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FACT: Every 8 minutes of every working day another HAAS is sold.

Toolroom Mills

762 x 305 x 406 mm
TM-1E ● 1016 x 406 x 406mm
TM-2E ● 1016 x 508 x 406 mm
TM-3E ● 762 x 305 x 406 mm
TM-1P ● 1016 x 406 x 406mm
TM-2P ● 1016 x 508 x 406 mm
TM-3P ●

Drill & Tap

508 x 406 x 394 mm
DT-1 ●

Mini Mills

Mini Mill-1 ● 406 x 305 x 254 mm
Super MM-1 ● 406 x 305 x 254 mm
Mini Mill-2 ● 508 x 405 x 356 mm
Super MM-2 ● 508 x 405 x 356 mm

Office Mill

OM-2A ● 305 x 254 x 305 mm

VF Series VMCs 40 and 50 taper

VF-1 ● 508 x 406 x 508 mm
VF-2 ● 762 x 406 x 508 mm
VF-3 ● 1016 x 508 x 635 mm
VF-4 ● 1270 x 508 x 635 mm
VF-5 ● 1270 x 660 x 635 mm
VF-6 ● 1626 x 813 x 762 mm
VF-7 ● 2134 x 813 x 762 mm
VF-8 ● 1626 x 1016 x 762 mm
VF-9 ● 2134 x 1016 x 762 mm
VF-10 ● 3048 x 813 x 762 mm
VF-11 ● 3048 x 1016 x 762 mm
VF-12 ● 3810 x 813 x 762 mm

VF TR 5-Axis VMCs

VF-2TR ● 762 x 406 x 508 mm
VF-5TR ● 1,270 x 660 x 635 mm
VF-6TR ● 1,626 x 813 x 762 mm

Mould Maker VMCs

VM-2 ● 762 x 508 x 508 mm
VM-3 ● 1016 x 660 x 635 mm
VM-6 ● 1626 x 813 x 762 mm

Extended Travel VMCs

VF-1YT ● 508 x 508 x 508 mm
VF-2YT ● 762 x 508 x 508 mm
VF-3YT ● 1016 x 660 x 635 mm
VF-5XT ● 1524 x 660 x 635 mm

GR Series Routers

GR-510 ● 3,073 x 1,549 x 279 mm
GR-712 ● 3,683 x 2,159 x 279 mm

Super Speed VMCs

VF-2SS ● 762 x 406 x 508 mm
VF-2YTSS ● 762 x 508 x 508 mm
VF-3SS ● 1016 x 508 x 635 mm
VF-3YTSS ● 1016 x 660 x 635 mm
VF-4SS ● 1270 x 508 x 635 mm
VF-5SS ● 1270 x 660 x 635 mm
VF-6SS ● 1626 x 813 x 762 mm

Toolroom Lathes

TL-1 ● 406 x 762 mm
TL-2 ● 406 x 1,219 mm
TL-3 ● 508 x 1,524 mm
TL-3B ● 762 x 1,524 mm

Office Lathe

OL-1 ● 305 x 204 mm

Long Bed Lathes

ST-40L ● 648 x 2.032 mm
ST-45L ● 648 x 2.032 mm

ST Series Lathes

ST-10 ● 355 x 355 mm
ST-10 Y-axis ● 229 x 355 mm
ST-20 ● 381 x 533 mm
ST-20 Y-axis ● 305 x 533 mm
ST-20SS ● 254 x 533 mm
ST-30 ● 533 x 660 mm
ST-30 Y-axis ● 457 x 584 mm
ST-30SS ● 406 x 660 mm
ST-40 ● 648 x 1,118 mm

DS Series Lathes Dual Spindle

DS-30 ● 533 x 660 mm
DS-30 Y-axis ● 457 x 584 mm
DS-30SS ● 406 x 660 mm
DS-30SS Y-axis ● 406 x 584 mm

Big Bore Lathes

ST-25 ● 381 x 533 mm
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ST-30SS Y-axis ● 406 x 584 mm
ST-35 Y-axis ● 457 x 584 mm
DS-30 Y-axis ● 457 x 584 mm
DS-30SS Y-axis ● 406 x 584 mm

EC Series HMCs

EC-400 ● 508 x 508 x 508 mm
EC-400PP ● 508 x 508 x 508 mm
EC-500 ● 813 x 508 x 711 mm
EC-1600 ● 1,626 x 1,016 x 813 mm
EC-1600YZT ● 1,626 x 1,270 x 1016 mm

5-Axis Universal Machine

UMC-750 ● 762 x 508 x 508 mm

Super Speed 5-Axis UMC

UMC-750SS ● 762 x 508 x 508 mm

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A Renishaw retrofit unlocks the hidden potential of your CMM

Measurement is vital to any manufacturing business, providing essential information to control processes and verify products, but older coordinate measuring machines (CMMs) can become bottlenecks if they fail to keep pace with changing measurement needs.

Advances in sensor, metrology software and controller technology offer the opportunity to transform existing CMMs,

providing greater accuracy, faster measurement, more automation and new capabilities, whilst taking full advantage of CAD-driven programming.

As these advances are not dependent on the CMM frame, they are also available for old CMMs, upgrading the critical elements of the measurement system that contribute towards its metrology performance at a fraction of the price of a comparable new machine.

Users of all brands of CMM can access a complete solution that features leading-edge technology in every aspect, from simple touch-trigger probing up to advanced 5-axis measurement, all underpinned by a common controller and metrology software platform and backed up by the security of service and support direct from the manufacturer.

The award-winning 5-axis measurement systems offer unprecedented measurement speeds, reduced calibration time, and flexible access to features unmatched by indexing or fixed probing systems.

Packed with innovative technology, the REVO scanning system allows CMM users to measure feature form, whilst also increasing measurement throughput and reducing operator intervention. With programmable stylus and sensor changing, REVO users can automate even the most complex measurement task. Furthermore, REVO sensors allow quality assurance tasks that are currently manually intensive, such as surface finish measurement, to be integrated into a CNC inspection process for the first time.

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3D dream needs catalyst to become a £5 bn reality

Recent predictions that the global market for 3D printing will exceed £5 bn by 2025 could fail to become reality unless the industry invests in new materials development and process control. That's the view of Kieron Salter, managing director of KWSP, one of the UK's new high performance engineering businesses focused on the exploitation of digital fabrication and additive manufacturing.

According to a recent report, 3D Printing 2014-2025: Technologies, Markets, Players, 3D printing has a bright future and will experience exponential growth over the next decade. No longer simply used for one-off pieces and prototypes, additive manufacturing (AM) is now more widely utilised for final part production of items, bringing about simplified assembly, rapid design iterations, mass customisation and minimal material wastage. Subsequently, 3D printing is becoming increasingly deployed in sectors, such as aerospace, medical, military and automotive.

However, such anticipated growth in the 3D printing sector could fail to happen unless further research and development takes place. Quality control, process improvement, materials development and control engineering adoption are key skills that need further investment before digital manufacturing will become a recognised engineering force in the UK, according to Kieron Salter.

The most efficient AM/3D printed parts will be designed to be manufactured digitally and companies such as KWSP are already exploiting these benefits in motorsport and high performance engineering sectors. But without consistent investment in R&D, such disruptive technologies are unlikely to realise their full potential.

Kieron Salter continues: "While there's a lot of media coverage given to 3D printing, I don't think it alone is the most exciting opportunity of the future. It's part of a much bigger movement of digital fabrication that utilises a range of technologies including 3D printing, industrial inkjet and material deposition, combined with new developments in functional materials. This innovation will allow the creation of printed electronics, embedded sensors, mass customisation, consumer electronics, medical devices, miniaturisation and zero tooling manufacture, while also protecting the security of the manufacturing data being used.

Simon Scott of Renishaw views a metal engine part printed on the company's additive manufacturing machine at the 3D printing exhibition at the London Science Museum

"The main hurdle facing materials development and new manufacturing processes such as digital fabrication is industrial inertia. There are already a lot of things made very cost effectively using existing processes and there is a cost of changing these processes. Therefore, I believe the revolution will only really start to take pace when it is able to be adopted to do things that can't already be done today.

"For example, printing electronics, in particular consumer electronics, which is a huge and fast-moving market presents a massive opportunity. New materials like graphene will also find their place in AM and 3D printing. We also expect the medical sector to make huge advancements in 3D bio-printing. In addition, we are likely to see greater exploitation of tailor-made implants, on demand to actual patient needs, perhaps even in theatre. This will have the benefit of reducing operative timescales and improving patient outcomes.

"By itself, 3D printing doesn't yet solve enough problems when applied to current manufacturing challenges. Real advancement will only come when customised products can be made more quickly, cheaply and efficiently. This will only occur when we see a genuine convergence between a host of technologies such as inkjet printing, AM and 3D printing. Only when these processes work in combination, will digital fabrication realise its full potential."

KW Special Projects (KWSP) is an ambitious business specialising in exploiting the application and solutions that exist within digital fabrication and additive manufacturing and operating within the high performance engineering sector – designing, manufacturing and supplying complete solutions.

Founded by Kieron Salter, founder and MD of KW Motorsport Ltd, KWSP provides services to meet the rapid growth in demand for a non-conventional approach to the integration of new processes and technologies into high performance engineering and manufacturing. Guided by the principles of motorsport, the need for speed, efficiency and precision through the use of technology, materials and processes, KWSP takes a disruptive approach to clients' creative ideas, facilitating the transfer of knowledge from one sector to another.

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AMRC expertise helps Rolls-Royce optimise manufacture of aero engine components

The University of Sheffield has confirmed its place as a world leading university with an international reputation for research excellence across a wide range of disciplines following the results of the 2014 Research Excellence Framework (REF), published today.

The University's Department of Mechanical Engineering and its Advanced Manufacturing Research Centre (AMRC) were ranked in the top ten UK higher education institutions overall.

The expertise of AMRC engineers within two research projects has enabled industry partner Rolls-Royce to make significant improvements in the effective manufacture of key aero engine components.

Aero engine discs

Aero-engine discs are at the heart of the modern jet engine. They hold the turbine or fan blades in place, and operate under extremes of stress and temperature. Consequently, they require exotic materials such as titanium and nickel super alloys. Machining of titanium and nickel super alloy discs is traditionally difficult, and requires complex manufacturing process.

AMRC engineers used simulation tools such as finite element analysis to guide the fixture design and machining strategy, whilst research into process damping, and the use of variable helix cutting tools enabled them to choose optimal parameters for the machining of the titanium and nickel super alloy discs.

Researchers at the AMRC subsequently devised a methodology for optimising the machining of the discs which has led to a reduction in production time and an increase in performance. when linked with other ground-breaking manufacturing techniques including the introduction of robotics and automation, the manufacturing techniques developed by the AMRC has reduced the time it takes to manufacture each disc by 50 percent whilst producing a step-change improvement in component performance.

In parallel with the underpinning research activity, Rolls-Royce identified a need for a new disc production facility, using the ground breaking manufacturing techniques developed by the AMRC, in order to meet the demand for new engine platforms.

When fully operational, the facility in Washington, Tyne and Wear will have the capacity to manufacture 2,500 fan and turbine discs a year. These discs will feature in a wide-range of Trent aero engines including the world's most efficient aero engine the Rolls-Royce Trent XWB.

There are two types of disc manufactured at the Rolls-Royce plant: fan discs and turbine discs. Located at the front of the engine, the fan disc holds the fan blades. There are typically 20 blades in each engine. They rotate about 2,700 times per minute and move 1.25 tonnes of air per second, the equivalent of the volume of air in a squash court. The fan discs remain in service for over 20 years.

The turbine discs hold blades in the hottest part of the engine where the operating conditions are at their most severe. The disc is made of some of the strongest materials available, created using refined powders which are specially

processed and machined to the accuracy of a fraction of the thickness of a human hair.

Aero engine castings

Aero engine casings are some of the highest value components within the modern gas turbine, since their complex geometries and exotic materials lead to significant manufacturing challenges. The AMRC has helped Rolls-Royce to overcome these challenges by developing a novel optimised manufacturing approach for aero-engine casings which mean that the manufacturing time for these components have been significantly reduced.

Superalloys have been developed for use in aero-engines as they provide high strength and heat resistance, allowing engines to operate in hotter (and hence more efficient) combustion conditions. Unfortunately due to their strength these materials are difficult to machine from both a tool vibration and wear perspective. This problem is exacerbated when the material is used for large thin walled cylindrical sections such as engine casings, and as a result these components are traditionally very costly to manufacture.

Research by AMRC engineers, has resulted in a step change in the productivity of casing manufacture. This included: designing a novel pneumatic fixture to hold the component during machining; establishing optimal machining parameters to positively influence material feed rates, tool geometry, and tool dynamics. The research also included developing, in conjunction with partner Sandvik Coromant, tool wear mechanisms and tool coatings along with ultra-high pressurised coolant systems to enhance machining tool life, and establishing an optimised sequence of manufacturing operations for each part, ensuring minimum manufacturing cycle times whilst retaining product quality.

Based upon these results, Rolls-Royce has worked with the AMRC to implement these novel machining approaches across their commercial product range. This has led to significant cost saving across all the components manufactured and reductions in production cycle times per component. For example, this more efficient way of machining allows material to be removed from the casings nearly 20 times faster than usual.

Emphasising the benefits of working with the AMRC on the development of such manufacturing technologies Steven Halliday, AMRC relationship manager at Rolls-Royce, says: "The manufacture of full scale demonstrator components at the AMRC validated the new approach in readiness for the launch of our new high technology disc factory near Newcastle. I am confident that the methodology developed through this project can now be used and applied to similar complex process challenges."

Dick Elsy, chief executive of the High Value Manufacturing Catapult, says: "The breakthroughs in machining time and accuracy have made UK manufacture for Rolls-Royce completely competitive."

"The biggest anchor point for innovation in the UK is knowledge. If we develop the knowledge here, it acts as the main binder to lock high value manufacturing into the UK."

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Advanced Engineering Centre coming to Brighton

A new Advanced Engineering Centre is to be established at the University of Brighton. The Centre, backed with £5 m from the Higher Education Funding Council for England (HEFCE), will provide cutting-edge facilities for mechanical, automotive and aerospace engineering to educate the next generation of professional engineers.

The Centre will incorporate the University's Centre for Excellence in Internal Combustion Research which earlier received £7 m Government backing. This Centre of Excellence is being established in partnership with Shoreham-based Ricardo, a world leader in technical and environmental consultancy and specialising in the development of low carbon vehicle technology. Joint collaborative projects include the search for the near-zero emissions internal combustion engine.

The Advanced Engineering Centre is integral to the university's £150 m redevelopment scheme for its Moulsecoomb campus, which includes Preston Barracks, a partnership scheme between the university and Brighton & Hove City Council. Professor Andrew Lloyd, dean of the university's College of Life, Health and Physical Sciences, says: "We are delighted with the news that HEFCE will provide £5 m towards this new facility to complement the university's ongoing investment to support the expansion of engineering at Brighton. This will allow us to establish world-class specialist teaching facilities to alongside the state-of-the-art research base we are establishing with our long term partner Ricardo.

"These facilities will provide a unique opportunity for our undergraduate and postgraduate students to study alongside our researchers and engineers from Ricardo and undertake industrially relevant projects at the forefront of engineering within the research facilities.

"In addition to inspiring more young people to study STEM subjects, we aim to support their transition from education to employment through our career-focussed approach to learning in this new and exciting educational environment."

The Advanced Engineering Centre, based on the University's Moulsecoomb Campus, will include new and refurbished accommodation and facilities for hi-tech, design-led manufacturing to support other companies in the region. Work is expected to start in June this year, for completion in November 2016.

Brighton University
Tel: 01273 600900
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Large variety of multi-axis work on one machine

A familiar refrain among contract machinists is that they do not know what type of job will come in next, so machine tools on the shop floor need to be as flexible as possible to tackle a wide range of component types and sizes. One machining centre that offers a particularly high level of versatility is the Spinner U-1520, as recent customer Loftlock Precision Engineering explains.

The aerospace subcontractor, which is celebrating its 40th anniversary in 2014, bought the German-built machine in February through sole UK agent, Whitehouse Machine Tools. Loftlock's managing director, Kevin Douglas and his son, Steve were convinced that the vertical-spindle, 5-axis machine was right for their company as soon as they saw the specification.

No particular jobs were lined up for it, but it was soon working flat out producing parts in mainly aluminium but also in titanium, stainless steel, phosphor bronze and aluminium bronze. Other materials are also machined occasionally, such as tungsten alloy to make ballast weights for Formula One race cars. More than three-quarters of turnover at the Reading factory derives from prismatic machining, with the remainder from fixed-headstock CNC turning.

The key to the Spinner machine's adaptability to suit many different types of job is its dual table design. A 2-axis CNC arrangement comprising a -90 / +110 degree swivelling trunnion carrying a 650 mm diameter rotary table is positioned at the right hand end of the machining area. A fixed table sits alongside it to the left.

Complex 5-axis work may be undertaken on the first table and 3-axis machining is available on the second table in the same cycle if another part is fixtured on it. In this way, one complete component requiring two operations emerges from the machine every time the operator opens the door.

Alternatively, with the rotary table positioned horizontally so that it is coplanar with the fixed table to form an extended X-axis, a component over 1.5 metres in length can be machined in three axes.

Kevin Douglas enthuses: "Such versatility makes the Spinner U-1520 an ideal subcontractor's machine.

"Over 90 percent of our business is in aerospace work, with the remainder in motorsport, defence, marine and medical, and we find that we are able to process a wide range of parts on the machining centre to very high accuracy."

He describes how the machine was deployed virtually as soon as it arrived on the shop floor. The first job was a batch of L168 aluminium alloy turntable bases for a helicopter seat, which required 3+2-axis machining in the 5-axis area of the machine.

Almost immediately that finished, an order came in for a large run of aluminium rocket sleds that measured almost the full 1.52-metre X-axis dimension. Good access to the working area including from an opening side door facilitated loading and unloading the components. This simpler, 3-axis job ran for a month before another 5-axis job was put onto the Spinner.

Mr Douglas continues, "We had run this job several times before, but we only had machines with one-metre in X so needed to reposition the parts two or three times to complete the cycle.

"Now the part is finished much faster in one hit, saving operator time, reducing the manufacturing cost and eliminating the possibility of errors caused by repeated refixturing."

The helicopter seat turntable had also been manufactured previously by the Reading firm on another make of 5-axis vertical machining centre, which was the first on site and was delivered shortly after MACH 2012. However, the machine was operating at the limit of its capacity, whereas the Spinner offers a generous 5-axis envelope of 620 x 520 x 460 mm.

Simple programs are entered into the U-1520's TNC630 control on the shop floor using Heidenhain's conversational GUI (graphical user interface). More complex 3-axis cycles, with and without positioning and hydraulic clamping of the rotary axes, are created in SmartCAM. The Spinner machine is also capable of fully interpolative 5-axis machining, programs for which are written by an external specialist, for now at least.

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New VCenter 5-axis machines offer maximum flexibility

Victor CNC has now extended its already extensive line of machine tools with the introduction of the new VCenter-AX800 vertical machining centre. Taking flexibility to a new level, the new AX800 incorporates a swivelling head B-axis and a C-axis rotary table (800 mm diameter) to fully facilitate 5-axis machining of large parts up to 1 m diameter.

With rigidity and precision built into every aspect of the new VCenter-AX800, the 5-axis offering has a C-axis table that is clamped at high torque (3433 Nm) for heavy cutting whilst the B-axis swivel head includes a hirth coupling with 1° increment that further enhances the rigidity to deliver 4 + 1 axis machining capability.

Incorporating a rotary table that is built next to the fixed table, this innovative Vcenter-AX800 is equipped with a swivel head on the travelling column to implement 5-axis machining on large parts. Furthermore, with a Rollercam-drive® mechanism for both rotary axes, the AX800 ensures sufficient rigidity for 4+1 axis heavy machining with high rotation compared to less robust conventional worm gear mechanism machines.

The robust new machine has a BBT-40 taper spindle that is fed by a 40 tool ATC that has a twin arm type ATC. This tooling setup performs quick and reliable tool changeovers beyond that of most machine tools and a 60 tool magazine is available as an optional extra. The B-axis of the new AX800 has a 15000 rpm spindle that delivers

a power output of 22 kW for conducting heavy machining processes that optimises material removal rates. To support heavy machining, the AX800 has large diameter ball screws couple with the servo motor to maximise rigidity and performance levels. What's more, the AX800 has a roller gear mechanism that minimises the backlash and guarantees high accuracy at an arbitrary angle.

With regard to flexibility, the new AX800 provides a whole host of options that include 8+1 hydraulic/pneumatic ports to direct the power through C-axis and pallet for multiple point clamping and air sealing detection to assure clamping quality. In addition, the VCenter provides the option of a chip conveyor, through spindle coolant, linear scales/angular encoders, auto tool length measurement, auto part measurement and also a selection of control units that include the Fanuc 0i, 32i and the 31i control or the Heidenhain TNC620 and 640 control units.

Introducing the new Victor Vcenter-AX350

With a reputation for supplying high precision 3-axis machining centres, Victor have now just launched their new 5-axis machining centre, this now completes their machining centre offering.

The new AX350 VMC is a fully simultaneous 5-axis machining centre. Driven by a Fanuc control system, this machine is built utilising the strengths already established on the three axis VMC range. With 1000's of installations worldwide of A72's, A110 and A102 B VMCs, it seems only natural to extract the core benefits of these machine tools when building a new model.

The new AX 350 is equipped with a fully integrated 2-axis tilt/turn table, providing engineers the platform to machine both 3 + 2 and full 5-axis.

The machine is constructed as a Fixed column C-framed VMC with high rigidity for heavy cutting, with the offering of either a 12000 or 15000 rpm spindle and high rapid feeds. The machine also has a Large Z-axis travel which is preferable for the tilting table concept.

The tilting table offers a workpiece capacity of 170 mm or 250 mm diameter. The axes travel on the machine is X 650 mm, Y 480 mm and Z 540 mm.

The new AX 350 is for sale now from Victor CNC, this machine is likely to suit both OEMs and Subcontractors. Whether you're machining production components of complex one off parts, this machine will deliver first class, precision manufacture in less set ups and in less time.

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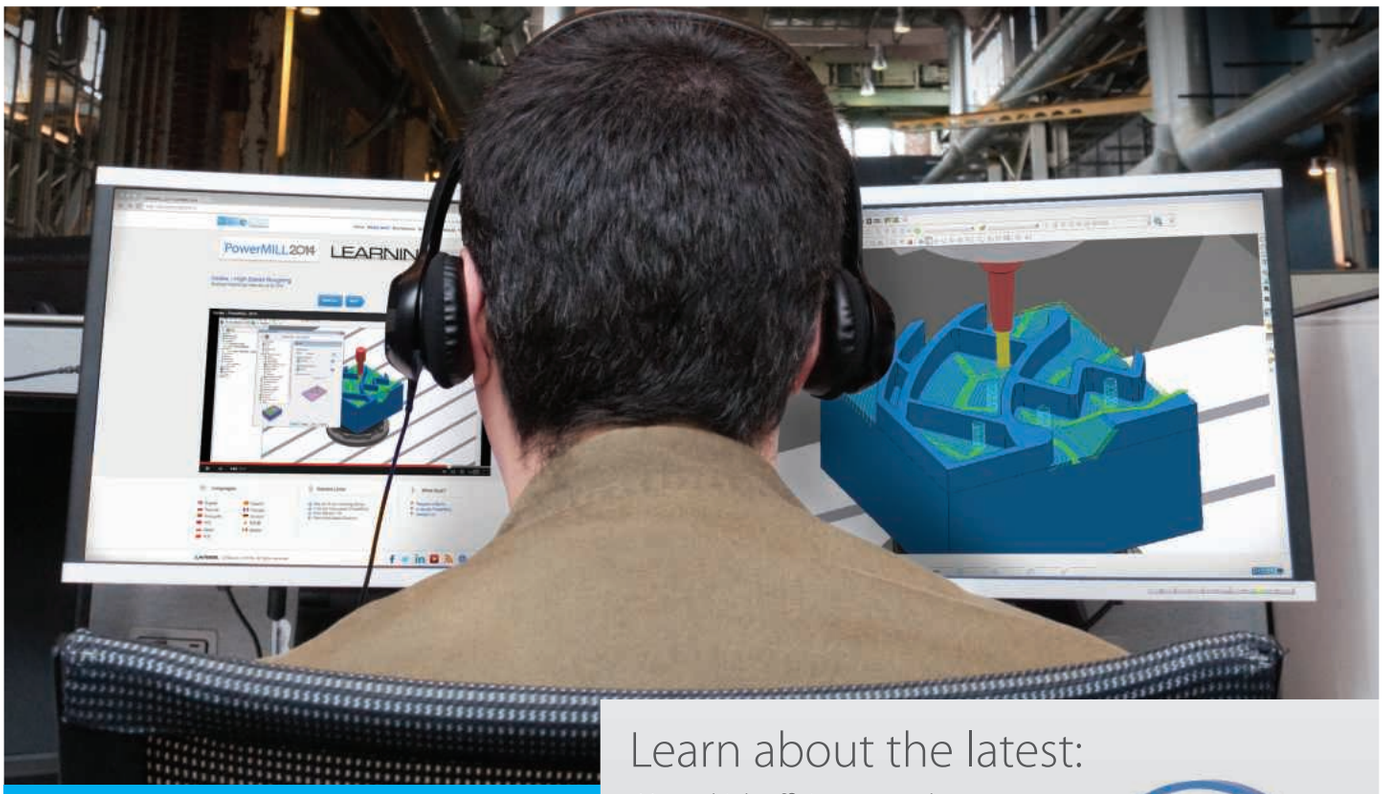

"PowerMILL's Dynamic Machine Control gives us the confidence to run parts first time on our 5-axis machines."

Brian Kerkstra, Paragon D&E

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AUTODESK.

Competitive performance package of machines

Targeting the single operational trend by users in vertical machining centre technology, a 5-axis, high specification Heidenhain-controlled machine is now available from Ajax Machine Tools International for under £80,000. This machine comes with 17 kW, 10,000 revs/min spindle and chiller, a 200 mm diameter rotary/tilt table and 24 tool magazine. Significant in the installation support of the accuracy and repeatability of the machine in production is the on-site Renishaw ballbar and laser calibration to ensure the machine specification is compliant following shipment.

Available through its Lymington, Hants headquarters, the structure of the machine is based on heavily ribbed high grade iron castings carrying high speed, linear roller guideways on each axis with direct drive motors that enable positioning at up to 48 m/min.

The Ajax V700-5X has a table size of 800 mm by 400 mm and axis travels of 700 mm in X, 400 mm in Y and 650 mm in Z. In order to be application specific, a 12,000 revs/min spindle with 20 bar high pressure through coolant supply is available as an option.

The machine is controlled via Heidenhain TNC 620 with its brushless main spindle and axis drive motor and encoder package which provides a system resolution of + 0.001 mm. However, of significant importance is the on-site installation serviced provided by Ajax whereby Renishaw ballbar and laser calibration is carried out to qualify accuracy is within the machine specification.

The 200 mm rotary table is able to carry loads up to 80 kg and rotate at up to 33 revs/min. Rotational index accuracy is within + 15 arc sec, tilt accuracy within + 30 arc sec and repeatability within 4 arc sec.

The bi-directional column mounted 24 tool magazine will accept tools up to 90 mm diameter by 300 mm long with a tool-to-tool time of 1.6 secs. Included in the specification package is a complete 200 litre coolant system with oil skimmer and spiral swarf conveyor.

Further options available include flat type chip conveyor, Heidenhain TT140 table probe for tool measurement and TS 640 3D touch trigger probe, Renishaw tool measurement and auto-measure system. In addition Delcam programming software and a starter tool pack of 14 mixed BT40 holders, pull studs and collet set can be specified.

Ajax Machine Tool Company Ltd, began manufacturing Industrial Drilling and Milling Machines in 1940 at its Halifax Factory, in the North of England, and subsequently became a Limited Liability Company in 1953.

The Company's success and increased manufacturing capacity resulted in it being acquired by the Dutch Electronics Group, Philips International in 1958.

Further developments in the 1960's, brought about the Company's facilities being relocated in Manchester, along with the development of new products, including, centre lathes, turret milling and grinding machines, to complement its existing range of machine tools.

In 1979, the Company was located at its purpose built facility in Bredbury, Stockport, became part of the CEI Group, within the Specialist Engineering Sector and subsequently transferred to Graseby Plc. At this time NC (Numerical Control) machines were introduced to the range which subsequently became CNC (Computer Numerical Control) in the 1980's this gave Ajax a wide range of machines to increase its hold on the international market.

July 1st 1992, saw a new era in the history of the company, by returning to a Private Ownership, with the successful completion of a management buyout from the Graseby Group.

In October 2001 the company was taken over by the Viking group of companies who apart from having their own brand also owned Startrite Machinery, and relocated Ajax to Birmingham.

In November 2002 the company was taken over again by its current owner Mr Savin who relocated it to Hampshire and has taken the company to new heights with new products, better prices and far greater efficiency.

March 2005 the company took over Semco Machine Tools in Southampton to expand in the south & further its foot hold in the UK market. Then combining products from both companies to offer even better quality and service in the South of England.

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Universal gantry-style 5-axis machines launched

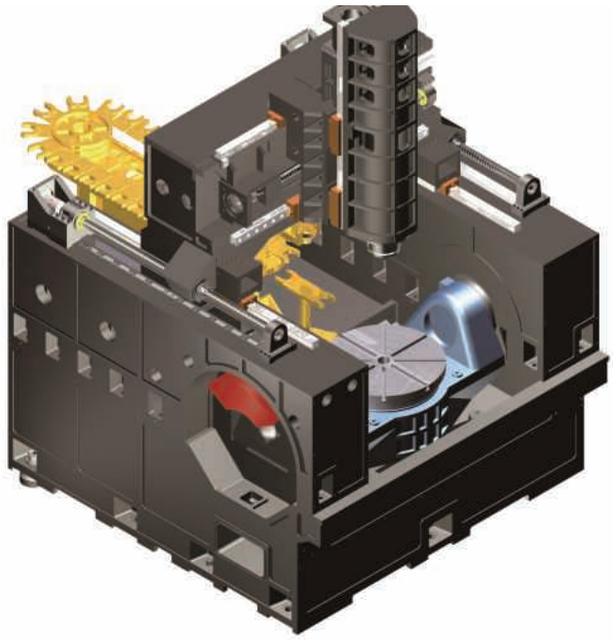
Based on a high rigidity, overhead gantry design with a patented backlash elimination system and twin, Y-axis ballscrew drives for high precision five-axis and five-face machining, the Wele Universal Gantry UG-Series is available in capacities of 550 mm by 700 mm by 500 mm (UG550) and 800 mm by 950 mm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

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

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

This two-axis unit has some 6,000 Nm of torque available to drive the trunnion rotational axis which carries the C-axis 800 mm diameter rotary table. On the larger machine this table will accept loads up to 1 tonne and rotate at up to 100 revs/min with the high torque drive developing up to 2,300 Nm. Each machine can be fitted as an option with a fixed rectangular table or either a single or smaller duplex C-axis rotary tables. Rapid traverse rates are 48 m/min in each main axis with acceleration of 5 m/sec^2.

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



2D CNC's Wele Universal Gantry 5-Axis UG-Series incorporates patented backlash elimination system and is a compact, overhead gantry design for high rigidity.

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

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

Established in 2009, 2D CNC Machinery Ltd is the sole distributor for Toyoda and Mitsui Seiki, CNC Machine Tools, REIDEN, WELE, FERMAT and PAL-TEC in the UK. Covering the full spectrum of manufacturing needs, the product range consists of horizontal & vertical machining centres, including 5-axis, grinding machines and automation solutions at the highest technical level.

2D CNC applications engineers have a wealth of experience in the intricacies of their customer's parts and the most advanced methodologies to produce them. Whether it's a complex part that has been in existence for decades or a totally new design, the applications engineering staff have the know-how to get the job done.

Refined technical expertise from 2D CNC Machinery continues after the sale. Every installation is customised for each application. As such, it takes a team of people thoroughly immersed in the application and the resulting machine solution to support customers long after the agreement is reached.

Expert installation, on-going maintenance, and on-demand system service are integral aspects of the 2D CNC Machinery performance package.

2D CNC Machinery Ltd
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www.2DCNC.co.uk

Best-in-class wire EDM and 5-axis machine tools

EDM, Milling and Laser ablation machine tool specialist, and automation systems solutions provider GF Machining Solutions, will exhibit a new AgieCharmilles CUT 200mS wire EDM machine and a new Mikron HEM 500U 5-axis machining centre from its stand (R98) at the Southern Manufacturing Show in February

Cut 200mS

The CUT 200mS is a high-productivity wire EDM machine that provides customers (precision component manufacturers and mould and toolmakers) with exceptional performance, reliability, flexibility and accuracy.

The machine features a rigid design and build, which includes a hardened frame-mounted and fixed work-table, to ensure high-accuracy and superior surface finishes (Ra 0.1µm) and linear glass scales with 50 nanometre resolution on all the machine's axes deliver high positional (+/- 3 microns) life-long accuracy.

The CUT 200mS is also equipped with an Active Thermo-stabilisation System that regulates the temperature of the machine's base, axes, mechanical components and tank etc., resulting in improved part accuracies and repeatability's.

And, armed with a number of performance-enhancing SMART Technology functions like PROFIL EXPERT and TAPER EXPERT, the machine enables users to achieve high accuracies (within 3 µm) on parts with complex contours and a unique +/- 1 minute angle accuracy from 0° to 30° on tapered parts.

HEM 500U

The HEM 500U is an ideal 5-axis machine for manufacturers who perhaps have looked at 5-axis machining in the past but were put off making an investment owing to the relatively 'high' cost of many machines currently available on the market.

Although the HEM 500U is a universal machining centre it is aimed at manufacturers, specifically subcontractors, machining one–offs and small batch precision parts who need a versatile machine that complements their production

requirements. The HEM 500U has a compact footprint with X-, Y- and Z-axis travels of 500 mm x 450 mm x 400 mm respectively, and the machine's 5-side/face machining capabilities are provided by a rotary tilting table (-65/+110mm degrees/B-axis; and n x 360 degrees/C-axis).

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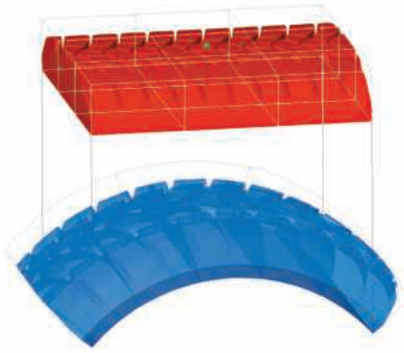
www.gfms.com

OPEN MIND set for success at Southern Manufacturing

At Southern Manufacturing 2015, OPEN MIND Technologies will be giving its new hyperCAD-S platform and new 5-axis machining strategies, incorporated into the latest version of hyperMILL 2014.2, their first outing at the Farnborough event. From the 10-12th February, OPEN MIND will be occupying Stand Q115 and providing demonstrations of its leading 5-axis CAM solution and the hyperCAD-S platform, which is the world's first dedicated CAD for CAM solution.

At the Hampshire event, OPEN MIND will be introducing the new features that have been built into hyperMILL and hyperCAD-S for improving productivity. The new features within hyperCAD-S have been created to further improve HSM, 5-axis strategies and power-cutting - all aspects that will maximise stock removal. One feature of note will be OPEN MIND's new Direct Modelling feature that sits within hyperCAD-S. This exciting new innovation provides programmers a 'just do it' approach to design with a modelling strategy that gives end users the power to quickly define and capture a geometry.

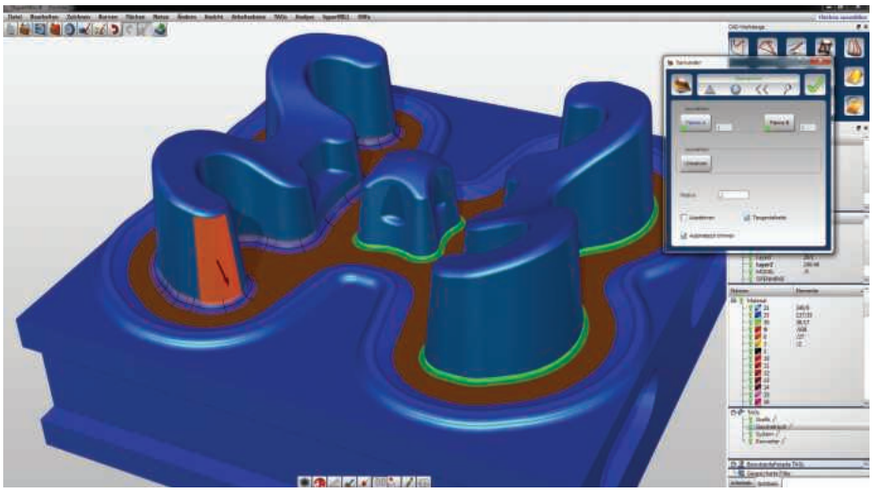
In real terms, it allows a programmer/designer to focus on creating a geometry rather than building features, constraints and design intent into models, which is the historical working method with the widely used Parametric Modelling strategy used by alternate CAD vendors. By adopting hyperCAD-S and its Direct Modelling strategy as opposed to the industry accepted Parametric Modelling, end users can eliminate the time-old process of anticipating and defining feature constraints, relations and dependencies to



ensure that any design modification will update all related downstream geometries in a predefined way. The benefits of this feature have been realised when creating a Parametric model in 7 minutes 31 seconds and then re-creating it in 4 minutes and 46 seconds with hyperCAD-S. This results in a time saving of 36 percent.

In addition, OPEN MIND engineers at Southern Manufacturing 2015 will be keen to highlight how a new geometric kernel, new database, graphics and user interface with touch support plus a new API for internal and external developers within hyperCAD-S can benefit the end user. On top of presenting the benefits of hyperCAD-S, another prominent aspect will be the utilisation of 5-axis machining strategies within 2D & 3-axis applications to improve productivity on the shop floor. An example of this is the new 5-axis pocket strategy in hyperMILL. Its unique 5X immersion method has been proven to reduce axial forces and loads on the cutting tool and spindle whilst permitting increased step-overs for significant gains in productivity.

OPEN MIND Technologies AG is a leading developer of CAM/CAD software and postprocessors for designing and manufacturing complex moulds and parts. OPEN MIND is one of the five largest providers of CAM solutions according to the NC Market Analysis Report 2013 compiled by CIMdata, a market research company. OPEN MIND offers an extensive range of products from 2D feature-oriented solutions for milling standard parts through to software for 5-axis simultaneous machining. The hyperMILL® software is used in the automotive, tool and mould manufacturing industries, as well as the mechanical engineering, medical, aerospace and jewellery industries, OPEN MIND Technologies AG is represented in all the important markets in Asia, Europe and America.



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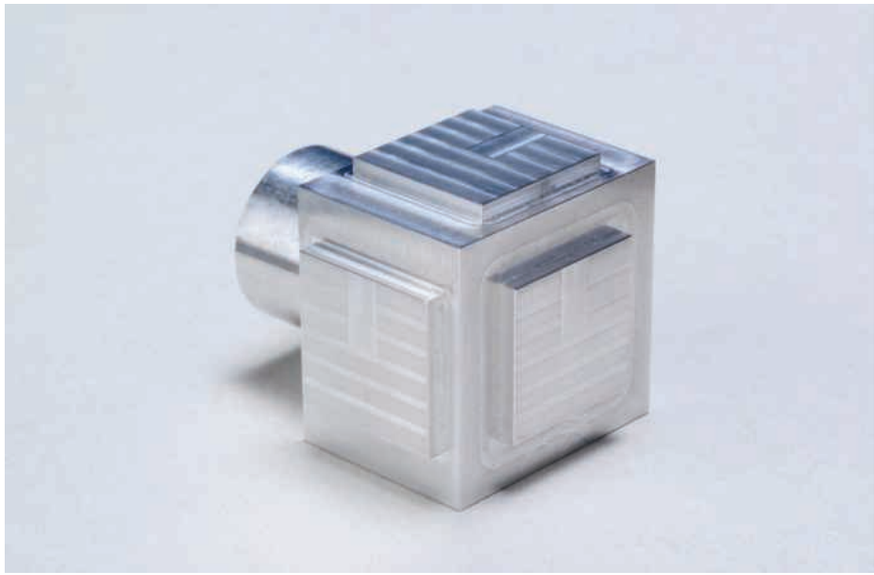
Test the precision of your 5-axis machine

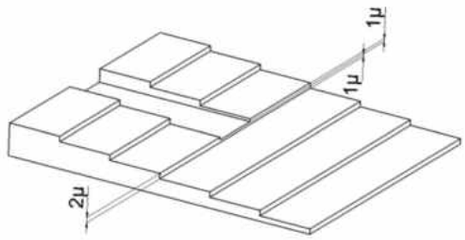
One of the great debates in machining is how to confirm the accuracy of a machine when working with tilting and swivelling tables. The reluctance of machine tool companies to specify accuracies in this form of operation is defended by discussing the accuracy of component setup and the initial setting of the kinematics of the machine.

The kinematic setting is the dimension from the centre of the swivel point of the table to the reference position of the machine. The preset dimension is from the swivel point of the table to the clocking position of the workpiece datum. These two dimensions have a major impact on the accuracy of machining achieved, the larger these distances the greater potential for inaccuracy. So the shorter the distance, the more accurate the machining should be. Another feature to be taken into consideration for workpiece accuracy is how square the clamping table face is to the spindle axis movement.

One easy and simple test is the KERN Step test. This involves inserting a bar into a collet chuck on a 5-axis machining centre and machining three adjacent faces. In simple terms five steps are machined on one face with a height difference of 2 µm, then a groove is milled in the steps that is 5 µm deep off the top face but at 90° to the steps. Therefore, off the second step, the groove is only 3 µm deep and off the third step only 1 µm and it does not touch the fourth step. Initially this simple operation shows the accuracy of 3-axis machining.



Images of the test component



Having completed the first face, the table is indexed by 90° and the machining operation is repeated on the second face. Having to repeat the 2 µm steps and the groove, the machine tools actual capability becomes apparent.

Finally the table is tilted by 90°, so that the third face to be machined is adjacent to the two previously machined surfaces. The step and groove machining is repeated. On all three faces, the operator should look at the third and fourth steps. On the third step, the groove should be 1 µm deep and you should not see any tool marks on the fourth face. It is really impressive that such a simple machining trial should produce outstanding results.

On a recent trip by Rainford Precision's UK customers to Kern, one comment that was heard was: "I can understand producing such a test piece as a one-off, but I've just seen ten identical parts machined as a production process – that's impressive".

Having high accuracy tilting and rotating axes is a standard feature for KERN. It is further enhanced on their Micro Machining Centre with a patented design for ensuring the table is true to the spindle axis movement. Possibly the name "Micro" disguises its true capacity for workpieces of 350 mm diameter and 220 mm tall with a standard tool holding capability of 101 tools with an HSK25 spindle or 90 tools with a HSK40 spindle. Customers demand 'process capability' to minimise operator involvement in the production of a batch of components and with the KERN Micro that is what they get.

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DMG MORI provides the machines to cope with rapid expansion

BSL Industries is bringing advanced manufacturing to the oil and gas and power generation industries with the efficient machining of high quality parts.

The company passed stringent quality audits for GE Energy, enabling it to become a Tier 1 supplier to the GE Group, manufacturing plates and rings. Success here enabled BSL to obtain oil and gas contracts from elsewhere within the group. These have amounted to more than £1 million in the last 18 months for the production of downhole tools alone, with further significant growth to come. New projects underway include the manufacture of 600 mm prototype hydrostatic bearings for ship stabilisation equipment. This involves propulsion units which maintain the ship's position during exploratory drilling operations irrespective of sea conditions on the surface.

To achieve such remarkable results in such a short space of time required significant capital expenditure. The oldest machines at BSL were only purchased two years ago and, in total, the company has invested nearly £4 million in machinery.

DMG MORI is the major supplier and machine technology partner to the company and has installed two NLX 2500SY/700 multi-axis turning centres, two NTX 2000 mill-turn centres, one NMV 5000 DCG 5-axis machining centre, one NVX 5100 3-axis machining centre and, most recently, one 5-axis DMF 260/11 linear machining centre.

Garry Calcott, commercial manager at BSL Industries, says: "The DMF 260/11 linear replaces another machine which was nowhere near rigid enough. The plates we manufacture require some very heavy cuts as we remove around 50 percent of the material. Not only is the machine much more rigid, but swarf removal is far better and the machine is fully enclosed. Previously we suffered from very high noise levels with coolant and swarf flying everywhere.

Downhole tool at BSL Industries

Machining plates on the DMF 260/11 linear

"The plates we manufacture weigh around 1,400 kg and are completed in two operations. The second operation uses a button tool to finish a large radius across the top of the part, which GE previously had to send out as a separate operation. BSL now delivers these large components fully machined.

"The NMV 5000 DCG has been invaluable for the manufacture of arms for downhole tools. Each downhole tool has six or eight spring loaded arms connected by tungsten carbide coated rollers, which run down the rock surface inside the drilled hole, keeping the tool central. These arms and rollers need replacing frequently due to wear. Previously the arms were cast, which resulted in inaccurate parts and individual on-site fettling operations to make them fit, adding considerably to cost and delays for the customer."

BSL now supplies the parts fully machined, which results in repeatability and fast fitting on-site and, in addition, a stronger component due to the grain structure of the material. The power and rigidity of the NTX 2000 machines led BSL to invest in two of these machines. Originally they considered other makes, but with the DMG MORI machines they were able to use them as true 5-axis milling machines, fixturing parts between two chucks.

"The oil and gas industry uses Acme threads, which require a full cut at the beginning of the thread. The DMG MORI machines have the power and accuracy to do this easily. The NLX 2500SY/700 and the NTX 2000 machines encapsulate everything that we need from a machine in versatility, strength, accuracy and reliability, adds Gary Calcott.

Business is growing so fast for BSL that it is already planning to expand its building by 35 percent. Garry Calcott says: "We plan to reposition the smaller machines in the new building for the lighter oil and gas components, with a mezzanine floor for a finished part store and assembly area. Our owner had previous experience with DMG MORI machines and his decision to select them for the type of work we do was a good one, so further investment in DMG MORI machines is definitely part of the plan to cope with the rapidly increasing demand."

Garry Calcott with downhole tool arms at the NMV 5000 DCG

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Cincom Miyano

Citizen installations turn in the savings for future investment

Following the acquisition of a failing small turned parts contractor where the deal included 10 aging CNC sliding head machines, these were very soon replaced with just four new machines from Citizen Machinery UK. Able to provide the advantage of running unmanned around-the-clock, such was the level of technology development in the new machines to increase output that they even provided additional spindle capacity.

Quality Turnings based in Knowsley now has 17 machines installed of which 13 are Citizen CNC sliding head turn-mill centres and two Miyano fixed head turning centres in its modern 16,500 ft² freehold machine shop that generated sales last year of well over £1 million. Owners Sue and John Stephens are both firm believers in keeping up with technology to reap savings for future investment and this has been rewarded with increased turnover while maintaining similar labour costs to produce batches of work between 100 and 100,000 components.

Most work is generated from a growing customer base in the hydraulics, white goods, electronic and maintenance component sectors and to help maximise the focus on machine setting for new work, a high ratio of production is already well-proven through repeat orders. Around five per cent of orders are exports destined for Denmark and Germany.

Quality Turnings was set up in 1993 as a cam auto shop but the two directors were gradually becoming disheartened over the returns generated in the business. A visit to the MACH exhibition in Birmingham in 1998 led to a discussion with the Citizen sales team that made them realise what they could be achieving for the effort they put in.

Sue and John Stephens have invested continuously to build Quality Turnings' production capability using Citizen and Miyano machines

This resulted in their first CNC sliding head machine, a Citizen L20, being installed the following year. Since then, 18 Citizen and two Miyano machines have passed through the workshop doors. Accounting for an average of almost one machine purchase a year, some were replacement upgrades, while others created additional capacity. However, the company really broke the machine buying trend when the Stephens added four Citizen supplied machines in 2013. In addition, two existing sliding head machines are scheduled to be replaced in order to maintain the progression of technology on their productivity.

Sue Stephens says: "We bought a newly launched Citizen K16-VII off the stand at MACH 2004 and even before it was delivered, we quoted a job and won the order. So within a week of installation we knew exactly where the company had to go for the future."

Today, the Stephen's plant list spans a Citizen A32-VII, three recently installed L20E-IXs, two K16-VIIs, one K-16 VI, five A20-VIIPLs and one C32-VI. From the Miyano stable a BNE-51 SY5 and BNA-42 DHY provide the fixed head capability with single operation cycle times varying between 10 secs and 3.5 mins. In addition to brass and copper, materials machined include plastics and copper.

The three latest installations of the 7-axis Citizen L20E-IXs were developed by the machine builder to provide an all-round level of versatility on components up to 20 mm diameter by 200 mm in length. The machines are capable of providing extended overlapping of operations through two independent toolposts that enable one to start work on the next part of the process before the other has fully retracted.

The L20E machine has a 3.7 kW main 10,000 revs/min spindle and 1.5 kW, 8,000 revs/min sub spindle. A vertical toolholder carries six turning tool positions and seven 1 kW, 5,000 revs/min driven spindles. Of these, three have the added flexibility of being swivelled 90 degrees between cross and end face machining. A Y-axis is standard. There are also seven fixed endworking tool positions, three for front and four for back machining. Rapid traverse rates are fast at 32 m/min.

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For manufacturers that haven't got all the time in the world.

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MILLS CNC

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XYZ to show diverse range at Southern Manufacturing

XYZ Machine Tools will be filling its stand with a cross-section of its machine tool range, including ProtoTRAK controlled turret and bed mills and SLX ProTURN lathes, through to full CNC machining centres and turning centres.

Customers already familiar with XYZ's ProtoTRAK control system are well aware of its simplicity and ease of use, but there are still many who are yet to benefit. To demonstrate the capability of machines equipped with ProtoTRAK, XYZ Machine Tools will demonstrate the ability and simplicity of the control on an XYZ SMX 3500 bed mill and an XYZ ProTURN SLX 425 lathe. The ProtoTRAK control system supplied with these machines is ideal for one-off and small batch quantities and even without any knowledge of CNC, operators will be producing parts within a day. The machines feature robust construction, including solid Meehanite castings, Turcite-B coated bedways on the mills, and extra wide vee and flat bedways on the SLX lathes. This combination provides a rigid and accurate machining platform for a wide variety of machining applications.

The XYZ SMX range of bed mills with the ProtoTRAK control remain popular due to the simplicity of operation and programming

For those looking at full CNC equipped machines, XYZ Machine Tools will be displaying an XYZ 710 VMC vertical machining centre and an XYZ Compact Turn 52 turning centre. Across the XYZ VMC range there is a common feature of high quality manufacture, with features such as solid Meehanite castings and extra wide induction hardened box slideways with Turcite-B coatings adding to rigidity and performance. Standard specification of the VMC range includes an 8000 revs/min 20 hp spindle, with feedrates up to 20 m/min in all axes. Additionally, customers can specify between the Siemens control with ShopMill conversational programming or the Fanuc production control, to suit their own needs.

The XYZ VMC range has proven its worth in the toughest of machining environments thanks to their solid construction

The Compact Turn 52 may be the smallest turning centre in the extensive range of CNC turning available from XYZ Machine Tools, with a footprint of just 1700 mm by 1450 mm in its standard form. However, it still provides a powerful machining platform thanks to its 5000 revs/min/20 hp spindle and axis travels of 185 mm and 325 mm (X and Z), with rapid traverse rates of 20 m/min. Like all of the machines in the XYZ range, these turning centres benefit from a highly rigid and stable construction, with hardened and ground box slideways and solid meehanite castings for the major components.

Also on display will be the new XYZ 2-OP portable vertical machining centre, which has received rave reviews for is ability to bring cellular manufacturing to almost any engineering business due to its versatility and ability to be positioned anywhere in the factory. With the XYZ 2-OP any business can benefit from the efficiencies of cellular manufacturing, such as maximising available labour hours, reducing work in progress, and significantly improving machining efficiencies through reduced component Takt time.

XYZ's innovative 2-OP portable VMC

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Cost-effective machining of automotive components

To increase metalcutting capacity in response to an upturn in orders for automotive pumps, the UK's leading manufacturer, Concentric has installed three Fanuc Robodrill machining centres at its manufacturing facility in Erdington, Birmingham. The company's oil, water and fuel pumps are used mainly in diesel engines that power light to medium duty trucks and off-road plant.

Two engine manufacturers have recently awarded significant new contracts to Concentric for machining, assembling and testing of an oil pump and a transmission pump. Consequently, a new production cell has been set up at the Erdington factory based around three α-D21LiA5 Robodrills dedicated to machining the aluminium pressure die castings.

The norm at Concentric is to use 40-taper, horizontal machining centres with twin pallet changers. However, a 30-taper, high-speed, vertical-spindle machine was better suited to the relatively light machining operations and was significantly more productive and competitively priced.

Mark McFall, manufacturing engineering manager, says: "We researched machines for our new oil pump cell during the last quarter of 2013. For the metalcutting operations, we were looking for a smaller taper machine with a fixed table and a fourth axis in the form of a rotary indexer.

"We opted for Robodrills due to Fanuc's good reputation in the market, especially for the reliability of their equipment. We went to see a similar machining centre that was robotically loaded at a manufacturer locally and the feedback was all positive.

"The Robodrill was also ideally sized in terms of its tool capacity, as our applications require 20 tools and the machine's turret-type magazine houses 21 cutters."

Concentric knew that the fourth axis arrangement on each machine would be critical to achieving the required TAKT times for the new oil pump and transmission pump.

Mark McFall loads the second of two oil pump bodies into another Robodrill. Both bodies are machined in a single operation

The line of three Fanuc α-D21LiA5 Robodrills in the new oil and transmission pump manufacturing cell at Concentric's factory in Erdington, Birmingham

So the manufacturer approached Saluki in Leicester for the supply of bespoke fixtures to mount on the Fanuc indexers, which had already been equipped with integrated hydraulics for clamping the parts and pneumatics for sensing that they are loaded correctly. Fanuc also fitted a tool breakage detection device at one end of the trunnion to assist in avoiding the production of scrap in this large-volume manufacturing environment.

To fulfil Concentric's customer contract, one Robodrill produces the oil pump cover and the other the pump body, with both machines operating over three shifts.

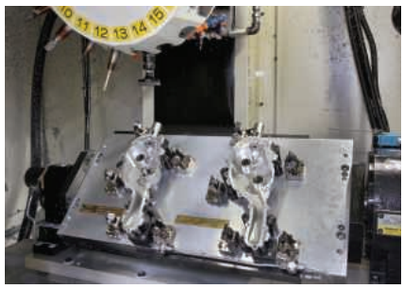
In the first machine, the covers require two separate operations and are loaded two at a time into fixtures that accept the part in both orientations. One undergoes op 1 and the other op 2 during each cycle, so a complete cover comes out of the machine in every load / unload sequence. In the second machine, two bodies are fixtured and machined completely.

For manufacture of the transmission pump, the third Robodrill produces two different parts in two operations each over a single shift, again from aluminium pressure die castings. Eight fixtures allow two of each

part, i.e. four components, to be produced per load / unload.

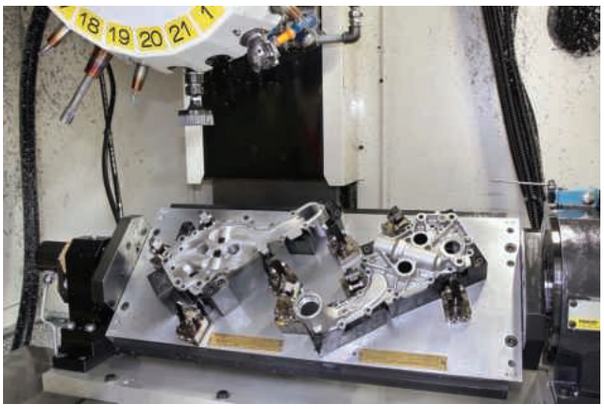
At the end of every cycle in all three machines, the trunnion carrying the fixtured components is programmed to come to rest at 45°. It encourages swarf and coolant to fall away and minimises the need to use an air gun to clear the machining area. Additionally, work is presented more ergonomically to the operators, enhancing production efficiency.

The high speed of the α-D21LiA5 Robodrills derives from an industry-leading specification that includes 1.5 g acceleration to 54 m/min rapids in all linear axes, up to 30 m/min programmable feed rates and 1.6 seconds tool change time, chip-to-chip. Working volume is 700 x 400 x 330 mm and the machines at Concentric have been equipped with a swarf conveyor and oil mist extraction.



Close-up of the oil pump bodies, showing the tool breakage sensor mounted at the right hand end of the index

The third Robodrill is devoted to producing two pairs of transmission pump components per cycle



A pair of oil pump covers fixtured in one of the Robodrills

Mark McFall confirms that the machines have proved reliable since installation, producing components to ± 10 microns tolerances, and that Fanuc has provided excellent programming support and training.

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PAL Robotics invests in Haas CNC Mini Mill

PAL Robotics is based on the third floor of an office building in central Barcelona, a few minutes by car from the city's busy and famous Las Ramblas promenade.

The company, run by Italian CEO Francesco Ferro, is building a reputation for its cutting-edge, innovative humanoid robots used in service applications such as hotels and shops, as well as in warehouses and supermarkets. To the layman, these are human-sized robots that look, move and sound like automatons from science fiction movies. But, they're not fantasy. They are in fact advanced, highly engineered creations, designed in-house by a group of talented engineers.

Up until now, all of the metal parts used to make a robot have been sourced from various external subcontractors and suppliers in Spain and overseas.

"Using subcontractors has its advantages, but also has some serious limitations," says Francesco Ferro, "especially during the prototype and development phase of a new design. For example, a complex assembly such as a hand includes very precise metal parts. We make many changes and improvements with an iteration of the design process. Sourcing the parts externally can slow down the prototype process considerably.

"The Haas Mini Mill is the perfect size and power for our workshop. As it's our first CNC machine, it's also important that it's easy to programme and use and that it's reliable. I didn't know much about Haas before we bought it, but when I started to investigate, I discovered very good things. The price and performance were exactly what we were looking for."

The compact and popular Haas Mini Mill comes with a 5.6 kW, 6000 rpm, 40-taper spindle as standard, giving it plenty of performance for cutting steel or Al alloy. Its worktable of 914 mm x 305 mm is the perfect size for small to medium sized parts and can easily accommodate a Haas rotary table for multi-axis machining. Maximum load on the table is 227 kg.

Shown in the accompanying photograph is REEM: C, the third version of a full-sized, humanoid robot. With a battery life up to 8-hours, PAL says 'she' can be used, for example, as a receptionist at an event or trade show, can entertain and compliment guests, provide dynamic information and even make presentations and speeches in many, different languages.

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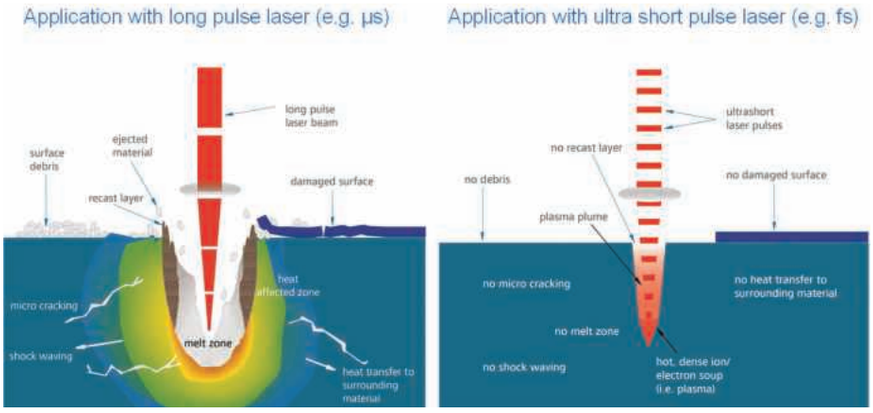
Femtosecond laser processing in the medical device industry

Microsecond (ms) fibre lasers have been used successfully for medical device applications like hypo tube and stent cutting for many years. While precise and fast, the down side has been that the parts require a number of post processing operations after they are cut, which add significantly to part cost and can also damage mechanically delicate parts.

In recent years ultra-short femtosecond (fs) laser technology has been introduced, which produces pulses that leave no thermal fingerprint on the part. These disk-based femtosecond lasers offer sub-400fs pulses, plus best in class beam quality, and peak power that enable an extremely high quality cold ablation cutting process rather than a melt ejection process. The resulting cut therefore requires minimal post processing and the smaller beam size allows machining of very fine details.



Schematic processing comparison of microsecond to femtosecond lasers

The process works especially well for production of such medical devices as catheters, heart valves, and stents, for medical and glass cutting and marking applications, as well as for 3D-structuring of ceramic material for dental implants. But perhaps the most interesting potential use is on a whole new class of bioabsorbable materials, polymers that safely remain in the body for controlled lengths of time before absorbing, which are being developed as an alternative to traditional polymers or metal components.

In the past, fs lasers have been considered too slow for commercially viable operations. Recent studies evaluated cutting time per part and post processing steps, demonstrating that the return on investment for a disk femtosecond laser can in many cases be less than 12 months, especially for high value components. A key aspect of realising the fs laser's potential is the system platform, and to this end Jenoptik and Miyachi America are jointly developing both stage and scan head platforms that can fully unlock the promise of reaching this new level of quality and precision for micro treatment.

Femtosecond laser technology is not new; it's been widely used in institutions and research centres for more than 30 years, but commercial-ready fs technology that can last in an industrial environment with a 24/7 qualification has been around for about the past 7 years. Originally used for wafer dicing and scribing of P1, P2, P3 solar panels or creating channels in panels for electrodes, fs lasers are now advancing into a new wave of machining capabilities, and many medical devices are excellent candidates, especially given the high cost of the components machined.

In addition to the ROI justification of minimized post processing, the fs disk laser can create unique features that were previously not possible due to quality concerns, particularly with polymers processing. The second photo shows the comparison of a nanosecond 355 nm source and a 1030 nm fs disk laser source processing polypropylene. The appearance

Comparison of 1030 nm fs disk laser to a 355 nm ns laser when drilling polypropylene

of the disk fs hole shows little taper, no melting or heat effect distortion around the hole. This enables product design freedom to maximise functionality with little or no compromise to the manufacturing process.

Development of femtosecond lasers for medical devices based on ROI considerations.

The edge quality possible with a femtosecond laser for both metals and plastics makes it excellent for machining of heart, brain and eye stents (both Nitinol and cobalt-chrome), catheters, heart valves, and polymer tubing. The nearly cold cutting process means very fine feature sizes can be cut into the thinnest material, while still maintaining mechanical and material integrity. No internal water cooling is needed for even the smallest Nitinol diameter tube.

Quality improvements and the promise of reduced post-processing has always made fs laser technology a theoretical possibility, but until about six years ago there was little commercial interest in its use for medical devices, due to concerns about the expense

and slow speed compared to other technologies. That changed when some companies, including Jenoptik, developed an ROI tool to illustrate the true cost of post-processing. The tool can be used to factor in overall costs, including laser equipment purchase, post-processing capabilities, machine time, and handling time. The calculations demonstrate that femtosecond lasers are actually faster, because they alleviate several extremely time consuming post processing steps.

Take the example of the ubiquitous coronary stent, one of the first devices to be manufactured with a fiber laser. First the part has to be machined, then honed, or cleaned out inside with a mechanical tool, and finally deburred. Then a chemical etch process must be performed to clean up around the edges, followed by an electro polishing step. Not only are these steps time consuming, they can also cause the part to become brittle, deformed and can have micro cracks. Yields tend to be in the 70 percent range, meaning a significant amount of end product is lost. By contrast, the fs laser is a dry format – no water or heat is introduced in the part. The number of steps is drastically reduced; the part is machined and then undergoes an electro chemical process to round the edges. The integrity of the part is improved, several time consuming steps are eliminated, and yields can be closer to 95 percent.

Figure 3: (Top) Nitinol stents (Bottom) Close up of a 100 micron thick Nitinol stent. Note that the edge shows the same finish as the material surface

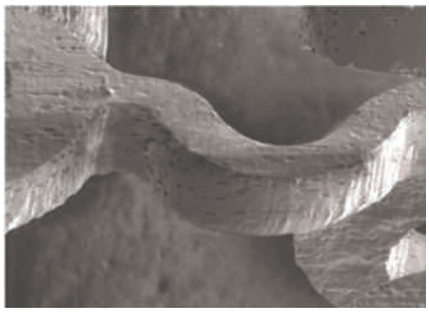


Figure 3 shows the high cutting quality of the fs laser for cutting of Nitinol stent material. The use of the fs laser prevents burr, and the slight roughness of the cutting edge gives a good precondition for the electro-polishing-process. Removal rate in this example was 0.25-5 mm/sec and material thickness up to 400µm is possible.

After years of clinical trials, several firms are awaiting approval and already planning for the new innovation to hit the US market, and several have been qualifying use of fs laser equipment to gear up for the precision micro-machining required.

The numbers definitely tell the story, as major medical device manufacturers are starting to understand the true ROI of more efficient machining technologies.

To gain the system integration capabilities needed to move the femtosecond laser capability into the marketplace, Jenoptik teamed with Miyachi America. The first developed platform was based around Miyachi's Sigma Tube cutter.

In a model unique in the industry, Miyachi is taking full ownership of the systems, providing the first line of support, including sampling processing, quoting, and building of the work cell, as well as installation, training, service, and warrantee. The work begins with understanding the end user's process to determine a specific application's system needs. This level of understanding can only come from the experience of running the application in house. While that knowledge is important with any process, it is magnified with ultrafast systems, which come with premium pricing. Miyachi uses its in-house femtosecond processing lab to provide a seamless transition from developing the application to the define-design-deliver approach used by the systems engineering group for both standard and custom system fulfillment.

Designing precision micro machining systems may appear to be just a question of determining how much granite is needed. While there is no doubt that mechanical stiffness and isolation are required, this is simply the starting point. Determining how delicate parts and materials will be repeatably positioned or clamped, implementing in-system part inspection, and incorporating real time optical beam diagnostics are several other key pieces of the puzzle.

The femtosecond disk offers unique in class process capability with excellent beam quality and high peak powers. To maximize the process capability for production the laser must be integrated into a system that enables high quality and repeatable processing. The combination of a highly robust femtosecond product that has been on the market for more than eight years with an experienced micro systems provider with in-house parts processing capabilities results in a partnership that can develop ideal production system solutions for high value medical products.

Femtosecond stent and hypo tube cutter, covers off, showing Jenoptik laser

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Leader indexing chuck technology helps turn a profit

For both accuracy and efficiency, the philosophy of not letting go once you have located a part is the ideal workholding choice. Nowhere is this better demonstrated than by the indexing chuck, which is more than a chuck, it is a complete technology.

Supporting this technology, workholding specialist Leader Chuck Systems offers a wide range of 2-jaw self-centring indexing chucks in diameters from 125 mm up to 500 mm. Specifically-designed for holding valve bodies and similar fittings, the chucks feature interchangeable indexing plates. Usual divisions are four 90o movements with an indexing accuracy of +/- 2 seconds of arc, but divisions of any incremental angle can be specified.

"It is not a new concept," admits managing director Mark Jones, "but indexing chucks offer significant advantages for difficult to hold components that would require multiple or staged fixing that could introduce errors. Historically, they have been popular in the production of volume automotive and valve industries for components such as trunnions, couplings and universal joint spiders, valve bodies and multi way connectors. Component accuracy is derived from the indexing accuracy of the chuck as all the machining is effectively related to the first datum setting."

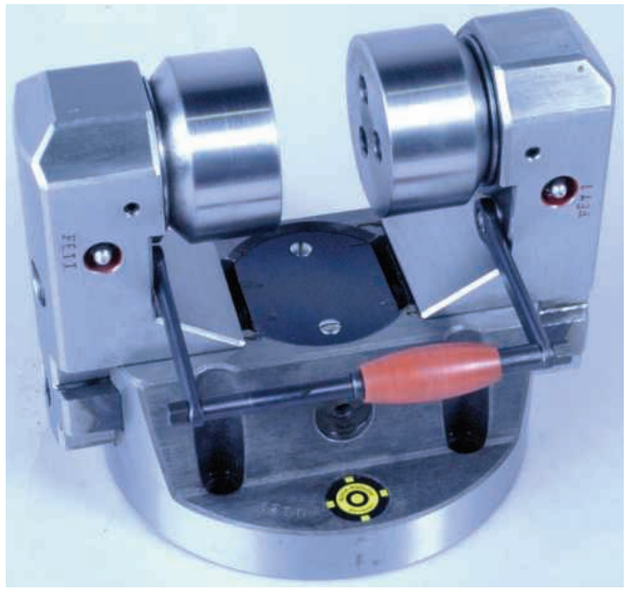
Over the years the range of components making use of the indexing chuck has become increasingly diverse, as designers and production engineers become aware of the benefits and flats or dimples for location and clamping are being included in the cast or forged raw component material. These features simplify location and can even reduce the size of the chuck required in many instances.

Manually indexed the chucks, which can be manually or power clamped, also support the drive towards lean manufacturing as the ability to fixture a part once helps improve profit margins on shorter batch runs. Even though these chucks provide a complete solution for a specific application they do so without compromising the flexibility of the lathe. The quick change philosophy promoted by Leader throughout its workholding product range has also been adopted here, and a fully manual chuck can be removed from a typical turning centre in under 10 minutes. The cost of the investment is also not prohibitive with manual indexing chucks starting at £5,000. So there is no penalty for investing and installing a bespoke solution.

A standard range of Leader indexing chucks is available, produced from high tensile forged steel. However, a depth of workholding knowledge and experience will positively benefit the manufacturing process. This is where Leader can help the customer make significant efficiency gains. As Mark Jones points out: "There are a number of prime considerations for selecting the correct size of chuck; and it is impossible to select the chuck without considering the tooling required, the access it needs to complete the machining necessary."

Clamping jaws are configured for specific applications, and for competitors' products the chucks usually feature one clamping and one static jaw that also provides the indexing drive. This configuration does not provide any self-centring. However, Leader indexing chucks with manual or power clamping offer simultaneous clamping drive that centres the workpiece as accurately as a standard power jaw chuck of the same size, making this workholding system the number one choice for cast raw material machining.

Based in Tamworth, Leader Chuck Systems has an enviable reputation for the in-house design and production of Leader chucking, stationary clamping, gripping and workholding products. A respected brand name for high quality equipment with more than 60 years' experience, the company also stocks products from the very best suppliers, such as AutoGrip, Bison, CARVEsmart, Gamet, Hainbuch, Hewa, Iram, Lexair, Maprox, MicroCentric, Posistop, ZeroClamp and Zweifel. Able to provide the right chuck or gripping solution for any application, Leader Chuck offers quality, precision, and reliability at competitive prices with reliable expert advice and a commitment to customer service.



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How to guarantee accuracy throughout the manufacturing process

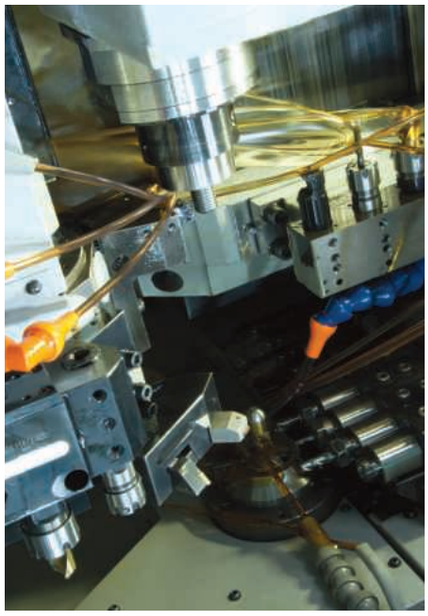
"For want of a nail the shoe was lost. For want of a shoe the horse was lost". This proverb carries on through rider and message to battle and kingdom. It pre-dates modern manufacturing, probably by a couple of centuries, but exactly the same principle applies to engineering.

Chris Putman, sales and marketing Director of WDS explains that if you don't get the small details right, the big picture will never be perfect.

Most of us enjoy flying away once in a while, for a few well-earned weeks in the sun, putting the worries and cares of our engineering world behind us. We can relax on the outward flight knowing that every component of the plane is manufactured and maintained to the strictest tolerances and maintained to the highest standards.

At 30,000 ft and 600 mph, we know we don't have to worry about cheap parts, quick fixes, or slapdash record-keeping. This is because the aerospace industry represents the pinnacle of engineering in terms of design, innovation and manufacturing quality.

In today's world, many component parts need to be manufactured with supreme accuracy. The aerospace industry, Formula 1 and precision engineering are obvious fields that require tolerances equivalent to a hair's breadth over many metres. But cars, consumer goods, electronic devices,



medical equipment and many other products are now made to tolerances almost as demanding. This requires workholding, fixturing and location parts that conform to high tolerances. Production of these parts must be accurate and repeatable, often produced at bewildering speeds.

In addition to these technical requirements, there are frequently commercial pressures for low cost, reduced lead times, changed orders and design variants. Then there may be tightening quality requirements for say, improving traceability or reducing defects.

Engineers at WDS Component Parts in Leeds have perfected a procedure for guaranteeing that their clients can produce accurate parts, time and time again. In the first stage they work with customers through the specification stages to produce technical drawings of fixtures etc. These are cast in iron, then machined and finished to an accuracy of 5 µm to the metre using ISO 9001 registered tooling. Prior to delivery, the parts are tested in-house using properly calibrated measuring equipment and supplied with a certificate of conformity. Cast iron has some key advantages: it minimises size distortion caused by fluctuating temperatures and is a deadening material, which cuts vibration during machining.

Workholding parts, such as cubes, end-plates and risers, are not only high value; they are also extremely cumbersome to manoeuvre and require a fair amount of storage space. Where production cells are responsible for different part runs, exchanging the workholding tools can often result in significant downtime during product run change-overs.

WDS engineers are able to work with customers to create matrix designs that can hold many different parts. This improves the work flow in most environments and keeps productivity high, as they typically only need to be turned through 90deg or 180deg to change from one task to the next.

Made in Britain

Around the world British engineering is synonymous with design ingenuity, quality and reliability. It's a reputation that we, as a nation, are quite rightly proud of, and it's a tradition that WDS is happy to be a part of. WDS manufactures the majority of its products in-house at its Centre of Engineering Excellence in Leeds and its 30-year relationship with the aerospace industry sets the standards by which it measures every job.

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Web tool creates 3D gripper jaws at the push of a button

SCHUNK eGrip is the world's first fully automatic 3D design tool for additively manufactured gripper fingers. SCHUNK eGrip needs only minimal data for the fully automatic calculation of the optimal 3D contour, pricing and delivery schedule. The license-free, browser-based web tool from the competence leader for clamping technology and gripping systems reduces the design and ordering time for customised gripper fingers to only 15 minutes.

With the intelligent software that is available around the clock and doesn't require a separate CAD program, the user uploads the workpiece or component as a STEP or STL file. The next process is to enter additional specific information such as the weight, installation position of the gripper and finger length. In a few seconds, the user receives a detailed offer containing the 3D contour, the delivery time and the price. SCHUNK eGrip can quickly calculate even complex geometries. Users have the option to order the top jaws right away or save the offer and retrieve it later. In addition, the outer contour of the generated assemblies that consists of the gripper, top jaws and workpiece, can be downloaded in STL format for immediate use in the system design.

The affordable additively manufactured SCHUNK top jaws can be quickly manufactured and are made of lightweight, wear-resistant polyamide 12 in either white or black. For use in pharmaceutical and medical applications, top jaws are also available in FDA-approved polyamide 12. Since polyamide is resistant to chemicals and suitable for use with foods, it can also be reliably used in connection with aggressive media. Due to their low weight, the top jaws are ideal for minimising cycle times and power consumption of the corresponding systems. They can also be used with smaller robots or handling systems. In combination with the SCHUNK BSWS quick-change jaw system, grippers can be re-equipped for a new spectrum of parts within seconds. In the first phase, SCHUNK eGrip top jaws are available for SCHUNK universal grippers PGN-plus 40 to 125 and for SCHUNK small component grippers MPG-plus 20 to 64. Other series are planned.

SCHUNK Intec Ltd Tel: 01908 611127
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New wireless hydraulic clamping sensor

The new electronic pressure sensor from Roemheld offers stationary and mobile measurement of rotating or hard-to-reach sections of hydraulic clamping fixtures. Designed for use with automatic manufacturing systems, transfer lines, assembly lines and rotary indexing fixtures and tables, up to 16 pressure sensors can be individually configured and monitored from a single receiver.

Ideal for applications where wired connections are impractical or too expensive, the sensor uses radio transmission with a free-field range of up to 300 m. The sensor enables the pressure of single or multiple points to be checked simultaneously during start-up and maintenance with minimum installation costs.

Pressure drops in hydraulic clamping fixtures can be identified in real time, helping to avoid tool breakage and resulting machine damage. With the easy-to-install modules of battery-operated electronic pressure sensors with radio transmission and a receiver unit, pressures of up to 16, 250 and 500 bars can be transmitted to machines and monitored at a distance of 300 meters.

Terry O'Neill, joint managing director of Roemheld, says: "This sensor is already proving extremely useful on a research project Roemheld is involved in with the Manufacturing Technology Centre. We are running tests to measure the effects of centrifugal forces on hydraulic fixtures and being able to use a wireless sensor to monitor multiple, moving sections at the same time is extremely advantageous."

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'. To find out more about Roemheld's range of hydraulic sensors and workholding solutions, contact:

Roemheld electronic pressure sensor fitted to machine table

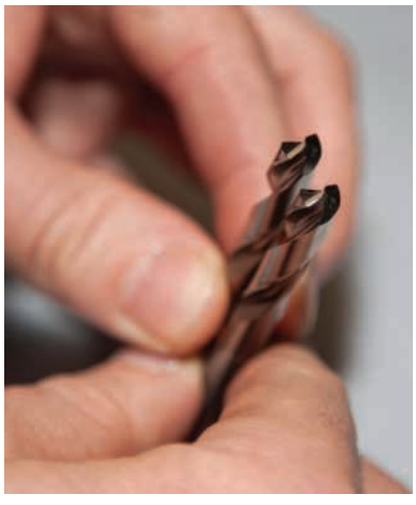
Roemheld UK
Tel: 01462 459052
Email: sales@roemheld.co.uk
www.roemheld.co.uk

WNT helps slash cycle time for BD Precision Engineers

When Leighton Buzzard-based BD Precision Engineers was presented with a machining challenge by a long-standing customer it became apparent that its reputation of meeting all deadlines would be under serious threat. Due to poor tool life and quality that its existing tooling was achieving, the job risked going over deadline and budget. However, with the assistance of WNT (UK), which stepped in to offer alternative tools and technical support, BD Precision Engineers' reputation remained intact.

Over its 40 plus years in existence, BD Precision Engineers has grown from a two man business, providing manual milling capacity, to become a modern precision subcontractor operating the latest in CNC machining, assembly and inspection. Over this time, it has resisted the temptation to specialise in any one industry sector, making its customer base as diverse as possible, a decision that has seen it ride out many recessions over the years. In spite of this diversification, BD Precision Engineers found that the majority of the materials it was asked to machine revolved around aluminium, stainless steel, and brass components. Therefore, when it was asked to produce a batch of components in Inconel 718, it had to rely on the advice of its then preferred tooling supplier for cutting data.

"This was the first job in Inconel that we had been asked to machine in 20 years," says BD Precision Engineers' works manager Jed Juster. "For advice we contacted our then tooling supplier to ask for cutting data



for the drilling and milling operations. That advice was to avoid carbide tools and run a pecking cycle with 0.5 mm steps with a powder metal drill. The result was a cycle time to drill four holes in each component through 8 mm of material of 11 minutes. Each drill could only achieve five holes before it either broke or had to be removed. The pecking was simply creating a work hardened surface."

These drilling problems were compounded by issues relating to profile and face milling the part. Both areas that were generating lots of burrs and poor surface finish and an overall cycle time of 43 minutes per part, which was simply unacceptable, as was the fact that the end mill they had been recommended was only lasting for one component.

"We were really struggling to meet deadlines and make any money on the job, and we simply couldn't leave the machine unattended through fear of drill breakages and scrap components. Therefore we had to find an alternative and that was when we called in Duncan Slough, WNT's technical sales engineer."

The first thing that Duncan changed was the drill, moving from powder metal to solid carbide with WNT's WTX Ti drill with through coolant, this was held in a WNT Centro P collet chuck with a guaranteed run out of less than 3 micron. The cutting data suggested was 55 m/min and 0.08 mm/rev and no pecking. As a result of this one change, the drilling cycle time for the four holes in each part was reduced to 40 seconds, the drill achieved 200 holes and looked as good as new when it had finished.

The profiling of the part was also changed to a 10 mm diameter solid carbide WNT HPC Ti cutter running at 500 mm/min feedrate, a ten-fold increase on what was being achieved before. In addition, the HPC Ti cutter machined 26 parts before needing to be changed, compared to just four parts with the original supplier's cutter. The final piece in the jigsaw was to use a 63 mm diameter indexable insert face mill using WNT's 5240 grade of inserts to finish mill the part and eliminate all of the burr and surface finish problems.

"The overall difference is incredible, with the cycle time dropping from 43 minutes to 17 minutes 35 seconds, or 60 per cent shorter. The quality of the finished parts is superb and the cost savings are substantial. If we had stuck with the original drilling cycle we would have needed 50 drills to complete the batch, whereas with the WNT WTX Ti drill we only needed one, a saving of almost £3000 in tooling costs alone," says Jed Juster.

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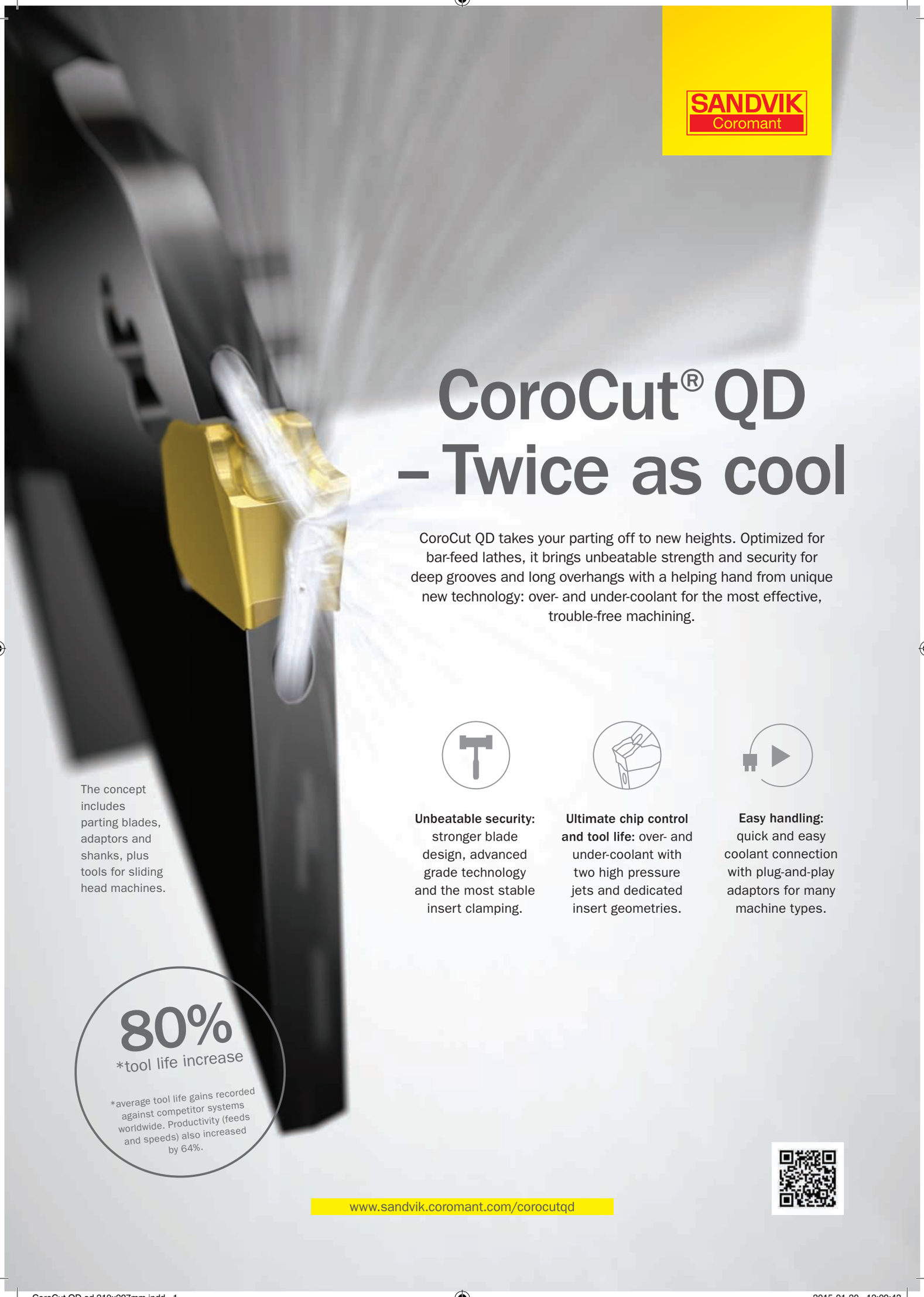

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CoroCut® QD – Twice as cool

CoroCut QD takes your parting off to new heights. Optimized for bar-feed lathes, it brings unbeatable strength and security for deep grooves and long overhangs with a helping hand from unique new technology: over- and under-coolant for the most effective, trouble-free machining.

The concept includes parting blades, adaptors and shanks, plus tools for sliding head machines.

Unbeatable security: stronger blade design, advanced grade technology and the most stable insert clamping.

Ultimate chip control and tool life: over- and under-coolant with two high pressure jets and dedicated insert geometries.

Easy handling: quick and easy coolant connection with plug-and-play adaptors for many machine types.

80%
*tool life increase

*average tool life gains recorded against competitor systems worldwide. Productivity (feeds and speeds) also increased by 64%.

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Surface finishing as part of the turning process

Multi-surface roller burnishing tool combines bores, OD's and faces in a single cycle

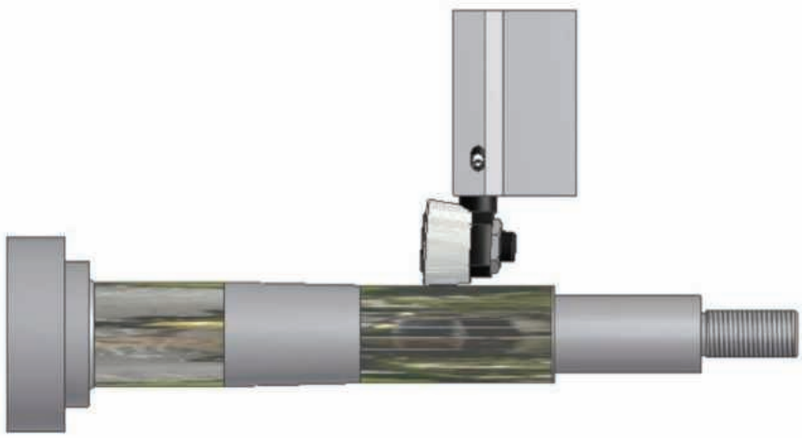
A carbide roller burnishing tool, able to burnish multiple surfaces of a component including internal and external diameters, radii, counterbores and end faces as part of a single CNC turning process, is now available through Mollart Engineering.

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

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

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

The 316 stainless steel motor shaft had two critical ground diameters 50 mm by 100 mm long and 54 mm by 70 mm in length.



An illustration of Mollart's Multi-Surface carbide roller burnishing tool

Both had to be produced within Ra 0.4 surface finish. By changing the process to roller burnishing, the Multi-Surface S2075-00 burnishing tool was able to work on pre-sized diameters leaving 0.025 mm of stock material and then, during the same programmed cycle on the CNC lathe, finish the two critical diameters in a total machining time of under 130 secs.

The machine was run at 800 revs/min, with a 0.1 mm/rev feed for the burnishing element. The tool was set to size via a sidescrew in the shank against a pre-loaded spring that accommodated bi-directional loading on each diameter in order to take up any variation in the turned surface of the part.

The tool has two sets of springs to accommodate bi-directional loading. One set is located within the tool shank which enables the entire head assembly to deflect when the carbide roll is pushed against the surface of the part and a second spring is located behind the carbide roll. This allows the roll to deflect when the tool is fed directly onto a flat face or shoulder. The level of deflection can be adjusted via a set screw in the side of the shank or by increasing or decreasing the applied feed rate.

Tools are available to burnish most materials up to 40 HRC from a minimum bore diameter of 16 mm with a selection of roll configurations and shank sizes to suit machine and customer applications.

A further recent application producing a 16 mm diameter by 140 mm deep aluminium cylinder for an injection moulding machine, the CNC turning centre was run at 500 revs/min with a feed rate of 0.1 mm/rev, to obtain a surface finish of Ra 0.2.

Mollart's Multi-Surface carbide roller burnishing tool combines two grinding operations into a single turned cycle

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www.mollart.co.uk

Jabro® Solid² - Seco's next generation of innovative solid carbide milling cutters - take flexibility, performance and productivity to new heights.

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High-speed machining at a fraction of the cost

Within every aspect of manufacturing, once in a while an absolute game changer comes along. The innovative SPINJET HSM Jet Spindle from Iscar epitomises the leap forward made by such ground-breaking developments. The easy-to-use, economic device provides true high-speed machining at a fraction of the cost of a high-speed machine tool and enables manufacturers to significantly increase productivity.

When the concept was first introduced, NC machining was a regarded as an absolute game changer. It revolutionised the metal cutting industry and made it possible for machined parts to be cut with greater speed and precision. As a result, productivity and production were greatly increased.

At that time, technology was such that the spindle rotated faster than the cutting tool was able to, which was typically made of high-speed steel. In time, other harder metals were used and new materials, such as submicron hard metals, were developed. The ever increasingly speed made possible by advanced cutting tools eventually outstripped the spindle speed that could be achieved on standard CNC machine tools. This limitation had a detrimental effect on the efficiency of small diameter cutting tools, as they need to be operated at higher rotational speeds.

The global machine tool industry addressed this situation through the development of high-speed machines and high-speed auxiliary spindles. Though an obvious next step, high-speed machines are expensive, occupy valuable shop floor space and may often sit idle. Auxiliary spindles, while more flexible and less expensive, have performance issues.

These problems were the catalyst for Iscar's development of the new SPINJET HSM JET Spindle. A highly innovative breakthrough in spindle technology, this ground-breaking productivity aid delivers the results that manufacturers are looking for, rendering it an inexpensive alternative to investing in a high-speed machine.

SPINJET HSM

ISCAR's SPINJET HSM Jet spindle uses a coolant pressure of 20-40 bar, to generate high speeds. As coolant pressure increases, higher spindle speeds are achieved, reaching up to 50,000 rpm. At rotational speeds such as these, manufacturers can save up to 70 percent of machining time. As at times, relatively lower speeds are also required, two other SPINJET models offer rpms of up to 20,000 and 30,000.

Compact enough to be held in the operator's hand, SPINJET easily attaches to any milling or turning machine. The spindle is stored in the tool magazine and is as easily accessed and connected in the same way as any other standard tool.

The SPINJET 'plug and play' spindle kit includes a wireless receiver that monitors RPM, allowing machining to be followed and if needed, for intervention to take place.

In-depth comparison tests of machining tasks, with and without SPINJET, verified

highly significant time savings and showed extended tool life by the use of the HSM spindle. For example, in thread milling on an SAE 4340 workpiece, per part machining time was cut by 70 percent and resulted in extending tool life by roughly 200 percent. Whilst milling a mould of V2 material, overall

machining cycle time was reduced by over 60 percent and the polishing process time cut in half.

Not only are shorter cycle times achieved and tool life extended with SPINJET, energy costs are reduced, chip removal is made more efficient and the machine tools' standard spindles are exposed to less wear and tear.

ISCAR's SPINJET is ideal for semi-finishing and finishing operations across a wide range of materials, including various milling applications, drilling, grinding, engraving and chamfering. In addition, the smaller diameter tools needed for these operations can cut at the required speeds.

CAM developers are also able to gain a major advantage, as the new and more efficient toolpaths created are extended further as the SPINJET can be relied on to execute high-speed moves and thereby achieve faster cycle times.

Along with the higher rotational speed, ISCAR's unique new technology boasts an impressive run-out specification of just a few microns. This accuracy translates into high precision and results in excellent component surface quality.

ISCAR's SPINJET combines speed with accuracy resulting in the goal of every manufacturer: rapidly-produced, high-quality parts. As a result of its advanced technology and high performance attributes, the SPINJET provides greater machining efficiency and flexibility and is a true, cost-effective alternative to investing in a high-speed machine.

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Innovations are always in the pipeline with Seco

Seco Tools UK is exhibiting a cross-section of its technically-advanced tooling solutions at Subsea Expo 2015, and will launch its new range of Steadyline milling and static turning vibration damping toolholders at the event.

Seco Tools, a leading supplier of complete machining solutions to the metal cutting industry, has confirmed its attendance at Subsea Expo 2015 from 11th–13th February at Aberdeen AECC).

Following its successful attendance at Subsea 2014, which generated a number of significant sales enquiries and leads, Seco has identified the 2015 event as being the ideal venue to promote a range of its latest innovative tooling solutions, designed specifically for the machining of precision components for the oil and gas sector, to show visitors. These include the company's Minimaster Plus range of endmill cutting tools with replaceable fluted inserts, its best-in-class multi-tooth configured Thread Chaser insert range, its high-performance range of Perfomax SD 602 modular drills and its recently- introduced range of Steadyline vibration damping toolholders.

John McGhee, Seco's product manager Turning Threading & Advanced Materials says: "Machining precision oil and gas components from what are often described as 'difficult-to-machine' materials, for example Inconel, Monel, 4130/4140 and Duplex present a number of challenges to manufacturers.

"To help overcome these challenges, namely achieving exacting part accuracies, repeatability's and surface finishes, plus being able to machine parts economically, safely and quickly, can seriously test a manufacturer's manufacturing processes and, in particular, the choice and use of cutting tools and tooling solutions.

"Seco's reputation for designing, developing and supplying innovative and technically-advanced tooling and world-class applications support is second to none. At Subsea 2015 we will be exhibiting just some of our tooling that has and will continue to take the market by storm."

Amongst the new products Seco is showcasing is its range of Steadyline tool-holders. Machining parts using tools with long overhangs, often the case for large oil and gas parts, create vibrations during machining operations.

Vibration, if left unchecked, can affect part quality and tool life and, in the worst case scenarios, can damage the workpiece. Not good news when machining high-value parts.

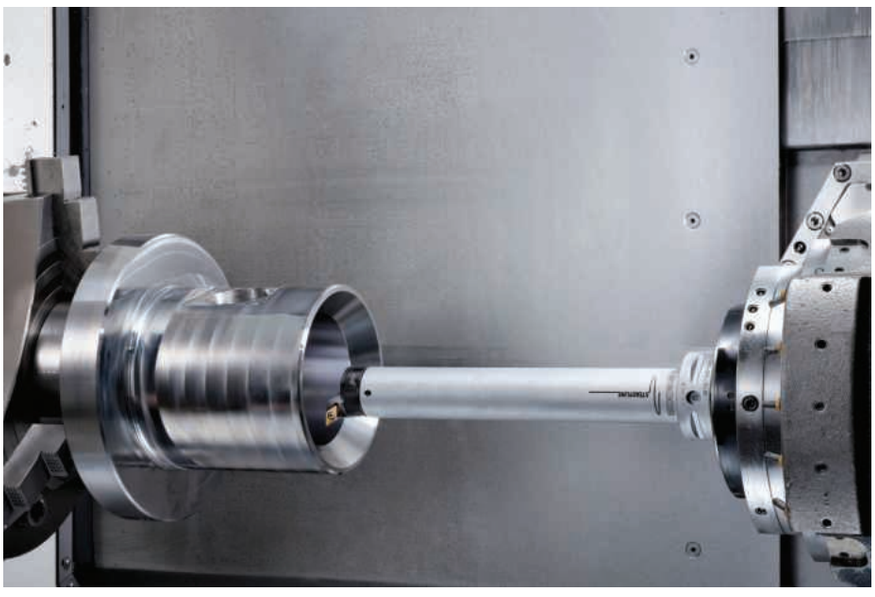
To mitigate the effects of vibration, component manufacturers may well consider altering their process parameters, e.g. reducing speeds, feeds and depths of cut. But, while such a response may help maintain quality, it will almost certainly have a negative impact on productivity.

Seco's new range of Steadyline milling and turning toolholders help manufacturers maintain accuracy and productivity even when rough machining difficult materials. Steadyline toolholders feature a 'dynamic passive system' inside the body of the holders which comprises a damping mass that helps absorb vibrations during even the most extreme machining operations.

Results have shown that Seco's Steadyline tooling solutions, because they enable manufacturers to employ the optimum cutting data, can reduce part cycle times by up to 50 percent in typical long overhang applications. Other advantages Steadyline delivers include the creation of reliable and repeatable machining processes, reduced stresses on a machine tool's spindle and longer tool life.

Steadyline toolholders provide up to 3 x times the dynamic rigidity of long conventional-type holders. Seco's Steadyline technology is available in a range of its proven milling toolholders: Shellmill, Combimaster and Shrinkfit. The company's Steadyline static range consists of turning and boring bars (6 x D; 8 x D and 10 x D) that feature Seco's patented quick-change and highly rigid 'GL' face and taper interface.

In addition to Seco's standard Steadyline range of milling and turning toolholders, the technology can be used in designing and manufacturing special 'custom' tools for customers that require a bespoke tooling solution.



Perfomax SD602 drills

SD602 drills are Seco's latest generation of the modular drills designed for heavy-duty applications and the accurate machining of large and deep holes.

New features of SD602 include exchangeable cartridges and guide pads which increase the drill ranges' flexibility and productivity potential, as well as the integration of optimised polished chip flutes and an adjustable centre drill design for improved performance and process reliability.

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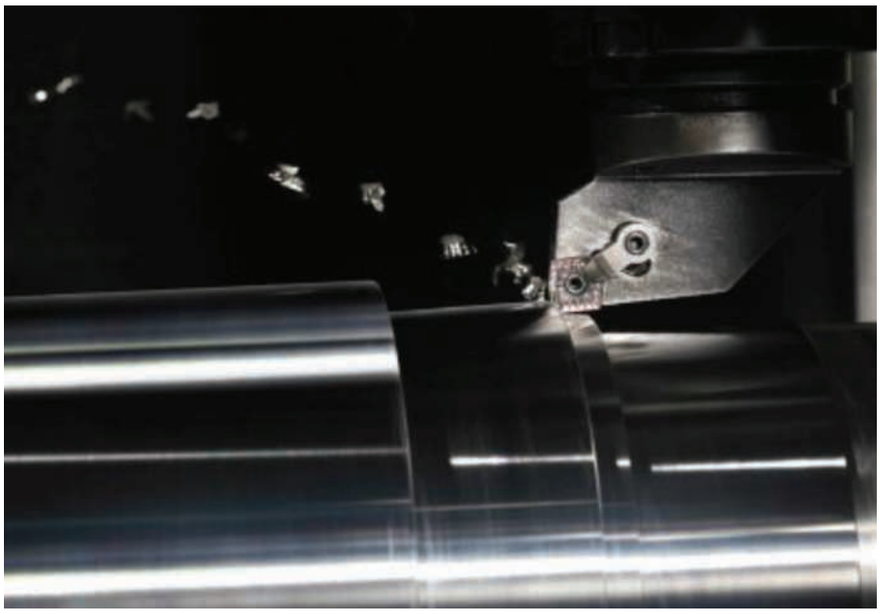
An overwhelming Victory

WIDIA Victory™ turning portfolio expands, maximising performance in wide range of materials



Introducing new grades and geometries to accentuate smooth machining and excellent chip control, the WIDIA Victory turning portfolio features Universal Roughing geometry for smooth chip forming and increased tool life

Shops turning a wide range of materials face extreme challenges daily. They know that the most efficient machining means finding the "sweet spot." Too slow may increase attention to detail but also increase opportunities from speedier competitors, whilst accelerating speeds and feeds may actually lower efficiency if you´re using up tooling faster or stopping your turning centre more often to clean out stringers.

The new geometries and grades in WIDIA's Victory family of turning inserts extend your turning sweet spot by delivering excellent chip flow that results in smooth machining, improved efficiencies, and extended tool life.

For difficult-to-machine materials like Inconel and Rene in complex aerospace applications or cobalt-chromes and high-alloy stainless steels in precise medical applications, the new WIDIA Victory FS geometry is a ground, high positive design best used in finishing tasks where surface finish and minimising part deflection are critical. Precision grinding, proprietary nose geometry, and optimised edge treatment result in an insert that retains its high-quality cutting edge with minimal heat generation and good chip breaking at finishing parameters. Its high rake angle reduces cutting forces and also reduces built-up edge.

The FS is available in WS10PT, a high-performance PVD grade. This grade utilises a two-layer coating that increases coating integrity and reduces depth-of-cut notching, increasing productivity and dependability. All inserts in the WS10PT grade undergo a post-coat treatment to increase compressive stress and improve edge toughness. This delays built-up edge and results in longer tool life. WS10PT is available in other geometries including the UR geometry.

Stainless steel performance

WIDIA's Universal Roughing (UR) geometry is specifically designed to increase roughing and medium turning performance in stainless steels and steel workpieces. Its unique chip breaker and rake profile design without inflection points breaks up stringers without concentrating cutting forces that result in breakage. Its positive rake angle further reduces cutting forces while improving depth of cut notching resistance. Together with a multi-layer coating with a ZrCN top coat for both extended performance and improved wear identification, the result is the ability to increase speeds or feed rates efficiently, increasing productivity and reducing cycle times.

WIDIA grades WP15CT, WP25CT, and WP35CT are also available in the Universal Roughing geometry to particularly improve performance on steel workpieces. Emphasising an excellent combination of toughness and cutting performance, WP15CT is universally applicable on all finishing, medium machining and light roughing steel operations, wet or dry, interrupted and non-interrupted.

WP25CT is best applicable on all medium to light roughing operations, wet or dry on interrupted and non-interrupted cuts. WP35CT is the best choice on all roughing and heavy roughing jobs, also wet or dry, interrupted or non-interrupted. These new grades also feature the ZrCN top coating and proprietary post-coat treatment that reduces friction and improves edge toughness as well as functioning as an excellent wear indicator.

"Shops doing a major percentage of turning work know that beating the competition involves delivering excellent results reliably," says WIDIA global product manager John Gable. "The WIDIA Victory turning portfolio is just the kind of tool selection that allows these shops to up their performance to even higher levels."

WIDIA-brand products and services have defined innovation in the metalcutting industry for more than 80 years, from the world´s first patent for carbide indexable inserts to the development of the world´s first coated grades. The WIDIA brand offers a complete portfolio of precision-engineered products and custom solution services. With thousands of milling, turning, holemaking, and tooling systems products available through a worldwide network of authorised distributor partners, you´ll find everything you need from one single source.

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Bore finishing increases productivity

SUMITOMO develops ultra-small CBN tools for 2.5 mm bores in hard materials

Ultra-small holes as fine as 2.5 mm diameter in hardened materials can be finish bored and faced using the advantage of Sumiboron cubic boron nitride (CBN) tools following the development by Sumitomo Electric Hardmetal of its BSME and SEXC series of boring bar tooling.

CBN has the advantage when turning hardened, tough and cast materials in allowing engineers to take the process into higher performance areas where carbide tools just cannot be applied. Not only does CBN offer greater levels of consistency, it also gives a precise predictability of in-cut life with the ability to maintain high levels of accuracy and precision over long periods.

The BSME tool has a brazed CBN cutting edge on a carbide tool shank, which creates added stiffness, for bore sizes between 2.5 mm diameter by up to 5.3 mm deep to 5 mm by 20.3 mm deep.

Meanwhile, the SEXC version utilises a two-corner, indexable CBN insert able to machine bores from 4 mm diameter by 8 mm in depth to 6 mm diameter by 18 mm deep. For this insert there are two grades of CBN available, BN2000 and BN7000, each with a 0.2 mm nose radii. BN2000 has a honed preparation to the insert's sharp edge while BN7000 maintains a normal sharp edge.

Both tool types have through tool coolant and each tool shank across the range can be held in a common 6 mm diameter sleeve with two clamp screws. A location dead-stop pin ensures repeatability when setting depths which can be maintained within 0.02 mm.

Recent trials on a CNC sliding head turn-mill centre involved precision finish turning of a cone in hardened HRC 60 material using neat oil coolant. The brazed Sumiboron BSME tool demonstrated an increase in the number of components produced per tool to 3,600 compared to a competitor tool that had a recorded life that varied between 400 and 1,500 pieces. The cutting speed was 48 m/min with a feed rate

of 0.2 mm/ rev and depths-of-cut between 0.02 to 0.05 mm. When finish boring 7.1 mm holes with emulsion coolant in hardened automotive components, the use of Sumitomo's SEXC indexable insert grade BN2000 increased the number of parts produced per corner by over 400 percent to 2,700. Cutting speed was 156 m/min (7,000 revs/min), feed rate 0.03 mm/rev with depth-of-cut, 0.10 mm.

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Toolholding that is fit for purpose

More than a decade ago, Diebold introduced the first contact-shrink unit. This was a milestone in modern shrink-fit technology and the company built on the lessons learned to develop inductive shrink units, chiller units, and integrated tool-settings systems. Comprehensively supported in the UK by YMT Technologies, Diebold today offers more than 10 different models of its ThermoGrip machines.

It is easy to think of shrink-fit technology as a relatively new technique. However, open-flame heating has been used to shrink-fit parts together since before the Industrial Revolution. The first documented application was to heat and then shrink iron rims onto wagon wheels. This method was then applied to smaller items, such as heating rings or bearings onto shafts. Eventually, open-flame units were developed to heat shrink-fit chucks using carbide tooling. These systems, as well as the ubiquitous oxy-acetylene torch, remain in use in some workshops to this day.

For safety reasons, hot-air shrink units were offered as an alternative to the open-flame designs. The main drawback of hot-air was the time required to heat a chuck sufficiently to change a cutting tool. It

offered the opportunity to automate the process to some degree, but this advantage was not enough to overcome the limitations of the very long cycle time.

In 1992, Tooling Innovations Inc, California, obtained a US patent for shrink-fit tooling, and for an inductive shrinking unit. The machine that was introduced was very powerful, but also very large. That unit developed high power in a relatively undefined area, which resulted in overheating of the cutting tools.

At the same time, Marquart in Germany was developing a system of inductive shrinking, and in 1994, the company obtained a European patent for Thermo-Grip tooling and an inductive machine. At first, the company concentrated on smaller cutting tools, but gradually expanded the product line to all toolholder sizes and forms for most common sizes.

During 2001, the ThermoGrip group was formed by the companies Diebold, Bilz, Marquart and Komet. Their goal was, and remains, to offer standardised, high-quality products using cutting-edge technologies. The group holds many patents for innovations in shrink-fit technology and they all manufactured shrink-fit holders using design specifications first introduced by Diebold GmbH for the ThermoGrip toolholders. This design eventually became a DIN standard, and is now accepted globally.

Today, the ThermoGrip group supplies roughly 30 percent of the shrink-fit market worldwide. Many technological innovations have come from the group and its leading experts. Solutions range from simple, bench-top units for smaller workshops right up to self-contained units that have been designed for the more demanding machining environment.

For shrink fitting carbide shank tools from 3 to 32 mm diameter and HSS shank tools 6 to 32 mm diameter, Diebold offers the manually operated HS1100. The horizontal configuration of the HS1100 unit makes adjusting and setting the tool length very easy. However, an optional length setting unit for pre-setting the length of cutter protrusion makes transferring the tool offset data to the machine tool very quick and easy. Changeable adaptors allow various tool holders to be accommodated, from HSK 32 to HSK 100 or SK/BT 30 to SK/BT 50, with a broken tool removal unit installed in all holder adaptors.

For cooling the patented chiller unit, the FKS 04 is recommended; providing the perfect solution for rapid cooling ThermoGrip chucks. It is available for manual operation or as a single button automatic sequence with tool changes achieved in as little as 40 seconds. More than 1,500 units are in use by customers across the globe.

Self-contained shrink-fit tooling solutions from Diebold include the ISG 3400TWK and the ISG 3400WK, both of which feature water cooling to make the shrink fitting and cooling of cutting tools a simple operation. Both units can shrink-fit carbide shank tools from 3 to 32 mm diameter and HSS shank tools 6 to 32 mm diameter, and have been designed so the operator does not have any contact with hot tools.

While the bench top ISG 3400TWK offers a maximum shrink extension of 400mm and a maximum cooling capacity of 160mm, the free-standing ISG 3400WK has the same shrink extension and a larger, 200mm cooling capacity.

YMT Technologies
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www.ymtltd.co.uk

The right angle head for your machine

Cutwel Ltd, the UK next day engineering tool supplier, can now supply Benz Angle Heads that allow you to add an additional axis on both vertical and horizontal machines. So if you could not machine in-house before, now you most certainly can. Benz Angle Heads can complete multiple setups on one machine, eliminating the need to remove or re-position your parts and ensuring that there is no loss to accuracy.

The features and benefits don't stop there though, as they also include the ability to machine parts in one hit and give you the capability to access awkward to reach places or confined areas, greatly improving cycle

times and reducing setup times. You can gain efficiency through innovation with the Benz X-line Crown Technology, giving you: higher speed rpm, higher transfer torque; compact aggregates with less wear parts; increased system rigidity by using optimised application of bearings; longer durability of cutting edge; longer time between maintenance; rotary feed through: for pressure up to 100 bar and rpms up to 15.000 1/min. Useable for all methods of modern manufacturing and capable of unrestricted dry running.

The precision torque arm stop guarantees repeatability when tool changing and prevents misalignment. This gives extreme positional accuracy for the cutting tool, which in turn improves workpiece surface finish and increases tool life. Depending on the application, an additional 3 point

BENZ® Werkzeugsysteme

support system can be built into the aggregate allowing for heavier machining operations. This also allows you to optimise the full power gear transmission system.

Benz Angle Heads are available as a standard, semi standard,or special solutions and are ideally for aerospace, automotive, oil & gas and subcontract machine shops. It can be interfaced to most machine tools e.g. BT, HSK, SK, BENZ Capto™, KM™ CAT and outputted to collet chucks, KM™, HSK, Benz-Solidfix™, BENZ Capto™, ABS® and Komet®.

For more information on Benz Angle Heads or other Benz products, contact:

Cutwel Ltd
Tel: 01924 869 610
Email: sales@cutwel.net
www.cutwel.co.uk to buy online now

CoroCut 1-2 for truly secure parting and grooving

New spring clamping mechanism offers increased stability

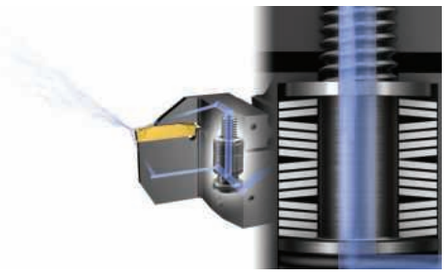
Sandvik Coromant has updated its CoroCut® 1-2 system for rigid and rapid parting and grooving to feature spring clamp technology. This not only provides increased stability but eliminates the operator judgement required when using a torque wrench on conventional screw clamps.

As well as high security, the new CoroCut 1-2 design focuses on easy handling. The new patented clamping solution has a railed insert seat and a quick release key that eradicates the need for a torque wrench. This not only guarantees good stability and correct clamping force time after time, but also a smooth insert change. As a result, CoroCut 1-2 now ensures truly secure and efficient parting and grooving for all applications less than or equal to 38 mm diameter.

Strong tool material (fatigue resistant alloy), high rigidity and effective chip control also offer the potential to increase feed rates when using CoroCut 1-2. In fact, longitudinal turning operation tests confirm that the new spring clamp allows for a feed rate* increase of up to 27 percent with maintained deflection. This is because deflection is 2.7 times less with a spring clamp in comparison with a screw clamp.

In support of its new design features, CoroCut 1-2 offers over- and under-coolant on all tools. The under-coolant controls temperature at the cutting edge, resulting in less tool wear and more stable performance, while the over-coolant is deployed to evacuate chips. What's more, these beneficial effects are witnessed at both high and low pressures.

An additional advantage is that connecting the coolant is facilitated by easy-to-use plug and play adaptors. Traditionally, connecting coolant to a tool has been time consuming due to poor access and hoses getting in the way of the tool and the component. Adaptors with plug-and-play functionality eliminate the need for a hose, providing a trouble-free



coolant connection and tool change. Suitable for all material types, the CoroCut 1-2 system includes more than 700 standard inserts.

* Do not exceed insert cutting data recommendations and take machining conditions into consideration.

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The "Big" solution for large diameter drilling

As a leading manufacturer in the cutting tools industry, Tungaloy has developed new cartridges for its TungDrillBig series to meet the high demand of the market in machining large diameter holes. The new cartridges allow the customers to use TungSix-Drill (TDS) inserts with TungDrillBig drill bodies, whose diameter ranges from ø55 to ø80 mm. This combination expands the insert selection for TungDrillBig and provides economical machining solutions to the end users.

Each drill body has a set of inner and outer cartridges. In addition to the previously-available cartridges that use TungdrillTwisted (TDX) inserts, customers can now attach TungSix-Drill (TDS) inserts on TungDrillBig. The TDS cartridge uses economical and rigid 6-cornered WWMU type insert for TungSix-Drill, while the TDX cartridge uses 4-cornered XPMT type inserts for TungdrillTwisted. The increase in the number of applicable inserts allows the customers to select between the two cartridges, depending on the application, machine rigidity and material to be cut. This product expansion strengthens the company's position as a leading manufacturer of drilling products for the heavy industry, oil & gas and general machining sectors. TungDrillBig series offer productivity benefits and economic advantages for end users who drill large diameters in steel, cast iron and a wide variety of materials. TungSix-Drill inserts can even machine superalloys because of their strong cutting edges.

To minimise tool inventory and associated costs for the customer, TungDrillBig bodies are available in only five variations. With the use of setting plates, the customer can adjust the diameter from ø55 to ø80 mm. Moreover, TungDrillBig has a long tool life because of its replaceable cartridges.

The drill bodies also have internal coolant system that applies coolant directly to the cutting edge. This system improves chip evacuation, tool life, and surface finish, thereby supporting the customers' need for precise holemaking.

The new cartridges for the TungDrillBig series satisfy the market demand for

economic and productive drills that can machine large diameters. Tungaloy's new development gives end users a competitive advantage in today's rapidly changing industries.

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New deep-hole drill launched by Dormer Pramet

Suitable for machining a variety of materials including steel, stainless steel, cast iron, copper and aluminium, the R459 has been specifically developed to overcome problems typically associated with deep-hole drilling.

A key feature of the new drill is its Continuously Thinned Web (CTW) geometry which increases both flute volume and cross sectional strength.

Ricky Payling, Dormer Pramet's application specialist for rotary tools, explains: "The combination of these elements ensures consistent forces throughout the drilling cycle, with little or no increase in power requirement as the drill penetrates deeper into the hole. This, in turn, allows increased cutting speeds and greater performance reliability without compromising tool life."

A special outer corner design provides added protection against wear and chipping, especially when under extreme conditions, such as cross drilling applications, while a specially designed 140° point angle makes for easier centring and reduces thrust requirements. The R459 also incorporates a consistent edge preparation which protects against premature chipping and flaking. In addition, internal coolant holes allow for effective cooling of the cutting area and efficient swarf removal, minimising machine downtime.

The R459 is available in diameters from 3mm – 16mm, including 0.1mm increments up to 10.0mm, and features a titanium aluminium nitride (TiAlN) coating.

Ricky Payling adds: "Including an 8 x D drilling option enhances our customer offer and provides a reliable, versatile and cost-effective solution."

Features in Dormer's new 2015 rotary tooling catalogue, the 8xD drill is available to purchase from 1 January 2015.

For more information about the R459 visit www.dormertools.com or contact your local Dormer Pramet sales office. To watch a video of the 8xD drill in action visit **www.youtube.com/DormerGroup**

The merger of round tools manufacturer Dormer Tools and cemented carbide tooling specialist Pramet Tools was

instigated in 2014. The combined product programme now encompasses a comprehensive range of rotary and indexable drilling, milling, threading and turning tools for the general engineering sector. An expanded sales and technical support service extends to over 30 offices serving more than 100 markets worldwide.

Dormer Pramet
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LMT introduces threadrolling range

LMT Fette has now created its next generation of thread rolling products, the EVOLine axial rolling head.

During development, the target for the EVOLine was to create a more user-friendly platform and improve process reliability. The new modular design with a shank adaptor certainly improves the concentricity levels and supports the transmission of the high torque levels required. Furthermore, the modular shank design makes the EVOLine suitable for a wide variety of machine tools with its simple adaptor system.

The EVOLine has a chipguard to protect the threading system from swarf ingress from previous machining processes. It also improves the longevity and performance of the EVOLine.

To ensure precision levels are beyond that of alternate systems, the EVOLine has a patented fine adjustment mechanism that sets the standard for precision and repeatability. The system allows the operator to adjust the head to within 0.01 mm. This works in synergy with a new closing clip design that allows the customer to rotate the clip a full 360 degrees, so the end user can use the clip or an alternate tool in the machine.

LMT Tools Tel: 01676 523440
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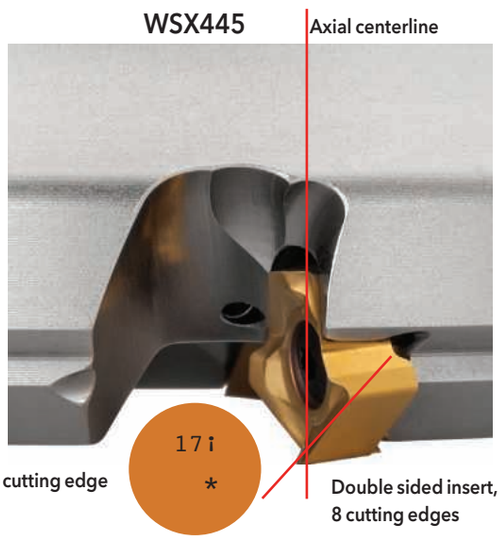
New WSX series low cutting resistance facemill

Innovative insert geometry

The positive geometry of the Double Z inserts for the new WSX series from Mitsubishi takes face milling to a new level of usability. The geometry produces low cutting resistance, making it ideal for all types of machines, from low power through to heavy duty types. This level of cutting resistance is only usually associated with conventional single sided positive inserts and allows end users to increase machine utilisation. The new moulded SNMU and SNGU G class type inserts used on the WSX cutter have all the attributes of a single sided positive geometry insert but importantly, also have the advantage of being double sided with a cost saving, eight cutting edges.

Double Z geometry



The cutting edge of the Double Z geometry inserts are set at a 17° positive axial rake angle when clamped in situ. This provides the perfect solution that includes a strong but sharp cutting edge whilst allowing the inserts to be double sided. Furthermore, a large 5 mm max depth of cut is possible.

Reliability

A predictable and safe performance is demanded by today's customers and the WSX series meets these criteria with strong insert clamping and an Anti –Fly mechanism. Through coolant holes are also standard in cutters under Ø 160, providing efficient chip removal and cooling to further enhance process reliability.

Wide application area

The WSX series comes complete with a comprehensive range of insert grades to cover a huge range of material applications, from carbon and alloy steels through to heat resistant materials and hardened steels. The latest TOUGH-∑ technology is used in the new MP range of insert coatings to provide enhanced heat and wear resistance and provide a low coefficient of friction, lending further help towards the ultimate aim of complete process reliability.

The inserts are equipped with a series of chip breakers specifically designed to cover a varied range of applications. L breaker has a positive land for lighter cutting and the lowest cutting resistance, M breaker is for general cutting and R breaker has enhanced edge strength for unstable cutting. The cutter bodies are available from Ø 40 to Ø 200 in coarse, regular and fine pitch types.

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SpadeRush cuts the stress of large-diameter hole making

Producing large-diameter holes can be a big headache for many shops that are aiming to be cost-effective and competitive in today's global market.

TaeguTec has introduced SpadeRush, a new line of high productivity head changeable drills for large diameter hole making that remove the challenges imposed on machine and cutting tools performing such operations.

SpadeRush's smoother method of making large-diameter holes, whilst staying within the cycle times necessary to be competitive, has been accentuated with an optimised cutting edge and unique rigid clamping system that generates higher productivity and outstanding performance.

Available as a standard drill in 3 x D and 5 x D for a diameter range of 26 to 41 mm, SpadeRush's unique clamping technology enables customers to quickly change drill heads without removing the clamping screw from the holder – an important feature that greatly reduces tool setting times and also machining downtime.

Furthermore, the SpadeRush's asymmetrical bottom design means error proof insert mounting, high tolerance and improved tool accuracy, as well as repeatability and an excellent surface finish. Its self-centered design eliminates the pre-centering function that many shops have to contend with when performing large diameter hole making applications. Moreover, SpadeRush's stronger rigid screw clamp not only improves productivity but also cuts on machining cost.

To keep the material cool during high-speed applications, SpadeRush's through coolant hole feature permits coolant to be applied directly to and in the hole-making area which also prevents the tool and holder from premature wear and damage.

The post-treatment of SpadeRush's flute design improves chip evacuation, reduces power consumption and strengthens vibration dampening, which strengthens the tools durability. Several tests were performed while creating TaeguTec's new line, in all cases, SpadeRush outperformed the competition.

To give just one example, SpadeRush outperformed a popular competitor's similar tool by increasing tool life by 30 percent while drilling into alloy steel at exactly the same cutting conditions.

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Cutting tool innovation

With the new cutting WK40TF material that combines tough carbide substrate with an innovative titanium aluminium nitride coating, the new Supreme MC326 shoulder/slot mill and MC726 routing mill from Walter GB offers up to double the tool life of their predecessors and up to 100 percent increases in cutting speeds.
The cutters can tackle most milling routines on most materials but are especially suited to steels (ISO P).

These enormous productivity gains are achieved by the application of a high-cobalt carbide substrate that is less susceptible to vibration and prevents chipping along the cutting edge, plus the use of a new TiAlN coating and a rear cutting edge having a reinforced core.

Walter's new Supreme MC326 shoulder/slot mill offers increases in cutting speeds and tool life compared to predecessors

Both the new ranges feature a 50° helix angle and are available in diameters from two to 25 mm with three, four or five cutting edges. They can be supplied with or without corner radius, as variants with neck and corner radii, as well as with Weldon and cylindrical shanks.

Walter's cutting data App is for desktops too
Walter GB has announced that its smart 'phone app for calculating cutting data for milling, drilling and turning processes is now available online or can be downloaded as a desktop version for Windows PCs.

Featuring cutting data calculator and 'machining viability' calculator, the App has so far been downloaded more than 50,000 times for IOS or Android 'phones.

Renamed the Machining Calculator and featuring a new optimised user interface, and a print and export function, the App can precisely calculate torque, required drive power, machining volume or cycle times, for example. It also allows an easy-to-understand comparison of two tool solutions.

Walter GB's Machining Calculator is now available online and as a desktop version for Window PCs, in addition to being a smart 'phone app

The app is available via the Walter website either online, where it therefore can be used on all operating systems, or as an offline variant that can be downloaded and installed on a Windows PC. Programming in HTML5 guarantees a uniform look on different displays, while the size of screen windows can be adjusted to suit.

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Dickies new productions for 2015

Dickies will be introducing a number of exciting new products and ranges for 2015, with style, functionality and quality being paramount in driving the Dickies business forward: with over 90 years' experience in workwear manufacturing, generations of workers have found Dickies to be a brand they can trust.

Employing the latest developments in fabric technology and manufacturing techniques, Dickies' high performance workwear is suited for even the harshest working environments.

New products include the Stanmore workwear jean, which has an ergonomic fit with multi pockets to ensure that the tradesperson has style, practicality and

comfort. The Eisenhower premium trouser is the must have work trouser for 2015 with a mix of the premium fabrics, rip stop and cordura, and the clever design of pocket details (zip off holster pockets). The fit has been ergonomically designed to be able to move and provide maximum comfort.

Following on from the popular two tone range introduced earlier this year is the two tone high visibility range, which includes a jacket, trousers, bib, T shirt and waistcoat. The new styles are all certified to the new high-visibility standard EN ISO 20471:2013.

To offer warmth while working, Dickies will be offering the Abbott '3 in 1' jacket with waterproof fabrication and fully taped

seams, it's a must have for the colder months. Reflective detailing sits this nicely with the Eisenhower range. A new waterproof jacket and waterproof pack away jacket are lightweight and suitable to be thrown into a bag or vehicle to be always prepared for those unexpected rainy days.

To keep hands safe while working Dickies has now joined forces with KONG® offering the new range of Impact gloves. These gloves are built off of the KONG chassis, carry the Dickies® name and cover jobs both "on" and "off" the drillhead: from rigger glove with a Duraclad® rope channel that offers 8x durability where the riggers need it most, to Deck Hand Cut 5 glove that can withstand just about anything.

Renowned the World over for its protective work wear, Dickies also offer a wide range of practical garments and footwear specifically designed for use in the country, whether at work or leisure. The new Farm and Country is a brand new range for Dickies. The range is functional, yet in keeping with the traditional look and feel you'd expect from an agricultural range. Dickies have added a new range of shirts into the collection to enhance its current Tattersall collection, as well as a new range of jackets and trousers to complement its existing range. Each suited to specific country pursuits but all versatile and comfortable enough to be worn at any time.

Dickies has introduced another 10 new styles of safety footwear and added more colours to the existing range, new lines in the PU/Rubber sole and also extended the range to offer more S3 footwear for 2015.

Wasi Ullah, buyer at Dickies says: "Since the expansion of the Dickies brand to the oil and gas market, the Detroit boot has been introduced. This is a high-end boot with internal waterproof membrane and waterproof YKK side zip. It also has 200 gram Thinsulate lining for cold insulation. This is made with composite toe and non-metal midsole with moulded PU scuff cap. The outsole is made with PU/rubber, which is heat resistant to 300 degrees. Another addition is the lightweight S3 ESD trainer made with fully composite, non-metal material."

There are also two basic style sneaker shoes introduced in composite toe and non-metal midsole. These are made with suede leather and canvas upper.

There is a new colour for the popular Landmaster safety Wellington boot in navy with an orange sole. The Landmaster Wellingtons are one of the lightest and most comfortable wellington boots on the market. Because Polyurethane is extremely light 40 percent less than PVC or rubber.

Another interesting addition is the Waders range being expanded to utility companies and environmental agencies for the first time with the introduction of two types of PVC wader, one thigh and the other a chest wader.

Dickies Workwear
www.dickiesworkwear.com

3M knuckles down on hand arm vibration at debut event

3M, the diversified technology company, has launched 'A Safer Future in Metal Fabrication', the first in a series of sector-specific events to get beneath the surface of health and safety issues. Theo Simon, technical specialist at 3M Abrasive Systems Division showed best practices in the proper use of grinding machines, tips on reducing vibration exposure and examples of vibration measurement systems.

Operations managers, managing directors, health and safety specialists and others involved in the personal security processes in their metalworking companies joined 3M at the Heritage Motor Centre in Gaydon, Warwickshire.

Hand-arm vibration (HAV) can cause a range of conditions collectively known as hand-arm vibration syndrome (HAVS) and consists of three components; vascular damage to blood vessels known as Vibration White Finger; neurological damage to nerve endings leading to numbness in fingers; and

musculoskeletal reduction in ability to manipulate objects known as Carpal Tunnel Syndrome.

Five million people in the UK, out of a population of 60 million, are exposed to HAV and up to two million of these are at a potentially dangerous level of risk.

Expert advice was also given by 3M Personal Safety Division on how to implement an effective respiratory protection programme and a step-by-step guide to hearing conservation.

The series of metal-processing events is set to continue throughout 2015 and will discuss the importance of having respiratory, hand-arm vibration and hearing protection programmes in place in order to comply with all relevant legislation.

Jenn Raymond from 3M says: "This event provided a detailed insight into the various issues that workers in the metal fabrication industry face. We are looking forward to delving deeper in our upcoming industry events and welcome all along."

The 3M culture of creative collaboration inspires a never-ending stream of powerful technologies that make life better. 3M is the innovation company that never stops inventing. With $31 billion in sales, they employ 89,000 people worldwide and have operations in more than 70 countries.

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Efficient ways to combat spills

Brady is offering a new guide to effective spill control. Spills in the workplace slow down production and cause accidents. Many slips and falls, which are one of the main causes for workplace accidents, can be avoided with an effective spill control programme. Meltblown polypropylene sorbents, unlike granular spill control, are a clean, fast and effective spill control product that can be used to combat spills both preventatively and reactively to drastically reduce the impact of spills in the workplace. Brady released a new spill control catalogue, including brand new spill control products and a practical user guide.

Cheaper and more effective

Many industrial companies still use granular to clean up spills. When waste disposal and labour costs are taken into account however, the meltblown polypropylene SPC solutions provided by Brady are way more efficient and cost effective. They absorb up to 25 times their own weight meaning both the amount of product needed and the waste disposal cost are dramatically reduced. On top of this, Brady´s SPC products absorb typical spills in mere seconds and can be used and disposed of just like a towel, significantly reducing the amount of labour involved in cleaning up a spill. Unlike granular, meltblown polypropylene has no small particles which can damage machinery.

Various liquids

Brady´s SPC products come in three categories. Coolants, solvents, gasoline, vegetable oil, kerosene and other water-based fluids are best removed with Universal absorbents. Dominique Roosen, EMEA product manager at Brady says ''Oil only absorbents are developed specifically to quickly remove hydraulic, motor or cooking oil, brake fluid and turpentine. They do no absorb any water, making them ideal for outdoor and marine applications. Chemical absorbents are used against aggressive chemicals, citric acid, sodium hydroxide and others. We have colour-coded our spill control categories for easy use in the workplace''

Spill context

An extra advantage of meltblown polypropylene spill control is that it can be moulded into any shape. This enables us to provide the best solution for any industrial context and really strengthens the preventative use of spill control.

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State-of-the-art solution

Instron equips new ElectroPuls linear-torsion tester with advanced Renishaw encoders

Instron, headquartered in Massachusetts, USA, is a global market leader in the materials testing industry. It manufactures and services a comprehensive range of materials testing equipment and accessories for the research, industrial and academic sectors. A variety of Instron systems test samples ranging from components for jet engines to medical syringes.

The company has just launched an advanced bi-axial variant of the ElectroPuls™ E3000 All-Electric test instrument. The E3000 is a compact table-top instrument comprising: a load frame, crosshead with combined linear/torsion actuator, Dynacell™ load cell and T-slot table for fixing samples.

The state-of-the-art ElectroPuls series includes the E1000, E3000 and E10000 fatigue test systems. These are suited for biomedical / biomechanical research applications and feature a wide dynamic performance range and low force characteristics. ElectroPuls is all-electric and utilises linear motor technology, which eliminates the need for ball / lead-screws and enables slow-speed static tests through to high-frequency dynamic tests at over 100 Hz.

The new E3000 linear-torsion is a smaller-scale equivalent of the E10000 linear-torsion system and includes a rotation axis with a standard range of ±135° as well as optional multi-turn capability for applications such as orthopaedic bone-screw testing. An ElectroPuls bi-axial linear-torsion test can be conducted on most materials and has found applications in testing inter-vertebral disc prostheses, various bio-materials, athletic footwear and elastomeric components.

Conventional servo-hydraulic test instruments use a linear variable differential transformer (LVDT), a type of inductive absolute encoder, to determine the linear direction of travel and position of the actuator. ElectroPuls is driven by a linear synchronous motor and requires additional high-quality velocity feedback for precise dynamic control. While suitable for position control, an LVDT suffers from relatively poor signal stability and cannot, therefore, produce accurate velocity measurements. An LVDT may also be susceptible to magnetic fields produced within a linear motor and exhibits increasing non-linearity over longer axes.

It is apparent that optical encoders, with intrinsically better signal stability and higher accuracy, are superior in this application. Instron decided that an absolute optical encoder, capable of providing absolute position information without homing, would be the best solution for their bi-axial systems. This offers several advantages over an earlier servo-mechanism using an optical linear incremental encoder in conjunction with an LVDT.

Instron specified that the chosen absolute optical encoder be reliable, highly-accurate, compatible with BiSS® serial communications, easy to set-up and install and non-contacting to eliminate friction / wear and, hence, mechanical hysteresis error. Renishaw's RESOLUTE™ is the only absolute optical encoder to support ElectroPuls controllers and satisfy all other criteria - while offering linear resolutions of 1 nm and speeds beyond 20 m/s. This market-leading performance has resulted in RESOLUTE encoders being chosen for both axes on the E10000 and new E3000 test-frames.

The ElectroPuls E3000 linear-torsion machine requires both linear and rotary absolute encoders for the linear and rotational axes respectively. Linear position is provided by a RESOLUTE readhead and an RTLA tape scale with ±5 µm/m accuracy and 5 nm resolution. Angular position is determined by another RESOLUTE reading a 115 mm diameter RESA ring, offering an

impressive resolution of 0.019 arc second and an encoder accuracy of ±2.5 arc second.

Renishaw is an established world leader in engineering technologies, with a strong history of innovation in product development and manufacturing. A worldwide network of subsidiary companies and distributors provides exceptional service and support for its customers.

Products include: additive manufacturing, vacuum casting, and injection moulding technologies for design, prototyping, and production applications; advanced material technologies with a variety of applications in multiple fields; dental CAD/CAM scanning and milling systems and supply of dental structures; encoder systems for high accuracy linear, angle and rotary position feedback; fixturing for CMMs (co-ordinate measuring machines) and gauging systems for comparative measurement of machined parts; high speed laser measurement and surveying systems for use in extreme environments; laser and ballbar systems for performance measurement and calibration of machines; medical devices for neurosurgical applications; probe systems and software for job setup, tool setting and inspection on CNC machine tools; Raman spectroscopy systems for non-destructive material analysis; sensor systems and software for measurement on CMMs; styli for CMM and machine tool probe applications.

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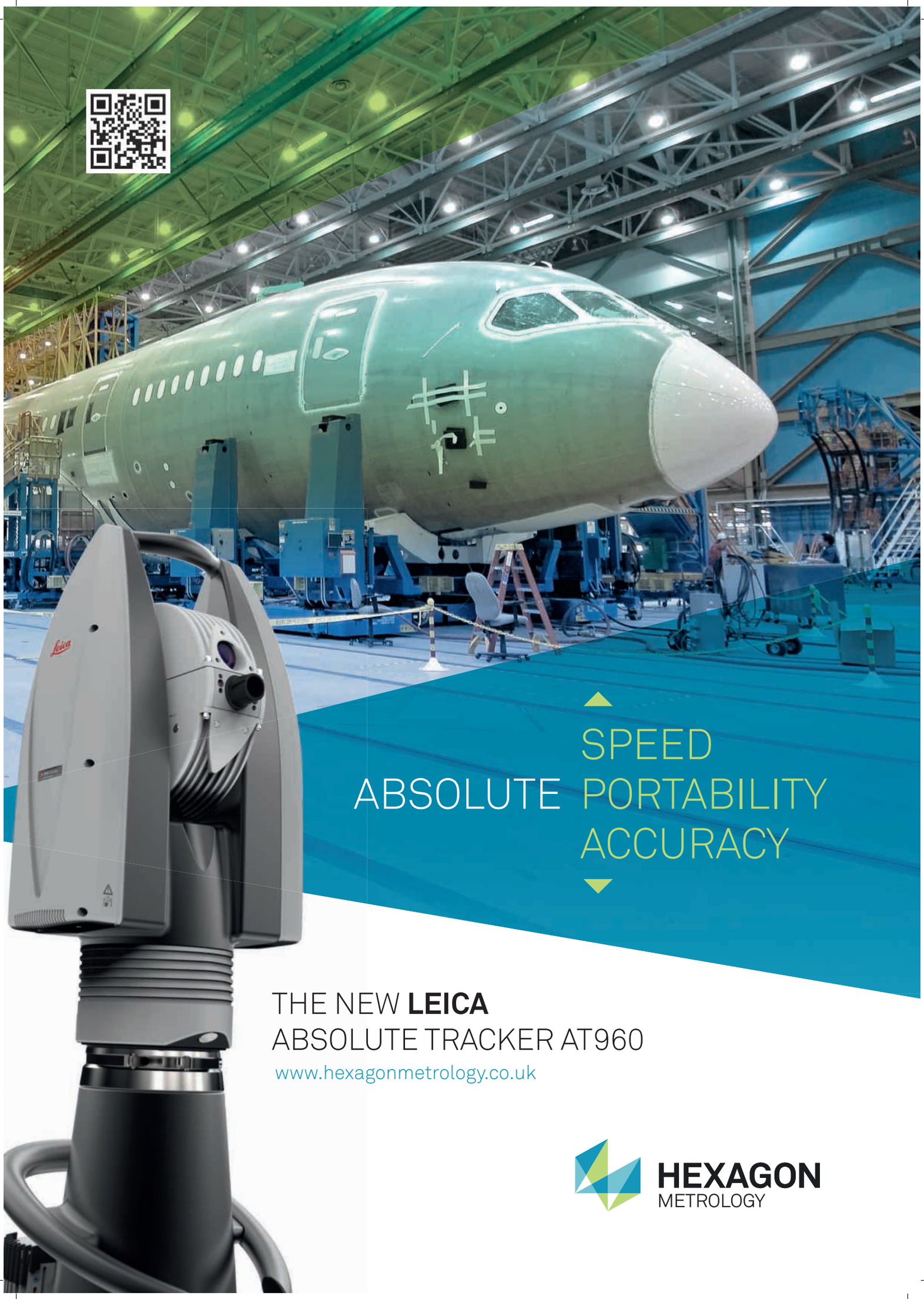

THE NEW **LEICA**
ABSOLUTE TRACKER AT960

www.hexagonmetrology.co.uk

HEXAGON
METROLOGY

Measuring is on track

Hexagon Metrology launches a new range of all-in-one high-speed laser trackers

Leading metrology solutions developer Hexagon Metrology has unveiled the Leica Absolute Tracker AT960, a walk-around coordinate measuring machine that fits in a single flight case. The latest model in the Leica Absolute Tracker range, the AT960 answers customer demand for a genuinely portable laser tracker with high-speed dynamics and six degrees of freedom (6DoF) capabilities.

With a complete range of Leica laser tracker accessories built into the device, the AT960 measures to a Leica T-Probe, Leica T-Scan or reflector straight out of the box. Hot-swap battery function and IP54 certification for use in even the toughest workshop conditions mean the AT960 really can be taken anywhere.

Another new launched is the Leica Absolute Tracker AT930 system. With all the features and functionality of the AT960 without the 6DoF compatibility, the AT930 offers a totally transportable 3D solution with unprecedented dynamic capabilities and real-time operation.

"The new AT960 and AT930 laser trackers feature the latest electronics and optical technologies," explains Duncan Redgewell, general manager, Leica metrology products. "Leveraging the recent developments of PowerLock, absolute interferometry and optical miniaturisation, we are able to release next generation portable products based on proven features. The AT960 and AT930 replace the hugely-successful AT901 and T-Cam products and complement the basic Leica Absolute Tracker AT402. We now offer the most complete and modern range of laser trackers available on the market, giving our customers the opportunity to choose the right equipment for their specific needs."

The Leica Absolute Tracker AT960 and the Leica Absolute Tracker AT930 are available to order immediately through your local Hexagon Metrology commercial centre or distribution partner.

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

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

Hexagon is a leading global provider of design, measurement and visualisation technologies that enable customers to design, measure and position objects, and process and present data.

The story of Hexagon Metrology is a story of both recent and traditional brands. The history stretches back to the 19th century; a rich treasure of experience covering almost 200 years that forms the solid foundation for customer-orientated action and future growth.

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The Hexagon Group has a strong base for future organic growth. Hexagon is also evaluating a large number of companies that have the potential to strengthen the product portfolio of Hexagon, or to further improve the sales network in new and existing markets.

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FARO Edge ScanArm HD assists in World Water Speed Record Challenge

The quest to go faster on water has challenged both man and machine for centuries. Whether for trading, waging war, or simply winning a coveted trophy, the relentless desire to reach ever higher speeds has been evident down the ages. Modern-day challengers have a clear benchmark against which to measure their skill and ingenuity. The World Water Speed Record is the pinnacle of sporting achievement on water, a compelling contest by man and machine, played out on a backcloth of wind and wave, distance and time.

The current record of 317.60 mph was set by Australian Ken Warby, in Spirit of Australia on the 8th of October 1978, at Blowering Dam Reservoir, NSW, Australia. Although this impressive mark has been challenged on several occasions, the record has now stood resolute for more than 36 years.

With the objective of bringing the Water Speed Record back to the UK, author Nigel Macknight established the ambitious Quicksilver project. Now, after much development work, experimentation and in-depth trials, an extremely efficient boat design has emerged. The technically advanced craft is of modular construction with the main body consisting of a front section of steel spaceframe construction, housing a Rolls-Royce Spey Mk.101 jet engine. The craft's monocoque rear section extends to the tail, whilst one of the boat's front sponsons houses the driver.

Nigel Macknight enthused. "The history of the World Water Speed record is a story of technological advancement, human endeavour, triumph and tragedy. The ultimate aim of the Quicksilver project is to return this prestigious international prize to Great Britain, and in doing so add a vibrant chapter for a new era, bringing modern technology to bear in the quest for speed with safety.

"Quicksilver is a new boat for a new generation, inspired by the past. We are striving to extend the reach of human endeavour and advance Britain's technological achievements on the world stage."

The Quicksilver World Water Speed Record Challenge is a collaborative venture uniting highly-skilled people and companies from across the broad span of British industry, drawn together by the project's founder. Team members contribute their time and skills voluntarily, dovetailing their efforts on the project with their other commitments. Invaluable assistance is also given by an extensive network of sponsors who operate within sectors relevant to the project. Sponsors back the challenge by contributing their expertise in areas ranging from design and manufacture to testing.

Acknowledged expert in the field of high-precision measurement and the application of CAD comparison software, Manchester Metrology Ltd was invited to lend practical support to the project. Nigel Macknight says "As Manchester Metrology specialise in the extremely precise, non-contact 3D measurement of engineered components manufactured to fine tolerances, their use of technology such as FARO's Edge ScanArm HD has been invaluable in enabling the considerable progress we have made to date.

"As in demanding related disciplines such as motor sport, when designing and constructing Quicksilver we needed to strike a fine balance between guaranteeing that all of the boat's components were strong enough to function correctly, whilst ensuring that they possess the minimum weight characteristics that would translate into speed.

"The in-depth FARO inspection routines that enabled accurate gathered component data to be compared with CAD models, have been vital in proving adherence to dimensional tolerances. Also, many of the fabricated components that make up Quicksilver's superstructure are made from

very thin aluminium and are prone to distortion when welded. After heat treatment and correctional re-work, these critical parts are scanned with a FARO Edge ScanArm HD, by Manchester Metrology, to confirm their conformity to specification.

"As Quicksilver needs to exhibit outstanding aerodynamic and hydrodynamic characteristics, Manchester Metrology will soon be using the FARO Edge ScanArm HD to gather data relating to all of the boat's external surfaces. The impressive speed and accuracy of the Edge ScanArm HD will prove invaluable throughout this stage of the project as the rapid capture of precise data will help to expedite this penultimate stage of the project and move us on to an attempt on the record."

As an authorised distributor and user of FARO products across a range of industrial applications, Manchester Metrology took the opportunity of using the recently launched advanced FARO Edge ScanArm HD to undertake rapid point cloud collection scanning routines on a wide range of Quicksilver structures. The use of FARO's CAM2 Measure 10 software allowed deviations from nominal conditions to be displayed in both a graphic and tabulated format and quick comparisons with CAD to be made.

The power of the new FARO Laser Line Probe HD, high-definition 3D scanner, combined with the flexibility of the FARO Edge measuring arm has created the FARO Edge ScanArm HD, a high performance, very affordable, contact/non-contact portable measurement system.

The Edge ScanArm HD delivers rapid point cloud collection with extreme resolution and high accuracy, all in a compact, lightweight and easy-to-use system. New functionalities now enable users to seamlessly scan across diverse surface materials regardless of contrast, reflectivity or part complexity and without any the use of special coatings or target placement.

The new system's extra wide scan stripe and fast frame rate boosts productivity by increasing coverage and substantially reducing scanning time. Intricate components can be captured in fine detail as a result of the 2,000 actual points per scanline and the new blue laser that features noise reduction technology. Users are able to dramatically reduce required training time with the new crosshair feature and existing LED Rangefinder functionality, which provides real-time scanning feedback.

Owner of Manchester Metrology Limited Paul Bulman concludes "Having gained vast experience when engaged in many other high profile projects and a multitude of onsite inspection assignments, we were delighted to be invited to lend our expertise to the Quicksilver World Water Speed Record Challenge. In addition to our in-house subcontract inspection work and our on-site inspection services, we sell, and lease a full range of FARO Arm, Gage and Laser tracking equipment.

"Following its launch, so impressed were we by the Edge ScanArm HD, Manchester Metrology were the first UK company to place an for the advanced new FARO product. The Edge ScanArm HD's many new capabilities will further improve the range of service we are able to offer and also increase our speed of operation''

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Mitutoyo's metrology helps Hone-All's precision

One of the specialities offered by Hone-All Precision Ltd, of Leighton Buzzard, Bedfordshire, is the machining of nickel-chromium-based superalloy components to tight tolerances. These oxidation and corrosion resistant materials, typified by Inconel and Hastelloy, are well-suited for service environments subject to extreme pressure and temperature and so are favourites of the petrochemical industry, but are very difficult to machine. Accelerated tool wear is a constant concern. This is especially true in the case of bored-hole features that sometimes approach three metres in length and which usually have to be finished by honing to meet stringent customer specifications.

Form accuracy shaped up

Due to the length of a typical bore, obtaining the accuracy potential of single-point tooling is impractical, except for a small length at the mouth of a bore to provide an accurate start for the tool. Instead, solid tooling is used with multiple cutting edges designed to balance the cutting forces from the centre of the bore all the way out to the edge of the cut. Large bores need several passes with progressively larger boring tools to achieve the final diameter, and it is vitally important to achieve excellent roundness and straightness with every cut so that the succeeding tool can maintain the high form accuracy needed for the final honing operation.

To help meet customer expectations in the realm of deep hole boring, where diameters are more than 20 mm, Hone-All use Mitutoyo's Holtest two-point bore micrometers and Surftest surface finish testers. Measurement is generally done in-process, on the machine, so portability, lightness and convenience in handling are important attributes of instruments, as well as the all-important factors of accuracy and calibration stability.

"One aspect of our service is finishing part-machined components to drawing. Sometimes the form accuracy produced by the initial machining is not as good as we would like, and it is a challenge to correct that," says Hone-All Precision director Andrea Rodney. "This is especially an instance where we rely absolutely on the skill of our workforce aided by accurate measuring equipment, such as our Mitutoyo two-point bore micrometers."

Surface finish brought up to scratch

The superfinishing process of honing uses abrasive stones of various types to generate excellent form accuracy and impart a superior surface finish to a hole or bore, and this must be maintained throughout the whole length of the feature. Hone-All use Mitutoyo SJ-310/411 Surftest portable surface roughness testers to help achieve and maintain the specification demanded by the customer. These models feature a colour display with large numerals for easy reading of parameter values, with autocalibration and printout of results on demand. The SJ-411 provides skidless measurement results if required by the customer's specification.

"The Surftests are easy to use, the portability is important for us as measurements are made in-process, while the part is still on the machine, and all the parameters needed are there at the touch of a button," says Wayne Wilson, business improvement manager. "This is important as surface roughness is a complex subject and customer requirements vary widely. The specification may call for only a single parameter to be measured with just an upper limit, but often as many as four parameters are required with upper and lower limits applying to at least one."

Partnership means excellent support

Inspection result credibility is vital, and Wayne Wilson went on to say, "Mitutoyo are always ready to offer advice and we have excellent support from Chris Pullen, the Mitutoyo area technical representative. I remember a query from one of our customers on a variation between their surface roughness results and ours on a particular component. Chris identified a difference of measuring equipment specification, and once this was remedied the issue was resolved to everyone's satisfaction."

The concept of partnership is very important in the vendor/customer relationship, a point well understood both by Hone-All Precision and Mitutoyo. As Andrea Rodney concludes: "The quality and service is what keeps us coming back to Mitutoyo. And of course association with the Mitutoyo brand helps, it gives customers confidence."

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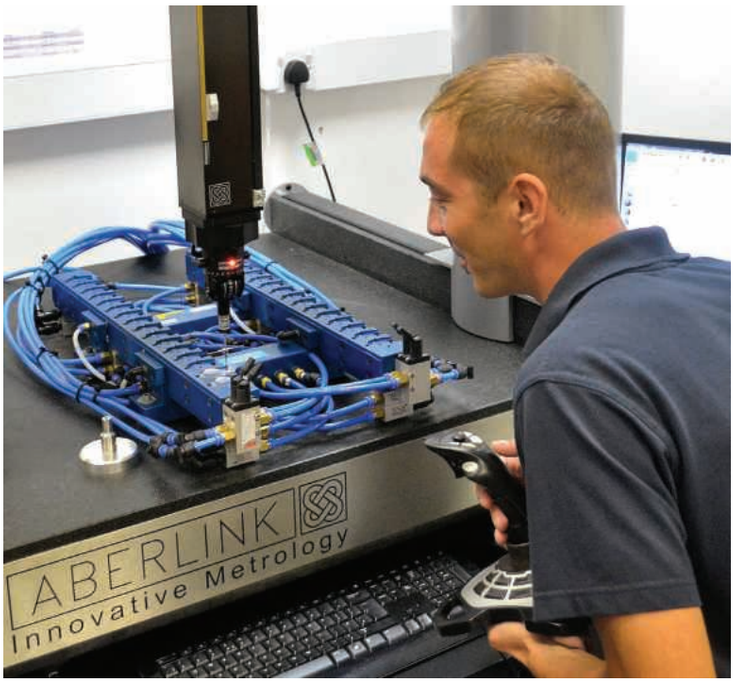
Jarden Plastic Solutions achieve speed and accuracy

The development of stronger and lighter materials, along with improvements made in manufacturing techniques has resulted in the increased use of plastics in areas that were previous the domain of metals. The growing use of plastics for technically challenging applications, that have demanding dimensional tolerances, has meant that over the past few years, many plastic component manufacturers have invested in precise, CNC coordinate measuring machines.

The sheer volume of parts that are produced by modern injection-moulding machines means that rapid feed-back, related to component features that are reaching out of tolerance conditions, is an absolute necessity. The accuracy and speed of several of today's CNC CMMs allows them to keep pace with the demands of plastic industry.

Jarden Plastic Solutions is a well-known multinational company specialising in high-volume, precision injection moulding for the medical, consumer packaging and high-end industrial markets. The company's proprietary engineering processes and extensive manufacturing capabilities enable it to provide first class design and engineering services to its growing list of customers. Its 60,000 sq ft Christchurch facility boasts a diverse customer base and is able to undertake the production of medical moulding and complex assemblies within its Class 8 Cleanroom.



To provide comprehensive support to the company's process management system, and to help guarantee the quality of the company's output, the Jarden Plastic Solutions Quality Department uses two advanced Aberlink Axiom CMMs.

Quality engineer Ian Brown explains: "Any delays in receiving feedback from our quality control department, related to the quality of parts currently being produced, can result in the production of substandard products. We therefore undertook a search for suitable coordinate measuring machines. Having looked at the alternatives, we purchased two Aberlink Axiom Too CMMs, as they had the required accuracy specification and also the speed of action that was able to cope with our high production volumes.

"As much of our work consists of the production of repeat batches, we have created numerous part programmes that we are able to recall when required. To enable very accurate results to be achieved by our Aberlink CMMs and to further speed-up our measuring routines, whilst a batch of one kind of component is being measured in a fully automated CNC mode, we load a second batch of another category of parts onto a special pallet type fixture.

As the removal of the first fixture, replacing it with another, recalling the new part program and starting a new batch measurement, takes very little time, our Aberlink CMMs are able to get through an impressive amount of precise work.

"It helps that the Axiom Too has a generous bed, as this allows us to use large portable fixtures that are able to hold many parts. Also, in addition to satisfying our accuracy requirements, the Aberlink machine has the fastest operational speed of the CMMs we considered purchasing."

Available in manual and CNC variants, the recently upgraded, cost-effective Axiom Too is the best-selling CMM from the largest UK owned coordinate measuring machine manufacturer. Popular throughout the plastic industry, Aberlink Innovative Metrology's Axiom Too CMM can truly be described as the complete Inspection Centre. High measuring accuracies are achieved through the use of the latest metrology techniques and advanced in-house manufacturing methods. The Axiom Too boasts an aluminium bridge with a very low thermal mass, rendering the machine ideal for use either in controlled environments or within less than perfect shop-floor conditions. Thanks to the Axiom Too's use of advanced materials, the machine's reduced inertia results in class leading speed of operation.

For increased accuracy air bearings of optimised stiffness are employed on all axes, whilst a granite Y beam allows preloading of bridge bearings in both directions. Borrowed from the aerospace industry, the CMM's sturdy component support consists of an advanced granite/aluminium honeycomb construction, this technology, provides natural damping and further improves the machine's thermal properties. Despite the Axiom Too's generous measuring volume 640 x 600 x 500 or 640 x 900 x 500, the machine's compact design occupies a relatively small footprint, with the controller and all peripherals housed within the Axiom Too's workbench.

Equally rewarding when used by the novice or an experienced CMM operator, the easy to use Axiom Too utilises Aberlink's famous, intuitive 3D software, ensuring greater user productivity and profitability.

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New user-friendly website

Bowers Group, a global leader in the design and manufacture of precision measuring solutions, has announced the launch of its new website: **www.bowersgroup.co.uk**

The new website has been designed to provide the ultimate user-friendly experience with improved navigation and functionality throughout. The site includes extensive product information to help customers understand Bowers Group's complete range of precision measuring solutions. Technical data, videos and application stories work together to provide a detailed overview of Bowers Group's capabilities across a wide range of sectors, including aerospace, defence, energy and automotive.

Created with the user experience firmly in mind, the website has been designed using the latest technology to make it compatible with today's browsers and mobile devices. The site covers the full solutions portfolio from Bowers of over 500 products, including: bore gauging and precision hand tools from Bowers and Moore & Wright; non-contact measurement solutions from Baty International; portable and bench hardness testers from CV Instruments; Swiss-manufactured digital measuring instruments from Sylvac and Trimos; digital inclination systems from Wyler; inspection solutions for the oil & gas sector from Gagemaker.

"The new website is a powerful resource for metrology professionals to expand their knowledge of the latest technologies available from Bowers," says group managing director Geoff Jackson. "Customers can now benefit from richer online content that is easier to navigate and share with others, assisting the specification process. This is a result of talking with customers and gaining their valuable feedback."

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

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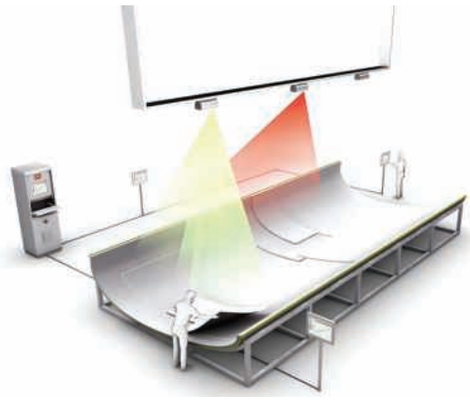
Laser projectors from Lüneburg help Airbus with wing construction

Today, aircraft companies such as Airbus use carbon fiber composites to produce vertical stabilisers, wings, or even whole fuselage sections, because they are lighter and stronger than steel. The components are made up of several layers which must be perfectly positioned and in the right order to ensure that they can withstand the enormous loads experienced in flight. The laser projection system COMPOSITE PRO from Lüneburg-based laser specialists LAP is used to ensure the layers are perfectly positioned. With the latest product development, the system can now even be controlled via tablet PC.

The idyllic Hanseatic City of Stade in Lower Saxony, 45 km west of Hamburg, is home to an Airbus production plant with 1,500 employees. At this plant, the world's second-largest aircraft company produces fuselage sections for the Eurofighter, wings and fuselage segments for the twin-engine wide-body A350 aircraft, and the vertical stabiliser for the A380. Airbus relies on carbon fiber-reinforced plastic (CFRP), which makes products much lighter while also providing increased stability in comparison to steel. Switching to this lightweight construction material is particularly beneficial for airlines, because the reduced aircraft weight enables them to save on fuel costs.

Most visitors are amazed when they take a peek behind the scenes in Stade. Semi-monocoques, which are made from special steel and are up to 35 metres in length and seven metres in width, can be seen at several workstations. The semi-monocoques, known as tools, serve as a negative mold for the carbon fiber components. CFRP mats in all kinds of shapes are pre-soaked in special resin and placed into the monocoques layer by layer by skilled workers. Once all of the fiber mats have been placed in, a vacuum film is laid over the moulds and they are compressed using negative pressure. In the final step, the layers are subjected to pressure and heat in an autoclave in order to cure them into a solid structure. The layering process cannot be described as straightforward. It requires exceptional precision to ensure that the finished components can withstand the enormous forces that they will be subjected to in the air for years to come.



Airbus started looking for a reliable positioning system several years ago to make it easier for aircraft companies to position the numerous CFRP mats and to increase product quality. The aircraft company struck gold with the Lüneburg-based laser specialists LAP, who started developing point and line lasers as early as 1984 and now provide complex, high-precision system solutions for industrial companies all over the world. "We first introduced Airbus to our laser projection system COMPOSITE PRO, which they could use to position the CFRP layers, in 2003. At that time, the Airbus site in Stade was just starting to produce components for the Eurofighter," recalls Harald Grimm, product manager at LAP. Airbus was delighted with the product, and has been purchasing its laser projection systems from LAP ever since. There are over one hundred COMPOSITE PRO systems in use in Stade alone, and many hundreds more in Airbus sites around the world.

So how does the laser system work? The projectors hang from swiveling arms at regular intervals at a height of about four meters above the model. They project individual lines or outlines from the digital construction plans onto the work surface at a scale of 1:1. This means that the staff know precisely where to place the CFRP mats and in what order, and they can align them with the laser lines with millimeter precision. It is also possible to reproduce warnings, notes, and numberings. This gives staff extra support and increases the reliability of the production process.

To make it easier to differentiate between steps, LAP has also fitted the laser system with a multicolor functionality which provides three projection colours: the green and red integrated laser sources can be switched on at the same time to produce yellow as the third colour. COMPOSITE PRO can display the three colours at the same time and independently of one another.

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Kelch expands its range of CoolStream tool

Kelch GmbH, based in Weinstadt near Stuttgart, now offers a wider range of tool holders with coolant channel bores ("CoolStream") as a series production item direct from the catalogue. That means lower prices and quicker delivery for the customer rather than depending on specials. This is in particular valid for shrink holders with A dimension 130 mm, but also for standard SK 40 and HSK 63 shrink holders. HSK 63 Weldon holders will also be available from stock in the Coolstream version.

"The demand for CoolStream holders has increased steadily in recent years" says Helmut Frotscher, managing director at Kelch GmbH. "The coolant channel bore procedure is being used for more and more applications. That makes it worthwhile to add further products to our standard offering. This saves the customer from expensive and time-consuming custom-made tools".

The CoolStream technology is used in tool holders for external cooling of the cutting edge of machining tools. This makes the cooling and chip removal more efficient, especially for milling and turning, which in turn improves the dimensional accuracy of the workpiece and the cutting tool life.

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Radan keeps underground rolling

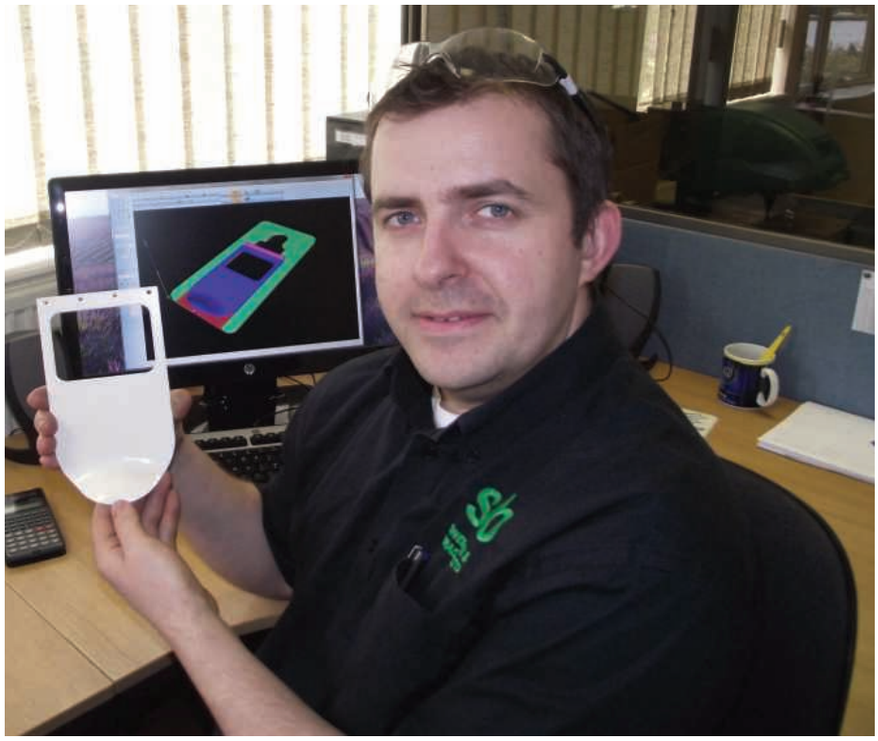
Almost everyone who has been on a London Underground train will have seen products drawn up and manufactured in Radan by sheetmetal subcontractor Sweetnam & Bradley Ltd.

Having had framework agreements in place with London Underground for around 20 years, Sweetnam & Bradley Ltd are heavily involved in refurbishing carriages, with anything from door skins and window frames, through advert and map panels, to sturdy cover flaps for alarm levers.

Christian Olejnik, operations director, says although they are an approved supplier, most contracts are put out for tender across Europe, and Radan's 2D draughting, and 3D design and unfolding capabilies, along with Radprofile and Radpunch's CNC programming, helps them put successful bids together.

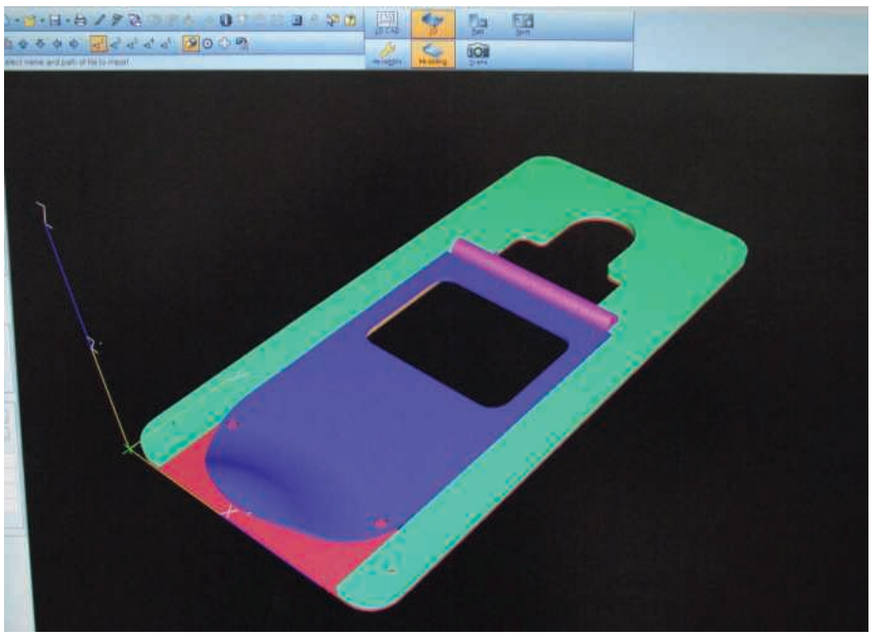
Radprofile drives the company's recently-acquired Mazak Optiplex 3015 Fiber 2 kW laser cutter, with Radpunch programming two Amada punch presses.

"Once the OEM no longer supports the product, London Underground need a contractor who can update the original drawings to produce a replacement part. They put a material procurement strategy in place, creating a number of commodity codes, one of which was metals, to reduce their hundreds of suppliers. We successfully bid to become one of six core suppliers for metalwork."



Ironically, with an annual turnover of £2.5 m, Sweetnam & Bradley's 40-strong workforce operates out of 20,000 square foot premises on the old station yard site, just metres from the engine shed in Malmesbury, alongside the route of the former GWR line, closed by the Beeching axe in the 1960s.

Manufactured mainly in Zintec and stainless steel, the parts are first drawn up either in Radan's 2D draughting solution Radraft, or Radan 3D. "The basic panels are generated in Radprofile or Radraft which produces geometry to the full accuracy that modern computers allow," says production supervisor Andrew Boulton. "And we use Radan 3D for assemblies to ensure the components all fit together properly. Even if we have approved customer drawings we like to know for ourselves that it all fits together before we start to manufacture anything. We just couldn't do that without Radan, because the parts we make couldn't be programmed manually."



Once a Radan part has been drawn up, tooled and nested, the DNC link is set and the CNC code sent to the laser or one of their two Amada punch presses; a Pega 357 with Auto Index, and Vipros 255.

The Mazak Optiplex 3015 laser is one of the first in the UK, and Christian Olejnik says they selected Radprofile to drive it, because the software seamlessly integrates the whole programming process of geometry creation, nesting, toolpath profiling, sequencing, code generation and finally DNC connectivity to the machine controller.

"We were looking for the most efficient way to nest, and Radprofile's fully integrated Project Nester gives an

instantaneous overview of our profiling demand. Automatic rectangular nesting, single part true shape nesting and manual drag and drop nesting techniques mean we can quickly, easily and efficiently meet ever changing production and customer demands."

Everyone in Sweetnam & Bradley's factory can perform several tasks, with five employees trained on Radan. "The same person could create the part, send it to the nester, set the DNC link, set up and operate the machine, run the part off, then bend it on our manual press brakes, weld it and dress it. We've even got a dedicated finishing department, working with both wet spray and

powder spray, to finish the components, using the latest spraying and curing technologies."

With some of the rolling stock dating back to the 1960s Christian Olejnik says they often need to work with the original manufacturers' drawings which don't tell the full story of how to manufacture the parts using modern technology. "This is why Sweetnam & Bradley has such a good reputation with London Underground. We have skilled engineers who can use Radan with these old drawings, ensuring that the new parts we make are a perfect fit.

And Radan recently proved invaluable for working with modern drawings, too. "We were contracted to produce sturdy cover flaps for alarm levers, which London Underground wanted to roll out on the Jubilee, Piccadilly and Northern lines ahead of the 2012 Olympics. But the product couldn't actually be manufactured from the drawings, so we used Radan to create new designs on the original drawing layouts, and as a result, we've been invited to produce these parts for more of the fleet."

As well as manufacturing products for the infrastructure of the London rail system, including overground as well as the Underground, the ISO9001-registered company also produces components for Metrology, Defence and Aerospace.

Part of the Vero Software Group, Radan is acknowledged as one of the world's leading PC based CAD/CAM solutions for the Sheet Metal industries. It offers a unique combination of applications for profiling, punching and bending, along with design and production management capabilities.

Vero sells and supports its range of products through its direct offices in the UK, Italy, France, Germany, Netherlands, USA, Brazil, India, Japan, Korea and China, and through a comprehensive global reseller network across more than 45 countries.

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TiNi Aerospace turns to Tornos ST-26 and Delcam's PartMaker

TiNi Aerospace, a specialist manufacturer of aerospace components based in Northern California, has successfully moved into Swiss machining with a Tornos ST-26 machine and Delcam's PartMaker CAM software.

Located in California's Silicon Valley, TiNi Aerospace specialises in the manufacture of mechanical-release devices for the aerospace industry, based on the company's specialist Shape Memory Alloy technology. Its products have been used on scientific missions flown by NASA, ESA and JAXA. Underwater applications of the devices include ballast release, buoy detachment, payload separation, instrument recovery and disentanglement manoeuvres on vehicles such as Alvin, the first manned submersible capable of travelling to the deepest regions of the ocean floor.

Historically, TiNi outsourced much of its machining work to shops in the Bay Area. The company recently decided to bring some of its parts in-house. It started with components appropriate for Swiss applications, such as titanium bolts, so that it could turn around small batch sizes for its internal R&D and testing efforts. TiNi made its first Swiss machine a Tornos ST-26, based on the combination of functionality to price that it offered against other machines on the market. To better harness the power of the Tornos ST-26, TiNi chose PartMaker SwissCAM for its programming.

"The challenge we have is achieving tight tolerances at short volumes. We don't have a long production run to optimise our processes, plus everything is slightly different to the previous job," says TiNi operations manager, David Bokaie. "PartMaker has worked amazingly well in helping us manufacture our designs on the Tornos ST26. Particularly with being new to Swiss machining, PartMaker really helps us tap into what the Tornos machine can do."

As the Tornos ST-26 was TiNi's first Swiss-type lathe, it was imperative that the company chose software suited to the task of programming the machine productively and intuitively. "PartMaker is really easy to use; the learning curve has been awesome," says Richard Cosman, TiNi's CNC programmer responsible for the new machine.

With introduction of the Tornos ST-26 and PartMaker into its manufacturing process, TiNi has been able to program quickly and achieve better cycle times. "PartMaker helps us produce a good part the first time, which means a lot faster turnaround. Parts that we previously would have had to do in two setups, we are pushing out in half the time," says Richard Cosman.

Much of the success TiNi has enjoyed with PartMaker can be attributed to the close cooperation between engineers at Delcam and at Tornos. Tornos provides the developers of PartMaker with a great deal of information that helps them develop robust programming solutions for the machines. By working together proactively, Tornos and PartMaker engineers were able to ensure that the PartMaker solution for the Tornos ST26 was robust before putting it into customers' hands.

Additionally, Tornos supplied PartMaker with solid models of the ST26 that were incorporated into the software's simulation technology. As a result, PartMaker users are able to achieve almost virtual-reality quality simulation of their parts cutting on the ST26 offline on their PCs before sending the program to the machine.

TiNi has also been impressed with the quality of the technical support provided by PartMaker. "The support I have received from PartMaker has been incredible. If I ever have a problem, their support team is right there with the solution," Richard Cosman concludes. In a business where "failure is not an option" according to David Bokaie, this superior level of responsiveness has been particularly helpful to TiNi in meeting the high demands it has of its products.

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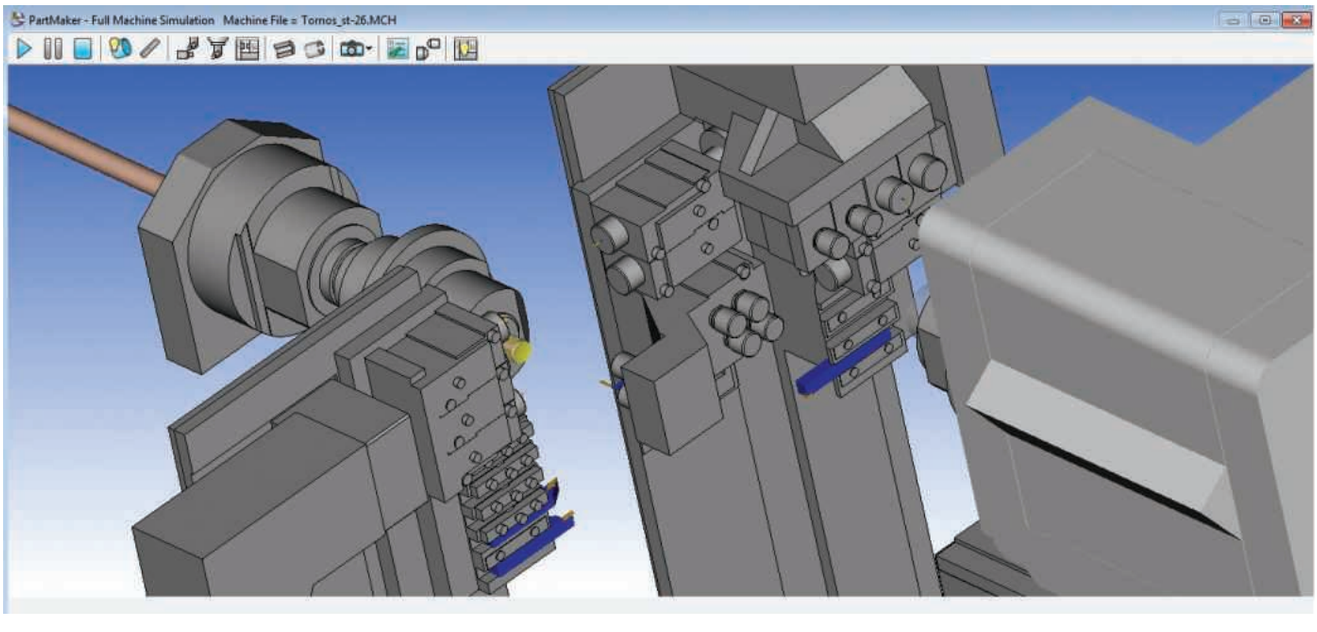
Caption: PartMaker allows Tornos customers to produce realistic simulations of their parts cutting on the machine



JETCAM releases v18 Expert

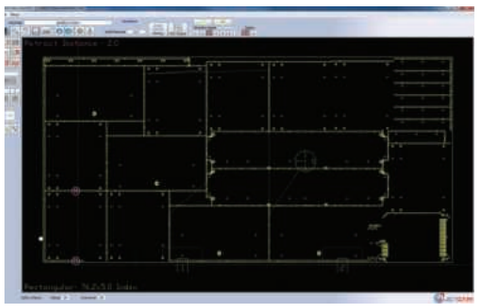
JETCAM International s.a.r.l. has released version 18 of its award-winning CAM and nesting software, featuring a new interface, new high performance nesting engine and its flagship Automatic Sheet Processing feature for punching machines.

The new user interface draws much of its styling from JETCAM's CrossTrack product, and focuses on reducing the mouse movements a user has to perform during day-to-day operations. All file management and tabular data views have been improved with new controls, and general performance enhancements have been made throughout the interface.

Automatic sheet processing, available for all Expert Premium users, allows for completely automatic skeleton destruction, unloading of parts, along with common punching/shearing. Martin Bailey, general manager says: "ASP marks a major step forward over traditional approaches. Users have the choice of applying tooling on the part, on the nest or a combination of both. They can choose to respect tooling on the part, such as parts where 'taught' tooling has been applied, or they can simply override previously applied tooling. With one click users can automatically tool an entire nest, destroy the skeleton, and apply common punching, macro unloading, microjointing and right angle shearing processes."

In version 18 JETCAM has further enhanced its optional high performance nesting module. In addition to improvements to nesting efficiency it now also takes advantage of multi-threading. With multi-core processors coupled with hyper threading often including up to 16 usable cores this delivers much more efficient nests in a fraction of the time.

In addition to all new help systems an updated F2 video help system is also available for free download. Including over 140 short videos, it covers all main areas of the software. The user simply hovers the mouse over a button and presses F2 to view a short tutorial video on the desired function.



Version 18 includes many other features and enhancements across the application, including new Right Angle Shear logic enhancements and new routing functionality. Expert Lite users now also benefit from functionality previously only available in higher versions, such as CAD filtering.

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Bandsaw is ideal for continuous cutting of tube

The first bandsaw from the new KASTOwin range to be purchased in the UK was delivered directly from the launch at KASTO's Milton Keynes Open House to Dyn-Metal, a specialist bronze foundry and machine shop in Acton.

Since the machine was installed in August 2014, it has been the mainstay of the company's long production runs of automatic sawing-to-length of bronze tube, used principally in bearing production. The material is used in ships' transmissions, oil and gas rigs, off-road vehicles, cranes, steel mills, mining equipment and machines in general, including machine tools.

The bronze alloys are produced in six centrifugal casting machines at the Acton foundry, one of which is among the largest in the UK, capable of producing two-tonne castings. The phosphor-, lead-, aluminium- and manganese-bronze tubes can be cast up to 1.2 metres in diameter, although larger is possible depending on length and weight. However, most material is below 330 mm, which is why Dyn-Metal chose a KASTOwin A3.3 bandsaw of that capacity.

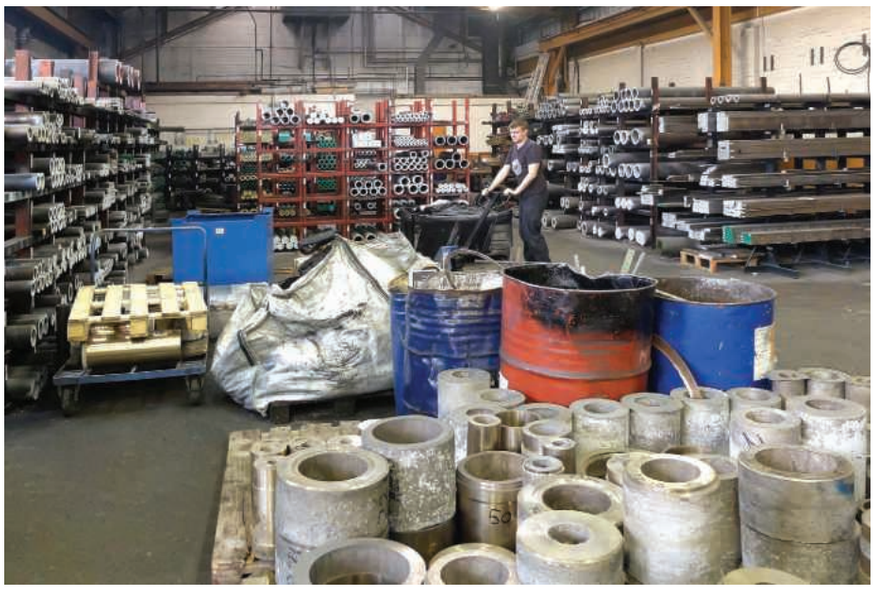
Managing director Stephen Capper says: "We supply standard bronzes as well as our own special varieties with modified grain structures, which result in bearings lasting up to three times longer than commercial castings of similar composition. Self-lubricating varieties with embedded solid lubricant are included in our range.

Centrifugally and continuously cast bronze alloy tube and plate at Dyn-Metal's Acton foundry awaiting processing and delivery

"Practically none of our customers hold stock, so ask for quick delivery of material to ensure that their production output is not interrupted. To be successful in this business, you have to be competitive not only on price, but also on order turnaround.

"We needed another horizontal bandsaw to replace an older model of a different make that was causing bottlenecks, as our order intake has returned to pre-recession levels.

"When I saw the new KASTOwin at the supplier's launch, the machine's competitive price, small footprint and ability to tackle long automatic runs made up my mind on the day, so I placed the order there and then."



A length of tube being transported to the KASTOwin bandsaw for cutting

Dyn-Metal is no stranger to KASTO saws. It has used the German manufacturer's equipment for more than 30 years, having first bought a powered hacksaw. In the late 90s, a vertical mitre-cutting bandsaw was installed and since 2005, the foundry has used a KASTObloc U5 for cutting bronze plate into wear strips and a KASTOtwin A4 bandsaw for general cutting of up to 400 mm diameter stock.

The foundry uses tungsten carbide tipped blades, rather than bimetal, not because the bronzes are tough to cut but to promote straightness of the sawn surface. This is a prerequisite of a high quality raw casting, as it minimises the amount of subsequent machining, whether it is carried out by Dyn-Metal or its customers. Band speed is generally 105 m/min and downfeed 40 mm/min.

Notable features of KASTOwin bandsaws include ballscrew drives instead of

The bronze tube being offloaded at the new bandsaw

close-up view of the bronze tube about to be cut

hydraulics to ensure tight control over cutting and material feed, constant monitoring and feedback of the force on the saw band, and constant chip load throughout the cut, irrespective of material cross section, which varies considerably when cutting tube. A touch-screen SmartControl manufactured by KASTO monitors and controls order requirements and sawing parameters.

Stephen Capper concludes: "We pride ourselves on buying only the best equipment on the market, irrespective of price.

"Visitors to our company will see an Inductotherm furnace, Lansing Linde lift truck and a machine shop full of Mazaks and DMG MORI machines.

"We think that KASTO bandsaws maintain this tradition. The KASTOwin A3.3 is just the latest example of high technology, top quality equipment from this supplier, and at a competitive price."

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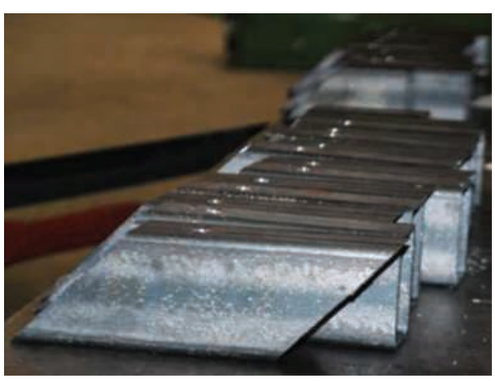
Great craftsmanship combined with innovative technology

Rosenhagen Metallbau's state-of-the-art production facilities in Burgwedel near Hannover are a perfect example of how to turn original and distinctive ideas into reality. Operating under third-generation management, Rosenhagen Metallbau provides customers with custom-built products, whether classic wrought-iron work or contemporary metal items. The company focuses mainly on indoor and outdoor staircases for non-commercial customers, commercial enterprises and public institutions. The 23-person team handles every step in the process, from planning to manufacturing and installation, turning even the most unusual ideas into reality.

The customers' special needs and unique design ideas require not only the highest levels of professional skill but also the equipment and methods necessary to carry out projects with the requisite precision and efficiency. Individuality often goes hand in hand with complexity. But particularly when it comes to stairways, the variety of materials used for railings, handrails and steps place great demands on production. A variety of railings, steps, handrails and spindles may produce a highly individualised design, but that in turn requires the right kind of processing methods and technologies to achieve the proper balance between precision manufacturing, optimum use of materials and efficient use of personnel.

Technical innovation and maximum precision are especially important when individual components need to be cut to meet a set of specified requirements. It's no surprise, therefore, that Rosenhagen decided a year ago in favour of the KKS 463 NA universal mitre saw from Kaltenbach, the leading producer of equipment used in working with steel, aluminum and other non-ferrous metals.



At the Burgwedel facility, Rosenhagen makes use of every type of mitre cut the KKS 463 NA offers, whether it's the 45 degree zigzag cut for stair steps or the +30 to -30 range of mitre cuts used for various types of handrails and railing spindles. The servomotor makes it's possible to place the rotary table in practically any position and automatically set it to a pre-selected cutting angle. Changing the bevel angle has no effect on operating speed because this occurs as the material is being fed in or components are being extracted. In addition, a vertical clamping vice on the side of the saw bench automatically pivots to a pre-selected bevel angle. This ensures that residual lengths are kept as short as possible (< 15 mm) and that materials are clamped firmly in place. Moreover, this unique technology eliminates the need for so-called aluminum yokes. These are cut by bevel angle and must therefore be switched out at regular intervals. The KKS 463 NA thereby reduces recurring costs for replacement parts.

The fully-automated KKS 463 NA circular saw has replaced the manual saws previously in use at Burgwedel. Automation results in changes in terms of cost planning, which in practice allows more personnel to move to final assembly. In addition, it also improves production times while lowering error rates. This means higher productivity at less time per unit, which really pays off in terms of competitive advantage.

The KKS 463 NA is programmed and operated entirely via touch screen using the Windows graphic user interface PROFICUT. Rosenhagen uses specialised software from Hartmann, specifically designed for stair manufacturers. Component lists, along with all programmed geometries and bevels, are exported via a special interface directly from the stair production program in CSV-format (Excel) or via DSTV files (NC files, German Stahlbauverband). Precision and optimum use of materials play a decisive role in stair construction. Only precision cutting ensures a proper fit while the costs for material mean waste should be avoided as much as possible. At Kaltenbach, mechanical and software innovations were employed to minimise projecting edges and to reduce minimal offcut lengths to roughly 15 mm. In addition, the program automatically calculates feed rate and cutting speed and transfers this information directly to the saw.

Materials are fed to the fully-automated KKS 463 NA saw via a flat magazine. The material is transported over a powered roller conveyor to the saw and cut as instructed by the program. After this, the parts are then automatically sorted to pre-selected positions, separating out first cuts and remnants. The flat magazine lets you handle materials in a variety of different dimensions successively without needing to take time to reset the equipment.

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Leading the field

As an industry leader in the design and manufacture of critical oil and gas valves for both surface and sub-sea applications, Newcastle-based BEL Valves concentrates its energies on serving evolving markets that demand the very highest quality and reliability.

The company has in the region of 50,000 valves installed across the globe, some of which operate in the most inhospitable environments on the planet, often in ultra-deep waters of up to 10,000 feet and under high pressures as well as extremes of temperature.

With valve sizes ranging up to 48"in diameter and tolerances typically less than one micron, ultra precision machining is of the utmost importance, so when BEL Valves needed to upgrade the cutting operation during the production of its 24"diameter split gate 4A topside through-conduit valves, it naturally turned to Prosaw to provide the solution.

Although the existing process utilised a vertical bandsaw, it was very wasteful of material, typically deviating from its true path by up to 1/2"on either side of the blade, requiring a considerable amount of post cutting additional machining in order to form a true surface.

Prosaw's response was to specify a Danobat VL vertical bandsaw, which has drastically reduced the cutting time for this product from 18 hours to just 6 hours, whilst simultaneously reducing waste material due to the appreciably more accurate cutting path, amounting to cost savings in the region of £1,500 for each valve. Additionally, further significant cost savings have been achieved by the use of a new type of carbide saw blade, with a life of more than 50 times that of the previous machine.

Shop manager, Adam Leggett comments: "We have been very impressed by this new Danobat machine. It is far more accurate and much faster compared with our previous system, and has created huge cost savings. It has also been responsible for relieving bottlenecks in production, causing work to flow more smoothly through the workshop.

"Prosaw have been with us every step of the way with this project, giving us excellent service and full sales and technical support which has assisted us greatly in bringing this product along."

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Anything but standard

Behringer leads the field when it comes to superlative speed and precision with its new mitering bandsaw, the HBP510-1208G. The HBP510-1208G is another superlative technological achievement from Behringer, designed specifically for cutting beams and hollow profiles. With a cutting range of 1200 x 510 mm and bi-lateral mitering from 30° on the right to 30° on the left, this machine is ideally suited to meet the most stringent demands of the steel construction and trade sectors. With ultra-precise cuts, it significantly increases plant throughput. The outstanding efficiency of the new HBP510-1208G is the culmination of proven Behringer design features combined with new findings from in-house research and development.

The gantry-type mitering bandsaw is both durable and torsion resistant. The saw blade guiding elements are made of vibration-damping grey cast iron, with all the associated benefits for tool life. The 8° incline of the saw frame reduces the maximum length of engagement of the saw blade in the material and is designed specifically to optimise the cutting of large beams and rectangular profiles.

The generously dimensioned saw drive system with its 13.2 kW drive output and optional servo feed with AFC (Auto Feed Control) permit the economical use of carbide blades for profile cutting. With the aid of a precise cutting pressure sensing system, feed and cutting speed are adjusted in line with the length of engagement of the saw blade in the material. This guarantees high cutting performance as a result of consistent chip removal and optimum tool life, while combined roller guides and pre-tensioned backlash-free carbide guides ensure smooth movement of the saw blade through the material.

Fully automatic saw frame height adjustment in line with the material height and saw lowering at high speed in the automatic mode both serve to substantially reduce non-cutting time. The movable vibration dampening saw blade guide adjusts automatically to the cutting width of the material, and the heavy-duty design of the material vice jaws ensures that large structural beams are reliably aligned and clamped. A double vice can also be optionally integrated into the machine.

Angular adjustment for rotation of the sawing unit is facilitated by two generously dimensioned swivel-action rotary bearings. Rapid mitre adjustment takes place on a fully automated basis using a servo drive system. The mitering point is located at the intersection between the saw blade and the material support edge, ensuring that the measurement reference line never changes. The slender design of the HBP510-1208G leaves scope for a wide cutting range, allowing an HEB800, for instance, to be cut at a 45° mitre angle.

When it comes to sawing profiles and structural beams, use of a high-performance micro-spraying system can make all the difference. The HBP510-1208G comes with this type of system as standard.

The development team attached particular importance to ensuring a user friendly design for the new mitering saw. Common operations around the machine such as material clamping or changing sawing angles have been simplified. Improvement suggestions from the maintenance and servicing departments were also noted and put into operation.

Behringer also offers an extensive range of peripheral devices. Depending on requirements, the machine can be supplemented by everything from input and output roller conveyors, cross transfers and length measuring systems through to complete transport management systems with optimised material flow concepts – all supplied by Behringer.

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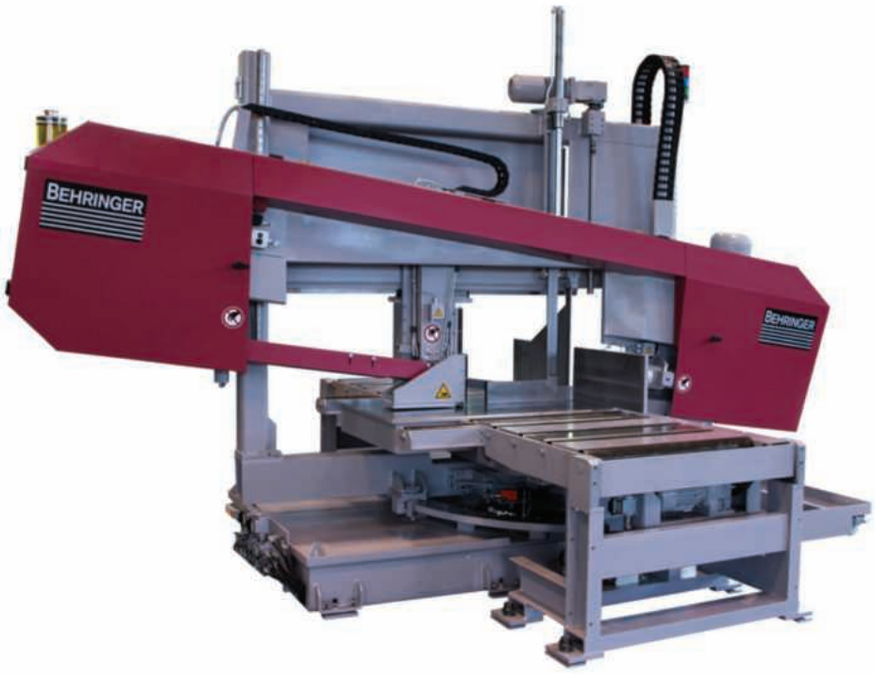

Bi-metal band saw blades cut quicker for longer

Versatix MP bi-metal band saw blades from The L.S. Starrett Company set new standards in the cutting of structural steel profiles, such as RSJ, I-beams, C-sections, tubes, channels and small solids used in many industry sectors. It features a revolutionary tooth design resulting in a significant increase in tooth strength and, consequently, a reduction in tooth stripping. This, combined with Starrett Bi-Metal Unique Technology, ensures that the blades can easily cope with the shock loading conditions associated with intermittent cutting, making the blade ideal for manual 'pull down' band saw machines with uncontrolled feed rates.

While standard saw blade tooth profiles have natural stress points, the Versatix tooth design has been developed to minimise any stress propagation and to evenly distribute the cutting load. The profile has a variable rake all the way down the tooth to reduce vibration, and a shallow gullet to lower noise levels for smooth, quick cutting and the prevention of teeth chipping and stripping. This also makes the blade resistant to heat build-up, abrasion and shock, allowing faster cutting, making it the best choice for applications with intermittent cutting, including structural steels, 'H' beams and sections, tubes and angle iron.

Available in widths from 19 to 54 mm (3/4"–2"), Versatix MP band saw blades are produced from triple tempered M-42 cobalt high speed steel teeth combined with a fatigue resistant alloy steel backing strip. Up to 27mm wide they are produced using a totally different method of manufacturing bi-metal saw blades; the Starrett Bi-Metal Unique technology joins two strips of high

speed steel wire to a backing steel strip in a solid phase, using the principle of solid state diffusion bonding. Wider blades are produced using a standard electron beam welding process.

This production method provides a number of significant advantages, including a massive increase in resistance to tooth breakage and fracture. Blades produced this way feature 170 percent more weld contact area through the solid state diffusion bonding process, ensuring exceptionally strong teeth.

Smoother, faster cuts can be achieved with multi edge performance and the split chip advantage to generate thinner chips that are quickly and easily evacuated from the saw cut. A heavy set (the distance the tooth is bent away from the blade) ensures the blade does not jam in structural sections, which can close up as the stress induced during their production is relieved. In tests, these blades have proved to be typically 35 percent faster. Longer blade life is another advantage of the exceptionally strong teeth, with blades lasting an average of 35 percent longer than competing blades. These advantages add up to offer a lower cost per cut.

A company director of a Midlands-based fabrications business certainly sees the benefits of the Versatix MP band saw blade. "We provide structural and general steel work support services for a wide range of 'blue chip' customers, ranging from BMW to Sainsbury's. Subsequently, the work we do is varied. We have found the Versatix MP band saw blade to be extremely versatile. It really is a multi-tasking blade that offers very good blade life."

Other successes include a decorative railing manufacture in the South that was changing band saw blades every 3 days. Now, with Versatix MP, blade life has been extended to between 3 and 4 weeks. A door manufacturer in the North of England cutting very thin interrupted sections was previously changing blades approximately once a week. With Versatix MP it is now reckoned the blade lasts up to 9 weeks. A Scottish engineering firm cutting pipe and structural steels, that tested a range of blades from different manufacturers in an attempt to get around persistent problems with tooth strippage, has also found the answer. All of the company's band saw machines now run Versatix MP and they report no further problems.

Experienced engineers and technologists at Starrett, many with decades of experience in band saw production, combined with the latest in cutting edge production technology, ensure that Starrett blades will meet and exceed industry's requirements time after time. All blades are manufactured to an ISO9001:2008 accredited quality system.

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A broad offering of plasma cutting solutions

StepUPTM Modular Power Technology allows you to grow as your business grows
Ultra-Cut® XT High Precision automation plasma systems bring intelligence to the table, offering superior quality, higher productivity and lower cutting costs. They are designed to grow as your business grows, utilising modular upgrade kits that allow a 100A system to become a 200, 300 or even 400A system.

Intelligent Control for integrated automated plasma cutting systems
The Thermal Dynamics® iCNC XT for automated plasma cutting provides tools for productivity and profitability, enabling fabricators to achieve the lowest cost-per-cut or best cut quality in all situations.

New PAK-200i provides the power for demanding manual plasma applications
The PAK-200i provides 200 Amperes of cutting power for quality cuts on up to 40 mm mild steel, with a maximum cut capacity of 70 mm. With a 100 percent duty-cycle at full output, this system is capable of operating at full power all day. A liquid-cooled torch provides significantly longer parts life, and the Tip Saver™ circuit ensures accidental contact between the tip and workpiece at high power levels will not result in damage. This system features dual-gas capability for cutting stainless steel with an argon-hydrogen (H35) plasma gas and nitrogen shield gas, to produce superior quality, weld-ready cuts.

For the demanding professional, Thermal Dynamics offers cutting solutions that empower users and companies in their cutting functions better than any other because of its commitment to integrating advanced technologies with intelligent design which enriches the user experience through productivity, reliability, simplicity, and versatility.

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Kerf is part of the family at Made Profiles

After working in the sheet metal profiling industry for over 20 years, Mark Derbyshire admirably wanted to build his own family business to provide a better future for his young family. Starting with nothing but industry contacts and experience, he formed Made Profiles in March 2014 and, only a matter of months later, the company had already exceeded its projections and expectations. This is largely credit to a management team that helped found the company, consisting of a sales and CAD/production manager both having over 20 years of experience that has been integral in the early success.

Forming the company with limited finances, Mark Derbyshire needed a cutting table that would deliver reliability and first class service levels, first and foremost. The first point of call for the new business to achieve this was Kerf Developments. He comments:

"As a start-up company buying our first machine, it was imperative that we bought a quality machine with outstanding service levels. This was because if the machine went down the profit centre of the business would be on-stop. We reviewed the marketplace and the deciding factor was that I worked with Kerf machines in my previous post, so I knew their service and support was second-to-none."

Whilst Made Profiles set the bar high with its service and reliability expectations, another key factor was the ability of Kerf to manufacture a bespoke machine that fitted the needs of the subcontractor, as it services the offshore, automotive, rail, construction and bridge building industries. When specifying a cutting table, Made Profiles wanted flame cutting heads for profiling up to 250 mm thick steel plates, whilst simultaneously requiring high definition plasma cutting capabilities for high speed and high quality cutting of sheets below 25 mm thick. Kerf duly obliged by manufacturing an RUM3500 machine with four flame cutting heads for simultaneously profiling multiple parts, plus one high definition plasma head for high speed cutting of thinner profiles. However, Mark Derbyshire also had the industry nous to specify the Kerf RUM3500 with a particularly large 12 by 3 m bed. He continues: "I wanted a large bed machine for two reasons. Firstly, it would allow us to cut very large profiles whilst also catering for small parts in larger batch sizes using the multiple heads. Most importantly, I wanted a large bed for flexibility and work flow purposes. For example, we are continually growing and the large bed enables us to prepare up to three jobs simultaneously on the machine. This allows us to set up at one end of the bed whilst an operator is cutting profiles at the other end. This reduces our setup and lead times drastically and it improves our workflow through the shop-floor."

This workflow is of particular importance to Made Profiles. One of the founding principles of the business is to deliver quality profiles at lead times the customer requires. Mark Derbyshire explains: "In general, the lead-times in the steel profiling industry for small quantity volumes can be quite lengthy, so we aim to work to a lead time of 2-3 days for our customers. To consistently meet our

target, the Kerf RUM3500 is running up to 15 hours a day, 7 days a week. Despite this non-stop running, the RUM3500 has been outstanding with no breakdowns or downtime, which justifies why we opted for Kerf."

The fast turnaround service at Made Profiles has enabled it to exceed its growth expectations in year one. The result of this growth is the imminent delivery of a second Kerf RUM3500 machine. Mark Derbyshire adds: "Now that we have been operational for a number of months, we have a better projection of what materials, thicknesses and profiles our customers require. Up to 75 percent of our year one work is precision steel profiles up to 25 mm thick, so we have ordered a second RUM3500 with a single 275 amp plasma cutting head. More powerful than the existing 150 amp plasma head, the new machine will allow us to cut high quality profiles up to 40 mm thick, whereas the existing 150 amp head is limited to 25 mm thicknesses."

Once again delivering a bespoke solution, Kerf will add the second RUM machine to the existing 12 m cutting table. In addition to this, Kerf will be extending the current 12 m bed to 15 m. This will effectively provide Made Profiles with the flexibility to manufacture components up to 15 m or alternately use the bed as two individual 7.5 m machines on a single platform.

Mark Derbyshire concludes: "We are cutting anything from mild and stainless steel through to Hardox, Durbar and boiler plates and the new plasma head will improve our through-flow of work and enable us to maintain our benchmark in the industry as a supplier that can consistently meet short lead times. We have built our business on this philosophy and the support of our customers has been outstanding. With such exceptional support from our customers, we will continue to invest to exceed their expectations. Kerf has been,

and undoubtedly will be instrumental in our future plans."

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High-quality, quick and simple welding

During EuroBLECH 2014, Fronius presented several welding applications that illustrate the practical benefits for users of the TPS/i MIG/MAG welding device platform and the new LSC characteristics. Applications from the special and railway vehicle manufacturing sectors were demonstrated, as well as uses in boiler and plant construction. Thanks to the Fronius solution, users were consistently able to accomplish their welding tasks more quickly and more easily, whilst nevertheless achieving still better welding results than with the conventional MAG welding processes used in the past. The quality of visible seams is so good and the risk of fusion defects so small that, in some cases, users can now perform welds with LSC, whereas in the past TIG welding was necessary.

LSC (Low Spatter Control) is a refinement of the dip transfer arc that offers several advantages: both arc stability and weld seam quality are superior to that obtained in the past with existing dip transfer arcs. In addition, Fronius has further reduced the tendency to spatter. Automatic functions and fast control circuits make working easier and allow shorter training periods.

Thanks to a more stable and more strongly focused arc, the root pressure and deposition rate are higher with LSC than with the arc variants available up to now. This has also allowed LSC to steal a march in terms of welding speed, which is particularly evident in the root pass, for which the LSC Root characteristic is designed. It allows root passes to be welded more quickly than before. Heat input is noticeably lower, while the deposition rate is higher. LSC Root even allows root passes to be welded in a downward position.

Among the first LSC users was the emergency service vehicle manufacturer Rosenbauer. In its workshops, this global player among fire-fighting equipment suppliers welds mainly high-alloy steels, for which an excellent surface appearance is required. In the past, welders often used the TIG process for this purpose. Though good for producing very neat welds, it requires some practice and only allows low welding speeds. Rosenbauer now welds these visible seams quickly and neatly using only LSC. This eliminates the time-consuming process of changing devices or the power source, a clear advantage in terms of cost effectiveness and resource use.

Similar positive effects have been achieved with LSC by a truck maker, whereby filler passes and final runs are welded in a mechanised process with the TPS/i. Of particular benefit is the penetration stabiliser of the MIG/MAG welding device platform. This evens out the almost unavoidable imperfections (offset, etc.) and ensures a constant depth of penetration without undercutting.

LSC is also used to good effect in the manufacture of large-diameter steel containers, as evidenced by an application from the boiler-making industry. Since edge misalignments are often unavoidable and the weld preparation may not turn out to be perfectly accurate, LSC Root provides the answer thanks to its ability to even out misalignments. This characteristic guarantees good root formation in the root pass with a higher deposition rate and prevents burn-through. Separate characteristics for the root pass, filler pass and final run guarantee optimum results every time. Boiler makers no longer need to counter-weld the seam, which was previously necessary to avoid incomplete fusion. In view of the good welding results, the company has converted part of its operations from TIG to the faster and more cost-effective MAG welding process.

For a user which produces pipelines for offshore platforms, yet another aspect of the Fronius solution plays a key role: with the TPS/i, no separate cable is needed for the voltage measurement and the power source reacts and readjusts extremely quickly to irregularities. This means that two welders can work on a workpiece at the same time and perform the same weld seam in opposite directions, without the arcs interfering with each other.

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A new name in the industrial and welding supplies sector

BOC, the UK's leading industrial gases business and the largest welding products distributor in Europe, has announced that it has united its 14 individual hardgoods branches from across the UK under one single new brand, IWS (Industrial & Welding Supplies).

The consolidation of the many separate legal entities into IWS (they had previously traded independently under their own name, and were commonly referred to as the Leengate group of companies) means that the branches will benefit from being unified as well as being part of the major BOC brand. As the hardgoods arm of BOC and the largest supplier of industrial and welding products in the UK, IWS will be offering a separate, and different, service to that offered by BOC.

Under the unified new brand IWS branches will continue to offer customers unrivalled scale, choice and product availability. They will now have access to a nationwide supply network and be able to offer customers more products from all the major brands, including BOC's own brands than any other welding products distributor at very competitive prices.

Andrew Bridger, operations manager at IWS, says: "I am delighted that all the branches are now unified under the IWS brand. Reaching this key milestone means that we can now combine our two greatest strengths; we will offer customer-focused local branches that are in business purely to satisfy customers, backed by the biggest brand in the welding business. The consolidation under one name also means we can now offer our customers a combined IWS product catalogue and on-line offer for the first time."

With technical experts always at customer disposal and a hire service covering all recognised brands available in every outlet, IWS aims to provide the highest possible levels of quality and assurance.

Among the brands that will be consolidated into IWS are Leengate, Gaffney, Rock and Future. The IWS brand was rolled out to all branches across the UK in October and November and will be completed with a major supplier Open Day in December.

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Total welding management with universal Kemppi solutions

Kemppi leads the way in the development of application software for online welding quality and productivity management. The company has taken another bold step by offering universal solutions compatible with all welding equipment brands.

The unique Kemppi total welding management concept, TWXM, allows welding quality, safety and productivity management according to customer specific needs. An essential part of TWXM is Kemppi ARC System 3, the modular software toolbox for management of all welding process data with one total solution, including for example online welding parameter control, fleet and welder qualification management, welding procedure specification management and production flow control. The system can be installed in arc welding machines of any make or brand. Access to all relevant welding data, now available online anywhere in the world, is a real revolution resulting in better decision making and remarkable improvements in quality and productivity.

"We do not believe in forcing our customers to behave in a certain way. Kemppi has always promoted open standards and freedom of choice", says Anssi Rantasalo, company CEO.

Kemppi offers a wide portfolio of universal solutions, available anywhere in the world for any industry or welding method, enabling top welding production performance, cost competitiveness and reduction in lead time.

Kemppi is a world-leading welding technology company manufacturing arc welding equipment and providing solutions for highly productive welding. In almost 65 years of operation, the company has introduced new innovations to the market, pioneering the development of welding technology and solutions. In 2013 Kemppi had a global revenue of EUR 111 million. The company has over 620 employees, with production plants located in both Finland and India. Kemppi is the first manufacturer of welding solutions in the world certified to ISO 3834-2. Kemppi will invest in continuous research and product development in the future, too, placing the primary emphasis on usability and design, in addition to the technical quality of the products. According to Kemppi's product promise, we will keep the 'Arc Under Control' and always offer its customers more comprehensive solutions than before.

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New high-definition ARISTO® TECH welding helmet

ESAB, a world leader in welding and cutting technologies, introduced the Aristo Tech HD welding helmet, a high-definition, auto-darkening helmet designed for the professional welder and for use in all welding processes, at EuroBLECH last year.

The Aristo Tech HD helmet sets new standards for usability and reliability with the highest optical clarity available, a large 100 x 60 mm viewing area, and new TIG+ Mode for low amperage GTAW (TIG) welding. The lightweight design with fully adjustable headgear and new matte carbon finished shell provides superior comfort and durability in a modern style.

The next generation of ESAB's Aristo Tech design, the Aristo Tech HD helmet has a 12 mm increased viewing area for wide visibility and better spatial awareness. An optical class of 1/1/1/1 delivers the highest optical performance of any welding helmet on the market, providing more clarity of the weld and increased definition of the weld pool through an advanced LCD.

An automatic shade darkening filter (ADF) and variable DIN 5 to 13 digital lens technology gives the welder full control to adjust shade level, sensitivity and delay settings with precision for any application or welding process. Angular dependence compensation (ADC) technology ensures a consistent shade level even when viewing the lens at an angle. Additional flexibility is provided by the external controls, which allow settings to be changed without removing the helmet. A grinding mode offers the versatility to use the helmet as a grinding shield for weld prep or weld clean up requirements.

ESAB's new TIG+ mode provides superior performance for low Amp TIG applications. Using electromagnetic arc sensors in the active TIG+ mode, the Aristo Tech HD helmet is able to operate below 5 Amps in TIG welding applications.

ADF lens technology offers electromagnetic arc sensing that automatically reacts to the magnetic field of the arc, eliminating interference from sunlight or other electrical/electronic equipment.

The full-coverage shell provides protection from dangerous UV/IR radiation, heat, and spatter in a lightweight design that weighs just 450g, considerably lighter than comparable welding helmets. The helmet's unique matte carbon rubberized finish is the most robust finish available, highly resistant to cuts and scratches.

ESAB's Aristo Tech HD helmet is engineered for comfort even when worn for extended periods. Fully adjustable Comfort headgear and a well-balanced design ensure an easy-to-wear, customized fit, which helps reduce welder strain and fatigue. A soft and absorbent sweat band offers added comfort.

The Aristo Tech HD helmet is available with several options, including a Powered Air Purifying Respirator (PAPR) unit and/or hard hat, magnifying lenses and hearing protection. ESAB's PAPR delivers the maximum fresh air flow and offers protection against dangerous welding fume particles.

ESAB Welding & Cutting Products is a recognised leader in the welding and cutting industry. From time-honored 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.

ESAB'S Warrior Tech helmet

ESAB now offers a Powered Air Purifying Respirator (PAPR) for its Warrior™ Tech 9-13 Auto-Darkening welding helmet, part of its comprehensive line of personal protection equipment. The Warrior Tech helmet with ESAB's Eco Air PAPR is a full-face respiratory system designed to provide the highest safety and comfort for the welder. Manufactured and tested to meet stringent EN12941 standards, the helmet with PAPR provides a high protection rating of TH2P and uses a high performance P3 main filter to remove particulate matter.

PAPRs operate by filtering air through a battery powered unit, which is then supplied into the breathing zone inside the helmet. ESAB's Eco Air PAPR delivers the maximum fresh air flow and offers protection against dangerous welding fume particles. Air movement over the face and head also keep the welder cool and comfortable.

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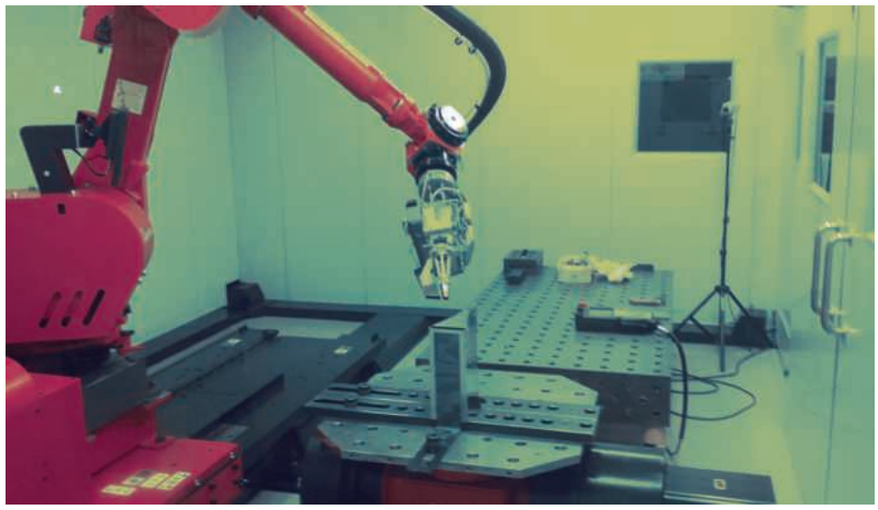
Amada unveils automated fibre laser welding cell

The new automated Fibre Laser Welding (FLW) cell from Amada has been designed to achieve high speed and high quality welding far beyond the capability of conventional welding systems. In addition, the innovative new system is supported by dedicated offline programming and welding simulation that allows production to continue without interruption.

Developed to be the market's ultimate fibre laser welding cell, Amada's new FLW comprises a 2-axis positioning table, repositioning robot carriage, 6-axis welding robot, Amada's original fibre laser welding head and 4 kW fibre laser engine. This is a system engineered to deliver end user benefits, predominantly centred on high speed, high quality welding with low running costs.

Among many advantages, FLW innovation includes a beam weaving and filler wire system for welding large gaps. Here, a gyrating lens is used to rotate the laser beam, while an automated filler system allows the user to specify when the filler is to be used. This patented beam weaving feature facilitates the welding of gaps of 30 percent of the material thickness, up to a maximum of 2 mm, therefore overcoming one of the challenges associated with laser welding. The system is also capable of welding a multitude of difficult materials that would not normally be possible using standard welding processes. This is because, compared with conventional lamp-pumped Nd:YAG lasers, fibre lasers can achieve a small focus diameter. The result is high power density at the workpiece, reduced heat input and reduced heat-affected zone. Process control is clearly vital, which is why advanced FLW functionality includes NC-controlled, automatic focus of the laser from within each processing condition. This aids quick and easy switching between various types of weld.



Of particular note is the system's dedicated CAM software (FLW CAM), which offers offline, user-friendly component programming. Nothing could be simpler or more efficient: a 3D part is imported into the software, weld lines and types are selected, and the robot path is assigned automatically. There is even a 'Teaching Assist' system that allows users to ensure the start and end of each weld are in the correct and precise location. The AMNC touch screen control is connected to the Amada SDD database to allow easy back-up and retrieval of programs and processing conditions.

In terms of capacity, the FLW's positioning table measures 700 mm by 700 mm and can accommodate workpieces weighing up to 500 kg. The table offers ±720° of rotation and ±90° of tilt, while the 1.5m robot carriage (lengths up to 6 m are available) delivers 60 m/min repositioning speed. The 6-axis welding robot/head features a 2 m reach to allow long distance welds, as well as a coaxial and side nozzle to suit a multitude of different part geometries.

Amada UK Ltd
Tel: 01562 74950
Email: info@amada.co.uk,
www.amada.co.uk

New disposable coveralls from Parweld

Parweld is continually moving forward with new products and has introduced the latest addition to its expanding PPE range. Parweld's new basic and Type 5/6 disposable coveralls offer the user a range of head to foot disposable protection.

The basic non-woven coverall is ideal for protection against non-toxic dusts and powders with features such as elasticated cuffs, ankles and hood, along with a zip front. The basic coverall offers a lightweight breathable disposable solution for everyday dust. The Type 5/6 uncoated and coated non-woven coveralls provide limited splash protection. Features include elasticated cuffs ankles and hood, along with zip front and a protective barrier with taped seam technology.

Parweld Ltd Tel: 01299 269800 Email: em@parweld.co.uk www.parweld.co.uk

New polyamide handles from Elesa

The I.780 handles from Elesa, in elegantly styled glass reinforced polyamide technopolymer, are designed for machines and equipment in a wide variety of environments. They offer resistance to solvents, oils, greases and many other typical industrial chemicals.

They are available in black or red with comfortable grip matt finish and feature a moulded-in blind fixing hole, threaded to suit M8, M10 or M12 dependent upon handle size of 65 mm, 80 mm or 90 mm length.

Elesa (UK) Ltd Tel: 01526 322670 Email: sales@elesa.co.uk

New Fluid check eliminates premature failure

Exol Lubricants, the UK's largest independent manufacturer and supplier of lubricant products, has launched a new fluid analysis service that will help to eliminate the risk of machines failing prematurely.

'Fluid Check' allows machine operators to regularly monitor the condition of the lubricating fluid they're using in a bid to detect the type of contaminants and wear issues that can cause early machine failure.

Operators simply draw a sample of fluid from their machine and then send it to Exol for comprehensive testing. The results are then posted to a secure web-based portal that operators can access to download the test data. If the fluid needs to be changed, the data will tell the operator and they can schedule maintenance before a failure occurs.

Exol Lubricants Ltd Tel: 0121 568 6800 Email: enquiries@exol-lubricants.com

New high-accuracy LIC 2100 Linear encoder

HEIDENHAIN (GB), a world-leading supplier of angular, linear and rotary encoders, digital readouts and CNC systems, has extended its range of exposed linear encoders with the launch of the low-cost LIC 2100. The new encoder will appeal to a wide range of industrial markets including PCB assembly machines, electronics, medical technology and metrology as well as machine tools.

The LIC 2100 offers an absolute resolution of 0.1/0.05 micron and an accuracy grade of +/- 15 microns over lengths of 3,020 mm as standard (6,020 mm optional).

HEIDENHAIN (GB) Ltd Tel: 01444 247711 Email: sales@heidenhain.co.uk

Brand New 'Easy Roller' Trucks

Pallet Trucks UK has announced the addition of two new trucks to its existing range of manual handling equipment, enhancing their position as one of the UK's top suppliers of pallet trucks. The two brand new 'easy roller' pallet trucks are set to offer increased variety for businesses in need of a manual handling solution which balances productivity with safety.

The two models cleverly incorporate a foot lever, which can drive the truck forwards and make life easier for operators. The traditional pump action of the handle is used to rotate and drive the rear wheels of the truck, massively reducing the initial force needed to make the pallet truck move.

Pallet Trucks UK Tel: 0845 5192700 Email: sales@pallettrucksuk.co.uk

Dickies 2015 new look catalogue

The new Dickies 2015 catalogue has been launched. With nearly 200 pages, it is packed with a number of exciting new products and ranges with style, functionality and quality being paramount in driving the Dickies business forward.

New products include the Stanmore workwear jean, which has an ergonomic fit with multi pockets to ensure that the tradesperson has style, practicality and comfort. The Eisenhower premium trouser is the must-have work trouser for 2015 with a mix of the premium fabrics, rip stop and cordura, and the clever design of pocket details (zip off holster pockets). The fit has been ergonomically designed to be able to move and provide maximum comfort.

Dickies Workwear www.dickiesworkwear.com

Blåkläder UK launches new website!

Blåkläder, has announced the launch of its brand new, updated and improved corporate website, allowing customers a smoother and easier online experience.

For the first time, Blåkläder now features pricing on every article, offers the ability to save articles into 'favourites' and has also added a 'create PDF' function. Further new features will be added and developed on a regular basis to continually improve the site.

Blåkläder has a long and proud history of manufacturing the highest quality workwear. 50+ years of expertise makes Blåkläder workwear among the best of the best, for people with the toughest, hardest and most strenuous jobs.

You can view the new site here: **www.blaklader.uk**

Blaklader UK Tel: 0800 0288234 Email: uksales@blaklader.com

High viscosity gel from Intertronics

The ADH 9454 adhesive from Intertronics is a gap filling cyanoacrylate (instant) gel suitable for use on vertical and porous surfaces in a wide range of industrial assembly applications. Dispensing is accurate and efficient when applied with the IJF ATD Autotube Dispensing System.

The surface insensitive ADH 9454 cyanoacrylate gel has high viscosity so preventing runs on inclined or vertical surfaces during the very short (3 to 60 seconds) fixture time. This viscosity also enables a high degree of gap filling (up to 0.50 mm) and ensures that the adhesive is not absorbed into porous substrates, thus ensuring a good bondline.

Intertronics Tel: 01865 842842 Email: info@intertronics.co.uk

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