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VOLUME 13 | No.4 ISSN 1742 -5778

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Published by Roger Barber Publishing
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Print: Holbrooks Printers Ltd, Portsmouth, Hampshire

"It's all about you"

Yamazaki Mazak is planning its greatest ever MACH show with its biggest ever stand hosting a total of 13 machines at the 2016 exhibition.

From entry-level machines, through to 5-axis, horizontal machining centres and lasers, the Mazak stand will showcase the finest machines across the entire Mazak range, many of them equipped with state-of-the-art SMOOTH Technology, the world's fastest CNC.

The 800 m² stand will be themed "It's all about you", which references Mazak's continued focus on its customers and practical solutions to their specific machining needs and applications.

Amongst the highlights will be the INTEGREX i-400AM which combines additive and subtractive manufacturing technology, and the new 5-axis VARIAXIS i-1050T, specifically designed for the heavy duty machining of large workpieces.

In addition, the stand will also host the latest version of the extremely popular UK-built VTC 800 series, the 800/30 SLR, and Mazak's newest horizontal machining centre, the HCN 5000/50. CNC turning centres will be represented by the QUICK TURN PRIMOS 150S, the QUICK TURN COMPACT 200MY and the QUICK TURN NEXUS 250 MS with RoboJob automation. Laser cutting will be represented by the new 6 kW version of the OPTIPLEX 3015 Fiber. All of the machines will be live cutting for the duration of the show.

Richard Smith, managing director UK and Ireland Sales Division, comments: "We've taken the decision to make MACH 2016 our biggest ever UK trade show presence, in terms of both stand size and machine numbers.

"This is a clear demonstration of our confidence in the quality and performance of our machines across the range and also our continued belief in the robust health of UK manufacturing, from OEMs and Tier One suppliers, through to the thriving subcontract manufacturing base.

"Many of the machines at MACH 2016, will be making their UK public exhibition debuts, which means it is the first time that UK machine tool users will be able to see these machines live cutting."

"2015 was an outstanding year for Mazak machine sales in the UK and we are confident that 2016, a MACH year, will continue in the same vein. I look forward to welcoming UK machine tool users onto our stand at MACH 2016 and demonstrating our state-of-the-art machining technology."

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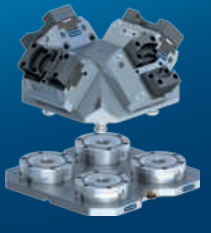

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Looking forward to my 15th MACH

by Roger Barber, publisher of Engineering Subcontractor

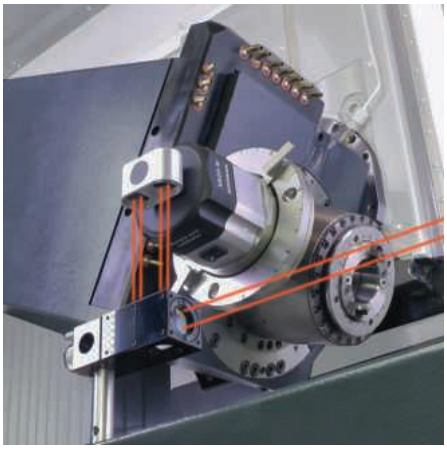
With just a couple of weeks to go before MACH 2016 opens its doors, exhibitors are bracing themselves for an extremely busy show. Despite the gloom and doom in the currency and stock markets and the uncertainty surrounding the European referendum in June, UK engineering is still experiencing something of a high, with full order books and a high level of investment in the latest machines and equipment.

This will be my 15th MACH exhibition, the first being in 1980 when I was working on Production & Industrial Equipment Digest. In those days, the show filled more halls, with more of an emphasis on machine tools. However, with the influx of Japanese and Far-East models and the decline of British machine tool manufacture, the whole feel of the event changed, with a far more global offering.

Under the auspices of the Manufacturing Technologies Association, MACH has developed from a machine tool showcase event into a manufacturing solutions show. Of course, the emphasis is still on machine tools, but even more on applications and the growth in technology.

As well as the latest developments in traditional machine tools, MACH 2016 will reflect the growing importance of advanced manufacturing, including additive manufacturing, 3D printing and automation.

On Wednesday 13 April, the seminar programme will take an in-depth look at Additive Manufacturing with a particular focus on the 3D printing revolution and on Thursday 14 April it will be turning its attention to Industry 4.0. As well as fascinating discussions around the topics there will be plenty of opportunities to network, with evening sessions being hosted by Airbus, Messier-Dowty and Siemens Power Generation to name but a few.



James Selka, CEO of the MTA, says: "3D Printing and Additive Manufacturing are becoming increasingly prominent within the industry. We recognise that this is no longer a fledgling technology but an integral part of the manufacturing process. The MACH Exhibition is the home of technological advances for the manufacturing industry in the UK and it is only right that we explore this process further through its own dedicated zone."

The 3D Printing and Additive Manufacturing Zone will be one of the biggest at MACH 2016. Many of the leading companies in the sector such as, Creat3d, Laser Lines, Nabertherm, Photo Labs and Stratasys are already on the floorplan, and more are in the pipeline to exhibit.

Visitor information

MACH 2016 runs from 11th to 15th April 2016 at the NEC Birmingham under the banner "Manufacturing in Motion." Opening hours are now 9.00 to 17.00 Monday to Thursday and 9.00 to 16.00 on Friday. Entry is free of charge and, once inside the two exhibition halls dominated by MACH, you'll find the UK's latest and best metal forming, metalworking and manufacturing technologies.

Entry is free of charge and once inside the two exhibition halls dominated by MACH you'll find the UK's latest and best metalforming, metalworking and manufacturing technologies.

This year there is a hugely extended UK Manufacturing Zone and the MTA is delighted to welcome back large OEMs including Airbus and Messier-Dowty, among others. Here you can experience a broad cross section of UK capability in component manufacture in one area.

With many other zones covering metrology through rapid manufacturing to welding and beyond, no other UK exhibition offers you such a comprehensive overview of the manufacturing technologies industry and of course 6,000 tonnes of working machinery demonstrating the best technologies in metal cutting and metal forming.

So if you are a subcontractor that is serious about being competitive in today's challenging market and want to keep up with the latest technology and supply chain opportunities you need to join me at MACH 2016.

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Mazak powers to MACH with 13 machines and biggest ever stand

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2015 record order intake for Mazak UK

Yamazaki Mazak has reported a record order intake in 2015, driven by strong growth across all machine types.

Richard Smith comments: "2015 was another record order intake in the UK across the entire range, but I would specifically pick out very strong results in horizontal machining centres, INTEGREX and our UK-built 5-axis machines, such as VARIAXIS."

He confirms that machine orders to the oil and gas sector have dipped, but that this performance has been balanced by other sectors: "We've seen a decline in oil and gas due to market conditions, but this has been more than compensated for by strong growth in aerospace and automotive.

"What is particularly pleasing is the continued robust performance of our sales into the general subcontracting market, in which we've picked up a lot of new customers taking their first steps into CNC machining with our entry-level machines, such as the VERTICAL CENTRE SMART and the QUICK TURN SMART."

He also reported a record year for laser machines: "2015 was a real breakthrough year for laser in the UK and, on the back of strong growth, we took a decision to further bolster the laser sales team. In particular, we've generated real traction with the general subcontracting sector, in which the benefits of using a Mazak machine tool alongside a Mazak laser are being realised by increasing numbers of manufacturers."

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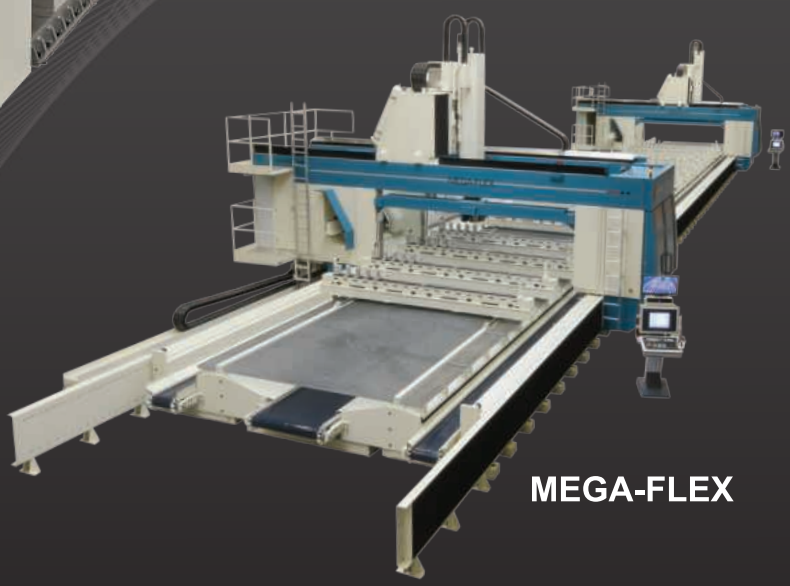

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Haas accelerates into MACH

The VF-16, Haas F1 Team's first racecar, has arrived. The car was revealed on 21st February to the world motorsport press at the Circuit de Barcelona – Catalunya, where it began pre-season testing on 22nd February.

Of all Haas machines with VF nomenclature, this four-wheeled, Ferrari-powered model has been perhaps the most eagerly anticipated since Gene Haas stated his intentions to enter the world's greatest race series, less than 2-years ago. Haas Automation Inc., the company he founded in 1983, is Haas F1 Team's principal sponsor and the genesis of the F1 venture.

"From an international standpoint, Formula One is the highest echelon of racing, and Haas Automation builds the highest-quality machine tools," says Gene Haas, who has grown Haas Automation Inc. into the largest machine tool builder in North America, with more than $1 billion in annual sales.

"When you hear the words 'Formula One' you know exactly what they stand for: a global racing series that invests in the latest technology and attracts the best talent in engineering and design. Haas Automation has an excellent reputation in the United States for reliability, innovation, and value for money, and I want that reputation to continue to grow worldwide. Connecting Haas Automation with F1 in name and in practice is the best way to grow our business, and elevate Haas Automation to a premium, global brand."

The dark grey, light grey, and striking red-toned livery of the Haas VF-16 was derived from that of Haas Automation's CNC vertical and horizontal machining

centres, turning centres, and CNC rotary tables and indexers: a 'complete' line of high-productivity CNC products.

The VF-16 demonstrates Haas Automation's and Gene Haas's commitment to technology and innovation to a passionate, global audience, many of whom are already Haas customers or who perhaps work in the precision engineering and manufacturing sectors.

"Just as Haas Automation's CNC machine tools evolve continually, becoming better and more efficient as time goes by, our methodology behind the VF-16 was to make it the best evolution of a good F1 car," explains Guenther Steiner, team principal, Haas F1 Team. "As we're a new team, we studied what the successful F1 teams were doing, so we had a strong baseline for the direction we needed to go with our design.

The VF-16 was tested on-track at Barcelona from February 2nd to 25th and March 1st to 4th before its debut race, the season-opening Australian Grand Prix on March 20 in Melbourne.

Visitors to the 200 m² Haas stand at MACH 2016 meanwhile will witness cutting demonstrations on ten of the company's latest model CNC machine tools, including high-speed vertical machining centres, 5-axis, high-speed machines, mid-sized verticals designed to take big cuts, high-productivity turning centres with live tooling and Y-axis, powerful, small-footprint mini-mill and toolroom machines and, making its UK debut, the Haas UMC-750SS universal machining centre, which is a 15,000rpm version of the best-selling UMC-750.

The UMC-750SS is a 5-axis 40-taper vertical machining centre with 762 x 508 x 508 mm travels and an integrated high-speed trunnion table. The machine is equipped with a powerful 15,000 rpm inline direct- drive spindle driven by a 30-horsepower vector drive system and comes standard with a high-speed 40+1 tool side-mount tool changer.

The UMC-750SS's 630 x 500 mm trunnion table features standard T-slots, as well as a

precision pilot bore, for fixturing versatility. The trunnion provides +110 and -35 degrees of tilt and 360 degrees of rotation for excellent tool clearance and large part capacity. The high-speed trunnion table offers 150°/sec rapids to quickly position parts to nearly any angle for 5-sided (3+2) machining, or provide full simultaneous 5-axis motion for contouring and complex machining.

The UMC-750SS is equipped with a 15,000 rpm inline direct-drive spindle, and comes standard with Haas Automation's powerful high-speed machining control software.

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XYZ appeals to all with its MACH displays

XYZ Machine Tools will be filling its 204 m² stand at MACH 2016 with a total of 18 machine tools selected from its extensive range, including ProtoTRAK controlled mills and lathes, machining and turning centres and the innovative LPM (Lean Production Machine) and 2-OP machines.

Representing XYZ ProtoTRAK controlled range of mills are the XYZ EMX, SMX 2000, SMX 2500, SMX SLV, SMX 3500 and the largest machine in the range the SMX 5000. This mix of turret and bed mills provide the option of manual operation or, CNC control via the ProtoTRAK system, with up to three axes, capable of being precisely controlled by this well-established, yet still innovative control system. The smallest machine in the range, the XYZ EMX, has a 3 hp (2.25 kW) spindle and a table size of 1069 by 228 mm. At the other end of the scale the SMX 5000

bed mill features a 7.5 hp (5.75 kW) spindle and a table size of 1930 by 356 mm. Key to the success of the XYZ mill range, though, is the use of the ProtoTRAK EMX and SMX controls, whose simplicity and efficiency maximises productivity whether producing a one-off component or small to medium sized batches.

The ProtoTRAK controlled lathe range is also well represented with the SLX 1630, SLX 355, SLX 425 and SLX 555. These machines cover between centre distances of 760 mm through to 3000 mm with swing over the bed ranging from 360 mm to 560 mm. With the exception of the smaller SLX 1630 all of the XYZ SLX lathes feature a one piece, solid ribbed, cast base, which adds significantly to their capability due to the design and weight of their construction. As with the milling machine range the SLX lathes productivity is boosted through use

of the ProtoTRAK control system with its simple to follow conversational language making programming quick and easy.

The ProtoTRAK controlled mills and lathes are also capable of machining more complex parts, that it may be easier to programme offline. With this in mind the control systems are able to accept files from CAD/CAM systems including Parasolid and DXF files, which can be downloaded directly to the control and making use of the on-board DXF file converter.

Completing the ProtoTRAK controlled machine line up are the XYZ LPM and XYZ 2-OP. Both machines have been designed to maximise spindle run times and improve overall manufacturing efficiencies for customers. The LPM (Lean Production Machine) is a machining centre that is both a logical step up from, or can also run alongside the XYZ ProtoTRAK controlled milling range when volumes move from prototype to production levels. Programs can be transferred from the ProtoTRAK SMX control to the ProtoTRAK PMX control without any alteration. Another key feature of the LPM is its use of dedicated precision location points machined into its bed. This allows fixtures to be positioned accurately and secured using the Jergens Ball Lock system.

Like the LPM the design and concept of the XYZ 2-OP portable vertical machining centre is revolutionising how companies go about maximising their productivity. The XYZ 2-OP is aimed at relieving pressure on more expensive spindles and freeing up labour hours, with its portability allowing manufacturing cells to be created anywhere in the factory.

The machining centre range will be represented by the Mini Mill 560, the XYZ 710 VMC and the XYZ 1060HS. All machines in the range are built around solid cast bases and feature box slideways, with the exception of the XYZ 1060HS which due to its high speed application makes use of linear roller guideways in order to achieve the 43 m/min feedrates.

The small, but highly capable Compact Turn 52 is an entry level machine with a 20 hp spindle and a footprint from just 1700 by 1780 mm through to oil-country lathes with up to 16,000 mm between centres and swing over the bed of 2200mm. It has a maximum swing of 400 mm and axis travels

of 185 mm and 325 mm (x and z) with a maximum turned diameter and length capacity of 220 and 280 mm respectively.

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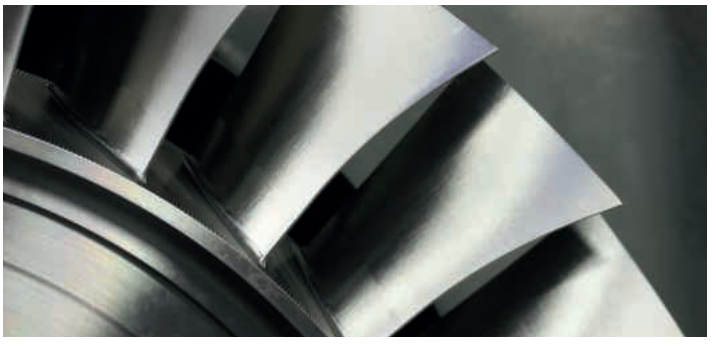

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AUTODESK.

European launch of next generation Cincom A20

Citizen Machinery UK will use MACH 2016 for the European launch of the 5-axis Cincom A20-VII, providing the opportunity to extend its capacity with an option 25 mm bar size. The machine also has the added flexibility to be easily reset between normal guide bush and non-guide bush operation which can be carried out within just 30 minutes.

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

The original A20 series, launched a decade ago, set the pace with its higher rigidity for a sliding head machine coupled with additional power to take more generous cuts and the fastest rapid traverse rates of any sliding head machine. This next generation maintains the same strategy but also capitalises on the lower cost factors associated with modularity of build and takes maximum advantage of using common frame and castings as the new 'icon' L-Series launched last year.

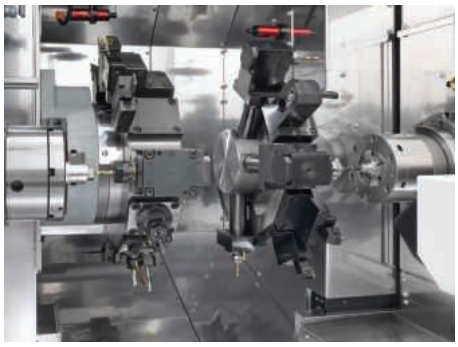
The speed of the main spindle is now 10,000 revs/min from a 3.7 kW drive and the 1.5 kW sub-spindle delivers 8,000 revs/min. The machine has a 21 tool capacity with the gang tool post (X1-Y1) holding five turning tools. Four tool positions up to 10 mm diameter are available for front drilling and four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

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

New turret design creates milling capability

On show for the first time at a UK exhibition, Citizen Machinery UK is launching its sixth generation of Miyano BNJ-SY6 fixed head, two spindle, twin-turret, turn-mill centres. The new machine features higher rigidity to both of its spindles, greater torque for driven tools, a Y-axis on the main turret and a totally new design of eight-station second turret that, in particular, creates a milling capability.

The new BNJ machine is available in two capacity versions: the 51 mm bar capacity BNJ-51SY6, which will be featured under power on the stand at MACH, and a smaller capacity 42 mm (BNJ-42SY6) machine. These bar / 6 inch power chuck machines



provide significant flexibility with an overlapping capability of the main turret in X1-, Z1- and Y1- axes with both main and secondary spindles.

As both spindles and driven tool turrets can be run independently, simultaneous machining can be performed with either or both turrets at each spindle. This level of machine flexibility means machining cycles can also be precisely balanced for maximum production efficiency and with the introduction of driven tools in the latest generation machine to the second turret, this significantly extends both the level of flexibility and capability.

The main spindle has 15 kW of power delivering 5,000 revs/min with increased rigidity through the incorporation of angular contact ball bearings and double-row cylindrical bearings to increase support to the rear of the spindle mainshaft. This increase in spindle rigidity maximises material removal especially when milling at the main turret when making use of the higher rated 2.2 kW of power and massive 25 Nm of torque available to the 6,000 revs/min driven tools.

The secondary spindle (X2- Z2-) has 7.5 kW 5,000 revs/min drive, also supported by the new eight-station second turret. This has four positions driven by 0.75 kW, 10 Nm, 3,000 revs/min motors. Rapid traverse rates are 20 m/min in each axis and 12 m/min for the new 80 mm stroke Y1-axis on the main turret.

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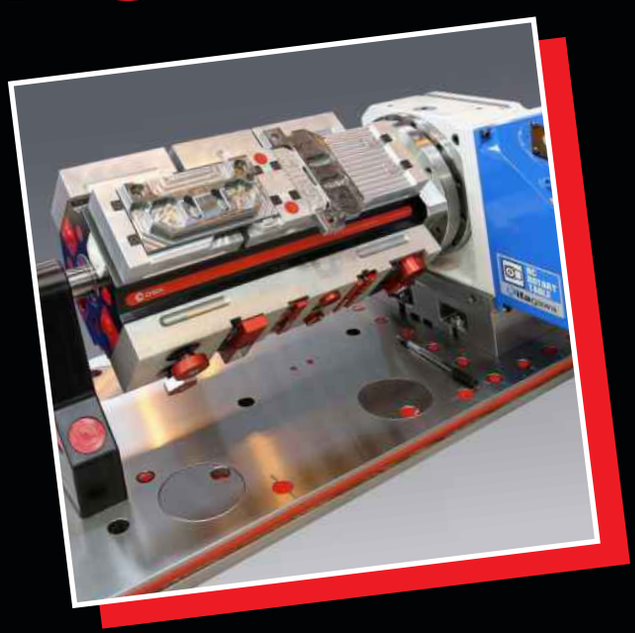

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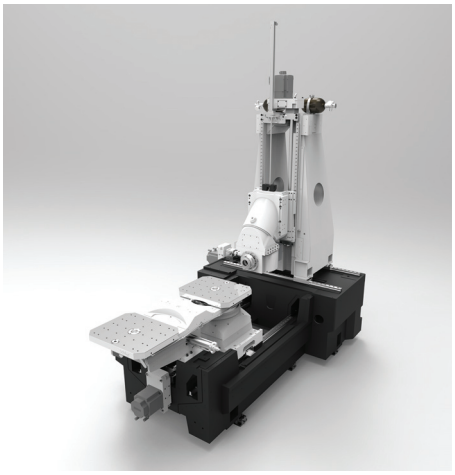
"Very flexible and cost-efficient" horizontal machining centres

The Starrag Group is breaking new ground in its horizontal machining centre strategy by announcing the launch of a new range of "very flexible and cost-efficient" Heckert machines specifically designed for general subcontract applications and for use by supply chain partners to OEMs in industries such as automotive.

The new Heckert Focus line machines, which align perfectly with the Starrag Group's philosophy of 'Engineering precisely what you value', offer users throughput increases of up to 10 percent through reduced machining times and energy cost savings of up to 20 percent via Blue Competence policies. In addition, they also promise up to 10 per cent savings in service and tool costs, and are available on shorter-than-usual delivery schedules times.

The new machines will be announced in the UK at MACH by Starrag UK and will be displayed and demonstrated for the first time under power at an Open House in June at Heckert's headquarters in Germany.

The three-machine Heckert Focus line: the HEC 400 F, 500 F and 630 F, utilise the same tried and tested construction principles and main components that have proved so successful on the Heckert HEC 400D, HEC 500D and HEC 630D machines.



Importantly, however, Heckert has now streamlined certain machine features, and worked closely with its suppliers, to produce a range of machines that will appeal to the budgets of companies of every size while also satisfying demands for consistent, high-quality and cost-effective machining.

Based on the world-proven HEC construction platform of mineral-cast or cast iron build and thermo-tolerant design principles, the new Focus machines feature a smaller control cabinet (housing Fanuc 0i MF as standard; Siemens Sinumerik 840D as an option) and shorter chip conveyor, for example, to create a very compact machine.

Also, 32.4 kW spindles from WEISS (a Siemens company) are employed, producing 18,000 revs/min and 67 Nm torque, ideal for aluminium cutting, on models HEC 400 F and 500 F; and 10,000 revs/min with 350 Nm of torque for heavier-duty, cast iron cutting, on the HEC 630 F model. Spindle options for increased torque to 130 Nm will be available on the HEC 400 F and HEC 500 F machines.

A 40-tool chain-type automatic toolchanger (HSK A63 as standard on the HEC 400, 500 and 630 F models) is standard across all three machines, with options for 60- and 80-tool types. In combination with HSK A100 on the HEC 630 F is a 30-tool chain-type magazine as standard (45- or 60-tool optional).

The machine designations reflect pallet sizes: 400 mm by 500 mm (capable of accommodating work weighing 500 kgs) on the HEC 400 F; 500 mm by 630 mm (600 kgs) on the HEC 500 F; and 500 mm by 630 mm (800 kgs) on the HEC 630 F. X, Y and Z axis travels across the trio are, respectively, 650 mm by 650 mm by 680 mm, 750 mm by 750 mm by 725 mm and 850 mm by 750 mm by 850 mm.

Jens Körner, Heckert's brand sales manager, says: "The new Focus line is the ideal addition to our range, bringing a premium brand into the arena of standard machines but, crucially, without compromise on Heckert's renowned high-quality standards and available on short delivery timeframes. Also, with the potential for automated use by, for instance, the use of robot loaders, gantry systems, plus 12- and 24-pallet systems allowing the straight-forward creation of integrated flexible manufacturing systems, there are endless possibilities for users to achieve consistently high-quality machining at cost-competitive rates."

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MACH • Hall 5 • Stand 5271

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NCMT to showcase lathes and machining centres

On show for the first time at a national exhibition in the UK will be the Multus U4000 multi-tasking turn-mill centre from Japanese machine tool manufacturer, Okuma. Sole agent NCMT says that the machine is designed for complete machining of workpieces up to two metres long and 650 mm in diameter, but that a smaller U3000 can be supplied offering up to 1,500 mm between centres.

The variant to be exhibited will be the single tool carrier model, Multus U4000 1SC, with a 22 kW / 12,000 rpm B-axis motor spindle that develops 120 Nm of torque. The spindle uses the HSK-A63 tool interface (optionally Capto C6), has 0.001-degree indexing and swivels through -30 to +210 degrees, providing considerable versatility of machining. The tool magazine has 40 stations as standard but options for 80 and 120 ATC.

The 22 kW main spindle has a 91 mm bore (optionally 112 mm) and generates 700 Nm of torque at up to 4,200 rpm. Alternatively, a 32 kW drive can be specified, providing a torque of 955 Nm. Servo motors deliver feed rates of up to 50 m/min in the X and Z axes, 40 m/min in the 300 mm Y-axis. Together with the C-axis on the main spindle, the machine is capable of fully interpolative, 5-axis (X,Y,Z,B,C) machining of freeform surfaces, with SuperNurbs smoothing.

Tests have shown thermal deviation to be less than 10 microns over a 24-hour period, despite a variation in ambient temperature of 8°C. This performance is a result of the application of Okuma's patented Thermo Friendly Concept to both the machine structure and the spindle, together with the use of 0.1-micron resolution linear scales in the orthogonal axes.

The Okuma MULTUS U4000 multi-tasking turn-mill centre

The Okuma Genos L200E-MY entry-level lathe

Okuma's TurnCut software for turning machines will be shown for the first time in the UK. It is already well known on the manufacturer's machining centre platforms, on which the X and Y axes are interpolated while the spindle carrying a turning tool rotates at the same speed and is fed forward in Z to generate straight, tapered or profiled features on inside or outside diameters.

Now, similar software allows such features to be created on a turn-milled part, either off-centre on its end or at any cross angle, by interpolating the linear motions of the B-axis while rotating the tool spindle at the same speed. A demonstration cycle will be running on the Multus U4000 1SC at the show.

NCMT will also exhibit for the first time in the UK the L200E-MY turning centre from the early-entry Genos range of machine tools built by Okuma. The lathe programme offers various combinations of spindle, bed size, tool turret, static or driven tooling, Y-axis, and tailstock or counter spindle. There is also the option of robotic or other automated systems for workpiece load / unload.

The Genos model to be exhibited at this year's show is for machining components up to 200 mm diameter and 380 mm long. It also has a C-axis and 80 mm of Y-axis travel on the 12-station tool turret.

Highly rigid, thermally-stable construction protects this Okuma vertical machining centre from thermal deformation, resulting in high machining performance for an entry-level machine. It nevertheless is designed on the Thermo-Friendly Concept and is controlled by the user-friendly OSP-P control. The machine handles a variety of materials, from titanium to aluminium, and does so without sacrificing dimensional accuracy, finish quality or productivity.

The M560-V has a 1,050 x 560 x 460 mm working envelope and maximum table load of 900 kg. The CAT40 BIG Plus, 15,000 rpm spindle moves in the X and Z axes, with the table moving in Y. A 32-position tool magazine is provided.

Software can be added, including Machining Navi to minimise chatter by finding the best cutting conditions. It employs a microphone to detect the onset of vibration and feeds information back to the control.

The Okuma Genos M560-V vertical machining centre

To emphasise the build quality and thermal stability of the Genos vertical machining centre range, a machine skeleton will be on the stand for inspection with all guarding removed.

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MACH • Hall 5 • Stand 5320

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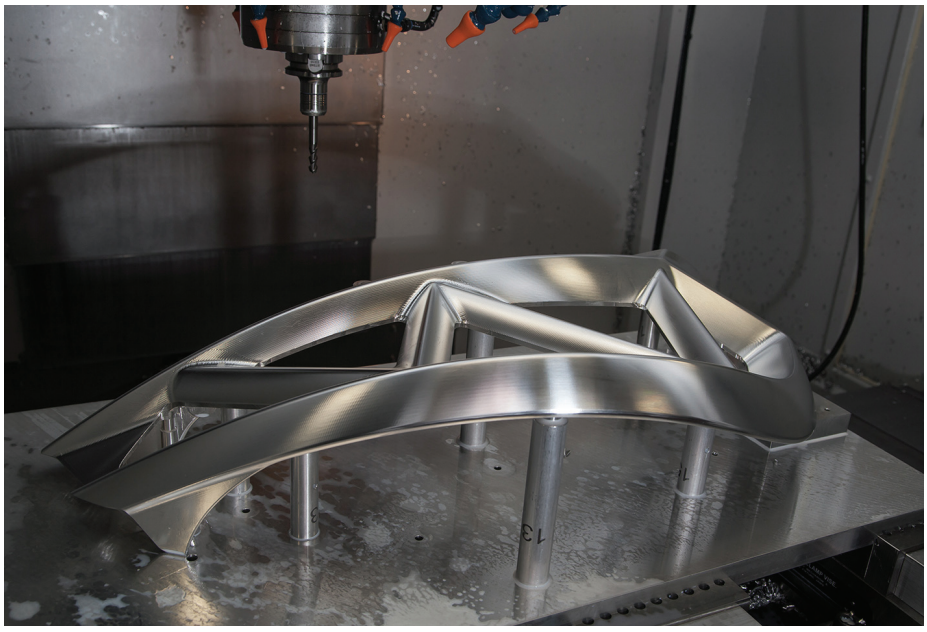
Helping to reduce manufacturing costs

WNT highlights new products and the benefits of applications knowledge at MACH

In the two years since the previous MACH exhibition, much has changed at WNT and MACH 2016 provides the perfect platform to highlight the benefits of those changes, which include new products, new systems, and new enhanced customer service. Visitors to its 300 m^2 stand will see first-hand how WNT can work with customers to reduce manufacturing costs through use of the latest cutting tool and workholding technology, applications support, and by developing new machining strategies for specific applications.

Among the new cutting tools on show will be the recently introduced range for machining aluminium. Launched in late 2015, the Type W solid carbide aluminium cutters have already been well received and WNT has recently extended the range adding additional flute length and radii options. They are ideal for cutting a variety of light alloy/non-ferrous materials and are available in a variety of geometries, with two styles of ripper cutters among the range. In addition to the ripper cutters the range features a variety of cutter styles including 2, 3, 4, and multi-flute cutters all with geometries developed for cutting light alloy and non-ferrous materials, and feature different helix and rake angles accordingly. These Type W cutters also benefit from new specialist coatings, including DLC, a diamond-like coating or, customers looking for an extremely sharp cutting edge can choose to take cutters uncoated.

WNT's Type W cutters for aluminium are among many new products on show at MACH 2016



One of the 'Wing Ribs' that make up the frame for the Ariel Ace motorcycle, WNT (UK) worked closely with subcontractor Talon Engineering to reduce cycle times by 50 percent

Customers are already benefitting from these tools and one particular application will take centre stage on the stand. Talon Engineering is machining the frames and other components for the new Ariel Ace motorcycle has worked with WNT to develop machining strategies and reduce cycle times by as much as 50 percent. The frame is a complex free-form design made up of several components, the main two being what Ariel describes as the Wing Ribs. A complete frame will be displayed and WNT's applications sales engineers will be available to discuss how other customers can benefit from a partnership with WNT.

In addition to a full display of cutting tools and workholding, WNT will be highlighting its exceptional levels of customer service and putting it to the test live on the stand with its MACH Deal. Part one of the MACH Deal is that every visitor that registers on the stand will receive a gift bag and by the following morning, via WNT's logistics centre in Germany, a free gift will arrive at their place of work. In addition any customer ordering £100 (135 Euros) of anything from the WNT catalogue (special tools excluded) at the show will also receive a set of WNT HPC four-flute cutters consisting of a 6, 8, 10 and 12 mm diameter cutter free of charge, a saving of £264.40 on list price. These orders will be processed on the stand and will be delivered before noon the following day to demonstrate the efficiency of WNT's next day delivery promise.

WNT will also have on its stand the latest race bike from Team WNT Elite Ladies cycling team, which features components manufactured by WNT customers Hope Technology of Barnoldswick and Rotor from Spain. In addition, the latest creation from British manufacturer, Empire Cycles, the VX8 Downhill bike will also be displayed. WNT has played a major part in refining the manufacture of the headstock for this bike, reducing cycle time by 68 percent through use of the latest tooling and innovative workholding design. Finally, Moto3 racer Sam Burman will be on the stand all week alongside her new race bike a KTM250, on which she will race for the first time the day before MACH opens its doors.

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MACH • Hall 5 • Stand 5641

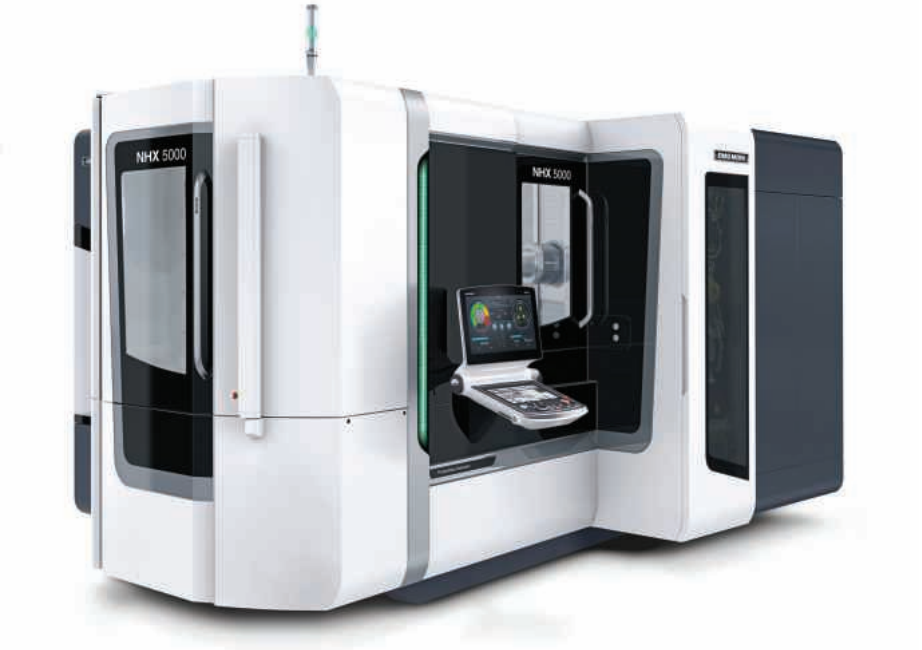
DMG MORI brings key machines to MACH along with the Porsche 919 Hybrid

MACH visitors will have the ideal opportunity to see a line-up of 14 DMG MORI machines under power, including advanced additive manufacturing with the LASERTEC 65 3D and 5 new APPs for CELOS®, aimed at intelligent Industry 4.0 production, as well as the impressive Porsche 919 Hybrid racing-car on its stand 5610 at the entrance to Hall 5.

The latest CELOS now has 16 apps including five new ones: Pallet Changer for simple handling of 2 or 3 pallets, Service Agent for an overview of all maintenance tasks on the machine, Tool Handling which reduces tooling times, Job Scheduler for machine-related job order planning and Messenger for immediate detection of downtimes.

The top selling DMU 75 monoBLOCK® is designed in the stable monoBLOCK design. The swivel rotary table allows simultaneous 5-axis machining for workpieces up to 600 kg. The DMU 75 monoBLOCK is equipped with the latest speedMASTER® motor spindle with 20,000 min-1, tool magazine with 60 pockets and CELOS with 21.5" ERGOline® panel and SIEMENS.

A new optimised gantry design for the DMU 60 eVo linear is at the heart of this machine. The short distance of the guideways on the X and Y axis ensure constant high rigidity and at the same time the design gives considerably improved side access, even when automation is implemented. Furthermore, the swivel rotary table has been uprated to 400 kg. Rapid traverse rates on the Dynamic version reach 80 m/min thanks to the linear drives and the tool magazine has 30 pockets, which can be expanded to 120 as an option.



Visitors will also be able to see the NHX5000 and the NVX5080 horizontal and vertical machining centres. The NHX 5000 2nd generation horizontal machining centre is equipped with the latest speedMASTER spindle, with 30.7 kW power and 15,000 min-1, and CELOS from DMG MORI with 21.5" ERGOline and MAPPS. This delivers high-speed and stable high-precision machining in a paperless environment. The structure of the machine is optimised for static and dynamic rigidity and the distance between the spindle end face and the centre of the pallet is short, so machining can be done using short tools even near the centre of the pallet. The optional B-axis includes DDM (Direct Drive Motor) and the rapid traverse is 60 m/min with an acceleration of 1 G for high-efficiency, continuous machining.

The ultra-compact patented turn-mill spindle on the CTX beta 800 TC has an integrated ejecting cylinder and provides 120 Nm of torque with a length of just 350 mm. In comparison with common spindles, this new spindle provides 20 percent more torque with an increased work area of 170 mm. The attractively priced machine has a turning diameter of 500 mm and 850 mm turning length. The Y-axis stroke is 200 mm and the Direct Drive B-axis has a swivel range of 110°, bringing the benefits of efficient turn and mill machining of small workpieces to manufacturers. Available with CELOS, and optionally 11 Technology Cycles, programming time can be reduced by as much as 60 percent.

The NTX 1000 2nd generation offers 5-axis simultaneous machining on a 10.4 m^2 footprint, the smallest in its class, with six variations to choose from. The turn & mill centre can handle workpieces 800 mm long and 430 mm diameter. Maintainability is improved with external disassembly of the safety glass and long life scratch resistant surfaces. CELOS comes with either Siemens or Fanuc ERGOline controls with DMG MORI SMARTkey® personalised access. Features such as holistic cooling, DDM (Direct drive B-axis), BMT (Built-in Motor Turret) and direct linear scale feedback by Magnescale combine to produce a powerful machine with exceptional levels of precision.

DMG MORI advanced technology on the LASERTEC 65 3D offers a hybrid solution for combined laser deposition welding and 5-axis milling. This process uses a deposition process by means of a powder nozzle, which is up to 10 times faster than generation in a powder bed. The machine has a 2.5 kW diode laser for laser deposition welding, combined with a fully-fledged 5-axis milling

machine in robust monoBLOCK design. This enables deposition and machining operations to be interspersed, enabling normally inaccessible areas to be accurately machined as the process continues. For components where a large proportion of the material is machined away or where special corrosion resistant coatings are required, the LASERTEC 65 3D can offer significant savings through the completion of parts on one machine.

The 2nd generation ULTRASONIC 20 linear offers high-performance, high-precision 5-axis machining of complex workpieces made of advanced materials. The new machine has a smaller footprint and comes with CELOS® and special APPs developed for ULTRASONIC. Optionally it can have spindle speeds up to 60,000 min-1. The technology in ULTRASONIC results in a higher removal rate, accurate edge machining and up to 40 percent reduced process forces in the machining of advanced materials such as glass, ceramics, corundum, composite materials and hard metal. Deflections are minimised while workpiece accuracy and process reliability are increased.

DMG MORI's ECOLINE machine tools deliver quality and affordability. One of the new features of the ecoTurn 450 is the Y-axis with ± 60mm travel option, which is only available with Operate 4.5 on SIEMENS, for more flexibility in complex turning-milling operations. The 45 degree slant bed eases chip removal and an automatically traversing tailstock offers high reliability. The rapid traverse rate is 30 m/min and the machine comes with a 15-inche DMG MORI SLIMline® Panel all in a footprint of 5.8 m^2.

The ecoMill 800 V will be at the NEC, offering the ultimate in entry level milling, enabling the machining of workpieces weighing up to 800 kg. It has an X-traverse capability of 800 mm while its two sister machines the ecoMill 600 V and the ecoMill 1000 V can handle parts up to 600 kg and 1000 kg respectively.

A highlight at the DMG MORI stand will be the presentation of the impressive racing-car Porsche 919 Hybrid. DMG MORI has been the Premium Partner of the Porsche team in the FIA World Endurance Championship (WEC) since 2014. The 2015 racing season was outstandingly successful as Porsche took the overall victory in Le Mans and won the Diver´s and the Manufactory World Championship titles. DMG MORI is proud to present the successful partnership live on its stand with one of the Porsche LMP1 Drivers on April 12th, 2016. Starting at 11.00 a.m., together with one of the Porsche race drivers, DMG MORI will introduce the visitors on its stand to the World Endurance Championship, its partnership with Porsche and give everyone the opportunity to attend an autograph signing with the LMP1 Driver.

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MACH • Hall 5 • Stand 5610

Asquith Butler to present four ranges of large machines

New, large capacity machine tools from Sahos (Czech Republic) and Zayer (Spain) will be launched at MACH 2016 by Asquith Butler. It will also present CNC, high-speed machining and sawing centres from Mubea (Belgium). The firm was appointed sole sales and service agent in the UK and Ireland for all three machine manufacturers shortly before its appearance at the last MACH show in 2014.

The company will also promote its own range of large capacity, travelling-gantry vertical machining centres, built at its factory in Brighouse, West Yorkshire, as well as its comprehensive spares, service and machine refurbishment activities.

Managing director Paul Hinchliffe comments: "We have had a lot of success selling Sahos machines over the past couple of years. Eleven machines have been sold to manufacturers specialising in pattern and mould making and F1 modelling, as well as those in the aerospace and automotive supply chains, for machining anything from model board, plastics and resin to carbon composites and aluminium alloys.

"The Zayer range of machines is also proving popular in the UK. A moving-column machining centre with a 10 metre X-axis has been installed at a leading stainless steel sheet and plate fabricator in the north of England and another machine is due to be delivered this year to a Midlands-based automotive manufacturer."

He goes on to say that the company is also receiving enquiries for its own range of bespoke, 3-axis to 6-axis CNC machining centres, such as the Starcut and the mill-turn version, Starturn. One active enquiry involving a joint venture project with Mubea is from a Chinese manufacturer for machining titanium. Asquith Butler also produces large capacity turning and positioning tables, which are sold for retrofit to its own machines and those of any make.

Submarine manufacture and armoured vehicle refurbishment projects in the UK are ongoing, which are ideal for these large machine tools. The marine and power generation sectors are target markets as well. Mubea machines are particularly well suited to applications in the rail industry, which is showing active interest as major infrastructure projects come on stream.

Sahos BRAM machining centre

On show for the first time in the UK, after its launch at the Milan EMO last October, will be the Sahos BRAM full 5-axis, gantry-type machining centre. It is designed for high-speed milling of complex components from aluminium as well as from plastics reinforced with carbon fibre or glass fibre, plus honeycomb and multi-layer structures. Users for this type of machine are typically found in the aerospace, transportation, patternmaking and mouldmaking industries. A manufacturer could easily machine a complex mould in aluminium and then, on the same platform, trim the composite components produced. The machine's construction is extremely rigid, resulting from extensive finite element analysis. It allows elevated axis movements, with linear acceleration at 5 m/s2 up to 80 m/min in X, Y and Z, with the theoretical possibility of raising the speed to 120 m/min, subject to further tests. There is no loss of quality despite these dynamic movements, with industry-leading dimensional accuracy and surface finish reported.

Different sizes of machine can be specified, based on an X-axis of either 3,000 or 4,000 mm, a Y-axis of 1,500 or 2,200 mm and a choice of 800, 1200 and 1600 mm in Z. All these variants are at the lower end of the manufacturer's size range, as Sahos builds machining centres with linear axis travels up to 50,000 mm x 6,000 mm x 3,000 mm in its BRAXL and BRAL ranges at its factory in Pištín, Czech Republic.

Access to the working area of the BRAM is unrivalled due to the twin folding door design, allowing easy loading of workpieces from the front by lift truck, while overhead loading by crane is equally easy. With cutting of composites in mind, the guarding is comprehensive and includes the option of a roller shutter covering the whole of the ceiling.

The machine can be equipped with two types of liquid-cooled spindle head, with feedback of the A and C axis positions via direct angle encoders. Spindle speed is up to 24,000 rpm, power range is from 12 to 29 kW and torque from 15 to 46 Nm. The linear tool magazine, which has 12 pockets as standard, optionally up to 48, can accommodate HSK A63 or HSK F63 toolholders, depending on spindle type.

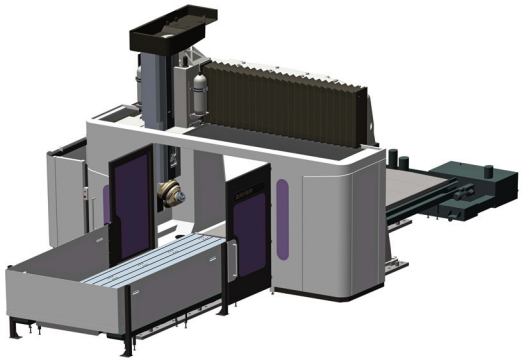
Three variants of table can be specified: aluminium with threaded holes, cast iron with T-slots or an aluminium vacuum table for securing composite and plastic workpieces. Control is by either a Heidenhain iTNC530 HSCI or Siemens Sinumerik 840D SL.

Zayer ARION machining centre

Also to the UK will be the ARION bridge-type, moving table machining centre built by Zayer in Vitoria-Gasteiz, northern

Spain. This modular machine is aimed primarily at the general subcontracting market and the mould and die sector. A particular benefit of the machine, despite its installed weight of up to 50 tonnes, is ease of installation as foundations do not have to be dug.

Thus for an economical investment, a manufacturer can take delivery of capacity for highly accurate machining of workpieces weighing up to 10 tonnes within a working envelope defined by a longitudinal X-axis of 3,000 or 4,000 mm, a Y-axis cross travel of 2,600 mm (optionally 3,100 mm) and a 1,100 mm Z-axis.



Despite the machine's large-size, rapid traverse of 30 m/min minimises idle times, while working feed rates up to 15 m/min ensure high productivity when the spindle is in cut. Zayer's patented, 30-degree, automatic spindle head with continuous rotation is standard, the spindle being rated at 24 kW / 752Nm / 6,000 rpm. A standard head for housing a 4,500 rpm / 940 Nm spindle can be specified, as can automatic head change. Cutters are exchanged from a 20-station (optionally 30- or 40-station) tool magazine.

One particular design feature is the pair of staggered guideways in the crossbeam that allows direct ballscrew positioning of the ram as well as optimal transmission of the ram weight and machining moments into the columns. The sliding guideways for the double counterbalanced ram movement are made from tempered steel with a hardness of 58 to 62 HRc, with linear roller packs located in the crossbeam. Ballscrew nuts for all axis movements are supplied with refrigerated coolant to ensure top accuracy machining.

Mubea

A member of the Haco group, Belgian firm Mubea produces multi-purpose, 4- and 5-axis CNC centres for high-speed machining and sawing-to-length of extruded aluminium and steel profiles up to 60 metres long. Typical applications may be found in rolling stock manufacture.

For programming its single- and twin-head routers, Mubea offers a 3D CAD/CAM system that is easily interfaced with software from other vendors. The scope of its capabilities is extensive, from nesting of multiple components, through 3D simulation of the cutting path and collision detection, to time calculations and patented, automatic, in-cycle clamp repositioning.

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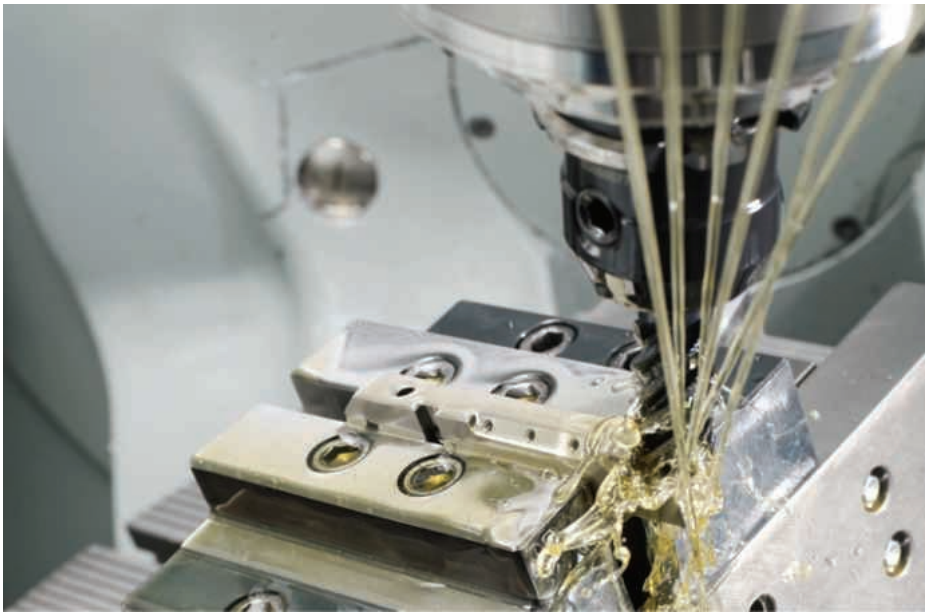
MACH • Hall 5 • Stand 5395

Oils, lubricants and coolant handling solutions

Cardev-Motorex partnership delivers cost savings and productivity gains

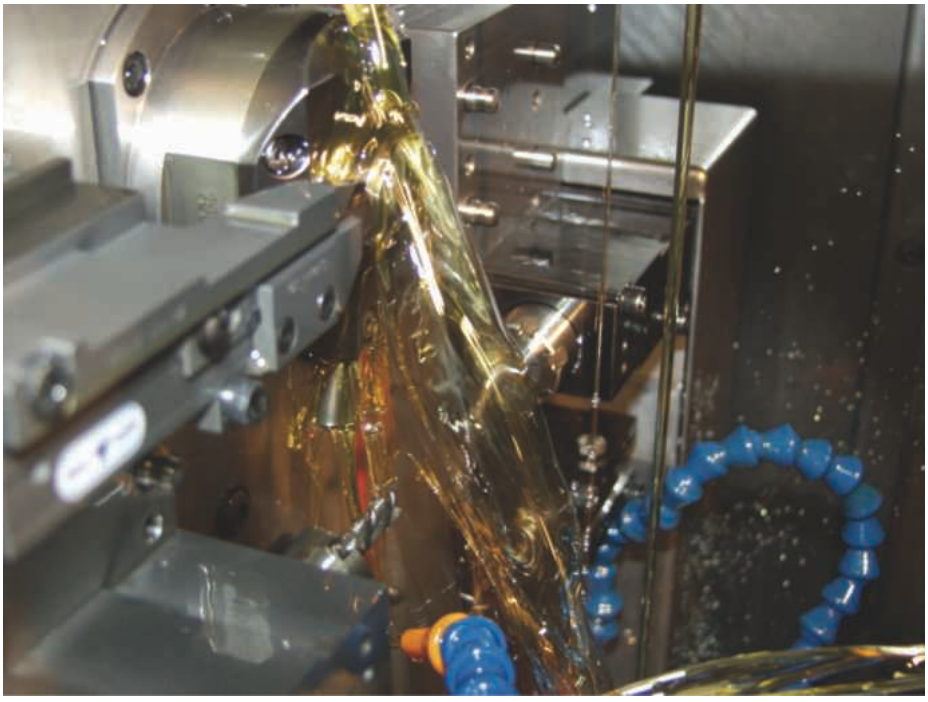
On the Cardev-Motorex stand at MACH visitors will be able to gain a better understanding of how the combination of high performance, innovative, metalworking fluids and the latest in coolant handling technology will generate significant cost savings and productivity gains.

In addition to the water miscible metalworking fluids available from Motorex, the Cardev-Motorex stand will also be highlighting the range of neat cutting oils and machine tool lubricants, in particular the Motorex Swisscut Ortho NF-X and its Spindleline ranges.



Swisscut Ortho NF-X is a neat cutting oil developed for high-speed machining applications. Due to Motorex's V-Max technology, the performance of Ortho NF-X increases as the oil gets hotter, allowing higher spindle speeds to be employed and extending tool life. The oil can be used across a wide range of materials, including high-alloy content steels, non-ferrous metals and aluminium. Further benefits of the formulation of Ortho NF-X are its ability to enhance surface finishes, extremely low-volatility, and its superb compatibility with machines and machine operators alike.

Motorex Spindleline is a range of precision fluids designed for high performance spindles and other closed cooling circuits on machine tools. Cool-X is a ready-to-use coolant with a guaranteed two-year life, recommended and used by spindle and machine manufacturers worldwide. Cool-Core and Cool-Core Ready Fluid (concentrate and ready-to-use respectively) are coolants specially formulated for Step Tec spindles. Spindle Lube Hyperclean is a spindle bearing lubricant that is several classes cleaner than conventional lubricants; eliminating bearing overheating, providing optimum lubrication, and ensuring greatly increased spindle service life. Other products in the Spindleline range include CS-Cleaner (biocide-free system cleaner), and Cool-Oil (spindle cooling oil developed in conjunction with Fischer AG).



The Motorex products complete the circle in the Cardev-Motorex 'cradle to grave' product range that supports customers in every aspect of a metalworking fluid's life from accurate mixing, transfer, in-sump management, cleaning and recycling. The Cardev range includes the Cardev SmartMix, which delivers mixed coolant at a rate of 90 litres/minute; either via a pipework distribution system or locally via a dispensing gun. By automating the mixing process, users benefit from accurate mixing into a tight emulsion, reduced fluid consumption and lower manual handling intervention. Augmenting SmartMix is Cardev's Automatic Coolant Top Up Unit (ATU), which automatically senses the sump level and controls the fluid level at all times, totally eliminating any manual intervention for topping up.

Once the metalworking fluid is in the machine sump the new Cardev Easy Max and Max 1-50 belt skimmers will help maintain its quality and extend its life. The Cardev EasyMAX is an entry level unit

suitable for small to medium-sized sumps, with a trampoil extraction capacity of three litres per hour. The Cardev Max 1-50 skimmer can be used in medium to large sumps where, with its 50 mm wide belt, it can extract trampoil at a rate of seven litres per hour. A further benefit of the Max 1-50 is the addition of an integrated aeration system, which helps to prevent the growth of bacteria. Completing the circle is Cardev's range of coolant recycling systems that help to greatly reduce consumption of new coolant and waste disposal costs.

To mark the launch of the Cardev-Motorex partnership, every qualified visitor to the Cardev-Motorex stand will receive a voucher for one free sump fill with the Motorex water miscible metalworking fluid most suited to their machining process.

"We are aware that customers have a wide choice, and words are relatively cheap, says sales manager Alan Dalton, so we are willing to go that extra step by offering a free fill of high performance Motorex metalworking fluid to anyone who is contemplating making a change. The offer includes flushing the machine system with Motorex system cleaner, before physically cleaning the machine out and filling with Motorex product. We do a proper job when cleaning a machine; all covers off, swarf conveyor out, a complete deep clean. We are confident that once a customer sees the benefits and cost savings they won't want to switch back to their old fluid."

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MACH • Hall 5 • Stand 5970

Hurco to launch 5-axis machining centres and new control software

Having made its world debut at EMO in Milan last October, the new Hurco VCX600i vertical-spindle, 5-axis machining centre will be exhibited for the first time in the UK at MACH 2016. Built in Italy for the European market, the highly productive, travelling-column model is another example of the manufacturer's policy of providing maximum metal cutting capacity in a compact footprint.

The machine has a 600 mm diameter rotary table mounted on a swivelling trunnion, a configuration popular amongst users as it allows components to be machined on 5 sides in a single setup. An octagonal support for the table means that clamps can be positioned clear of the surface, ensuring that the full area is available to accommodate workpieces weighing up to 350 kg.

The integral, ± 110° B-axis trunnion offers generous Z-axis clearance and unrivalled undercutting capability. Together with a 16 kW / 12,000 rpm / 109 Nm direct-drive spindle, 30 m/min rapids and a 40-station magazine for 40 taper tools, the machine is suited to applications across manufacturing industry but is especially applicable to motorsport and aerospace.

The manufacturer's proprietary WinMAX control includes patented Ultimotion software, which ensures smooth, high-speed contouring of 3D surfaces. Machining accuracy and effective vibration damping are promoted by wide linear roller guideways and a base frame made from the concrete and steel composite, Hydropol.

Axis travels are X: 750 mm, Y: 550 mm, Z: 500 mm, glass scales ensuring high precision positional feedback to the control. Similarly, absolute encoders provide feedback from the rotary axes. The table is of robust construction and is supported on the non-driven side by a counter bearing, the load on which can be transmitted through to the floor. This provides greater rigidity than that offered by other cantilever designs. The doors, which open on two sides of the working area, simplify access for automation systems.

New, large capacity 5-axis machining centre in two versions

At the other end of the size range, a 3-axis DCX22i twin-column, bridge-type machining centre will occupy a large area on the stand, as it did at the show in 2014. With 2,200 mm x 1,700 mm x 750 mm travels and six tonne table load capacity, it suits machining of large, awkwardly shaped components.

Compared with other dual column machines on the market, it has the advantage of being fully enclosed and has a 40-station magazine with swing-arm toolchangers for ISO/BT40 or ISO/BT50 toolholders.

David Waghorn, managing director of Hurco Europe in High Wycombe, advises that the DCX range is the fastest growing in the company's machine portfolio.

He hopes that this trend will be reinforced by the UK launch at MACH 2016 of two new 5-axis models, designated DCX32-5Si and -5SCi. The suffixes denote the addition of a 2-axis CNC spindle head with ± 180-degree or continuous 360-degree rotation respectively. The 60 kW / 18,000 rpm HSK63A spindle head is mounted on a vertical ram of box construction for maximum cutting capability and rigidity. Specification of the machine includes a working area of 3,200 mm x 2,100 mm x 920 mm and 11 tonnes maximum table load.

Automated cell features another new 5-axis machine

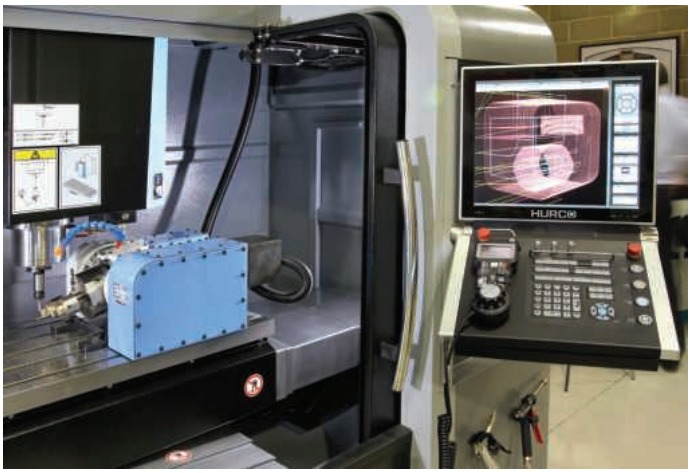
The VMX30UHSi 5-axis, high speed machining centre on show will also be new to the UK. It will be connected to an Erowa robotic pallet change system and will be of particular interest to aerospace manufacturers, according to Hurco, whose latest MAX 5 control has new features to exploit unattended running (see below).

The machine's 18,000 rpm spindle provides the high surface speeds needed for rapid metal removal and the 40-station tool changer supports complex operations typically needed for machining aerospace components. Additionally, Hurco's latest control offers fast processing speed for fulfilling 5-axis machining of complex 3D geometries. In all cases, the VMX30UHSi provides a high level of accuracy and fewer setups, components often being completed in one operation.

Furthermore, due to its advanced look-ahead algorithm applicable to both NC and conversational programs, Hurco's UltiMotion software is highly beneficial for the production of freeform parts. It is able to generate motion that is smoother and faster than any hardware-only solution on the market, according to the company. Benefits include a reduction in cycle times of up to 30 percent and improved surface quality.

MAX 5 control system software

All of the above machines feature Hurco's new MAX 5 control system, which will be



premiered for the first time in the UK at a national exhibition. Running the latest WinMAX 10 software, it is ideal for 5-sided and 4th axis rotary conversational programming, but also handles all of the latest ISNC codes required to run simultaneous 5-axis programmes.

Unlike previously, a customer can take delivery of a single-screen control, which comes as standard with entry-level VM-series machining centres, and upgrade it later to a twin-screen version with a hinged auxiliary screen, as supplied with all VMX- and DCX-series machines. The operator can then view an image of the part as it is being programmed.

Alternatively, the extra screen to the right can be used to monitor the machining process while the next job is being programmed via the other screen. This functionality is enhanced by large, 19-inch LCD screens and the use of high-definition graphics. These are now user-definable in that the display can be altered to show digital readout information, or a split screen showing DRO and graphics, to suit the task at hand. Additionally, a new Quick Menu minimises multiple button presses so that the machinist can quickly access the information needed.

Benefits accrue from the control now being an integral part of the machine, coupled with the ability to retract the QWERTY keyboard, drop the keypad from horizontal to vertical, close the auxiliary screen if fitted and swing the whole control assembly flush to the front of the machine. First, it is no longer necessary to ship the machine and control system separately. Secondly, a user can save space on the shop floor by positioning machines closer together, as the screens can be folded back to allow access for a lift truck to load and unload workpieces.

The MAX 5 control can further benefit NC shops with features such as Job List, which allows users to call up a series of different programs from the hard drive, one by one, and execute them sequentially without operator intervention. This is beneficial when automatically feeding pallets for unattended production of one-offs and small batches and can be used in conjunction with a barcode reader. It also enables program stitching, file bundling and adaptive processes.

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MACH • Hall 5 • Stand 5330

RK shows aerospace and automotive productivity gains

Visitors to the RK International stand at MACH will be able to discover how the Modig Universal Mill Universal milling machine can generate significant cost reductions when machining aluminium aerospace components when compared to 'conventional' machining techniques.

Comparing the Modig way with a conventional horizontal machining centre at an aerospace subcontractor, the annual material savings alone were calculated at £132,000 per year, based on a production run of 16,000 airload ribs per year. Using a machining centre, each component took 24 minutes to machine and resulted in 8.1 kg of waste aluminium, whereas using the Modig Universal Mill, which is bar-fed rather than billet machining, waste-per-part is reduced to 0.28 kg and the cycle time falls to 12 minutes. Over a 12 month period the saving in material is 32,205 kg of aerospace grade aluminium.

"The Modig way of producing parts of this type generates significant material savings," says Dick Aldrich, sales director at RK International. "We can then add on to that the elimination of fixturing, as the parts are now supported in the Modig machines chuck system, and in this particular application a total cycle time saving of 3,200 hours per year (or 84 weeks at 38 hours/week). These productivity gains add to the competitiveness of the supply chain and also allow additional work to be won without adding extra capacity."

A video of the Modig way of producing aerospace parts can be viewed at:
http://bit.ly/1OhFNuZ

While not on display at MACH, visitors will be able to gain an insight into the Europa Jainnher range of centreless grinding machines, to which Jainnher can provide conventional, NC and CNC models with automatic loading and unloading systems. The Jainnher range of centreless grinders have a wide application range, but of particular interest is the automotive sector. Recent installations saw a Jainnher JHS-18 CNC 8-axis grinder, with loading and unloading delivered for the grinding of the four 'legs' on an automotive universal. A second application for the grinding of shock absorber parts with fully automated load/unload achieved surface finish of Ra 0.16, roundness of 0.001 mm and straightness of 0.003 mm/600mm.

Typical of the construction quality of the range is the Europa Jainnher JHC 12S Centreless Grinder, which is based around a stiff and stable platform using a FC-30 heat treated cast machine base, produced using a low frequency melting furnace and a resin core pattern. The resulting stable performance and accuracy is further enhanced by the use of KJ-4 alloy bearings with a three point hydrodynamic oil support membrane. The regulating, or control, wheel is managed by a Fugi Servo variable speed motor, ensuring that it can achieve and maintain optimum linear speed. The housing of the spindle and motor are also linked together so that when the control wheel is tilted, the motor follows thereby overcoming the problem that arises through a gear box system. Finally, the wheel dressing device for the grinding and control wheels on the Europa Jainnher JHC 12S features stepless control through a regulating valve. Each wheel has its own unit, which is fitted with a safety release handle to retract the diamond in emergencies, these units can also provide a +/-5° swivel adjustment to shape the regulating wheel in order to increase contact with the component whilst through feed grinding.

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MACH • Hall 5 • Stand 5790

New Lynx lathe range will turn heads

Mills CNC, the exclusive distributor of Doosan machine tools in the UK and Ireland, is launching a new range of compact high-productivity, high-efficiency Lynx lathes into the market and will showcase one of the new models, a Lynx 2100B, on its stand at MACH 2016.

The Lynx 2100 series is an upgrade on the phenomenally successful Lynx 220 range introduced a few years ago and will provide precision component manufacturers with a best-in-class machining solution for small parts production.

Depending on the selected machine (there are 10 different model-types in the series), Lynx 2100 lathes are equipped with either a 6" chuck 51mm bar capacity or 8" chuck 65mm bar capacity and have a maximum turning diameter of 350 mm and a maximum turning length of 550 mm.

The Lynx 2100 series is an upgrade on the successful Lynx 220 range and will provide precision component manufacturers with a best-in-class machining solution for small parts production

The machines feature a powerful 15 kW 6,000 rpm or 4,500 rpm spindle which, combined with their highly-rigid and low-vibration design and build, i.e. spindle housing, bed, feed shaft etc., ensure high-accuracies, repeatability and surface finishes even during heavy-duty machining operations.

Models with driven tools are equipped with 6,000 rpm milling capability and the BMT (Base Mounted Turret) driven tool mounting configuration for improved rigidity, productivity and process reliability.

Lynx 2100 series lathes have high-speed, stable and responsive servo-driven turrets that improve productivity and accuracy. They also feature an integrated collision protection system as standard that prevents, for example, a machine's turret from coming into contact with its tailstock.

The new Doosan Fanuc I controlled Lynx lathes are also equipped with an easy-to-use Work-Setting function for fast, error-free measurement and job setups, a fully-programmable tailstock and a tool monitoring function that provides information on tool change efficiency.

In addition, an on-board tool setter for automatic tool measurement and compensation that further reduces setup times and improves accuracy and overall performance is supplied as standard.

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MACH • Hall 5 • Stand 5430

Wide range of workholding and automation solutions with bespoke options

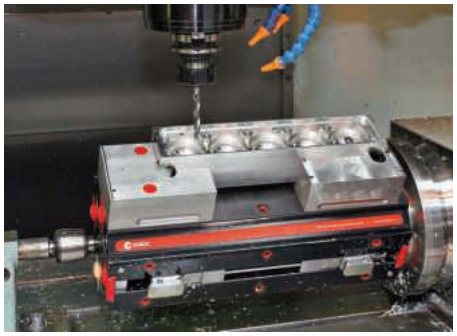
A theme of the 1st Machine Tools Accessories (1st MTA) stand at MACH will be the company's ability to provide an array of customised solutions under the 2016 slogan "The Answer's Yes."

Shown for the first time will be new range of Italian-made products that incorporate permanent-electro magnets, designed for workholding on machine tools and for handling sheet, bar and other ferrous materials in warehouses and factories.

Of particular interest will be the MillTec Grip magnetic clamping system for milling machines and machining centres. The low-profile, frameless, monolithic clamps have a sealed, double magnetic circuit that allows uniform clamping between the workpiece and the magnetic surface and at the same time between the magnetic system and the machine table.

US workholding system manufacturer, Chick offers a number of versatile solutions for clamping products quickly on machining centres. For example, an Indexing Sub System (ISS) will be demonstrated to show how it is able to present more components to a spindle by adding a fourth axis, a configuration that has the potential to increase a manufacturer's profitability enormously.

In this way, a minimum of eight components can be milled and drilled in a single CNC program, while if machined soft jaws are used, many more can be presented to the spindle, resulting in fewer tool changes per component and even more efficient production.



Another Chick product on show, which is a direct replacement for the old-fashioned wind-up vice, is the One-Lok clamping system. Unlike a traditional vice, which requires up to 70 complete revolutions of the operating handle to be fully opened or closed. One-Lok features a 'QwikSlide' mechanism that allows the moveable jaw to be easily unlocked and slid forwards or backwards to within a few turns of full closure, greatly speeding workpiece setups.

Its maximum grip capacity of 17 in (432 mm) is complemented by the manufacturer's 'Boltfast' jaw system, which enables jaws to be replaced quickly and efficiently with a repeatability of 0.02 mm. The system's compact, modular design also features innovative 'squeeze' clamping, which imparts a pull down action and virtually deflection-free clamping with a maximum retaining force of 4.5 tonnes.

On show from Kitagawa will be a representative selection of the Japanese manufacturer's rotary tables. A new model on the stand will be will be the Kitagawa TT150 tilting type rotary table with 150 mm faceplate and MAC mini controller for providing 4th and 5th NC axes on a machining centre.

High clamping torques, extreme rigidity and fast operation are key features of Kitagawa's heavy duty GT series. Available in three models with tables from 200 to 320 mm diameter, the units incorporate a novel piston design that delivers component clamping torques of up to 2,800 Nm.

An extended range of collet chucks from Kitagawa will be exhibited, including standard short and long chucks and quick-change variants. Pull-back types, designated DHP, provide secure and accurate clamping of components and generate a powerful holding action for first-operation work. Other models like the fixed-length DHF range feature a removable bore stop, fixed collet position and high accuracy to ensure precise second-operation machining.

The Kitagawa NV chuck range has been developed to meet the demand for large power chucks in vertical lathes. Produced in eight models for components from 62 to 1,000 mm diameter, NV series units feature a protective jaw cover and scraper system that prevents the ingress of swarf or coolant into the chuck mechanism. They are rated for maximum speeds up to 2,900 rpm and are designed for use with standard range Kitagawa jaws and Y2035R type cylinders.

Kitagawa's QJR08, QJR10 and QJR12 quick change chucks are interchangeable with the company's popular large through-hole B208 / B210 / B212 and BB208 / BB210 / BB212 models. The new units' base jaws, which are rapidly and simply changed using a manually operated wrench, feature metric serrations to accommodate a wide variety of popular jaw types.

The Italian-built Iemca range of shop floor automation equipment will be represented on the stand by two automatic bar magazines for lathes. The KID 80 features outstanding versatility, as it is suitable for fixed- and sliding-headstock single-spindle turning machines, either CNC or cam-type. It can accommodate bar diameters from 5 to 80 mm and lengths up to 1,615 mm and can also handle bar pieces by inserting them into the spindle.

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MACH • Hall 5 • Stand 5120

Star GB exhibits huge range at MACH

Fresh from another fantastic year, the Melbourne, Derbyshire-based solutions provider will be exhibiting a huge range of pioneering CNC machines and associated technology. At this year's event, Star will be showcasing a total of eight machines, with information on their strengths and specialities, along with live demonstrations of their capabilities.

Taking centre stage will be the launch of the Star SV-20R, featuring an advanced dual tooling system in one high performance mill/turn centre. This latest addition to the Star range features both a platen and turret to enable balance turning and milling capability together with an 8-station independent rear tool station that provides maximum overlapping capabilities. Joining it will be the SR-38B, an impressive full 38 mm diameter platen machine that offers balance turning and B-axis capability, together with Guide Bush and Non Guide Bush modes. These will be complemented by several of Star's popular sliding head lathes, including the SR-32JN and ST-38, along with accompanying ancillary equipment to complete the display.

This comprehensive range of machines will amply demonstrate the outstanding results that can be achieved with sliding head technology and provide new users with a great opportunity to enter the world of CNC machining.

In 2014, MACH attracted over 23,000 visitors from a diverse range of sectors and displayed over 6,500 tonnes of live working machinery. With this year's exhibition promising to be even better, Star GB's stand will be the ideal place to witness leading edge technology and sample the company's renowned hospitality.

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MACH • Hall 5 • Stand 5340

Tornos gives UK debut to new machines at MACH

The new Swiss GT 26 B turning centre will make its UK debut on the Tornos stand at MACH 2016. Launched at the EMO exhibition in the autumn, it will be showcased alongside the competitively priced Tornos CT 20 turning centre.

As one of Tornos' best-selling units, the new developments incorporated into the Swiss GT 26 launched at EMO will certainly attract the attention of visitors to MACH. Despite its already impressive flexibility credentials, this machine now boasts a B-axis. With 6 linear axes, two C-axes, three live tooling platens with the facility for 16 driven tools and a total of up to 36 tools, the Swiss GT 26 B-axis provides remarkable flexibility and capability for the end user. Putting all this into an aesthetically pleasing package, visitors to MACH will be impressed by the absolute flexibility of this machine.

The integrated positional B-axis design places the B-axis on two fixation points, which makes it far more rigid and robust than competitor machines with just one fixation point. Tornos engineered the machine in this fashion for customers to maximise the potential of the powerful spindle motors on the driven tool stations. In doing this, customers can experience the utmost in rigidity to enhance material removal rates as well as improve precision, surface finishes and consistency of the final component.

The innovative design of the Swiss GT26 B-axis enables it to accommodate 2 X 4 rotating spindles with a spindle speed of up to 9,000 rpm. Furthermore, the kinematics of the new Swiss GT26 B provide the facility for 2 X 4 fixed front tool stations, ensuring that virtually any angle can be indexed or processed by the NC programs.

Patented by the Swiss manufacturer, this raft of new features that have been integrated into the B-axis to ensure it is the only B-axis machine that can support up to four fixed tool positions. It is also the only B-axis machine tool design with a modular position that can incorporate either a fourth rotating drilling station or a 'true' thread whirling head.

Alongside this hugely popular machine at MACH will be the entry level Tornos CT20. This cost-effective machine is an automatic turning centre with sliding headstock and bar capacity of 20 mm. With five linear axes and C-axis on both the main and counter spindle, this machine offers extreme flexibility at an economic pricing level.

The machine is available with 5 linear axes and is also equipped with two C axes to increase machining capacity. The CT20 can take up to 26 tools, with up to 10 rotating tools as an option, which makes it one of the best-equipped machines in its category.

The new machines from Tornos will be working in conjunction with the company's TISIS software. As the first machine tool builder to embrace Industry 4.0, Tornos will demonstrate its TISIS 2.0 software package. TISIS encompasses programming and machine management software that is designed for all Tornos products and conforms to Industry 4.0. So, whether you're looking for a cost-effective entry level machine or a highly capable and flexible turning centre, Tornos can provide both with industry leading technology in its TISIS software.

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MACH • Hall 5 • Stand 5749

TaeguTec returns after 10 years

MACH 2016 will see Korean cutting tool manufacturer TaeguTec make its much anticipated return to the UK's leading manufacturing exhibition after a 10 year absence. TaeguTec will be returning to MACH as part of its centenary celebrations to introduce its latest innovations that have underpinned the company's meteoric growth over the last few years.

At MACH, TaeguTec will be introducing its extensive milling line that has delivered outstanding results in the industry. Regarded as one of the most extensive milling ranges in the industry, TaeguTec will be introducing indexable end mills, modular tools, face mills and a complete line of solid carbide innovations.

Taking centre stage will be the MillRush series of super high positive insert tools with three cutting edges. The company's best-seller, the MillRush has a completely unique geometry, a thick insert design for robust milling applications and an extremely high positive axial rake angle that reduces cutting forces and improves chip evacuation.

Other milling products on show will include the ChaseMill Power, a range of indexable insert tools for optimising performance on low powered machine tools. With double dovetail geometry on 2PKT inserts, the innovative insert pocket absorbs cutting forces and relieves the insert screw from the cutting load.

For customers frequently conducting ramp and slot milling applications, TaeguTec will introduce the Chase2Mill at MACH. The Chase2Mill is also available in end mill, modular or face mill designation. This compact four corner double sided 4NKT 06 insert has a 90º entry angle that is suitable for high ramp down applications. Also on show will be the Chase Hepta milling line that consists of single-sided positive seven corner inserts that also reduce cutting forces and improve performance.

The introduction of such a diverse range will demonstrate how TaeguTec can optimise productivity and tool life whilst reducing cycle times and costs in everything from micro machining tools through to

heavy industrial product lines and bespoke, application specific solutions.

For further details on how TaeguTec can deliver these benefits and to join the centenary celebrations, visit TaeguTec at MACH.

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MACH • Hall 5 • Stand 5763

Mitsubishi Materials returns to MACH

Mitsubishi Materials is back at MACH and will be presenting an exciting range of new tools and technologies.

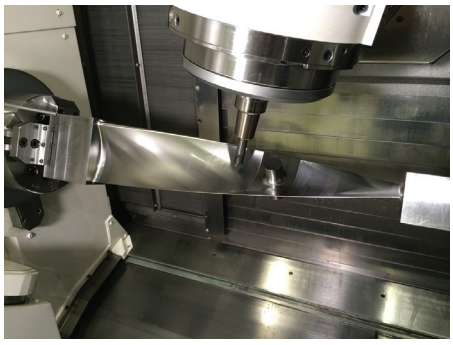
This stand will feature a new interactive way of viewing tools via an augmented reality application. This will be done by using a state-of-the-art app that will display all the interesting features of selected tools, and in addition will provide seamless links to CAD and other downloadable data.

Together with this new app there will be high precision tools exhibited, focusing on the major industrial sectors and demonstrating the latest advancements of Mitsubishi Materials technology. On the stand will be the latest turning products and to ensure there will be some point of interest for all visitors, there will also be advanced precision milling and drilling solutions for the automotive, aerospace and general machining industries.

The very latest milling tools will be shown in the form of the newest additions to the innovative iMX range. iMX was the world's first screw in type end mill series to feature a carbide head and carbide holder. This all-carbide joint enables security and rigidity close to that of a solid type end mill. There are now 13 different geometries available that include a brand new taper-flute, corner-radius type suitable for turbine blade machining.

To offer enhanced performance in turning, across a diverse spectrum of material and application ranges, Mitsubishi has a wide range of insert grades for cast iron, general steel, stainless steel and heat resistant alloy applications.

With such a diverse line-up of grades and geometries, Mitsubishi developed its Easy Chipbreaker Selection Table. Available online and in all new product portfolios, the Easy Breaker table identifies the correct grade for the customer by highlighting the ISO designation for each material. To ensure the customer then selects the correct chipbreaker for their specific application, the table identifies the process by cross referencing with Light Cutting, Medium Cutting and Rough Cutting for each ISO material. For example, Cast Iron grades (ISO K) and their respective chipbreakers are



labelled as LK, light cutting for cast iron, MK for medium cutting and RK for rough machining. This simple selection process is a failsafe procedure that ensures the customer selects the correct grade and chipbreaker for the specified task.

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MACH • Hall 5 • Stand 5373

Hainbuch to introduce a host of new technologies at MACH

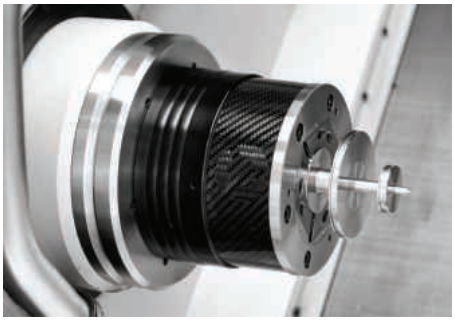
Hainbuch will be introducing a plethora of new products from its vast array of workholding and automation solutions at MACH. Whatever the workholding need, whether its the clamping of stationary or rotating parts or even automation solutions, Hainbuch will be highlighting its latest innovations at the show.

From its diverse selection of workholding solutions for rotating components, Hainbuch will be drawing attention to the impressive new MAXXOS mandrel system. Developed for machining in the most challenging of environments and applications, the MAXXOS incorporates Hainbuch's innovative hexagonal clamping geometry that can significantly improve clamping forces and improve sensitivity to contamination.

Hainbuch's existing customers may already be familiar with the technology that currently exists on the company's TOPlus range of chucks. However, by transferring this technology to its mandrel line, Hainbuch can boast clamping force increases beyond 30 percent when compared to existing systems.

Hainbuch's decision to now also integrate this hexagonal geometry for the mandrels was only logical, since this criteria is as important for I.D. clamping as it is for O.D. clamping. Thanks to the hexagonal geometry, now an unattained clamping force and rigidity is reached with optimum precision also for I.D. clamping. This mandrel system is available for demanding workholding applications in diameters from 10 mm to over 150 mm.

The Hainbuch SPANNTOP Nova workholding system now provides three different chuck options: the combi pull-back with end stop facility, the combi



dead-length with end stop and the modular chuck pull back version for bar work only. All equipped with different features, this exciting range has been developed to meet all your clamping requirements.

Resistant against contamination from coolant, swarf and dust, the clamping head of the SPANNTOP Nova has a vulcanised seals that protect the system from any ingress from the work area. This vulcanised clamping head on the SPANNTOP Nova also minimises vibration to improve precision, surface finishes and the consequent tool life for the end user.

The rigid clamping of large workpieces in the chuck is no problem for the SPANNTOP Nova. Customers can just fit the jaw module and clamp parts up to 215 mm diameter. Internal clamping is just as easy. By rapidly changing over to the mandrel system that fits directly into the Nova chuck, this tiresome process is significantly reduced. By utilising Hainbuch's CentroteX positioning technology, no radial adjustment is necessary. This enables the customer to retain precision and clamping forces whilst drastically reducing changeover times. Changeover time is further reduced with just three screws holding the base end-stop. This innovative feature allows customers to change from bar work to billet work in just over a minute!

To increase the clamping power placed upon turned parts, Hainbuch will also show its impressive TOPlus range of chucks. For customers that may already be using high-end solutions such as the Hainbuch SPANNTOP range, the new TOPlus provides 25 percent more holding power.

The R&D department at Hainbuch has developed a novel new innovation that permits 25 percent higher clamping forces whilst utilising the same clamping cylinder that is used to actuate the market leading SPANNTOP range of chucks. The TOPlus incorporates a pyramid arrangement of glide surfaces to make this possible. The clamping head rests with full-surface contact in the TOPlus chuck body. This even applies with large workpiece tolerances.

Taking innovation to the next level, Hainbuch will also be alerting MACH visitors to the arrival of its new carbon fibre product range. To retain a slender and lightweight design and avoid unnecessary wall thickness and masses, Hainbuch has integrated carbon fibre into its product ranges and monitored performance under working conditions to ensure whether a clamping device is ideally loaded and balanced.

Hainbuch now relies on carbon fibre reinforced plastic (CFRP) as the basis for its new light weight generation of clamping devices. This manufacturing process sees CFRP embedded in a plastic matrix in multiple layers. The result is a high-strength composite material in which strength and rigidity in the fibre direction is much greater than it is transverse to the fibres. Hainbuch's next generation of lightweight clamping devices have a static radial clamping force of up to 170 kN.

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MACH • Hall 5 • Stand 5219

World-class CNC programmer and operator training at MACH

The CNC Training Academy will offer visitors to MACH a full and varied programme of learning activities and training opportunities.

It will promote and demonstrate the productivity and performance benefits manufacturers can expect to achieve when investing in proven and professionally-delivered CNC Programmer & Operator training.

Focusing on CNC Programmer & Operator Training for Fanuc turning and milling, Heidenhain 3- , 4- and 5-axis and Siemens milling, the Academy will also offer visitors introductory practical sessions on conversational CNC programming software systems, for example Manual Guide i and ShopMill.

The intention behind the Academy's attendance at MACH is to demonstrate, via interactive and one-on-one sessions, how manufacturers can get more from their CNC machine tools, and how investing in training can boost individual company's productivity and competitiveness.

By covering the full range of its training provision at MACH visitors will be able to see that the Academy provides clear and recognised training progression from CNC operator/setter through to CNC programmer for customers.

As well as its stand at the show, the CNC Training Academy is also one of a few select companies hosting a MACH Seminar during the week of the exhibition.

On Tuesday 12th April from 10.00 am to 11.00 am in Hall 4, CNC Training Academy manager, Jeff Hart will be presenting his views and commenting on skills shortages in the UK manufacturing sector and the ways that CNC training and re-training can help companies maintain their competitive edge.

Commenting on why visitors should take time to visit the CNC Training Academy at MACH, Jeff Hart says: "We have a number of wirelessly-linked workstations on our stand where visitors can see, understand and appreciate the productivity potential of our CNC Programmer & Operator Training courses, and our advanced, specialist courses too.

"Our attendance at MACH means we are providing companies and individuals with the opportunity to meet directly with our training consultants to discuss their own specific training requirements and to identify how our standard and/or specialist courses can address and meet their short and long term training needs.

"Irrespective of whether you're a relative novice or a seasoned pro, why not visit our stand where, in a supportive and informal environment, you can find out more about the different training opportunities available," he concludes.

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CNC machining at its best

New 3-axis Overhead Gantry
isel UK's latest edition to its CNC range of machines with servo motor drive offers excellent performance, easy operation and saves space too.

This impressive machine boasts: compact floor standing design for efficient use of space; unique configuration of linear axis units mounted above work area; large machining area clear of moving axis motion; collection chip tray; 4- and 5-axis options.

This CNC machine epitomises the standard of engineering and practical attention to detail that people expect from leading manufacturer, isel. It is a 'ready to use' machine, ideal for a variety of automated applications. All components are manufactured by Isel, ensuring complete compatibility and efficiency.

With CNC machines and CNC routers from isel UK quality is guaranteed.

This new Overhead Gantry machine gives you distinct advantages of minimal maintenance and optimum efficiency. This machine is available as a compact unit in three standard sizes with processing areas of: X = 710 mm / 1210 mm; Y = 610 mm / 910 mm / 1410 mm; Z = 310 / 590 mm.

It uses recirculating preloaded ballscrew drives to ensure zero play during operation, giving you pinpoint precision and repeatability. In particular, this CNC machine is ideal for the machining of light metals, plastics, wood, foam, Plexiglas and resin design boards.

As you'd expect with an isel machine, the servo motors, mechanics, electronic and controller are perfectly harmonised giving great performance and excellent results.

An extra advantage of this machine is the low vibration and quietness involved.

From CNC machines and routers to aluminium profiles and linear motion products, isel UK offers you the perfect blend of German Engineering and British innovation.

isel has a global reputation for designing, developing and supporting quality components and systems with the entire range manufactured in Germany.

isel UK offers local support for customers based in the UK and Ireland. Customers

enjoy a consistent point of contact in the UK and can work with someone who knows the products thoroughly, understands your application requirements, offers creative thinking and is both knowledgeable and approachable.

isel UK will be showing the Overhead Gantry CNC machine at the MACH 2016. Alternatively, contact:

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MACH • Hall 4 • Stand 4375

Additive manufacturing wired for success

Innovate 2 Make is a leading proponent of the very latest additive manufacturing technology using direct metal laser sintering. However, the technology relies heavily on toolroom skills and knowledge supplied by James Camden Engineering, a Warwickshire-based tool and mould making specialist that has invested in three Excetek wire EDM machines, supplied by Warwick Machine Tools, to meet its business demands.

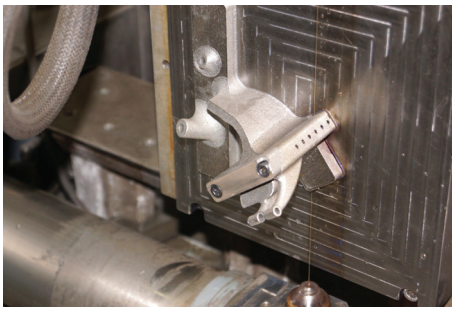
Innovate 2 Make (i2M) was initially set up in 2011 in Warwick, but moved to its current Birmingham facility in 2012 and established a focused additive manufacturing (AM) based facility that is the pinnacle of modern engineering in the area. As AM offered a new approach to manufacturing complex structures in a wide range of materials, such as aluminium, titanium, Inconel, stainless steel and so on, the company recognised the need to provide open access to this exciting new technology and has already helped a number of major manufacturing companies to adopt the technology into their production processes.

The AM process works directly from the Computer Aided Design model (3D CAD). It orientates the components and slices the CAD data into layers that are then drawn in the build chamber, in i2M's case using a Ytterbium (Yb) fibre laser fired on to a powder bed containing fine metallic 'powder' particles. Each layer is 'grown' together to produce the final metallic component.

One of the significant advantages that many supporters of the AM process highlight is its ability to start producing parts without tooling. While i2M call it tool-less production, Mike Kelly says this is not strictly true: "People see it as casting; I like to think of it as elegant welding. As the parts are grown they will often require some form of support structure that can be grown at the same time as the component. While we can vary the density of the supporting elements, such that they can be removed by hand and peeled away from the finished component, sometimes the support is more intricate, requiring specialist knowledge and equipment."

This is where James Camden Engineering comes in. Possessing both the precision engineering knowledge and the specialist equipment, in the form of three Excetek CNC wire EDM machine tools, the company works hand-in-glove with i2M to remove all of the supporting structures, protective shells and excess material, such as base plates, from the parts.

Dave Bloxham, managing director of James Camden Engineering, says: "The AM process allows design engineers to push the boundaries in industries looking for performance and also cost advantages. They can create components to fit exactly within very confined spaces, reducing weight without compromising performance.



Complex components such as these will always require an element of post AM work, and the skilled toolmakers at James Camden work with i2M to finish parts to the customers' specification. Most of this is achieved by CNC wire EDM machines from Excetek. Housed in the company's 4,000 ft^2 facility the three wire machines are surrounded by traditional and CNC machine tools, and a staff of 8 with a wealth of good, old fashion, British machining skills.

To meet the requirements of i2M the company initially purchased a V350G Excetek machine from WMT. An entry level machine that is not short of capacity the V350G provides comparative performance levels to Swiss and Japanese wire EDM machines, but with cost saving of between £20,000 and £25,000 against any equivalent size machine tool. Fitted with a 600 litre tank, it is capable of accommodating workpieces up to 700 x 500 x 215 mm and weighing up to 450 kg. This fully specified wire machine has U and V axis travels of 80 mm and +/- 30o taper capability and an accuracy of 3 micron over 100 mm. capacity and spec.

The fact that the tooling is created with the parts can save significant time for customers. Mike Kelly concludes: "Between the AM process and the skills provided by Dave and his staff we can effectively offer the complexity of handcrafted parts, but with the production integrity of mass produced items. I know I can rely on him, just as he relies on WMT for his wire EDM machines."

Warwick Machine Tools
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2020 VISION

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20/20 vision

GF Machining Solutions is urging manufacturers to see and future-proof their manufacturing productivity and performance with its advanced technologies on show at MACH 2016.

The EDM, milling and laser ablation machine tools specialist and automation systems solutions provider is showcasing a range of its best-in-class technologies on its stand. There are four machine tools being exhibited.

CUT E 600 wire EDM machine

This new, recently launched large-capacity wire EDM machine combines advanced and proven EDM technologies with GF Machining Solutions' unrivalled EDM experience and expertise to deliver a wire machine that helps customers improve their performance and productivity, makes their EDM processes more reliable, and reduces lead times.

The CUT E 600, the recently-launched large-capacity wire EDM machine

The machine features the proven and popular IPG digital generator, integrated collision protection (ICP) on X-, Y- and Z-axes, and the intuitive AC CUT HMI control.

CUT 200mS wire EDM machine

This best-selling and ever popular wire EDM machine is fast, accurate and features the AC CUT HMI control; An active thermo-stabilisation system and glass scales on all axes for increased precision; Integrated collision protection and a range of SMART technology software to increase the machine's already high-performance and process reliability.

FORM 200 with integrated WPT1 robot

Demonstrating the productivity gains that can be achieved from automating the die-sinking process, a high performance AgieCharmilles FORM 200 spark erosion machine with its fast and responsive digital generator, IQ Technology for zero electrode wear, and flexible electrode changer will be integrated with a WPT1 compact, plug and play robot workpiece loader.

The AgieCharmilles FORM 200 spark erosion machine will be integrated with a WPT1 compact, plug and play robot work-piece loader

GF Mikron MILL S 400U

The MILL S 400U is a high-speed 5-axis machine equipped with a 13.5 kW/42,000 rpm HSK-E40 spindle, and a (n x 360; +/-110) rotary tilting table. The machine has 61 m/min rapids on X-, Y- and Z-axes, and features a generous-sized ATC (up to 308 position), and an integrated APC (automatic pallet changer) with up to 20 pallets.

The new MILL S 400U is a high-speed 5-axis machine

Managing director Martin Spencer says: ''Manufacturers looking for the latest advanced machine tool technologies will be more than impressed with the machine tools we're exhibiting on our stand. The focus at MACH is very much on the future, and visitors to our stand will be able to see clearly technologies that will be as relevant and necessary in 2020 as they are in 2016.

Martin Spencer concludes: "It's a case of being able to see tomorrow's technologies today."

GF Machining Solutions is a leading provider of machines, automation solutions and services to the tool and mold making industry and to manufacturers of precision components. Products range from electric discharge machines and high-speed and high-performance milling machines, including clamping and palletisation systems, to 3D Laser surface texturing machines, services, spare and expendable parts, consumables, and automation solutions.

Based in Switzerland and maintaining a presence on 50 sites worldwide, GF Machining Solutions is a globally active group and source of strength to its customers.

Customers are at the centre of the company's vision, values and strategy. Their needs guide daily business, from research and development and production to application expertise, quality process management and delivery of valuable services along the lifetime of GF Machining Solutions milling, EDM and laser products.

The company has production centres in Switzerland and China, sales companies worldwide, application centres offering training and product demonstrations on the latest technology trends and developments, centres of competence offering dedicated solutions for specific industrial segments, and TechPoints providing fast test cuts, wear parts and consumables and quick support.

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Toolroom addition quadruples capacity

voestalpine Metsec Plc, the UK's largest specialist cold roll-forming company, has acquired a new Sodick SL600G CNC wire erosion machine from Sodi-Tech EDM to serve in its busy toolroom. The business case for the machine, which replaced a 15 year old wire EDM supplied by another manufacturer, could be justified simply on the ability to use lower cost wire and consumables. However, in addition, the arrival of the Sodick machine with its linear motor drive technology, is allowing the company to cut workpieces some four times faster, thus quadrupling capacity.

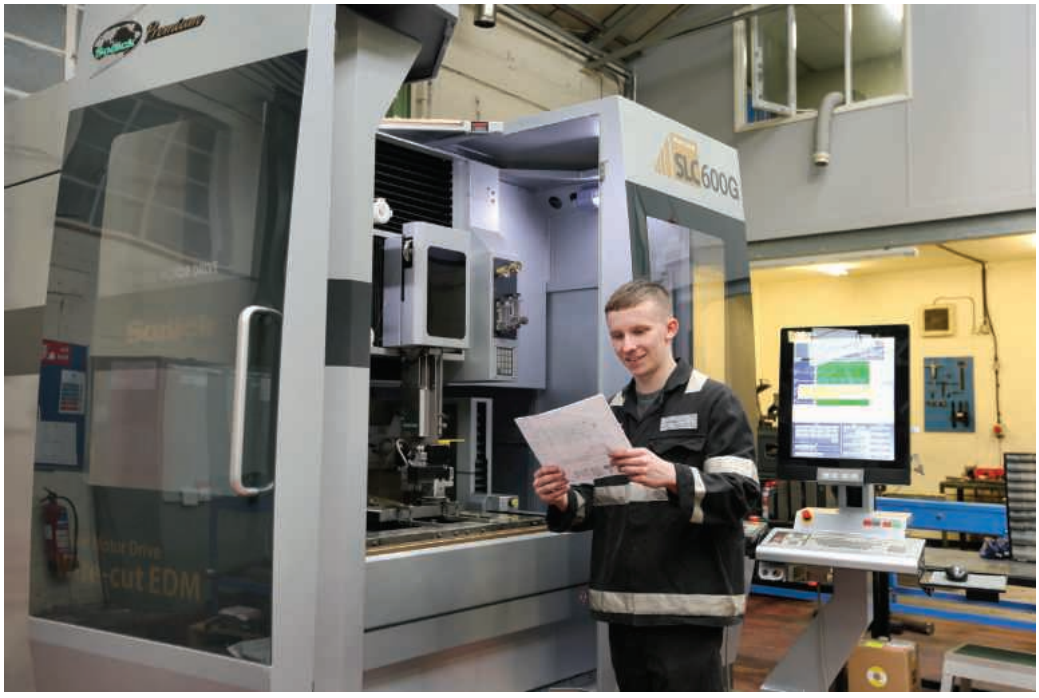
As a specialist in the provision of cold roll-formed products to industries that include construction, yellow goods, sustainable energy, storage, transportation, office furniture and marine, Metsec, which has been part of the Austrian-head-quartered voestalpine group of companies since 1998, can today boast around 380 employees who help to generate annual turnover of around £85 million. The company, which was recently named 'Best Business of the Year' at the 2015 'Business is Good for the Black Country Awards' hosted by the Black Country Chamber of Commerce, is accredited to ISO9001, ISO14001 and OHSAS18001.

voestalpine Metsec's UK production site at Oldbury is supported by a busy toolroom within the company's Central Service Division. The Central Service Division is tasked with ensuring that the cold roll-forming machinery and equipment remains operational at all times, a vitally important function that helps voestalpine Mestec meet demanding customer delivery schedules.

Peter Richards, technical manager of Central Services says: "We acquired our first wire EDM for the toolroom around 15 years ago, however, late last year we reviewed how much the spare parts, repairs and downtime was costing us. Together with the fact that the machine required the use of expensive wire, and that we could only achieve relatively slow cutting speeds, we decided to put in a capital expenditure request for a replacement machine. Just based on the fact that a new EDM would allow us to use far cheaper wire, we were able to justify the investment."

Peter Richards and his team looked at four or five potential suppliers, discovering that the Sodick SL600G from Sodi-Tech EDM not only offered the best price of the machines scrutinised, but the best performance too.

Peter Richards says: "Firstly, because the machine can run using conventional, lower cost brass wire, the cost of consumables has fallen 50-60 percent. Furthermore, the Sodick linear drives means we can run up to four times faster than previously, thus quadrupling our capacity. The machine also has a larger bed than our previous model, which allows us to load multiple jobs simultaneously for unmanned running at the weekends. 20 kg wire spools can be accommodated to ensure extended periods of lights-out operations."



Installed at the end of July 2015, the machine at voestalpine Mestec runs almost constantly, producing tooling such as press tools, die sets, cut-off tools, blades and many more types of general consumables, typically from D2 tool steel. Although the tools are complex and call for tight tolerances and high surface finish, the requirements are well within the capability of the Sodick SL600G.

Peter Richards says: "We're extremely pleased with the performance of the machine. Jobs that would previously require 2-3 days of cutting time can now be completed within a day. This has created a lot more capacity and allowed us to recall many jobs that were previously subcontracted, saving yet more costs."

Three different operators are trained to use the Sodick SL600G at voestalpine Mestec, along with two design engineers. Training is vital to this progressive manufacturing business, which runs an award-winning internal apprenticeship scheme.

Peter Richards concludes: "When we were exploring the options for a new machine, a lot of suppliers wanted to charge extra depending on how many people we wanted to train, but Sodi-Tech EDM offered to train as many people as we needed, which has been a huge help. It basically ensures we can maximise the potential advantages of this advanced machine."

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New EDM & HSM lines at MACH

At MACH 2014, CNC International made its MACH debut. This exhibition saw the UK show debut of the Accutex line of wire cut EDM machines, something that proved a resounding success. Generating considerable sales at the last event, CNC International will give a UK show debut to the Accutex AL600 CNC wire EDM at MACH 2016 to emulate the results of the previous show. This impressive Accutex machine will appear along the industry leading Exeron range of high speed machining centres and spark erosion technology.

Since their UK introduction at MACH 2014, it is no surprise the Accutex Series of wire cut EDM machines has proven such a hit. With a linear shaft motor drive and a closed loop control to eradicate backlash, the machines deliver a high level of repeatability with low friction and exemplary efficiency and precision levels. At MACH 2016, the new AL Series that has five machines in the range from the smallest AL400SA to the largest AL750, will be represented at the show by the AL600. The smallest machine can accommodate workpieces up to 790 by 610 by 215 mm (LxWxH) whilst the large AL750 can accept workpieces up to 1190 by 720 by 295 mm (LxWxH).

The AL600SA to be shown at MACH has a maximum workpiece weight of 550 kg, an X, Y and Z stroke of 600 mm by 400 mm by 300 mm and a UV stroke of 100 by 100 mm. The AL600 has a maximum water level in the tank of 300 mm and a water system capacity of 900 liters. Build quality and rigidity is assured by the 3,700 kg machine weight that is packed into the compact 2480 mm by 2980 mm by 2210 mm footprint.

The AL600SA incorporates a rapid servo response unit that can enhance the sensitivity of the discharge gap control to improve production times by upwards of 10 percent. Furthermore, this rapid servo response unit prevents the wire from breaking to reduce downtime whilst also increasing the processing speed. In addition, the Accutex AL600 Series to be shown at the exhibition has a high resolution signal processor that delivers a smoother velocity control than alternate machines. The result is improved stability of positional control to guarantee unrivalled contouring accuracy with a resolution narrowed down to 0.2 microns.

Working in conjunction with this is the Accutex Corner Pro system that optimises data such as wire thickness, cutting data, angle and workpiece thickness. This feature automatically controls the machine parameters to achieve the best possible cutting performance. What this means, is that small and continuous corners can be processed with astounding precision. This corner precision is matched by Accutex passion for perfection that now sees the AL Series introduce its new Lead-In and Lead-out technology. This innovation reduces the commonly occurring wire-mark at the lead-in process.

Adding to all this, CNC International can supply the Accutex line with a host of optional extras that include auto wire threading, anti-collision on Z-axis, safety door interlock, transformer, remote master, auto voltage stabiliser, alarm messenger, pilot lamp, 45 kg jumbo wire feeder and high pressure water jet threading. The Accutex line will be accompanied at MACH by the high-end line of Exeron HSM machining centres and spark erosion machines.

Founded as an EDM Service centre in 1982, CNC International has grown into one of the UK's leading independent suppliers of new and used wire, die sink, drilling EDM machines and high speed machining centres, while maintaining its original facility of service and support and the sales of refurbished EDM equipment.

CNC International acts as sole UK and Ireland agents for several leaders in the EDM and high speed machining sector (NewMachines). Sales of new and used equipment are backed up by CNC International's team of highly skilled and experienced team of service engineers, with every machine carrying an extensive warranty for customer peace of mind.

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MACH • Hall 5 • Stand 5250

Taking centre stage with new machines

HK Technologies will be taking centre stage at MACH with its new line of Mitsubishi EDM machines.

The impressive line of MV Series EDM machines from Mitsubishi will showcase the next generation of innovation. Yet to be confirmed, the two machines making their MACH debuts will be demonstrated with the latest technological advancements.

Incorporating the latest innovations in machine construction and power supply technology, the Mitsubishi MV Series introduces an impressive annealing length that makes this range of machines capable of threading the maximum workpiece height and also providing a realistic opportunity for the customer to thread through the gap as well as dry, not waterjet, for smaller workpieces. This new feature is ideal for end users that may need to recover broken wire.

From an operational cost perspective, the new MV Series introduces Mitsubishi's new V350-V AEII Power Supply DMX-S (Digital Matrix Sensor) that shapes each spark to reduce electrode wear considerably. This feature reduces consumable costs for the end user whilst reducing the power consumption and subsequent running costs of the machine.

The MV Series also features the M700 Series control unit that has a particularly large 15-inch touch-screen monitor. This Windows based control is both intuitive and user friendly and with the 15-inch screen, it improves operation for the end user. From a productivity standpoint, the MV series introduces the world's first linear shaft drive system XY which delivers smooth, highly controllable movements and unparalleled precision levels. Supported with a 12 year positional manufactures warranty, the MV Series delivers unbeatable speed, precision and running cost reductions.

All this technology is built upon a fine grain 'Dianite' casting material that guarantees the 'one-piece' hardened 4-sided stainless work table is mounted on the most robust and precise high quality base that is available. Furthermore, the MV range has a vertical machine tank door for improved setup and operation. All this is provided to end users in the UK with uncompromising levels of support and service from HK Technologies.

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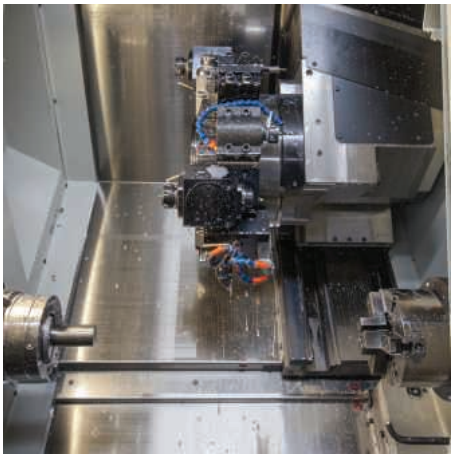
Build quality wins the day



Focussing on the core competencies of turning milling and light assembly KW Engineering (Poole) has built a highly successful subcontract business allied to the aerospace sector, gaining several accreditations along the way including, AS9100, Airbus and other approvals from leading aerospace companies. While that focus remains on aerospace, the group also has more down to earth ambitions, to produce the best fishing reels on the market under its Kingpin Reels brand.

At the heart of KW Engineering's success is its willingness to invest in both capital equipment and systems, which has allowed it to create an all-round service for its customers to include pre-production product development to enhance design for manufacture, which will shortly include a 3D printing service. However, metalcutting remains key to delivering parts on time and to the exacting quality demanded by aerospace. Over the years Keith Ward, KW Engineering's managing director, has built up strong loyalties with machine suppliers, which is immediately evident by the colour schemes as you walk around the machining areas. That said, when the work demands it he is willing to consider alternatives, which was the case when he ordered a CMZ TA20YS-640 turning centre through independent machine tool specialist Ray Vockins, who works on behalf of CMZ in the south of England.

Keith Ward says: "Myself and Ray had spoken many times about the CMZ range but at that time we were 100 percent with another manufacturer for our turning centres, so I kept turning him away" That was until we won a three-year contract for one specific component manufactured from stainless steel. We recognised that we would need a more substantial, rigid, machine with both a Y-axis and sub-spindle capability and the CMZ met that brief perfectly.

"Before placing the order for the CMZ TA20YS-640, he visited CMZ's manufacturing facility in Spain with Ray and that trip convinced him that the decision he was making was the correct one. "I was very impressed with how CMZ built their machines and it helped to convince me that CMZ offered something different. Key to this was the use of traditional box slideways on all axes that help with the rigidity that we needed and the additional benefit that it helped improve tool life."

The CMZ TA20YS-640 installed at KW Engineering features a main spindle with up to 22 kW and 366 Nm of torque available, the standard 640 mm bed length can be extended with options of 400 mm and 1100 mm, and each position of the 12-station turret is capable of holding live tooling, driven by the in-built 12.000 revs/min, 75 Nm/11 kW motor.

The initial contract that justified the purchase of the CMZ machine may well be extended by the customer and with that taking approximately 60 percent of the available machine capacity, it is being kept busy with other work, including parts for the Kingpin Reels. The reel manufacturing business came about after Keith Ward purchased the rights to the range when the original business ceased trading.

Keith Ward says: "I saw it as a great opportunity to keep a British brand alive. We have developed the range now and we are seeing significant business growth, particularly in export markets like the USA, which completely buys into the Made in Britain element of the product, which is backed up by the quality of the design and manufacture''

Ray Vockins concludes: "KW Engineering is a great example of a successful UK subcontract company and its loyalty to one particular machine tool brand is not uncommon, but with the CMZ range we are winning over lots of business based on the quality of manufacture of the CMZ lathes and also the versatility of the range, which can include straightforward stand-alone two axis turning centres, through to twin turret, twin spindle gantry loaded cells. All of which are based on solid machine tool construction principles that provide a good base from which to produce high quality components,"

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MACH • Hall 5 • Stand 5230

Industry confirms standards for the protection against machine tool fires

The German machine tool industry, in association with engineering companies, universities and suppliers, has created an industry standard information document entitled "Machine Tool Fire and Explosion – Prevention and Protection." This is available from the leading UK supplier of machine tool fire extinguishing systems; Kraft & Bauer UK.

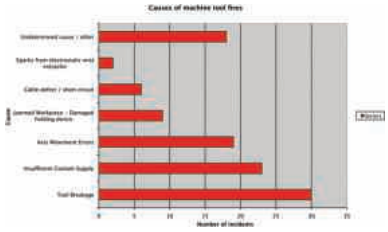
Participants included Index, Traub, Deckel Maho, Daimler, Fuchs, Kraft & Bauer and the Association of German machine tool manufacturers plus various government bodies, with the aim of understanding the main causes of machine fires, what happens during a fire, and to formulate the best practice for dealing with them.

The report notes that low-viscosity flammable metalworking fluids (neat oils) rather than soluble ones are increasingly being used to achieve more efficient and economic machining on grinding, milling, turning and EDM machines. The annual usage in Germany alone of oil in machine tools is now in excess of 40,000 tons per year. This trend brings the topic of fire and explosion protection and protection for machines to the fore. Depending on the type of machining, reactions of the oil/air mixture may occur in the interior of the machine tool, which if violent and followed by a fire, can be the cause of accidents with severe fire damage. Besides injuries to persons, the consequences to engineering companies can be high due to losses because of production stoppages right through to insolvency. Many engineering companies think that insurance is sufficient, but don't take into account that it may take many months before factories and machines can be replaced. Their customers might well not be prepared to wait and would instead go and find alternative suppliers whilst they were still trying to recover from a fire incident.

Starting from a legal basis, the aim is to protect workers as comprehensively as possible against fire and explosion hazards during the use of machines. Machine manufacturers and also users of machines have key obligations. When using flammable metalworking fluids, the employer has the duty to determine with a risk assessment if a hazard caused by fire or explosions on machines is possible. It is respected that if any machine uses oil, and/or has a capacity to generate a spark, or is machining a potentially combustible material such as titanium or magnesium alloys, then it represents a major fire risk.

The machine manufacturer should take this information into account when analyzing fire risks and consider the subsequent specification of equipment to protect the machine; usually by means of fitting an automatic fire extinguishing system and explosion flap devices. The end user has responsibilities to ensure that the fire protection systems are serviced, at least annually, by a responsible validated service technician; usually the fire extinguisher makers own engineers.

So what are the causes of machine tool fires? Within the framework of a study carried out on 150 machine tool fires, these were investigated and the causes for these fires are shown in the following chart:



Most incidents were connected with the generation of incandescent chips, high-energy sparks or hot surfaces, which act as ignition sources. Root causes included broken or worn milling cutters, drills, turning inserts and grinding wheels. As a consequence of technical developments concerning machine tool feeds and speeds together with the trend towards low-viscosity metalworking fluids used at very high pressures, then the fire risk has increased dramatically in recent years.

In the immediate vicinity of the machining zone a reactive mixture of metalworking fluids and air is formed, which may be ignited by these ignition sources. The resulting fire propagates very quickly through the whole interior of the machine tool. The pressure increase accompanying ignition is also very important in the case of an explosion inside an enclosed machine. Due to the pressure increase inside the machine, flame ejections may occur through gaps, may force open enclosure doors, and exit via loading and chip removal openings if no relevant provisions are taken.

In case the machine's encapsulation is insufficiently pressure-resistant, a potential injury hazard exists to persons if housing parts blow-off or flames eject when the air mixture is ignited. In such cases, a pressure relief device should be fitted for such pressure peaks with flames and hot combustion gases resulting from the ignition being directed to safe areas (upwards and away from where operators may be present).

As machine enclosures often only have low pressure resistances (<< 100 mbar), the response pressure of relief devices fitted to machine tools should be less than 5 mbar.

The pressure flap safety devices only opens briefly and shuts back closed. This should prevent the rekindling of flames by the introduction of air as well as avoiding flame propagation. A typical safety flap designed to shut off access for flames and explosions through mist extraction ducts is shown.

For the protection of machine tools, automatic fire extinguishing systems with gaseous extinguishing agents, either carbon dioxide or in case of machining titanium or magnesium Argon Gas, from Kraft & Bauer who have pioneered designs specifically for use on machine tools, are generally used.

Mist Extraction Safety Flap Device

The aim is the fast and safe extinguishing of any burning metalworking fluids (oil fires). The generally accepted requirement is that a fully automatic fire system must be used and the system must be fully integrated within the machine tool itself and having hand-held or externally used systems is not acceptable.

Control system for automatic fire system in conjunction with mist extraction protection

An automatic extinguishing system for machine tools consists of, amongst others, the following major components:

- Fire detection sensors placed within the machine and other places where fire hazards exist, e.g. extraction system, chip conveyors. Kraft & Bauer UK uses both IR (Infra Red) and UV (Ultra Violet) flame/heat detectors that can react in under a second. These ensure that a fire is detected as early as possible and that the fire extinguishing system is activated without delay and these fire detection sensors are a key criterion for fire protection. They must guarantee the safe detection of fires in a fast and reliable way and activate the extinguishing process via the control system.
- Fire alarm control device (for fire detection, alarming, monitoring and control of the extinguishing system) and if applicable automatic machine shut-down and shut-off or closing of any mist extraction system.
- Manual activation (at the operators control panel or in the near vicinity of the machine).

Emergency manual release switch on a Mazak machine

- Extinguishing agent cylinder (including a loss monitoring device such as an automatic bottle weighing system) with distributor pipes to the interior of the machine.
- Extinguishing nozzles (appropriate arrangement inside the machine) in order to uniformly distribute the extinguishing agent over the entire machining area.
- Alarm warning devices, both optical and acoustic (acoustic alarms must be at least 5 dB louder than the background noise and K&B UK offers 115 dB alarms).
- If applicable, a door interlocking option for the extinguishing system, a time switch and a pressure relief device. Options such as devices that constantly monitor a bottles weight (in the case of CO_2) or a bottles pressure (in the case of Argon) should be considered as these prevent machine tools from being used with empty bottles.

Example of a bottle weighing system

Optical sensors must be kept clean and can be done by constant air purging. System malfunctions should also be monitored and fire detection equipment must correspond to the latest standards (e.g. DIN EN 12 094-9). Kraft & Bauer UK looks at each individual machining application and then specifies a specific solution for each type of machine tool.

Typical optical sensor with nozzle for fire suppressant gas being released

Mandatory annual maintenance checks must be carried out to repair and faults and to ensure safe operation and these checks are also required by insurance companies. Machine tools must be tested for fire safety prior to initial commissioning and then recurrently thereafter in accordance with the supplier's maintenance specifications (at least annually) and after any maintenance work which may affect safety. For the testing of working equipment the qualification of the person to be appointed to carry out the test must be validated, with certification from the fire system manufacture available, and the service company must record the test results. The records of the tests should ideally be stored over the whole operational lifetime of the extinguishing system but for at least four years.

Kraft & Bauer warns UK engineering companies that they come across many non-functioning fire protection systems that have not been serviced for years putting lives and companies at risk and that most machine tool fire extinguishing systems have time critical parts that must be swapped out such as batteries and old style pyro-technical valve detonators (no longer used by K&B) every three years. Kraft & Bauer UK offers a full installation, service and retrofit facility for fire extinguishing systems to fit any make or model of machine and also provides end users with a same-day/next-day cylinder refill facility.

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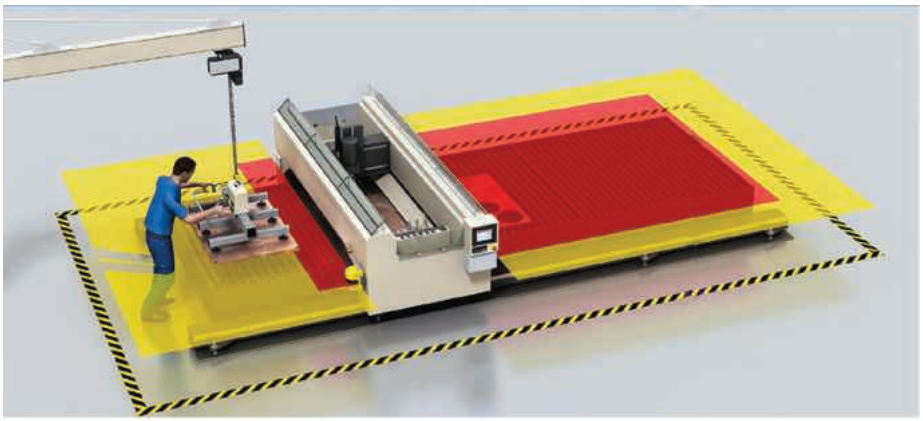
SICK makes the safe factory more productive



Visitors to MACH 2016 are promised a glimpse of the future of industrial safety as global market leader SICK continues its roll-out of next-generation safety products at the leading UK event.

On its stand safety and manufacturing specialists from SICK will demonstrate the new DFS60S Pro safety encoder, microScan3 safety laser scanner and deTec4 Prime safety light curtain, all designed to increase uptime and efficiency in automated production and warehousing environments through more dynamic safety.

"Dynamic safety is an enabler of improved productivity in the Industry 4.0 Smart Factory," explains Dr Martin Kidman, safety specialist from SICK UK. "We'll be introducing technologies developed to meet the needs of a more connected and fast-moving production environment.

"Instead of cumbersome fenced-off areas that exclude personnel and introduce long downtimes when access is required, SICK is developing its industrial safety products to enable better human-machine collaboration through safe motion control and uninterrupted production with flowing protective fields."

SICK will be showing its DFS60S Pro incremental safety encoder, enabling motion to be safely monitored in Automated Guided Vehicles (AGV's) or in machinery requiring frequent operator interaction. The DFS60S Pro enables safe operator interaction at reduced speeds without the need to stop the machine.

Especially when teamed with the Flexi Soft FX3-MOC Drive Monitor, the DFS60S Pro permits safe working without loss of productivity during routine operations such as piece part loading, magazine replacement, adjustment on machining centres or splicing of material on reel-fed machinery. Using a single DFS60S Pro, the rotating shaft speed can be monitored as part of a safety function with a required performance level of PLd / SIL2. If using two encoders, PLe / SIL3 can be achieved.

With the microScan3, SICK is launching a new generation of safety laser scanners at MACH 2016. SICK has revised and optimised every detail of its laser scanner technology to set a new benchmark for individual safety and workflow efficiency.

With its patented safeHDDMTM scanning technology, the microScan3 has a compact and rugged design with a large 5.5 m protective field and a scanning angle of 275°. The microScan3 is designed for long life, after which rapid device changeover is ensured through its Smart connectivity, configuration memory and easy commissioning with SICK's new Safety Designer software.

The versatile deTec4 Prime Safety Light Curtain, also to be launched at MACH 2016, adds extra functionality and flexibility to complement the highly successful deTec4 Core. The deTec4 Prime offers a scanning range up to 21 m and is available in both finger (14 mm) and hand protection (30 mm), making it suitable even for exceptionally wide machines. Configured simply, it is suitable for a wide variety of applications. Commissioning is quick and safe and up to three deTEc4 Prime safety light curtains can be cascaded minimising wiring complexity.

Martin Kidman concludes: "With the deTec4 Prime, SICK has produced yet another functional safety device optimised for maximum uptime through ease of connectivity and quick commissioning whilst meeting the most stringent international safety standards.

"SICK has led the way in industrial safety for more than half a century and these latest product launches represent the next generation of devices, ready for use in the Industry 4.0 Smart Factory."

SICK will also be demonstrating its full range of Smart Sensors at MACH 2016, including the new Trispector 3D Vision Sensor, and its full industrial instrumentation product range.

SICK (UK) LTD is based in St Albans, Hertfordshire and has been the UK subsidiary of SICK AG (Germany) since 1973. It boasts a wide network of sales engineers, service engineers, distributors and resellers throughout the UK and Ireland. As an experienced system partner for many major projects, SICK not only offers a wide range of leading edge products, but also a comprehensive package of vital know-how, service and support. You will find SICK products in daily use throughout industry, serving the widest imaginable range of applications in all sectors.

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Additive benefits on display

At the EMO exhibition last autumn, the Mapal stand drew more attention than the fashion shows the city is renowned for. As a market leading innovator in the cutting tool industry the company enthralled the crowds with a host of 'industry firsts'. These 'industry firsts' can be seen in the UK for the first time at the forthcoming MACH 2016 Show.

On its stand Mapal will be introducing a host of groundbreaking technologies from its milling, turning, drilling, toolholding and the tool setting and measuring lines. Added to this, Mapal experts will be on hand to discuss bespoke tooling solutions that are the benchmark in the automotive and aerospace sectors.

With regard to the products receiving their MACH debut, a key emphasis for Mapal will be its new drilling lines, and in particular it's solid carbide Tritan-Drill. Making its MACH debut, the three-fluted Tritan-Drill provides extended tool life, higher feed rates, improved cutting performance and reduced tooling costs when compared to two-fluted alternatives. In addition, the three-fluted design significantly improves hole concentricity, as the drill is self-centring. This universal drill is ideal for a wide range of material types and with its innovative geometry design; it optimises swarf removal and reduces cutting forces. The test conditions of this drill have returned tool life improvements of 45 percent and cycle time reductions of 30 percent; these conditions have been exceeded in the marketplace since the world premiere at EMO.

The Tritan-Drill will be shown alongside the exciting new QTD indexable insert drill. Ingenious and patented, this remarkable new drill is produced by a laser sintering additive manufacturing process. The reason is two-fold. The Mapal engineers identified

that central coolant supply in drills tends to weaken the core of the drill and makes them unstable. To alleviate this issue, especially in smaller diameter drills where the size of the coolant holes and subsequent flow rates are reduced, Mapal has developed trainable coolant holes for significantly increased flow rates. The triangular coolant holes increase coolant flow by 100 percent and this improves chip removal, tool life and cutting performance. Available with tool bodies from 1.5 XD to 12 XD and insert grades for drilling steel, stainless, cast iron and aluminium, the QTD must be seen at MACH.

Fully embracing the benefits of additive manufacturing, Mapal has also developed a series of narrow contour hydraulic chucks that will be seen for the first time in the UK at MACH. Once again taking innovation to another level, the additive machining process has enabled Mapal to offer its High Torque Chuck (HTC) range without the need for an internal membrane sleeve. The new HTC sleeveless chucks permit the clamping of tool shanks as small as 3, 4, 5, 6, 7, 8 and 9 mm diameter. The customer benefits from the elimination of sleeves and consequent setups, but more importantly the HTC line has an extremely narrow contour. This enables the end user to confidently clamp

small tool shanks with the ability to extend tool reach for intricate parts or cavity machining.

Combining the benefits of hydraulic clamping technology with a taper of just three degrees, the clamping area can be positioned very closely to the front of the chucks, which would have been impossible with conventional production methods. This ensures an optimum concentricity of <3 µm at the locating bore and <5µm at 2.5XD. With a high degree of dimensional accuracy, exceptional vibration dampening and tool reach potential far beyond anything else on the market, this system is ideal for manufacturers in the mould & die, aerospace and automotive sectors. These groundbreaking new innovations are just a flavour of what Mapal will have on show at MACH 2016.

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Guhring dives into MACH with new product lines

At MACH 2016 Guhring will be introducing a multitude of new cutting tool innovations to the UK marketplace. On its stand, the new products launched at the recent EMO Show will make their UK exhibition debut at MACH.

Taking centre stage will be the new Guhring Tool Management Software (GTMS). Incorporated into Guhring tool vending systems, this user-friendly tool dispensing software is unlike alternate systems, as it documents all relevant movement data of stock levels, triggers order requirements and enables evaluations to various criteria. The comprehensive and detailed reporting is built on a modular design to provide users with the maximum possible transparency regarding tool stock levels, consumption and cost allocation. With an interface that links to various goods management systems and online connection to suppliers via automated ordering procedures, the GTMS is the most comprehensive analysis tool available.

The analysis of the tool stock level is the perfect basis to optimise production. The modular GTMS can be individually adapted to customer requirements to make production and tool relevant processes transparent. The result is instantly quantifiable improvements to production as well as tool inventory savings. At the core of the GTMS is a product database whereby the user can register by user identification, barcode or RFID chip. The data collected can locate weak spots in the manufacturing process such as a sudden increase in tool wear, incorrect tool withdrawals, machine stoppages and much more.

Whilst Guhring will be covering the overall management of tooling consumption at MACH with the GTMS, the German cutting tool company has a plethora of new innovations at the show that can slot straight into your machine shop to cut production costs and cycle times on the machine tool. One of the new product lines making its debut at MACH will be the new HT 800 interchangeable insert drilling system for the economical and precise drilling of diameters up to 40 mm. Ideal for machining steel, stainless, cast iron and aluminium, the new HT 800 is available with a range of different geometries and coatings that are always perfectly adapted to the respective field of application.

With an optimised flute geometry and through coolant, the HT 800 has an open flute design for optimal chip evacuation. This combination makes the new HT 800 the drill of choice for deeper holes up to 10 XD. The HT 800 delivers enormous machining flexibility thanks to the problem-free exchange of the different inserts according to the material machined. Complementing the HT 800 at MACH will be a comprehensive line of additional holemaking products from Guhring as well as its new PowerTap line of taps for threading steel, aluminium, stainless and high-tensile steel and also cast iron.

From the milling stable, Guhring will be giving a MACH debut to the extended line of RF100 Diver end mills. For manufacturers demanding the utmost in machining flexibility, the RF100 Diver is an end mill that covers five operations with one tool.

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MACH • Hall 5 • Stand 5038

Versatile milling in focus

When working with mixed production, investing in a versatile milling cutter is always a good idea. CoroMill® 390, equipped with size 07 inserts, is an extremely flexible concept designed for productive milling in a wide range of operations and materials. Thanks to the small inserts, a higher cutter-teeth density delivers superior productivity. Combine with the insert grade GC1130, produced with Zertivo™ technology, for an added dimension of security and predictability to your steel milling operation.

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SANDVIK Coromant

Complementary high-speed expertise

At the METAV exhibition in Düsseldorf, Datron presented numerous system solutions and tools for efficient high-speed machining. The company showcased two milling machines, M8Cube and MLCube LS, together with a range of high-quality CNC milling tools. With a special area for high-speed tools the Datron experts marketed its extensive portfolio of high-speed end mills for successful use with all standard CNC milling machines featuring hollow taper shank or direct shaft clamping.

Tool booth

Only accurate tools facilitate significant added value for a production. At the company's separate tool both, experienced experts consulted visitors about economical milling with Datron tools. Compatibility with machines from other manufacturers is a given. Dr. Arne Brüsch, CEO of Datron AG, says: "We use our expertise in high-speed milling to prepare a proper tool mix for individual and demanding milling cycles for our customers. As a manufacturer of high quality industrial machines, a decade of experience under our belt, the expansion of our own tool segment is the only logical conclusion."

Datron AG has effectively embraced this expansion with continuous innovations and patents over 20 years of business in the tools market. At METAV, the mechanical engineering specialist presented its new tool cooling, which meets highest demands regarding precision together with the 8 kW-(HSK-E 32) power-spindle and the Datron M10 Pro. Datron's tool cooling is also compatible with machines from other manufacturers. Through an internal coolant supply the end mill is cooled while chips are safely and efficiently removed due to its special geometry, even at speeds up to 40,000 rpm. The internal cooling also positively affects the service life, the changeover times, and thus it lowers the acquisition and operating costs of the tools. Also, the specially-balanced single flute end mills in ultra-fine grain quality reduce costs. The chip flute leads away chips efficiently and can go with high feed rates into the material. On its first booth specifically for HSC tools the company displayed six different product groups and accessories.

M8Cube and MLCube LS

Datron experts presented the production of industrial components on the CNC machines M8Cube MLCube LS "around the clock". The worldwide successful high-performance milling machine M8Cube stands for a dynamic cutting cycle resulting in mirror-smooth surfaces and finest engraving and drilling details. At METAV, it produced live, complex electronics housings using a 3 kW high-frequency spindle. In the manufacturing industry, the M8Cube masters precision drilling of 3D aluminum molds, graphite electrodes or test adapters with up to 60,000 rpm. At the same time the machine was designed for acceleration and stiffness to ensure an excellent surface quality.

The Datron MLCube LS, with a particularly large production area in relation to its relatively small footprint, provides special advantages for batch production applications. At METAV, the MLCube LS demonstrated its great large-format through live producing workpieces from the aerospace sector. Also front panels and housings can be manufactured with the machine's economic and power saving features: The brand new linear scales measuring system compensates temperature fluctuations optimally and adds greater precision to the X- and Y-axes. At METAV, equipped with a 4 kW high-frequency spindle, the MLCube LS reaches up to 40,000 rotations. Using a different setup, the MLCube LS even works at 60,000 rpm. The machine's core application sectors are the automotive

industry and its subcontractors as well as the aerospace industry.

Datron AG develops, produces and sells innovative CNC milling machines for the processing of future-oriented materials such as aluminum and composite materials, dental milling machines for the efficient processing of all common dental materials in dental laboratories and high-performance dispensing machines for industrial sealing and bonding applications. With the help of latest technology, backed by numerous patents and the integration into a comprehensive service package, the company offers unique solutions.

For its innovative technology and unique design, the engineering company has repeatedly received awards such as the internationally renowned Red Dot Product Design Award and the ZIM prize awarded by the Federal Ministry of Economy and Development.

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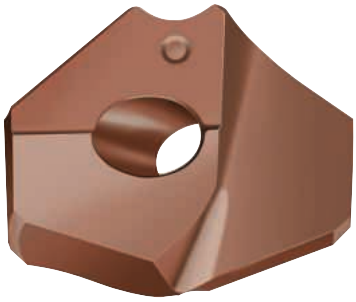
New Color Select insert optimises cast iron drilling

The introduction of a red coloured indexable insert for Walter's Xtra.tec B401x point drills not only designates that the insert is targeted at applications in cast iron (ISO K materials) but it also acts as a wear indicator. Any degradation in colour denotes that an insert change is needed.

Available in the UK from tooling giant Walter GB, the new Color Select grade WKK45C inserts are supplied in diameters from 12 mm to 29 mm and 77 mm, and feature a geometry and multi-layer PVD coating developed to suit the specific requirements of machining cast iron workpieces. Typically brittle, of irregular structure, and having inclusions combined with surface crusting, cast iron components can generate a great deal of strain on cutting edges and create temperatures that increase very quickly when machining.



The WKK45C's coating, however, counteracts the impact of such high temperatures since its coating structure is thicker than that of conventional standard single-layer coatings, which results in exceptional heat-shielding characteristics, and it has a combination of wear-resistant and supporting layers for toughness.

By optimising the relationship between hardness and toughness, the result is a higher level of productivity and process reliability when drilling ISO K materials, compared to conventional drills.

Walter GB offers a range of Color Select coatings on inserts for all machining tasks across all ISO material groups.

Walter GB appoints new managing director

Walter GB has appointed Ashley Battison as its new managing director to succeed Gerry O'Hagan, who is taking early retirement at the end of March after 29 years with the company, including 13 years as managing director.

Formerly key account manager at Sandvik Coromant UK, Ashley Battison joined Walter GB in January to ensure a smooth handover at the company's Bromsgrove headquarters.

With extensive experience in sales, business development and leadership, as well as accreditations to BEng Honours and MSc, apprentice-trained 41-year-old Ashley says one major ambition in his exciting new role is to continue to build on the success of Walter GB.

"Gerry and the team here have established a UK market-leading operation spearheaded by a comprehensive range of products and services. Combined with their Walter 'Engineering Kompetenz' expertise, they consistently help solve production problems in the most cost-effective manner," says Ashley Battison.

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Added versatility to true 90° shoulder milling

The versatile and robust VSM17 platform from WIDIA provides true 90° walls and excellent stepless finishes.

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

Designed for low horsepower draw and free machining, the VSM17 delivers an effective one-two punch of reduced horsepower at the machine and higher speed and feed rates that mean more parts per shift. Adarsh Sowcar, global product manager, indexable milling says: "For a wide range of work materials, the entire VSM 17 platform is optimised to provide higher productivity for job shops"

VSM17 cutter bodies have an integral chip gash design for excellent chip evacuation along with hardened-steel construction and hardened pocket seats which provide high resistance to deformation. VSM17 offers aggressive ramping capability up to 8.8° and a maximum 0.642" (16.45 mm) depth of cut. VSM17 is available in shell mills, screw on cutters, cylindrical shank and Weldon shank end mills with internal air and coolant capability.

VSM17 inserts have strong cutting edges, multiple corner radii, and positive rake faces that provide a true 90° wall while providing excellent wall and floor surface finish.

VSM17 starter kits are available now through local authorised WIDIA distributors. These kits feature a cutter body and ten inserts.

Moreover, the VSM17 platform is available through NOVO™, WIDIA's digital process knowledge application. With powerful process knowledge available on iPad™ and other digital devices, NOVO helps users define machining features, such as ramping or slotting in specific work materials, and then immediately reduces the product set to those like VSM17 that can do the job. This provides far more useful process knowledge than any online catalogue alone, all obtained in a fraction of the time. WIDIA-brand products and services have defined innovation in the metal cutting 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.

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Shaping the future of manufacturing

Sandvik Coromant will exhibit at MACH 2016, ready to share its expertise, knowledge and vision for manufacturing challenges under the banner "Together we shape the future of manufacturing.''

Strengthening its offering in Industry 4.0 areas like digital transformation, intelligent machining, digital product and application recommendations and tool data in ISO format, just to mention a few, Sandvik Coromant is actively influencing the ongoing industrial revolution. The company continues to develop its Industry 4.0 position with modern advancements such as data exchange and manufacturing automation. Recently acquiring Prometec GmbH, a sophisticated process monitoring company, and opening the Additive Manufacturing Centre positions the company at the forefront of new manufacturing technologies. The company will be demonstrating its use of additive manufacturing (AM) to inspire high fashion to display one-of-a kind, 3D-printed steel shoes created with Lady Gaga fashion designer, Naim Josefi.

The highlight of every show is new products and 2016 is no exception. Sandvik Coromant will be introducing sought-after concept milling tools such as the CoroMill® 390 with size 07 inserts and the CoroMill® 745, which is a double-sided multi-edge tool for positive cutting. New insert grade GC1130 with Zertivo™ technology will be on display. It has a coating and substrate that can handle the toughest materials at the highest cutting data. Also new this year is the CoroTurn® 300, featuring eight-edge, long lasting inserts, iLock interface for the highest insert stability and accuracy.

Sandvik Coromant has an extensive network of tooling specialists and machining experts who have a passion for manufacturing. They will share that passion at MACH 2016 where they will be on-hand to show customers the latest technological advances for milling, automotive component, future manufacturing, aerospace and oil and gas. As principal sponsor of the Learning and Development Zone, the company is actively supporting the MTA's aim to attract, inspire, and motivate the next generation of British engineers through a rewarding experience within the MACH show. Young Engineers from Sandvik Coromant will also be taking part in the Apprentices at Work stand within the L&D Zone which is a great chance to meet other young people from within the MTA membership.

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MACH • Hall 4 • Stand 4676

Two of the best from rose plastic

BlockPack, the newly patented packaging concept from rose plastic, excels with its impressive TwistLock locking system. So much so that it has been presented with two packaging awards. In order to offer customers the widest choice of application possible, the product range has now been extended by several new sizes and includes tool diameters of 8-105 mm and effective lengths of 50- 620 mm.

The two-piece protective packaging combines two essential functional product advantages. The bayonet-type twist lock technology, for smooth slide opening of the tube, and the ratchet length adjustment for individual securing of product content. BlockPack only requires the minimum operating opening force for length adjustment, offering both the manufacturer and end user effortless entry in to the packaging. It only takes a quick click to engage both parts and a simple rotation of about 10 degree fixes the desired length. Special contoured tube ends, lateral stiffening ribs and an integrated base provides stability and gives a cushioning effect. BlockPack is available with an optional clip on / off hanger system making it one of the most universal tool packaging on the market today. Available as standard in natural PE material from stock.

InsertSplitBox SL

The user friendly InsertSplitBox SL offers several advantages when it comes to storing and transporting high quality cutting tools. Recently this exclusive and versatile protective packaging has had additional sizes added. It is now available as a multipack with 5 individual detachable compartments in a double row configuration, or as a single item with only one compartment. Separate highly transparent lids, allow for a clear view of the content.

When opening a box, the lid snaps into each middle and end position providing additional protection during removal. The InsertSplitBox SL is stackable with or without the lid attached, due to the special guiding ridges, thus allowing for fast auto assembly process.

InsertSplitBox SL base part is made of impact and break resistant ABS plastic and the parts are available with horizontal or vertical dividers as well as without dividers. InsertSplitBox SL is available in ABS base in grey and clear lid from stock.

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MACH • Hall 5 • Stand 5094

You're in safe hands with Speroni

A feature of the NCMT stand at MACH 2016 will be the Speroni Futura STP 46 tool presetter with CNC control over the 50-taper vertical spindle as well as the X and Z axes, with fine linear adjustment completed by hand-wheels. Of rigid construction and designed for shop floor use, it incorporates a novel taper adaptor and a claw system that accommodates all pull stud designs, allowing changeover for setting different tool tapers in just eight seconds. Repeatability of positioning is to within one micron.

As with all Speroni tool presetters, the thermo-balanced structure is made of artificially aged, pearlitic cast iron to ensure the equipment is fully isostatic and will not deform or distort over time or as the temperature changes.

Unlike most presetter designs, the homogeneous structure avoids the drawbacks of systems that use light alloys and/or granite, which have different and unstable reactions to changes in temperature and the environment. There is consequently no need for frequent recalibrations during a shift due to temperature change.

Modular design and a large number of configurations offer solutions tailored to almost every application, with full upgradability in the future. Both hardware and software are developed and produced in-house by Speroni, whilst peripheral equipment is sourced from the very best suppliers including Schneeberger linear guideways, Heidenhain encoders, Sony CCD camera and Festo Pneumatics.

Bench-top Speroni tool presetter, Magis, will also be demonstrated. The ergonomically designed system has an integrated calibration master, pneumatic axis locks, X- and Z- axis fine adjustment, a CCD camera and an integral ISO 50 taper spindle. The single-screen control has an optional touch screen to increase the speed of tool measurement.

The machine has a standard X-axis range of 50 to 350 mm and is available in three column sizes with either 400, 500 or 600 mm travel in the Z-axis. The unit is supplied as standard with a pneumatic spindle brake that allows the operator to lock the spindle at any point in the 360-degree rotation, guaranteeing correct, stable positioning of the tool prior to measurement and / or presetting.

Magis also comes as standard with an episcopic front ring light system that provides a light source for manual inspection of the tool tip / insert on the screen. A variable adjustment knob facilitates inspection of different types of coated inserts. Hand wheels are provided for micron-precise, smooth adjustments of both the X and Z axes throughout the system's range of travel.

Blue Photon adhesive workholding

Last year, a photo-activated adhesive workholding system was introduced by NCMT under a new sole agency agreement. The MACH 2016 show will mark the first demonstration of the technique at a national UK exhibition.

Called Blue Photon, it was developed at The Pennsylvania State University to fixture difficult-to-hold parts for tight-tolerance machining and inspection. The process involves applying an adhesive that is cured by ultraviolet light via fibre optic cables. The adhesive can subsequently be melted and the machined workpiece removed by immersion in hot water or by application of another heat source, which optimally should be at 80°C.

Alternatively, the adhesive contact points can be sheared to free the workpiece by rotating the gripper pins in the fixture plate with a spanner. No witness mark is visible where the glue was applied.

Use of the technique has grown rapidly in the aerospace industry in the US and is now spreading to other industries due to its ability to hold components securely with an average shear resistance of 136 kg, yet allow cutters excellent all-round access for machining on five sides. Unlike magnetic clamping systems, it can be used to secure not only ferrous metals but also non-ferrous metallic parts as well as ceramics and composites, including delicate materials.

Blue Photon is ideal, for example, for clamping gamma titanium aluminide, which is being used to produce low-pressure turbine blades for the latest generation of high-efficiency jet engines. The alloy halves the weight of aero components compared with Ti64, providing big savings on fuel burn, but is brittle and difficult to handle.

Other advantages of the clamping process are an absence of workpiece distortion, good damping properties to suppress chatter, reduced cost of fixtures for holding complex parts, and elimination of locating lugs on castings.

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MACH • Hall 5 • Stand 5320

Technology zones for new product range

Roemheld UK Ltd will be launching new to the UK products from across the entire Group range at MACH 2016 (Hall 5 Stand 5022). The stand will be split into technology zones for 5-axis clamping, zero-point mounting, automation and materials handling systems with the new product ranges providing the star attraction for each zone.

The next generation of 5-axis vices, capable of gripping on 3 mm while able to facilitate heavy metal removal, will be on display at the exhibition. Visitors will be able to find out how implementing this latest 5-axis clamping technology can enable cost savings of up to 15 percent per billet to be achieved.

The very latest Zero Point technology will also be launched at the show, exhibiting a new concept in location and quick change fixturing. A fixture, purpose built for an automotive customer in the UK, will take centre stage and be shown working.

Visitors to the materials handling technology zone on the stand will also be able to view a new materials handling fixture that displays all the latest technological advances in tilting, lifting and lowering, in action.

In addition, new ranges of clamping elements from the innovative Roemheld core product range will be in action at the event. Brand new ranges of flat clamps and compact clamps will be launched in the UK at the show. Both ranges combine compact design with high clamping forces and will be able to be seen working elements in hydraulic fixtures on the stand.

Managing director Terry O'Neill says: ''This is one of the most exciting stands we have put together for many MACH exhibitions. It demonstrates the commitment and drive that the group have to innovate in all the market sectors we cover. We look forward to welcoming visitors to our new stand to see our latest technological advances in action.''

Roemheld is committed to researching and developing products designed to meet not only the demands and expectations of today's discerning buyer, but also emerging markets and applications. Through

continued improvement of products and services, the Roemheld Group intends to remain an innovator at the forefront of technology providing 'All your workholding needs from a single source'.

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MACH • Hall 5 • Stand 5022

New precision product range

Brown & Holmes will be launching its new Swiss Chuck precision workholding product range in the UK at MACH 2016. On its biggest size stand to date, the company will also be exhibiting new products from existing product ranges alongside its expertise in design and manufacture, workholding and automated solutions. Special 'only at MACH' deals on selected products will also be available daily on the stand.

Having recently been appointed sole distributor in the UK and Ireland for Swiss Chuck, Brown & Holmes will be launching this specialist range of high precision chucks at the show. This includes high-precision tool grind chucks for manufacturing or re-sharpening of monoblock tools, precision power chucks for cylindrical grinding machines, compensating chucks for the grinding of all shaft-type workpieces and precision diaphragm chucks for high precision clamping.

Visitors to the stand will also be able to see the new Fresmak ARNOLD Block-SC in action. The BLOCK-SC range has been specifically designed for use in the mass production of workpieces that need to be clamped in constrictive spaces.

Other new products on display will include the new Tsudakoma TN130 small 5-axis unit that can be used for turning up to 3000 rpm, with all the functions of an integrated 5-axis unit. While the new FORKARDT OmniGrip quick change collet system for CNC lathes also promises to be a draw to the stand as this offers a collet changeover of less than 10 seconds.

Representatives from Tsudakoma rotary indexing tables, Fresmak ARNOLD high pressure vices, Mytec hydraulic expanding clamping tools and FORKARDT rotary workholding products will also be on the Brown & Holmes stand at the show to chat to customers and answer queries.

Also to be unveiled at the show will be Brown & Holmes' new sister company, MistBuster Ltd. The MistBuster family of self-contained mist removal systems is designed to capture mist and smoke from metalworking applications in the industry.

Kevin Ward, joint director of Brown & Holmes, says: "This will be the largest stand we have ever taken at MACH and we are excited to be able to showcase so many exciting new products and solutions. There will be some great deals on offer too so make sure you come along and visit us.

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MACH • Hall 5 • Stand 5402

Concept Laser wins prestigious IAMA award

16 innovations from all over the world demonstrate the high relevance of 3D printing

The winner of the International Additive Manufacturing Award (IAMA) was chosen during the "Inside 3D Printing" specialist congress at the METAV 2016 exhibition in Düsseldorf. Concept Laser from Lichtenfels in Upper Franconia came out on top against 15 other entries from Germany, Finland, the UK, the Netherlands, Switzerland, and the USA.

"The IAMA is welcome recognition for our hard work, but also evidence that we're on the right track. So the international 3D award makes us extremely proud, and provides ample motivation to continue enthusing the global market with new innovations," said a delighted Frank Herzog, managing partner and founder of Concept Laser.

Frank Herzog, Managing Partner and founder of Concept Laser, Lichtenfels

Winner's innovation monitors quality during actual production

3D printing has huge potential: almost daily, new processes and products appear on the market. Whether it's an artificial hip joint or a turbine blade, almost everything can be additively manufactured. In all of this, however, the quality and sturdiness of the components concerned play an important role. Defects may have dramatic consequences. So manufacturers have to conduct regular quality testing. Destructive test procedures, however, are uneconomical, susceptible to error and prolong the process's running. New approaches are required, and companies like Concept Laser offer them. The winner of the IAMA has created a process that combines efficiency and brilliance in a single concept.

The innovation involves the first in-situ real-time process monitoring system in powder-bed-based additive manufacturing. It measures properties like size and intensity of the melting bath's thermal radiation in ultra-high resolution, and displays the data in correlation to the position of the melting bath on the workpiece's surface and thus to the component's geometry. This will make it easy for the user to localise and evaluate process anomalies during production.

"This enables downstream test processes to be reduced to a minimum, which helps to save both time and money," emphasises Frank Herzog. In addition, the process offers an entirely new approach for research and development centres tasked not only with improving the process as such, but also with approving new materials and component geometries.

Additive manufacturing is well on course worldwide

"Innovations like that from Concept Laser show that the sector is doing intensive work on further industrial-scale implementation, focusing on all of the currently challenging issues. This will progress the bandwidth of applications," says Dr. Wilfried Schäfer, executive director of the VDW (German Machine Tool Builders' Association) and one of the IAMA's initiators.

The entries submitted for the IAMA were assessed by a ten-strong international jury. This included qualified experts from the industrial sector, the research and academic communities, the media and industrial associations. The entries were rated in categories like the following: degree of technological innovation, clearly discernible advantages for the industrial sector, the natural environment and society as a whole, cost-efficiency, and industrial-scale feasibility.

"It's exciting to see how much the IAMA has grown after just the second award, with 16 different innovations from six countries competing for the prize," said Douglas K. Woods, President of AMT, the award's co-initiator along with VDW. "We think this speaks highly to how much additive manufacturing is growing worldwide. Additionally, the award has gained an admirable reputation throughout the industry and we look forward to seeing even more advanced technologies next year, when the award ceremony takes place in the USA."

The IAMA was created by a partnership between the American AMT (Association For Manufacturing Technology) and the VDW (German Machine Tool Builders' Association). The aim is to proactively support this dynamically growing technology on the international scene and foster the expansion of its industrial applications. The IAMA has been launched specifically for this purpose, as an annual accolade conferred alternatively in Germany and in the USA to honour innovations in the field of 3D printing. The prize is supported by media partners like Gardner Business Media and VDI nachrichten, plus Cecimo, the European Association of Machine Tool Industries. It was in February 2015 that the IAMA had its first winner: the American company Hybrid Manufacturing Technologies Ltd. Besides the IAMA trophy itself, the winner receives a money prize amounting to 20,000 US dollars, plus a media package worth 80,000 US dollars for marketing its prize-winning technology.

Founded by Frank Herzog in 2000, Concept Laser GmbH claims to rank among the world's leading vendors of machines and lines for 3D printing of metal components. The patented laser cusing process (powder-bed-based laser melting of metals) opens up new freedoms in designing components and also enables manufacturers to run tool-less, cost-efficient production of highly complex components in small batch sizes. The company's customers come from many different sectors, like medical and dental technology, the aerospace industry, tool and mould construction, the automotive industry, and the watchmaking and jewellery industries. The 3D metal printers from Concept Laser, for example, handle powdered materials made from stainless steel and hot-work steels, aluminium and titanium alloys, plus (for producing jewellery) precious metals.

Dr. Wilfried Schäfer, Executive Director of the VDW (German Machine Tool Builders' Association), Frankfurt am Main

For further information, visit **www.concept-laser.de**

Headquartered in Frankfurt am Main, the VDW has been representing the interests of the German machine tool industry for 125 years. Together with the German Engineering Federation's Machine Tools and Production Systems Association, it numbers about 300 voluntary member companies, which represent approximately 90 percent of the sector's entire turnover. The VDW does much more than simply represent the industry's interests to the public, the government, the academic community and business associates. Based on its in-depth knowledge of the industry and resulting expertise, it serves primarily as a service provider to its members. It provides information, advice and support on individual issues in numerous fields.
The VDW also organises exhibitions for the international machine tool industry. It has over 90 years of experience in organising events. It stages the EMO Hannover on behalf of Cecimo, the European Association of Machine Tool Industries, and it also organises its own event, the METAV International Exhibition for Metalworking Technologies, in Düsseldorf.

For further information, visit **www.VDW.de**

The Association for Manufacturing Technology (AMT) represents and promotes US-based manufacturing technology and its member: those that design, build, sell, and service the continuously evolving technology that lies at the heart of manufacturing.

Founded in 1902 and based in Virginia, the association specialises in providing targeted business assistance, extensive global support, business intelligence systems and analysis. AMT is the voice that communicates the importance of policies and programs that encourage research and innovation, and the development of educational initiatives to create tomorrow's Smartforce. AMT owns and manages IMTS, the International Manufacturing Technology Show, which is the premier manufacturing technology event in North America.

For further information, visit **www.AMTonline.org**

UK debut for new metal additive manufacturing system

Renishaw, a world leader in precision engineering technologies, will be exhibiting its extensive range of metrology and additive manufacturing equipment at MACH 2016. The Gloucestershire-based innovator will be unveiling its new RenAM 500M additive manufacturing system, as well as its new non-contact vision measurement probe system (RVP) for CMMs.

The RenAM 500M will be making its UK trade show debut at MACH. Fully designed and engineered in-house to be used for serialised production, the RenAM 500M builds complex metal components directly from CAD using metal powder fusion technology. Highlights of the system include a Renishaw designed and engineered optical system with dynamic focussing, automated powder sieving and recirculation, a 500 W ytterbium fibre laser and patented high capacity dual filter SafeChange™ system.

The company recently announced that it has joined Land Rover BAR's Technical Innovation Group (TIG) as an official supplier, as a partner in the quest to bring the America's Cup home to Britain. The company will contribute its expertise in metal 3D printing and position feedback encoding.

The America's Cup is the oldest international trophy in world sport, pre-dating the modern Olympics, the Ryder Cup and the World Cup and Britain has never won it. It's the world's premier sailboat racing contest, and the 35th edition will be held in Bermuda in 2017, in foiling multi-hulls. Land Rover BAR is the British challenger, and Sir Ben Ainslie, winner of four Olympic gold sailing medals, is the team principal and skipper.

The Land Rover BAR Technical Innovation Group was formed to bring together the best of British talent and industry. The goal is to find advanced technologies and develop them to give the team a competitive edge. The TIG complements the existing Land Rover BAR design team and allows it to rapidly develop, test and prove these technologies.

The TIG has already engaged a number of key partners and suppliers from British industry, including Land Rover, BT and BAE Systems. The TIG is governed by a steering group, chaired by PA Consulting's Dr Phil White with the BAR team represented by Andy Claughton, Land Rover BAR's chief technology officer.

Renishaw is one of the world's leading engineering and scientific technology companies, with expertise in precision measurement and healthcare. The company supplies products and services used in applications as diverse as jet engine and wind turbine manufacture, through to metal 3D printing, dentistry and brain surgery. The Renishaw Group currently has over 4,000 employees, of which 2,700 people are employed within the UK.

"As a British engineering company with core skills in precision and performance, combined with expertise in position encoding and metal 3D printing, we are delighted to have the opportunity to make a valuable contribution to the TIG and help Land Rover BAR bring the America's Cup back to Britain", explains Robin Weston, marketing manager of Renishaw.

Renishaw's contribution will be through its expert metal additive manufacturing knowledge, helping to optimise the design and construction of critical, 3D printed metal parts of the team's race boat. It is also contributing by providing ongoing expert advice on position encoder technology.

Sir Ben Ainslie comments: "We don't underestimate the challenge ahead of us. We are a first time challenger for the America's Cup, and only one challenger has ever won it at the first attempt. We want to leave no stone unturned in our search for new technologies that will help us to bring the Cup home. That's why we have developed the Technical Innovation Group and are pleased to have the support of Renishaw with its heritage of over 40 years of breakthrough innovation."

For more information on Land Rover BAR Technical Innovation Group, visit: **http://land-rover-bar.americascup.com/en/technical-innovation-group.html**

For more information on Renishaw metal additive manufacturing and position encoders, contact:

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www.renishaw.com/encoder

MACH • Hall 5 • Stand 5730

Latest version offers greater flexibility and efficiency

The latest release of PSL Datatrack's modular production management and business administration software is now available. The version includes many new features for improved functionality, navigation and user experience that have been developed in response to the active customer "wish list" programme. It contains the highest number of feature improvements in any version released to date and will run on Windows 10 as well as previous versions of Windows.

The new version of PSL Datatrack is faster to use, provides greater flexibility, more control, easier monitoring and reduces the time taken in a number of key areas whilst providing the necessary information to manage a subcontract manufacturing business in a cost-effective and efficient manner.

Data input and historical data searching is now quicker with predictive text and intelligent listboxes. Cross-referencing and access to data from other business areas within the system has been enhanced. Supporting correspondence and documentation can now be stored and accessed in more modules providing greater ability to share key information between colleagues.

Quotations now has greater flexibility to set hourly rates, the ability to provide an instant financial breakdown for rapid decision making and timesaving management of changes to routing descriptions. Improved definition and control of raw materials provides easier monitoring of material usage and can reduce time taken for stocktaking. Automatic management of one-off tooling charges ensures that costs do not get overlooked when processing sales orders whilst new automation features greatly reduce the time taken to generate routine documents.

Quality improvements include automatically providing alerts to potential quality issues when receiving raw material or components back from a subcontract process and retrieval of material and subcontract certificates has been made easier.

Scheduling accuracy has been improved by allowing variable operation efficiencies and the shop floor can log technical comments, where variations from planned set or run times are encountered, to provide detailed feedback enabling analysis and management of processes to inform future quoting decisions.

Standard reporting now includes KPIs (Key performance indicators) for deliveries to customers and from suppliers and the ability to report on jobs that may quality for R&D tax credits.

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UK debut of entry-level metal additive manufacturing machine

EOS, a worldwide technology and quality leader in high-end additive manufacturing (AM) solutions, will use MACH 2016 to present its extensive and growing portfolio of machines, peripheral equipment, software and certified powder materials for producing metal and polymer components. A variety of service and consulting products that support customers at each phase of the value-added process will also be showcased.

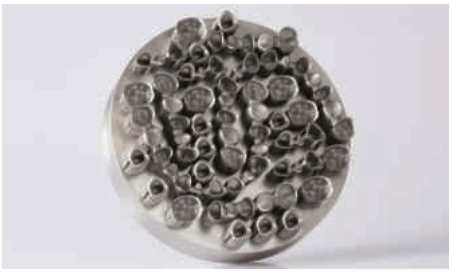
EOS M 100 metal AM system

Ideal for companies considering their first use of additive manufacturing, the new modular M 100 DMLS (Direct Metal Laser Sintering) machine from EOS offers reproducible parts quality, due to the optimum and consistent processing conditions ensured by the high quality and stability of its 200 w fibre laser beam. Moreover, the small spot size with excellent detail resolution enables highly complex and delicate components to be manufactured.

With its small build volume based on a 100 mm diameter platform, the cost-effective system is capable of economical production of small quantities, thanks in part to its efficient recoating and exposure strategy, which reduces non-productive time. For example, it can produce approximately 70 dental crowns and bridges in a single, three-hour build. Efficient handling and component changeover result in short setup times increasing productivity, while operator safety and ergonomics have been improved.

The new EOS M 100 DMLS additive manufacturing system

Due to its modular interior construction, the system can be dismantled quickly, facilitating speedy material replacement and maintenance. The peripheral equipment minimises powder contact and is consistent with an industrial production process. Currently, two types of material may be processed, EOS CobaltChrome SP2 (CE-certified, CE 0537) and EOS StainlessSteel 316L, while EOS Titanium Ti64 will be available shortly.



Approximately 70 dental crowns and bridges made from EOS CobaltChrome SP2 in three hours in an EOS M 100 system

Real-time, automatic process monitoring during AM of metal parts

An add-on to the EOS M 290 DMLS system, EOSTATE MeltPool Monitoring is an innovative, powerful tool that paves the way for complete parts traceability as well as automated surveillance and analysis of the melt pool during the build process for every spot on every layer on every part.

Developed jointly with plasmo Industrietechnik GmbH, a global supplier of automated, high technology quality assurance systems, it expands EOS's existing, comprehensive portfolio of monitoring solutions for AM by adding high performance online monitoring for even greater transparency of the complex build process. The technology therefore targets R&D and manufacturing customers with demanding quality requirements.

Reliable quality assurance tools play an important role in boosting trust in a technology. The decisive factor for customers on the road towards series manufacturing based on AM is reproducible, top-quality components at the lowest cost per part possible. EOSTATE MeltPool Monitoring allows the quality assurance to be moved from post- to in-process, not only supporting better risk management, but also reducing cost per part as well as the time and costs associated with quality assurance.

An EOS M 290 DMLS AM system equipped with EOSTATE MeltPool Monitoring

EOSTATE MeltPool observes the light emitted by the melt pool. The key elements are a pair of photodiodes located on- and off-axis, a camera adapter, a specialised signal amplifier and spectral filters to separate process light from reflected laser light. The associated software offers automatic data error correction and real-time process visualisation and evaluation.

For data analysis, the EOSTATE MeltPool Toolbox visualises data in 2D or 3D mappings and enables the evaluation of indication clusters. The tool operates based on three advanced algorithms to obtain different data interpretations. From the collected data, conclusions for the resulting quality in the final part can be drawn, according to customer-defined parameters.

In addition, EOS will introduce a new metal powder to the market, EOS StainlessSteel CX, for mould and tool manufacture. The material is an extremely corrosion-resistant stainless steel with maximum stability and excellent hardness.

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MACH • Hall 4 • Stand 4861

TRUMPF laser adds up for metal deposition specialist

Doncaster-based Laser Additive Solutions, a relatively new company which provides advanced laser based Additive Manufacturing (AM) services across the whole breadth of engineering sectors, has taken delivery of a TRUMPF 2kW TruDisk laser with fully integrated BEO 70 LMD processing head to help it complete a plethora of laser metal deposition (LMD) projects.

The tasks completed by Laser Additive Solutions range from straightforward job shop laser cladding through to comprehensive R&D programmes. Founded in early 2015, owner Peter Brown has invested heavily in the latest LMD and ancillary technology to provide a highly capable and flexible AM solution configured in a special processing cell.

The new technology includes a TRUMPF 2 kW TruDisk laser with integrated BEO 70 LMD processing head and a REIS RL80 6-axis gantry manipulation system.

LMD involves the use of a highly accurate and perfectly controlled laser beam that forms a melt pool on a metallic substrate into which powder is fed. Manipulated by a CNC driven gantry, the process can be used for component life extension purposes where typically an 'overlay' approach is utilised to prevent corrosion or wear for instance, or to build near-net shapes as an alternative to wasteful conventional subtractive machining such as milling, turning and grinding.

The TRUMPF 2 kW TruDisk laser offers a minimum deposit wall thickness of 0.5 mm, high stability over the full power range (60 to 2,000 W) and recorded LMD process-monitoring for quality assurance purposes. The solution was supplied with TRUMPF's DepositionLine technology package for powder deposition welding. The process is simple: users first program the path of the laser optics, which follows the surface of the component, before powdered material is guided through the nozzle, step by step. Once the new material has cooled, operators weld the next layer, or start the refinishing process. Up to 3 Kg of filler material can be applied to a workpiece every hour.

When the process is controlled correctly, a wide range of titanium, nickel, cobalt, tungsten and steel alloys can be deposited, including Ti-Al6-4V, Inconel 718 and Stellite-6. The process inputs the minimal heat required to achieve successful fusion of the powdered material, resulting in a fine grained microstructure.

LMD can be used to provide protective coatings to expensive parts, such as turbine blades, valves or pistons, or give inexpensive components a high-grade, wear-resistant surface.

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The robot revolution: what manufacturers must do to keep productive and keep their people

by Dr Bob Struijk, vice president, FANUC Europe

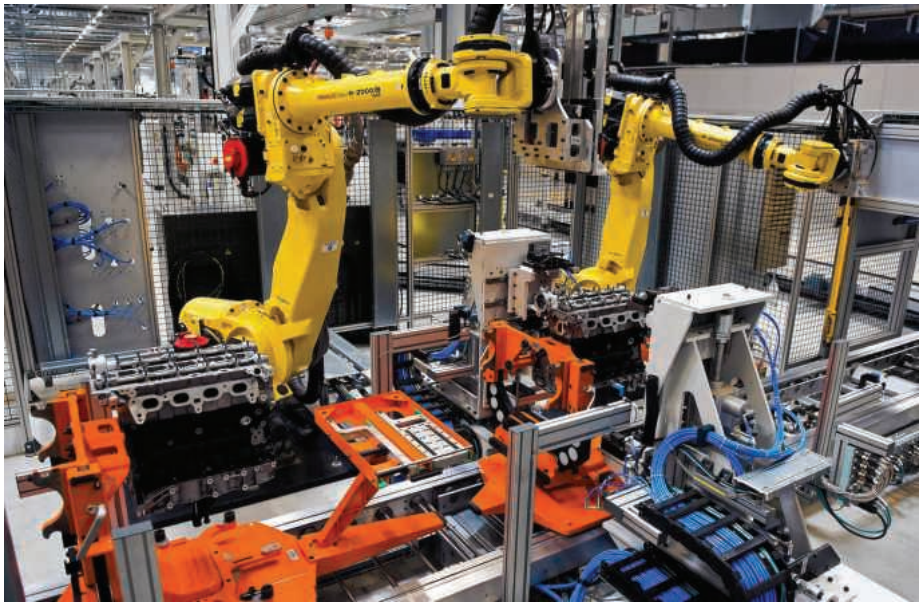
Will robots take our jobs? It's a commonly-held concern but until recently very limited empirical evidence on the impact of robotics and automation (R&A) has been carried out.

Published earlier this year, research by Graetz and Michaels at the London School of Economics has revealed the effect of industrial robotics on the world. As the first of its kind, the study shows that the technology is a direct driver of economic growth.

Across the 17 sample countries, an increase in the use of robots for manufacturing was shown to raise the growth of GDP by 0.37 percent annually.

The research has also proven the positive impact of R&A on worker productivity. For example, industries that invested in automation have seen a 16 percent increase in annual labour productivity growth.

It is clear that robotics and automation are bringing many benefits to the global economy and its workers. However, manufacturers need to place the most emphasis on investment in people. Robotics and automation are changing the nature of the workforce, and businesses need to consider how to retain and attract talent in order to evolve, while keeping ahead of the competition.



Changes to the workforce

Despite speculation over associated job losses, Graetz and Michaels' study has found that countries which invested significantly in automation between 1993 and 2007, for example Germany and Sweden, have experienced fewer job losses compared to countries that made lesser investments.

This indicates that automation has generated the need for employees within other areas of the business including design, engineering, machine maintenance, marketing, logistics and other services. Robotics and automation also reduces hazardous tasks undertaken by human employees, improving health and safety and reducing working hours.

It is essential that manufacturers therefore prepare themselves for a change in working practices when adopting new technologies, planning effectively for the deployment and resulting impact on the workforce of automation equipment. Investments in robotics and automation are best coupled with training and development programmes that support the re-deployment and associated upskilling of staff.

Taking responsibility

Manufacturers must take responsibility for implementing strategies to drive upskilling and ensure their staff are adequately prepared for new kinds of activity. They must also engage young talent through educational initiatives to attract the next generation of engineers.

Europe is currently facing a serious science, technology, engineering and maths (STEM) skills shortage, particularly when it comes to women, whose engagement in STEM qualifications continues to lag behind

men. Manufacturers can close the gap through a variety of STEM-based initiatives to encourage the next generation of young engineers. These may include apprenticeships, internships, and university partnership programmes.

Currently, Rolls-Royce is leading in this area pledging to reach 6 million people by 2020 through its STEM education activities. The company has more than 1,000 STEM ambassadors worldwide and Rolls Royce employees spend at least 60,000 hours a year delivering STEM programmes to local communities, with activities aimed at 5 to 19 year olds, as well as teachers, parents and youth leaders.

Similarly, LEGO has developed MINDSTORM - a range of robots to assemble and program using an icon-based interface. These come with 'curriculum packs', which include problem-solving activities that follow a design engineering process as used by engineers in various industries. These call upon science and mathematics skills, creative thinking, problem solving and teamwork to encourage and inspiring young people to think of STEM careers in a fun and challenging light.

Staying ahead of the competition

Robotics and automation technologies are enabling companies to stay ahead of the competition. Since the 1990s, automation uptake has been on the rise and is showing no signs of slowing down. Global spending on robots is expected to jump from £9 billion in 2010 to over £43 billion by 2025. The speed of uptake is driven by a convergence of falling prices and performance improvements, and with automation moving beyond the manufacturing realm into new sectors, businesses need to invest creatively and effectively in order to reap the benefits.

Forward-looking businesses need to extend the competitive advantage of automation by investing in robotic solutions that are specifically tailored to operations. Customised solutions can disrupt and provide a long-term source of differentiated value.

The caveat here is that as automation becomes the industry norm, the competitive value will slow down. Manufacturers must act now. Manufacturers who adopt robotic processes earlier are those who will benefit, increasing productivity to cope with demand from customers more efficiently, and outworking competitors.

The future

Previously, robotics and automation was most widely applied to the automotive and metals industries; sectors whose growth has rapidly expanded over the last 40 years. This is now not the case; with investment in research and development, and advances in engineering capabilities, robots are equipped with a wider breadth of applications and are entering new industries such as medical and plastics.

Tasks such as picking, packaging, product testing and inspection can now be undertaken by robots, and are particularly relevant to the biomedical/pharmaceutical, food and drink and consumer goods sectors. Robots can also work on components that are too small for the human eye, like micro-electro-mechanical systems - a market that by 2017, is estimated to hit £13.7 billion. Other areas experiencing particularly rapid expansion include factory logistic systems and unmanned aerial vehicles, more commonly known as drones, for the military and services industries.

Manufacturers are beginning to harness collaborative robotics with the FANUC CR35iA leading the way. Collaborative robots will be one of the highest areas of growth in the next year, and we're already seeing heightened demand within the automotive industry. Soon engineers will be working hand-in-hand with these products every day, especially as the technology becomes more readily available and accessible from suppliers.

One of the major advantages of collaborative robots is improvements made to the welfare of employees, removing the need for external safety devices such as metal fences and creating a safe environment for humans to work in. This new way of working also helps manufacturers to eliminate the large costs associated with the amount of space needed to house both on the plant floor.

It is already clear that robotics and automation is increasingly becoming an indispensable part of production, offering advancements in industry productivity.

Further enhancements can be made to robots through vision, force sensors, and artificial intelligence, which greatly improves the rate of industrial production making it more cost and energy efficient. At the same time industrial waste is reduced and sustainability is increased.

However, the full impact of robotics and automation will likely take a generation

before it is truly measurable. The research available today is the result of years of cumulated data, and reflects the impact of automation since the 1990s. Robotics and automation has boosted global GDP and overall productivity, while transforming the manufacturing workforce.

The challenge for companies now is to attract and retain the best talent, while at the same time, investing in new and emerging technologies. That dual approach can keep them ahead in a tough manufacturing landscape.

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MACH • Hall 5 • Stand 5210

ABB introduces YuMi to the UK market

Collaborative dual-arm robot for small parts assembly

Aimed initially at the 3C (Computer, Communication and Consumer electronics), toys and watch making industries, YuMi has no barriers, cages or zones. Its padded arms and motion control technology enable YuMi to work side-by-side with humans safely. The collaborative robot is able to assist in small parts assembly tasks whilst employees can either work with YuMi or apply their production skills to another part of the process.

As YuMi's capabilities become more widely recognised, the robot will open up more opportunities in other industrial sectors. However, the robot has been primarily developed to meet the flexible and agile production needs of the consumer electronics industry. With integrated hands comprised of 2-finger grippers and embedded cameras, YuMi can efficiently handle the small components typical of this environment.

The UK electronics industry is the fifth largest in the world with an annual turnover of £78 billion, a total of 6,000 businesses and 800,000 employees. Benefiting from YuMi's many features would strengthen the UK electronics industry through improved productivity, lower costs and a quicker response to the global market.

YuMi is part of ABB's strategy to provide a solution to the UK's productivity puzzle. However, the nature of today's electronic consumer demands means that quick changeovers of products are a necessity whilst the internet of things or 'Industry 4.0' means that customers expect high quality, low cost items in a short time span.

YuMi helps to overcome this. Its table mounted lightweight design means YuMi is easily moved to different stages of the production process whilst YuMi's speed makes it faster than most other collaborative robots. With a velocity of 1500 mm per second and the ability to return to the same point within 0.02 mm of accuracy, YuMi makes high quality, fast production possible.

Furthermore, YuMi's lead through programming capabilities provide ease of use as employees can teach the robot through demonstration in a minimal amount of time. Historically ABB robots have been programmed using teach pendants or coding but this new method reduces the complexity to a level that is user-friendly. Combined with its adaptable grippers, this means that the YuMi can be programmed to perform new tasks quickly and efficiently.

"YuMi opens up great opportunities for UK businesses. Task sharing between humans and robots provides scope for boosting UK productivity and YuMi's Lead Through Programming capability will enable SMEs and larger manufacturers alike to be responsive to quick changes in consumer demand," explains Colin Dullaghan, Product Manager for YuMi at ABB Robotics UK. "The initial market response has been very positive. ABB has begun to sell YuMi to a number of end users since the end of last year and there's a definite growing interest in the product across industrial sectors outside of electronics as its many applications become widely recognised."

In addition to its suitability for small parts assembly applications, YuMi has been designed for use in camera-based inspection, parts-feeding, packaging and testing.

Ideal for use in small parts assembly, Sony UK Technology will use ABB's dual arm robot solution to pick and place circuit board parts. Primarily used in research and development, YuMi will help Sony UK Technology to better understand the benefits of collaborative robotics in its high volume circuit board application.

Having recently been awarded the prestigious Production Centre President Award for Best Performance, Sony UK Technology will use YuMi to help improve assembly techniques, specifically the manufacture of circuit boards.

YuMi's safe design, 2-finger grippers, accurate vision and sensitive force control lends itself well to the proposed application and presents Sony UK TEC with the opportunity to readily adapt YuMi's programming to match any changes in its assembly process. Furthermore, YuMi's flexible software allows staff to use lead-through programming to effectively teach the robot how to handle each part, reducing setup time and allowing team members to play a significant role in the robot's operation.

ABB's new YuMi dual-armed robot will be on show at MACH 2016.

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MACH • Hall 5 • Stand 5771

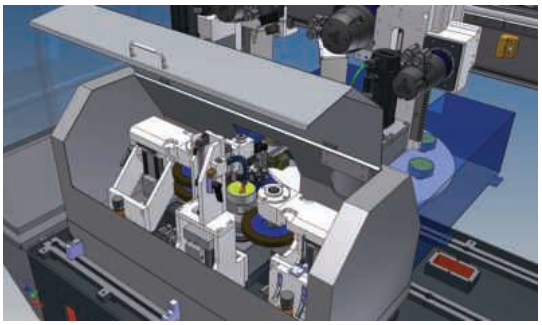
Autoloading deburring machines

For over 30 years, the SECKLER AG has been developing and custom building high-precision, automated handling systems and industrial robots for machine tools and for linking manufacturing systems as well as special purpose machinery. The fully automated systems for mass production of high-precision parts are used primarily in the automotive industry, in hydraulics/ pneumatics, watch/jewellery and in medical technology.

SECKLER AG is introduced its latest invention on their booth at the recent EMO exhibition in Milan. For the first time the SECKLER modulo robot cell was presented autoloading the SECKLER deburo deburring machine.

The SECKLER deburo has been developed for the automatic deburring of workpieces. As the Swiss company explains, every mechanical production process creates deburring problems despite use of the best machining technologies. However, modern cost and quality considerations call for process-secure automated solutions.

Wire and impregnated nylon brushes can be used for the deburring process. An automatic brush compensation mechanism is available as an option. The machine system includes modules for various brushing operations such as: OD deburring; face deburring; ID deburring; slot or groove deburring.



The model on show in Milan was developed for the complete processing of gear workpieces, comprising the simultaneous deburring of two end faces by means of a sandwich brush, and the deburring of the exterior diameter. The brush angle can be adjusted individually. This device is designed for gear parts from diameter 5-100 mm.

SECKLER is a global, Swiss-based manufacturer of individually designed automation systems in the field of handling technology. Its main activity is the development and manufacture of fully-automated machines to mass-produce high-precision components, especially in dirty and wet environments.

The company's 40-year history demonstrates its long experience and broad expertise in special-purpose engineering. SECKLER possesses standardised, patented and also highly unique system solutions. The company's modular machines are designed to be very flexible, and their long lifetime, low service costs and re-usability are particularly impressive.

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Simplified switch to automation with auto clamping head

Manufacturers involved in automation are increasingly under the pressure of small batch sizes, increasing part variants and always less time to get parts out of the door. To resolve these issues, workholding specialist, Hainbuch has developed an automation solution that makes the end user more productive, more independent and more flexible.

For those familiar with the Hainbuch brand, you will know that no production process problem is unsolvable. When investigating smart, minimalist automation solutions that would make work easier, Hainbuch has created a stocking and changing station placed on the workpiece feeder belt of a vertical lathe.

To set up the system, the spindle passes with the chuck over the combination of clamping head and end-stop to be changed and it is swapped completely and reliably within seconds by a pneumatic pulse. The workpiece to be clamped is then directly grabbed from the next changing station and clamped. The innovative design demands no additional automation.

The system makes the machine tool amazingly flexible. Using a clamp check with air sensing, the efficiency can be increased even further. This simple practical solution is suitable for a variety of machines. This is because the changing station can be installed directly beside an industrial robot or gantry.

This impressive new automation solution is ideal for lower batch sizes or multiple part variants and it can enable operator free production over three shifts. With all the clamping heads and end-stops available from Hainbuch, the new development gives the customer optimal set up and changing of the clamped parts.

The system is available for a low upgrade cost that is remarkably low when compared to conventional automation systems. From an installation and setup process, the system is easily integrated into your machine shop and once installed, no automation expert is required to operate the user friendly system.

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MACH • Hall 5 • Stand 5219

Lear finds fast and accurate solution with ScanArm HD

FARO Edge ScanArm HD provides fast, accurate non-contact measurement to aid Lear´s growing demand for foam car seats

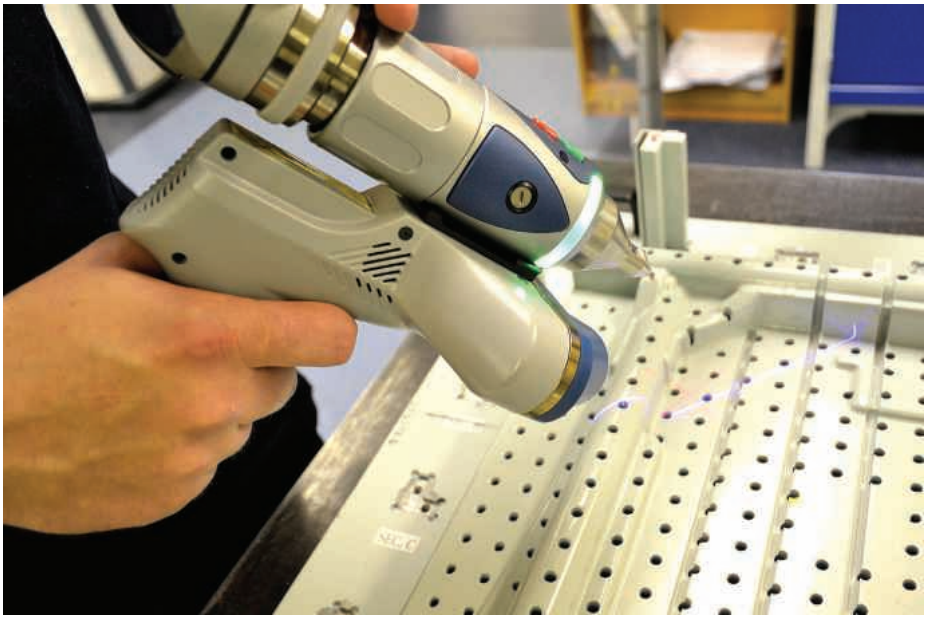
As it is critical that its car seats meet safety compliances and demanding customer expectations of comfort and craftsmanship, Lear Corporation leverages breakthrough chemistries to provide comprehensive foam product offerings that meet strict automotive performance specifications. The most rigorous of quality control standards are also adhered to in Lear car seat foam manufacturing facilities throughout the world.

Originally established to supply the nearby Nissan Motor Manufacturing plant with seating systems on a Just-in-Time basis, the success of Lear Corporation's Sunderland factory recently prompted a further multi-million-pound investment. To enable the busy facility to keep-pace with growing demand, the Corporation has extended its factory by a further 3,500 sq m and installed additional state-of-the-art production and testing equipment. The new extension has increased Lear Sunderland's capacity by over 300,000 car seats per year, taking the plant's total capacity to more than 600,000 per annum.

Jim Handy, senior quality engineer at the Lear Corporation Sunderland plant explains: "To enable the Sunderland facility to uphold Lear Corporation's reputation for the quality of its car seat foam products, stringent quality checks are regularly undertaken. As the correct dimension of car seats has an influence on their comfort, safety, durability and aesthetics, a wide range of measurements related to 'Significant Characteristics' are made on foam component in our quality department. Given the deformable nature of our foam products we have found the advanced non-contact scanning functions of the FARO Edge Scan- Arm HD to be ideal for our accurate measuring routines. The easy to use FARO product exerts no pressure on our components and quickly provides the precise results we are looking for.

"Following a FARO measuring routine, we use the accurate data obtained for examining Significant Characteristics and for inspecting sections through the component. In addition, we use the data for making precise CAD variance comparisons. A typical measuring routine would consist of a fixture that precisely represents the surface of a foam injection tool used in production, being accurately scanned with the Laser Line Probe of the FARO Edge ScanArm HD. The captured data is then stored as a datum. The foam seat component under inspection is then placed on the same fixture and aligned to duplicate its position at the time of manufacture. A second precise FARO scanning routine is then made and saved an accurate point cloud.''

Jim Handy continues: "The original fixture datum point cloud is imported, along with



the point cloud of the foam seat component, FARO's ingenious software then registers the two files together. The relevant CAD model is then imported and displayed as a reference file and the component's scanned point cloud file is then set as a test file. Comparison can then be carried out by keying in a value for the position where Significant Characteristics need to be checked; the achieved result is displayed, showing the nominal CAD value, the actual Significant Characteristic's value, and any deviations. Given the speed at which we produce foam components and their demanding dimensional specifications, not only are the highly precise results delivered by the ScanArm HD extremely important to us, the FARO products speed of operation is also vital. The rapid feedback we obtain from the system, related to foam components' Significant Characteristics drifting from nominal conditions, allows prompt interventions to be made and allows us to adhere to a zero defect condition."

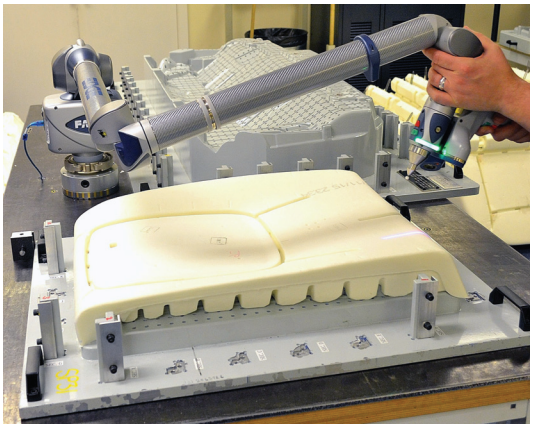
FARO develops and markets portable CMMs (coordinate measuring machines) and 3D imaging devices to solve dimensional metrology problems. Technology from FARO permits high-precision 3D measurement, imaging and comparison of parts and compound structures within production and quality assurance processes. The devices are used for inspecting components and assemblies, production planning, documenting large volume spaces or structures in 3D, and more. FARO's 3D measurement technology allows companies to maximise efficiencies and improve processes. FARO ScanArms combines all of the advantages of FaroArms with a hand held laser scanner (Laser Line

Probe) resulting in a perfect contact/non-contact measurement system. Unlike other scanning systems, the ScanArm's hard probe and the Laser Line Probe are able to digitise interchangeably without having to remove either component. Users can accurately measure prismatic features with the hard probe, then laser scan sections requiring larger volumes of data, all with a single, easy to use tool. Handheld laser scanners provide a quick and effective way to inspect and reverse engineer complex parts and surfaces. They turn everyday objects into digital computer models. Soft, deformable, and complex shapes (such as car seat foam components) can be easily inspected all without ever coming in contact with the part.

The FARO Edge ScanArm HD, as used by Lear Corporation, Sunderland, features enhanced scanning technology. Now, materials with challenging optical qualities can be scanned with less effort, allowing the user to scan jobs in less time. Moreover improved software algorithms allow the scanning of materials with high contrasting colours at the same time. The ScanArm HD is the ideal tool for product development, inspection, and quality control and offers capabilities such as point cloud comparison with CAD, rapid prototyping, reverse engineering, and 3D modelling of free-from surfaces. In combination with the all-in-one metrology software CAM2 Measure 10, FARO ScanArms provides companies with a complete metrology package for both contact and non-contact measurement.

Lear Corporation is a leading supplier of automotive seating and electrical, components and systems. Headquartered in Southfield, Michigan, Lear operates in 240 locations in 35 countries around the globe and employs approximately 135,000 employees. As one of the world's fully integrated manufacturers of the entire seat, Lear work with every major automaker the world over and have a proven track record in delivering quality seating systems. Lear supply completed seats for programs ranging from the highest volume platforms to specialty applications covering every segment from small car to full-size sport utilities.

FARO has proven that as well as providing a good quality product with the ScanArm, they also have a product that can quickly and effectively create data to examine for inspections. This data has been used by Lear to make sure that the characteristics of their products are of the right quality to deliver quality seating systems.



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MACH • Hall 5 • Stand 5910

Mitutoyo's hard and fast rules at Cross

Since the 1920's the Cross Manufacturing Company has specialised in the design and manufacture of heat resisting wrought alloy sealing rings and associated products. Cross' expertise within its chosen fields has resulted in the company becoming a leading supplier to the aerospace, automobile and power generation industries throughout the world. Currently, more than 90 percent of Cross' output is directly or indirectly exported.

In addition to a factory in Bath, Cross Manufacturing operates from two adjacent hi-tech facilities in Devizes, Wiltshire, here Cross manufactures two distinct product groups. A dedicated factory makes brush seals for aerospace and steam turbine applications, in addition to aircraft piston rings and custom seal rings for aircraft engines.

With annual production running into tens of millions of units, a second factory produces sealing and retaining rings for virtually every passenger car and truck turbocharger OEM. In-house manufacturing, quality control and advanced materials testing techniques have been developed by Cross to provide high performance, cost effective sealing in all areas of turbo systems, resulting in Cross becoming the world's leading manufacturer within this specialised sector.

Cross specialises in the manufacture of rings made from wrought materials. Custom designed production equipment and sophisticated process control techniques ensure superior sealing performance and consistent high quality. Cross constantly strives to remain at the forefront of technology and administers a progressive regime of investing in the most up-to-date production and test equipment. A case in point was the recent up-grade of the company's critical hardness testing function.

Graeme Newell, Cross Manufacturing brush seals and aerospace products, quality manager explains: "At Cross Manufacturing we combine technology with innovation to achieve world-class standards of precision and quality. Adhering to these values has enabled us to earn a global reputation for the delivery of high quality parts. In addition to multiple customer approvals from many multinational Aerospace companies, the premium quality of our systems has enabled us to gain several NADCAP Process approvals. The adherence to specification of the materials that we use is crucial to their performance. Given the demanding environments and the challenging operating temperatures, up to 1000°C, our brush seals operate in, they are manufactured from a range of advanced materials and alloys.

"Because of the need to verify our products' material properties, accurate material hardness measurement is a vitally important company quality function. Therefore, in accordance with our quest for continuous improvement, we recently replaced our previously used material hardness testing equipment.

"Having conducted a search for suitable equipment that would match, and further enhance our precision standards, in addition to improving our speed and ease of use, following an impressive demonstration we concluded the HV-110 Vickers hardness tester from Mitutoyo represented the ideal instrument for our demanding needs.

"We placed an order for three of the advanced Mitutoyo testers, two for use on our turbocharger sealing rings and one for use in our NADCAP approved heat treating and non-destructive testing facility, for use on aero-engine sealing rings.

"Following a trouble free installation and excellent training from Mitutoyo's staff, our operators quickly became proficient in the use of the new Vickers hardness testers.

Graeme Newell continues: "In addition to the HV-110s' speed and accuracy of operation, Mitutoyo's intuitive AVPAK-20 software has helped us to increase productivity. Although our previously used hardness testers were accurate and within specification, the advanced new Mitutoyo instruments have aided us in further raising the precision of our material testing functions and shorten inspection times.

"Within our aerospace related South Site, as well as tests, such as goods inward material hardness checks, we use our new Mitutoyo equipment to measure the hardness of sealing rings following heat treatment procedures. Not only do our new hardness testers help us to preserve our high quality standards and to maintain our crucial approvals, they also enable our important traceability records to be kept up to date."

The recently launched Mitutoyo HV110 is ideal for accurate yet fast Vickers hardness testing. The innovative new testers provide a wide range of test forces, ranging from 1 kgf- 50 kgf. The tester's precise load system allows load durations to be set between 5 and 99 seconds in 1 second increments, enabling the accurate testing of a wide variety of materials.

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MACH • Hall 4 • Stand 4486

Bowers Group to launch biggest ever catalogue

Bowers Group will be exhibiting a range of industry leading metrology products at MACH 2016. As well as launching its biggest catalogue to date at the event, visitors to the show are invited to bring their own material or components to be tested on the day by experts from Bowers, who will be providing working demonstrations of the latest measurement technology.

Visitors will have the opportunity to find out more about the range of precision measurement equipment available from Bowers Group, including a selection of products from Baty, Trimos, Sylvac, Gagemaker, Innovatest, WYLER and ACCRETECH. There will also be an on stand promotion, with further details to be released nearer the event.

Bowers Group sales director Stuart Millington says: "The MACH Exhibition is an important event for Bowers Group, and an excellent opportunity for us to showcase the very latest technology in the field of measurement. As well as generating interest in our products, we are excited to be offering visitors the unique opportunity to take advantage of our engineers' expertise by bringing along their own components to be tested. With the added excitement around the release of our latest catalogue, it's set to be a fantastic event."

On display at Bowers Group's stand will be a range of Sylvac products including the new scan vision system, a range of Bluetooth data transmission hand tools which includes calipers, micrometers, and digital indicators, along with the new UL4 Ultra Light Digital Caliper and new UNICAL2 Ultra Light Digital Universal Beam Gauge.

A wide variety of Optical products will be exhibited, including the new Sylvac Scan 52 machine, the Baty R400 FT2-E touch screen profile projector, and the new Bowers XT3 and XT3-BT Bore Gauge range. The Sylvac Hi-Cal 450 height gauge, the new Trimos V series Height Gauges and a variety of Sylvac hand tools with Bluetooth displays will also be exhibited.

Also on show will be the Innovatest Bench and portable hardness testers, along with the ACCRETECH Rondcom Touch roundness checker and Handysurf Portable

Surface Roughness Instruments, and a variety of Moore & Wright hand tools. In addition, the stand will have a selection of Wyler Levelling instruments, Gagemaker thread measuring devices, and a Trimos Labconcept Horizontal calibration machine.

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MACH • Hall 5 • Stand 5928

Cutting tool quality assurance measurement systems on display

Alicona's high resolution optical 3D metrology sensor head, combined with a 6-axis, automatic or manual robot, provides users with a flexible measurement solution for quality assurance applications.
The 3D measurement sensor is ideal for production or defect inspection applications: it is resistant to vibration, ambient light and temperature variation in addition to being quick and easily integrated in existing systems.

With two different application possibilities, the 3D sensor can be easily optimised for inclusion in the process line. One option allows for the sensor to be mounted on a robot enabling it to approach various workpieces. Another option is manually moving the sensor head to the feature to be measured.

This fully integrated 3D metrology in production saves time and allows quality assurance to be included as an integral part of the manufacturing process. Using this technology, users are provided with important real-time information on the state the manufacturing process in addition to the product.

This is made possible through the rapid display of reliable measurement data, especially in industrial manufacturing. In just one measurement cycle, it is possible to measure and analyse at various positions.

A traffic light system immediately reports whether or not workpieces are within geometrical tolerances, enabling the early recognition of defective processes. In addition, a simple teaching functionality allows simple configuration of customised measuring sequences.

The measurement process can be successfully implemented into different industries for inline measurement of critical surfaces.

For example, in the tool industry the robot is used for verification of all cutting edges in only one measurement cycle. Numerous edge parameters including: radius, angle, form deviation, flash or diameter are measurable.

Another area of application is the quality assurance for entire batches. This is made possible by analysing a single parameter on several workpieces in one measurement cycle. With this high degree of automation,

the need for manual intervention after starting a measurement is eliminated retooling times are reduced.

All measurements are taken on an accurate 3D model of the surface, allowing the measurement position to be identified and placed according to requirements. This 3D model is saved in a database providing a quality assurance record.

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MACH • Hall 5 • Stand 5919

Force and material testing solutions

In the crucial world of metrology and inspection Starrett has an established and enviable reputation, having supplied a wide spectrum of precision measurement equipment to manufacturers and craftsmen across the globe for decades. Now, the company has applied this knowledge and expertise to creating a range of advanced, but exceptionally easy-to-use, force and materials testing solutions.

Starrett's recently launched turnkey system solutions and test frames for materials testing, force analysis and force measurement have been designed and manufactured to simplify the creation and performance of the test function, as well as the management of the test results with class-leading software using SI or Imperial units.

Across the range high grade materials and precision components are used to ensure any test procedure and resultant data created is produced on secure foundations. Solid granite bases are used for exceptional stability while an extruded aluminium column structure, joined to the granite base with a large platform, ensures excellent rigidity. Adjustable over-travel limits prevent accidental overloading and integrated bellows protect the mechanical motion controls from debris.

Test frames for material measurement and force measurement are available in single column format for maximum load capacities of 500 N, 1,000 N, 2,500 N and 5 kN, and dual column for 10 kN, 30 kN and 50 kN. The vertical test space ranges from 559 mm in increments up to 1,270 mm for both the material and the force measurement testing frames, which provides plenty of sample material space. For efficient loading and positioning the maximum vertical travel rate of 1,525 mm/min applies to all the testers. However, the minimum speeds differ with the force testers' travel controlled down to 0.05 mm/min, while the material testers go to a much lower 0.001 mm/min to ensure maximum data capture at the point of yield or fracture.

With the quality of its test frames a given, Starrett has created software designed to make creating and performing a test, analysing test results and managing test data so much easier. Designed to meet the requirements of today's research scientist, design engineer, quality manager or technician responsible for material characterisation, verification and validation, the Starrett L3 System provides a perfect example of this.

Any point, or any segment, on the graph can be measured. Analyse using stress, strain, load, distance and time, with measurements displayed on the graph and shown in data tables with statistics and tolerances. Tests can be carried out using tension, compression, flexural, cyclic, shear and frictional forces.

Designed for advanced force measurement and analysis, Starrett L2 Plus Systems have been optimised for quality and engineering staff, with intuitive and efficient test setups. It not only captures the measurement, but also has the information that shows 'why, when and where' the measurement occurs.

For applications such as high-volume in-situ production, incoming inspection and validation, or basic force measurement, the Starrett L2 System provides a cost-effective and easy-to-use solution. The small footprint makes them ideal for lean manufacturing environments and tests can be setup in seconds using templates or created using the L2 Test Builder. No programming experience is required.

Operating from a Windows-based tablet PC; load, distance and time-based results are displayed in a large format for easy interpretation. Graphical results from each test can be displayed and data tables show results with tolerance and statistical calculations.

For an easy-to-use measurement system for accurately and precisely determining spring rates, spring constants, spring lengths and other spring characteristics, the Starrett S2 systems provide the solution. They are ideal for high volume production testing and quality control.

S2 systems can be used for compression and extension springs with load ratings up to 50 kN or 5,000 kgf. Starrett has developed simple, fill-in-the-blank test setups that allow springs to be tested and validated in as few as three steps.

Reflecting the accuracy of the testing system, Starrett's comprehensive range of load cell sensors for each testing type and are all supplied with a NIST-traceable Certificate of Calibration. All sensors are 'plug and play' and are available in ranges from 5 N to 50 kN. Measurement accuracies of +/- 0.05 percent of reading down to 1/100 of sensor capacity can be achieved.

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MACH • Hall 4 • Stand 4314

Demonstrating new inspection solutions

Vision Engineering is demonstrating its powerful range of inspection solutions for manufacturing at MACH 2016, including the latest in optical excellence with the Lynx EVO eyepiece-less stereo microscope and the EVO Cam full-HD digital microscope. Visitors to the show can check out the microscopes in **Hall 5 Stand 5937**.

Unlike typical stereo microscopes, the patented eyepiece-less design of Lynx EVO eliminates the difficulty and strains of microscope use, providing unrivalled ergonomic performance to enhance operator productivity and ease of use.

Lynx EVO has been designed to power productivity, with every aspect designed to deliver comfort and efficiency for inspection tasks. The 10:1 zoom ratio and 240 x magnification provides the platform for inspecting a wide range of components.

Specifically designed for quality control, testing, inspection and documentation, the new EVO Cam digital microscope simplifies precision magnification tasks allowing you to focus on the detail, bringing to life a macroscopic world in stunning detail.

Magnification options up to 300 x and full auto focus, the EVO Cam ensures ultra-sharp imaging at all times. Live video streaming and exceptional full-HD 1080p/60fps image quality unlocks the power of digital imaging, with integral image capture direct to USB memory stick (without a PC) providing ultimate simplicity.

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Manufacturing applications of vision

STEMMER IMAGING will be showing a variety of industrial vision systems at MACH 2016 **Hall 5 Stand 5956** These will include a smart 3D system making 3D measurements on parts on a conveyor, a multi-camera packaging inspection system, robotic pick & place with a novel pattern matching method and component inspection using a high resolution smart camera.

The LMI Gocator series of 3D profile sensors will be highlighted in a conveyor belt demonstration where various 3D components of parts will be measured and a pass/fail decision made.

A multi-camera packaging inspection system will be used to determine print quality, read alphanumeric and barcode data and check fill-level as boxes pass underneath. Using cameras from JAI, Allied Vision and Teledyne DALSA, this will show how cameras with different interfaces (USB3 Vision and GigE Vision) and varying resolutions can be combined to meet different inspection needs.

Vision enabled robotic pick and place is a well-established technique, but here a novel pattern matching tool, CVB Polimago is used to determine the position, pose and rotation of the items to be picked. Teledyne DALSA´s new 5 megapixel Boa 2 smart camera will also be shown for inspecting pharmaceutical packaging.

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Xtreme measures at MACH

Aberlink will be launching a unique CNC coordinate measuring machine, the Xtreme, at MACH 2016. Designed with a novel non-Cartesian structure and utilising linear motors and mechanical bearings, the Xtreme's advantageous configuration ensures that it maintains its accuracy at very fast measurement rates and does not suffer from the accumulative inaccuracies that occur in conventional 3-axis Cartesian arrangements. As its name implies, the new Xtreme CMM offers customers a robust solution for undertaking precise inspection routines wherever they are required. However, it is anticipated that it is the cost effective price of the Aberlink Xtreme that will have a significant effect on the market.

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

To help illustrate the impressive scanning capabilities, made possible as a result of Aberlink's new MKIV software, the Zenith 3 CMM will be demonstrated fitted with a PH10M motorised indexing head and SP25M scanning probe. The award winning Zenith too CMM has recently undergone several improvements and design innovations based on the larger Azimuth CMM range. The new Zenith 3 boasts improved accuracy and faster travel due to the increased stiffness of the X-axis bridge design.

Aberlink staff will also be demonstrating what the company is calling 'the ultimate answer to inspection bottlenecks'. The recently launched, Axiom Too HS CMM is the high-specification variant of Aberlink's best-selling Axiom Too. In addition to boasting an enhanced accuracy specification, the impressive speed of the HS variant enables it to perform a remarkable number of inspection tasks in a fraction of the time normally taken. Aberlink's best-selling Axiom Too CMMs will be fitted with PH20 head touch probing systems and PH6M-SP25M scanning probe systems, in addition to advanced interchangeable cameras and collimated light systems.

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MACH • Hall 5 • Stand 5946

Strong showing for Vero at Southern

Each of the four Vero brands exhibiting at the Southern Manufacturing show reported exciting prospects as a result of its presence there.

Edgecam finalised a sale on the booth, and reported strong leads across the three cutting disciplines of milling, turning and wire EDM. There is a high probability of a former Javelin customer returning to the software after seeing "tremendous advances" in recent releases. Considerable interest was shown in Radan's powerful bending system, Radbend, as experienced press brake operators retire. And visitors to the booth were particularly impressed with VISI's surface and solid modelling tools.

Edgecam area sales manager Scott Ravenscroft says he was approached on the booth by an existing customer wanting a new post processor, and the deal was agreed during the three-day exhibition: "Edgecam is a multi-discipline system for milling, turning and Wire EDM, and we've taken leads from manufacturers using all three of those cutting technologies. Many visitors were impressed with the game-changing Waveform roughing strategy that is now available for both milling and turning, and we also demonstrated the new ramp cut strategy in the rough turn cycle. This method is typically used for turning deep recesses with double-sided turning inserts and extends tool life as the contact point on the insert is constantly changing, avoiding notching. The new strategy can be used with decreasing cut increments."

www.edgecam.com

Andy Mills, account manager for Vero's ERP/MRP system, Javelin, says as well as a number of potential new business enquiries, a former customer who had moved over to another production control software, said he had 'made a mistake.'

"We demonstrated the latest version, 2016 R1, and showed the number of developments in recent releases, which prompted the former customer to say he could well contact us shortly to see about returning.

"Overall, visitors were particularly impressed with Javelin's quality aspects recording quality on parts, and the quality in respect of recording size on operations, and the control of part issue and part review."

www.javelin-mrp.com

For Radan, the highlight of Southern was the interest shown in its bending software, Radbend. Area sales manager Gary Smith says: "Manufacturers are starting to see their experienced press brake operators retiring, and they find it difficult to recruit skilled replacements. So they're using Radbend to bring the knowledge that they're losing at the machine on the shop floor, into the engineering department. Using Radbend means they can recruit semi-skilled workers on the press brakes, who are being supplied with full bending programs from the office."

He says the quality of leads generated at the exhibition is higher than in previous years: "We had a number of enquiries from a range of manufacturers although predominantly subcontractors who are genuinely looking for new software at this moment."

www.radan.com

VISI's southern sales manager Rob Hawkins also reported a number of strong leads over all three days of the exhibition: "We were showing our latest release, VISI 2016 R1, and visitors were most interested in its modelling and machining features because of their ease of use, along with the press tool design and mould tool design capabilities."

It was the first time VISI had had a presence on the Vero booth at the exhibition, but he says they will definitely be back next year. "It's been particularly successful for us...well worthwhile attending."

www.visicadcam.com

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

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MACH • Hall 5 • Stand 5710

Version 4.0 software to demonstrate capabilities

Tebis, the CAD/CAM experts, shall be exhibiting its new Version 4.0 software at MACH 2016. Alongside previews of the new software shall be a Quaser MV184P 3-axis CNC machine demonstrating the capabilities of the Tebis software.

The Tebis software which features a new user friendlier interface, more efficient design processes and an expanded automation process for NC programming will be showcased and the UK team will be on hand to demonstrate its complete range of CAD/CAM solutions for all types and size of business. Working in partnership with the Engineering Technology Group, the machine shall cut parts for demonstration. Tebis is presenting, for the first time internationally, its high performance adaptive roughing and re-machining strategies live on the machine tool.

Tebis has over 30 years providing process automated CAD/CAM solutions to industries as diverse as automotive, aerospace, model mould and die tooling manufacturers, oil and gas, marine, consumer products and medical

engineering parts. Tebis CAD/CAM solutions include applications developed and tailored to improve industry specific processes.

Tebis CAD is rich in real life "model for manufacture" analysis tools to provide key feedback about the product manufacturability prior to committing to production, drastically reducing or eliminating the need to re-develop the correspondent processes or re-manufacture. Our CAD includes reverse engineering functionality capable to produce pre-class A surfaces bridging digitised models with styling, model making, and engineering applications within the automotive, and marine sectors.

With a clean, modern yet powerful, graphical user interface, Tebis provides a single environment for all your manufacturing needs: 2-5 axis milling, turning, turn-mill, mill-turn, 5-axis trimming, 5-axis laser cutting, 5-axis waterjet cutting, robot offline programming, electrode manufacture, and wire EDM.

Tebis is growing into a high-quality global brand for creative engineering. The company delivers end-to-end software solutions and highly efficient processes for the development, design and manufacturing of models, moulds and dies, and components.

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MACH • Hall 4 • Stand 4020

3DViewStation WebViewer 2016

KISTERS has announced the 2016 release of 3DViewStation WebViewer. The WebViewer version of 3DViewStation provides extremely fast 3D viewing, advanced analysis and Digital MockUp (DMU) for browser based viewing and mobile users of tablet-PCs, smartphones and notebooks. No client installation is required. 3DViewStation WebViewer ships with current and mature CAD-importers for a broad range of formats including: Catia; NX; Creo; SolidWorks; SolidEdge; JT; 3D-PDF and STEP plus an extensive set of functional tools to view and analyse 3D CAD data.

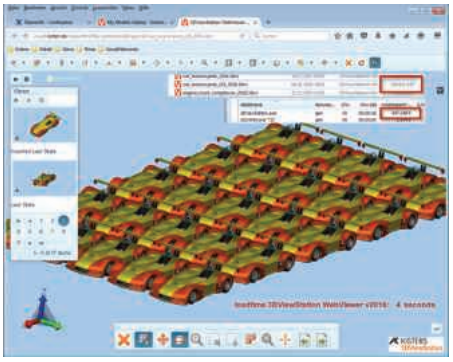
The 3DViewStation WebViewer 2016 offers unique possibilities. Mobile users have the same performance, the same APIs and the same functionality. This has previously been only available to Desktop users.

Although KISTERS 3DViewStation WebViewer has been very fast previously, the focus of developments has been to further optimise the handling of extremely large assemblies and enhancements of the analysis functions.

The graphics kernel, which is a KISTERS development, has been optimised again to cut down load times by 50 percent in 3DVS file format and to reduce memory usage by 60 to 70 percent. Also the file size of 3DVS files has been reduced by 20 to 30 percent.

As an example, a complete truck, being more than three GB of JT pure tessellation file will be reduced to 450 MB in 3DVS file format and will load in less than 10 seconds in your browser on your tablet computer, smartphone or notebook, using less than 500 MB memory for that session on the server. Handling and analysis of this model is working fluently, even with limited bandwidth.

The KISTERS 3DViewStation is developed by very closely following customer requirements. It is available as desktop, ActiveX and HTML5 WebViewer product-versions. All product flavors are intended to be used together with a PLM-, ERP or other management system like product configuration or service & spare part applications, providing all necessary APIs. For cloud, portal and web-solutions



there is a HTML5-based WebViewer solution available, which does not require any client installation at all. All file formats can be used in combination with the intelligent navigation and hyperlinking features to address needs of complex integration scenarios.

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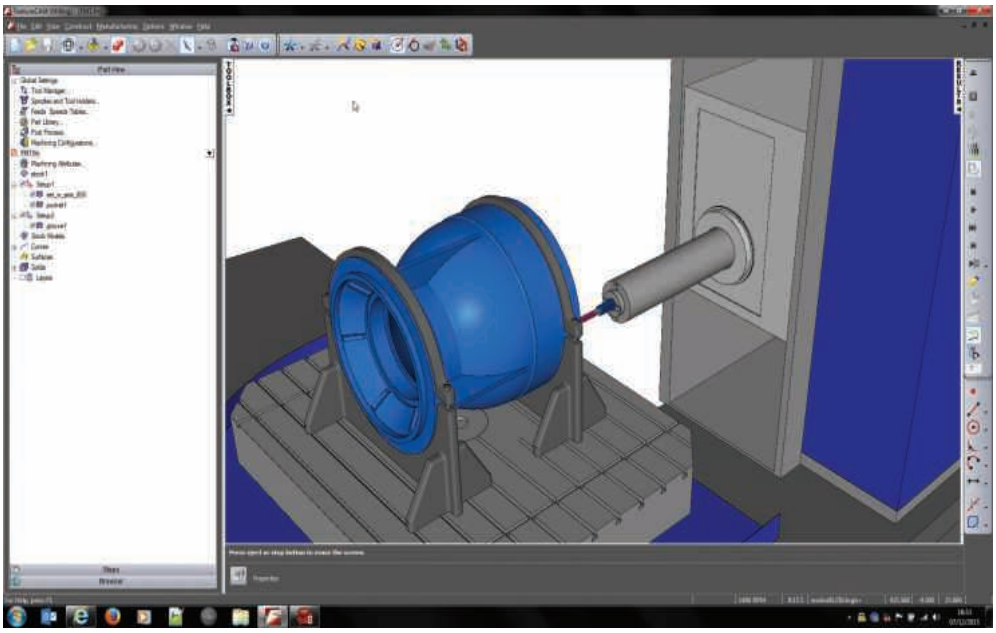
Latest version of FeatureCAM at MACH

Delcam will demonstrate the many benefits in the latest release of its FeatureCAM automated CAM software to increase productivity and provide more control over the toolpaths produced. These include more options for the Vortex high-efficiency roughing strategy, support for bar-fed mills, more efficient turning, increased 5-axis functionality and user-interface improvements to make programming even easier and faster.



More efficient milling

The Vortex high-efficiency roughing strategy in FeatureCAM now allows the non-cutting moves of 2.5D and 3D Vortex toolpaths to be fine-tuned, with options to retract the tool and/or to increase the feedrate. Other roughing improvements include the ability to dynamically take into account the current stock state during holder collision checking, ensuring that Z-level roughing toolpaths are completely free of toolholder collisions.

The milling of inside or outside groove features now includes support for different stepover types, a wind-fan finish, plunge/retract handling, better gouge checking, and support for tool radius and partline cutter compensation.

Curve sorting has been added to 2.5D pocket features to give shorter cycle times. This gives automatic control of the order in which multiple curves are machined within a single feature.

5-axis flexibility

5-axis machining has been made more flexible with a new option to control the upper and lower Z limits of a simultaneous 5-axis swarf toolpath. This is useful if there are tool length limitations or if the stepdown needs to be varied for different segments of the toolpath.

Features aligned to the Z-axis can be machined by using the C-axis, rather than by moving in the X and Y axis. This option, which is commonly known as polar milling or polar indexing, can be used in situations where the machine cannot travel beyond a certain linear point. Instead the C-axis can be used to rotate the part within the machining envelope, helping to reduce machining time and improve surface finish.

Support has been introduced for the W-axis on machine tools such as horizontal boring machines. This addition can be used to control and simulate moveable live spindles, which can extend the travel limits of the Z-axis to help avoid collisions.

Turning and turn/mill

The use of turning tools has been simplified with the ability to use a single tool in multiple orientations. This new automatic tool orientation categorises tooling into either outside-diameter or inside-diameter turning tools, reducing the number of different tools that need to be created, to speed up programming time.

Support has been added for bar-fed milling machines, with cut-off operations that support the use of milling tools.

User interface and documentation

Interface improvements include the ability to create additional setups quickly during feature recognition, via a new button in the Feature Wizard. This enhances the workflow to reduce programming time.

FeatureCAM now allows the quick import and alignment of pre-defined vices and chucks into a project. Toolpaths can then be automatically trimmed to avoid these fixtures and a more realistic representation during simulation can be achieved.

An improvement to automatic tool selection includes a check of the diameter of the tool shank. If the shank diameter is found to be larger than the diameter of the cutting portion of the tool, FeatureCAM will choose a tool of the appropriate length to avoid collisions of the shank with the part.

When used in combination with PowerSHAPE, FeatureCAM now allows machining files to be selected and nested automatically in a single block to optimise stock material usage.

Machine design files now appear on a document level, making it easier to check visually which file is loaded. This also makes it quicker to edit the setup location of the component and to change the machine-design file for the post-processor that is currently loaded.

In another enhancement, FeatureCAM allows a post-processor document to be generated. This document helps users to understand the capabilities of the post-processor that is loaded.

Finally, Autodesk RealDWG has now been integrated into FeatureCAM, bringing with it increases in the speed of import of DWG files and support for import of DWG solid models.

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MACH • Hall 4 • Stand 4011

VERICUT composites applications software at JEC

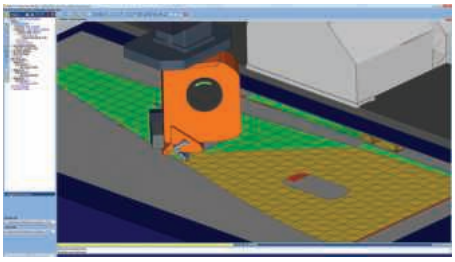
CGTech recently exhibited at the JEC Composites show in Paris. Throughout the show, the company demonstrated VERICUT Composite Applications: VERICUT Composite Paths for Engineering (VCPe), VERICUT Composite Programming (VCP) & VERICUT Composite Simulation (VCS).

The latest version of CGTech's VERICUT software was on display. VERICUT is CNC machine simulation, verification and optimisation software that enables users to eliminate the process of manually proving-out NC programs. VERICUT simulates all types of CNC machining, including drilling and trimming of composite parts, water jet, riveting, robotics, mill/turn and parallel kinematics. VERICUT runs standalone, but can also be integrated with leading CADCAM and PLM systems, including Dassault Systemes CATIA, Siemens PLM NX CAM, Delcam PowerMill, Vero EdgeCAM, Open Mind hyperMILL, DP Esprit and Missler TopSolidCAM.

CGTech also demonstrated how critical simulation is when trimming composite parts. Managing director John Reed says: "Because composite workpieces have a significant amount of process time and labor in them prior to machining, they can be more expensive than even some exotic metal alloy workpieces. It's usually not possible to repair a composite workpiece damaged during machining. Thus, validation of the part program is extremely critical''

Visitors to CGTech's stand were able to see first-hand the necessary steps needed to get from a CAD designed composite part to CNC programs that drive an Automated Fiber Placement (AFP) or Automated Tape Laying (ATL) machine. Information on new projects included the implementation and use of machine independent off-line NC programming software for AFP and ATL machines. Among the current customer projects highlighted was the extensive use of robots, lasers, probing, and ultrasonic knifes on machines from leading AFP and ATL manufacturers including Electroimpact and MTorres.

CGTech was also featured on the STELLAR project stand. Stellar is a European Commission funded project and the



concept is to develop the design methodologies, manufacturing processes, equipment and control systems needed for localised placement of different fibre-reinforced thermoplastic composite tapes onto a range of substrates, creating locally reinforced components that are fully weight-optimised.

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MACH • Hall 4 • Stand 4021

New version of CADCAM Nesting Software

ESAB Welding & Cutting Products has announced the release of Columbus® CADCAM Nesting Software version 1.3, a powerful CADCAM programming and nesting software optimised for plasma, oxy-fuel, laser and waterjet cutting. This latest version of Columbus offers many new features and updates to make programming easier and more efficient, improve material utilisation, increase productivity, and streamline workflow.

The most powerful function is the new Job Wizard, which automatically creates NC programs from customer orders. For the parts and plates within a customer's library that are marked for automatic process, Job Wizard can automatically nest all parts on the correct plates, as well as assign the best machine to cut the part based on strategy settings. For job shops, Job Wizard can perform these functions automatically within minutes after a customer releases the order, saving hours of time.

Influenced by customer requests, Columbus version 1.3 now features a simpler, optimised User Interface (UI). The menu-driven user interface complements the screen icons to help keep the workspace organised and keep important functions at the user's fingertips. The workspace can be customised by hiding or showing all features in each section and organising the different menus with dockable windows over more than one monitor.

Other enhancements include a zoom overlay window that shows details without zooming the complete layout, visual control for users to detect parts on a table grid which will tilt after cut, commands that improve cut quality and production time when beveling by optimising the cutting path and eight more improvements that simplify programming and cutting. ESAB offers total online support for Columbus software. All support is done online, which allows questions to be answered as quickly as possible to get customers up and running faster.

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

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Hammering home an advantage

The Halder family company has been producing soft-faced hammers for over 75 years and is recognised as the world leader in this product segment. Recently, it has automated the entire welding process for the soft-faced hammers made at the Baden-Württemberg site in Achstetten. The new, compact QIROX QR-CC-6 robot cell produced by CLOOS guarantees constant quality and reproducibility.

Engineer Erwin Halder founded the company in 1938 under the "Simplex Schonhammer" patent. Since then, many products for varying fields such as standard parts, workpiece clamping and aviation have been added. Since then, the Halder Group as a whole has employed around 300 employees and it is still growing. The soft-faced hammers are used all over the world. They must withstand extreme weather conditions, both very low minus temperatures in the Canadian winter and the very highest temperatures in the desert.

"In order to maintain the high quality we claim for our hammers, we rely on a 100 percent production depth", explains Stefan Halder who today runs the company together with his brother Martin, both of the third generation. "So that the hammers have the right amount of whoomph, that is to say the right level of impact, the quality of the head-shaft connection is of particular importance."

CLOOS has developed the fixture specifically for Halder

The two-station design allows for simultaneous welding and loading of the compact cell

The soft-faced hammers are available in many different sizes

Automated welding of the soft-faced hammers

This critical connection is welded by robots from Carl CLOOS. The first system for the production of medium-sized hammers was already commissioned in 2001.

"We had excellent experiences with the older CLOOS compact system", emphasises company manager Markus Bührle. "What's more, we are very happy with the services of the CLOOS representative Görmiller in nearby Kirchberg."

Last year, Halder invested in another CLOOS compact cell. Here, the QIROX QRC-320-H robot welds the very small and very large hammers from Halder's broad product range. These were previously welded by hand. By using the welding robot in the compact cell, spatters from welding have now been reduced to a minimum and there is therefore there is no need for an extensive rework.

Individual complete solution for efficient production

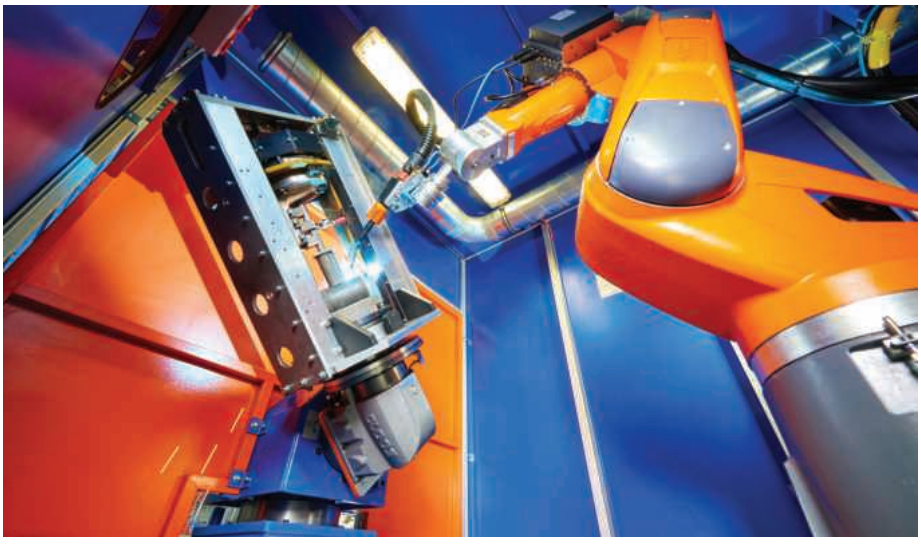
It does not require much space and could be easily integrated into the production. From sensors to controller and safety technology the compact cell is a tailor-made unit with components which match each other optimally.

The cell has a two-station positioner with turning/swivelling movement. Here, the construction of the fixture for the hammers was a particular requirement.

"CLOOS has developed an individual fixture for us which is designed specifically for our hammers," says Markus Bührle.

Due to the two-station design the operator can remove the welded workpieces on one side and reload the system whilst the welding process takes place at the other station. As controlling and programming of the compact cell are exactly as with the older system, the employees were quickly able to adapt to the new equipment.

"By changing to automated welding, we were able to make our production process safer and achieve exactly reproducible welding results," adds managing director Stefan Halder. "Just with the new compact cell, several tens of thousands of hammers can now be welded automatically each year."



The CLOOS compact cells do not require much space and can be easily integrated into each production

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Fronius presents a new generation of TransPocket MMA welding systems

More functional and more energy-efficient than ever before welding technology expert Fronius is launching a new generation of its tried-and-tested MMA welding system: introducing the TransPocket 150 and TransPocket 180. The devices have been refined to produce outstanding welding results and include an improved range of functions. In addition, a digital resonance inverter ensures perfect weld properties for a variety of electrode types, and thanks to innovative PFC (Power Factor Correction) technology, the devices are extremely energy-efficient.

The TransPocket 150 and 180 are replacing the proven TransPocket 1500. With the TransPocket 180, a single-phase 180 A MMA welding system will be available for the first time. The manual welding systems are designed primarily for MMA welding and can process rod electrodes with a diameter of up to 4.0 mm. The latest generation of devices is also suitable for TIG welding up to 220 A, with a new TIG Multi Connector and welding torch with Up/Down function available for this purpose. The latter enables the welding current to be set on the welding torch. The TransPocket permits TIG welding as a pulse welding process as well as in two and four-step mode.

The new TransPocket delivers excellent welding results irrespective of the welding process. A digital controller adapts the power source characteristic to the electrode to be welded. This results in outstanding weld properties, which become apparent mainly as a result of the optimised electrode ignition with a lower short circuit current and reduced spattering during the welding process.

High voltage reserves at every operating point produce an extremely stable arc. Furthermore, truly innovative PFC technology (automated Power Factor Correction) adapts the power consumption of the power source to the sinusoidal mains voltage, thus reducing the machine's current consumption. The device is therefore much more energy-efficient and disturbances to the mains supply are reduced to a minimum. Long mains leads can be used as a result.

The TransPocket 150 and TransPocket 180 impress with outstanding welding results and an extended range of functions

Fronius has also further optimised the design of the TransPocket. The stable and robust plastic housing provides the device's sensitive electronics with the best protection against dust and moisture, making it suitable for all applications. A permanently integrated dust filter and improved cooling system are also used for this purpose. These guide the air flow past the sensitive PC boards, preventing them from becoming contaminated. Ergonomic handles simplify handling, and the protected, seven-segment display can be clearly read under all lighting conditions. The user interface is simple and intuitive and offers a variety of options. In addition to the protected service interface, which allows system information to be read easily and updates to be carried out for special characteristics, the optimised housing also ensures effortless device maintenance.

The TransPocket 180 is also available as a multivoltage variant, a flexible single-phase device that can be operated at a mains voltage of between 96 and 265 volts. This is a huge advantage for users with different mains supplies. The compact and robust design of the TransPocket makes it the ideal companion for use on construction sites.

Fronius International GmbH is an Austrian company with headquarters in Pettenbach and other sites in Wels, Thalheim, Steinhaus and Sattledt. With 3,385 employees worldwide, the company is active in the fields of welding technology, photovoltaics and battery charging technology. Around 92 percent of its products are exported through 21 international Fronius subsidiaries and sales partners/representatives in over 60 countries. With its innovative products and services and 928 granted patents, Fronius is a global innovation leader.

Fronius UK will be showcasing the new Fronius TransPocket 150 and 180 for the first time in the UK at MACH.

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MACH • Hall 4 • Stand 4758

Use Weld Backing Tape for perfect weld

When welding sheets, pipes, tanks and other vessels made from metals such as stainless, carbon, duplex and chrome steels, it is important to support weld roots and provide even profiles.

As an international leader and manufacturer of weld purging technology, Huntingdon Fusion Techniques HFT® has extended its range of purging products and is providing an economical Weld Backing Tape™ for the backing of welds, where purging is required but neither easily achieved nor economically viable.

Georgia Gascoyne, CEO for HFT says: "With the use of this relatively low cost Weld Backing Tape, welding speeds can be increased and will result in neat, clean welds that will require minimal post weld attention. The cost of the HFT Weld Backing Tape is paid for on each weld by dramatically reducing welding time and cleaning."

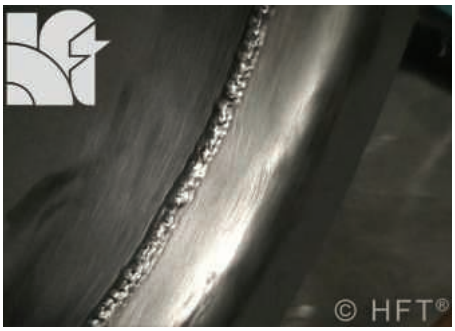
Weld Backing Tape is a glass fibre weld backing system that supports and protects the weld root from oxidation. It will trap the inert gas from the weld torch to hold the gas surrounding the weld pool, effectively providing a back purge facility.

Using Weld Backing Tape is it possible to weld with MIG, TIG (GTAW) or Plasma (PAW) for the joining of all metals. In cases of welding large diameter pipes or vessels, there will be a massive inert gas saving by using Weld Backing Tape instead of filling complete pipes or vessels with gas.

Weld Backing Tape is available in three grades and all consist of a high temperature resistant aluminium backing foil with a heat resistant band of woven glass fibre cloth. With the thickest cloth, it will support single pass welding at weld currents up to 240 Amps, without change to the chemistry or metallurgy of the weld.

Huntingdon Fusion Techniques has a worldwide Exclusive Distributor network that can be found by visiting www.huntingdonfusion.com.

There is a video online that shows the Weld Backing Tapes in use and the quality finish **www.youtube.com/HuntingdonFusion**.



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PTG supports academia in Friction Stir Welding research

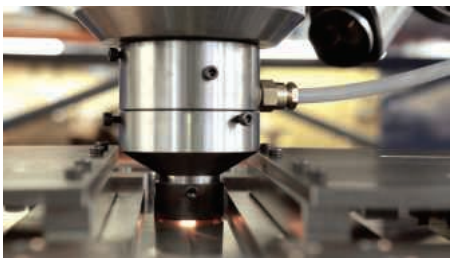
As growing numbers of manufacturers embrace the benefits that Friction Stir Welding (FSW) provides, UK-based PTG Heavy Industries reports considerable interest from universities and research institutes in its smaller 'laboratory' FSW machines.

"Our larger Powerstir Friction Stir Welders have long been a favoured choice among organisations wishing to achieve superior high strength welded joints, without the detrimental and visible side effects of conventional welding," comments PTG Group business development director, Neil Jones.

"Powerstir models are typically used in the manufacture of railway carriage panels for high speed trains, as well as in avionics, the space industry and across many other sectors," he adds. "However, the recent upsurge in demand for our laboratory models clearly indicates an increasing desire to apply Friction Stir Welding to an even greater range of manufacturing processes. As such, we are keen to help advance the use of FSW technology and welcome enquiries from academic institutions that are interested in acquiring one of our Powerstir laboratory machines, or partnering with PTG in their research activities."

The University of Manchester's Institute of Science and Technology (UMIST), for example, was one of the first academic institutions to acquire a Powestir laboratory machine. Since then, research departments from across the global aerospace and transport sectors have also made Powerstir laboratory machines central to their studies into creating stronger, lighter and more aesthetically pleasing welds. Finally, in the UK, The Welding Institute uses a Powerstir machine for its ongoing work into FSW processes, joint strength and tool development.

Launched in 2000, PTG's Powerstir machines offer far-reaching opportunities for jointing often difficult to weld alloys, where special attention is paid to structural rigidity. Used primarily for the jointing of aluminium, magnesium, copper, titanium, steel, lead and zinc, the Powerstir FSW process provides a clean, highly aesthetic alternative to traditional welding. It delivers proven weld quality, excellent mechanical properties, virtually no porosity and the opportunity for reduced wall thickness in many applications.



PTG's Powerstir laboratory models are typically used for educational and research purposes or for the manufacture of small components. They are particularly suited to welding thin wall sections, such as: hydraulic cylinders, suspension dampers and heat exchanger components.

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Surtech to debut indestructible welding tables at MACH

In the 'Welding World Village' at MACH 2016, Surface Technology Products (Surtech) will be giving fabricators the opportunity to view the latest range of welding tables from Bernd Siegmund GmbH. Surtech will have two stands at MACH 2016.

On the strategically located stand in the welding village, the Birmingham-based company will cater for the audience of fabricators at MACH with welding tables and a weld cleaning machine. Surtech will have two welding tables on its stand to give visitors just a taste of what is available from the Siegmund brand.

The philosophy of Augsburg-based Bernd Siegmund GmbH is to manufacture elaborate, flexible, indestructible and exclusively designed clamping and welding tables. These robust and hard wearing tables are exclusively available in the UK from Surtech.

Thanks to an elaborate modular design and a huge functional diversity, it is possible to realise complex applications and combinations in no time. It is possible to choose between two base table versions with different dimensions, table legs and material composition.

The new Professional Extreme welding table is rightly described as a 'good-looking and indestructible bench that will last over half a century'. The welding table's lifetime is designed to be used for more than 50 years when treated correctly. By using pre-hardened steel and a specific processing of the surface, the so-called plasma nitration, the table becomes extremely durable to outer impacts such as scratches, rust and welding spatter adhesion.

The Professional Extreme table has proven its extremely hard surface in an extra-ordinary endurance test. It overcame the impact of a car being dropped on it from a height of 8 metres, it was buried under 45 tons of gravel, soaked with saltwater for two weeks in order to provoke rust and then it endured a controlled explosion. After all these tests, the table was still completely intact, apart from some minor colour changes.

But the Professional Extreme does not only convince with its extraordinary hardness and its functionality, but also with its exclusive appearance. In 2013, it was awarded with the red dot for design quality and received a 'Silver Award' at the US design competition IDEA. This exciting product is only the most recent addition to the Siegmund range that not only consists of welding tables but also a wide range of accessories like bolts, clamps, extensions and much more. All these products are now available in the UK from Surtech.

The two tables on display at MACH will introduce a range of possibilities with varying tooling hole configurations. There is a wide selection of clamping and fixturing devices with accessories to make each set up more efficient for every fabrication shop.

The Siegmund tables are designed exclusively for clamping and welding and they are presented as flexible, indestructible, hard wearing with a huge functional diversity making it possible to realise complex application setups very quickly. They enable the user to choose between two base table versions with varying dimensions, table legs and structural hardness. The Siegmund tables are precision machined on the top and side tooling locations with scale for the highest accuracy and repeatability of setups. This precision is emphasised in every aspect of the product with extremely precise support rails offering unlimited expansion.

To complement the welding tables on display, Surtech will also give a MACH debut to its new range of ISOARK weld cleaning machines. The Swiss manufactured ISOJET Cleaner 5 is a fully mobile system for removing weld and plasma cutting residue from components. The new ISOJET Cleaner 5 from ISOARK offers an easy and cost-effective way to remove the tarnished surfaces that result from TIG, orbital welding and plasma cutting without dulling the base material.

The ISOJET Cleaner 5 operates on the electrolyte principle, whereby the tarnish is removed through the effect of the electronic (positive to negative flow of electrons) flow from the anode to the cathode using a special electrolyte.

Operation is simple by connecting the applicator to the current supply, fitting the carbon brush, dipping it into the "ISOJET ISOL C electrolyte solution and brushing over the weld. The flexible carbon brush conforms to every weld and cleans all stainless steel where tarnish appears after welding, spot-welding or punching.

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MACH • Hall 4 • Stand 4943/4531

Lasers contribute to gravity wave detection in more ways than one

Meta Vision Systems (MVS) has contributed to the LIGO (Laser Interferometer Gravitational-Wave Observatory) project in the USA, which recently detected gravity waves predicted in 1916 by Albert Einstein on the basis of his general theory of relativity **www.ligo.caltech.edu/page/vacuum**

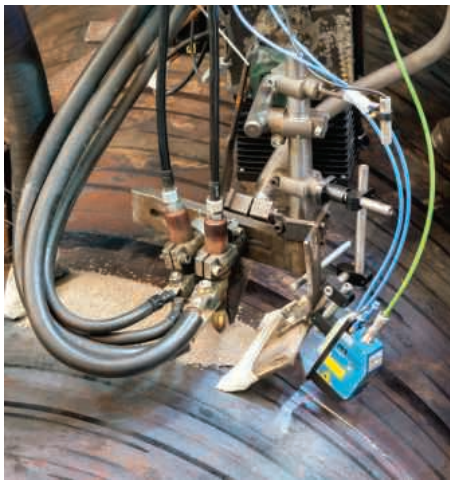
Each of two LIGO observatories, thousands of kilometres apart, contains a laser interferometer connected to two 1.2 metre diameter, 3 mm thick, 4 km long vacuum tubes, created in 19 to 20 metre segments. They were produced as spiral-welded, 304L stainless steel pipes in a special, high specification spiral pipe mill made by PRD Company, Hayward, California.

A high vacuum within the tubes is critical to interferometer performance, so any weld defects would have been seriously problematic. While a mathematically perfect cylinder will not collapse under pressure, any small imperfection would allow it to buckle. The Montreal subsidiary of Oxford-based MVS provided the mill with laser vision systems to guarantee integrity of the weld joints by ensuring that guidance of

A LIGO spiral-welded beam tube after assembly at Livingston (Photo courtesy of: Caltech/MIT/LIGO Lab)

the welding equipment was always precisely on track. The project started in 1996 when the PRD mill was first assembled in Washington State to build the Hanford observatory before being moved 3,000 km to Louisiana to build the second observatory in Livingston. Marcelo Rodegher, Meta's engineer who installed the laser vision systems and still works for the company, reported that he first installed the systems at PRD in California before travelling to Hanford for the start of tube manufacture there.

Meta continues to supply the most advanced laser vision and control system to spiral pipe mills worldwide.



A typical Meta Vision Systems laser seam tracking configuration for spiral pipe welding (Photo courtesy of: Meta Vision Systems)

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Speed marries quality with Kemppi mechanised MIG systems

Kemppi's new A3 and A5 MIG Systems offer welding mechanisation equipment for straight line OR orbital MIG/MAG welding applications.

The A3 MIG System is an excellent, durable and simple straight rail solution. Powered from a reachable battery, the A3 torch carriage is an ideal and low cost solution to mechanise longitudinal welding and cutting process.

The A5 MIG Systems offer integrated welding carriage solutions for either straight rail or orbital MIG welding, incorporating a weaving unit, remote control, plus either straight rail or guide ring sets for orbital MIG welding. They are digitally integrated together with Kemppi's latest FastMig welding equipment, guaranteeing excellent welding arc control. The operator can easily select the best welding settings for each application prior to and during the welding cycle, including the use of pre-set memory channels, direct from the remote control unit.

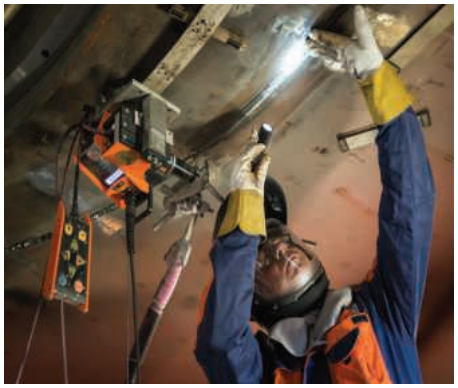
Upgrading from manual to mechanised welding makes a great improvement in welding quality and productivity, through faster welding speed, greater duty cycles and increased deposition rates. A3 and A5 MIG Systems linked with WISE performance, takes MIG welding to the next level.

Kemppi mechanisation systems also link to Kemppi's celebrated 'WISE' modified arc solutions, including WiseFusion, WisePenetration, WiseThin and WiseRoot.

WISE arc performance solutions 'make the impossible, possible', ensuring quality and productivity improvements when compared to standard equipment.

For example, in filling and capping passes on heavy plate, WiseFusion together with WisePenetration, ensures the optimal welding arc performance during the whole welding cycle, offering ideal conditions for reduced joint geometry and narrow gap welding, bringing significant cost savings through reduced filler material, fewer welding passes and shorter welding times.

Kemppi is a pioneering company within the welding industry. It sees its role as developing solutions that can make you win business. Headquartered in Lahti, Finland,



Kemppi employs over 600 welding experts in 17 countries and has a revenue of more than 110 million euros. Its offering includes welding solutions in the shape of intelligent equipment, welding management software and expert services, for both demanding industrial applications and ready-to-weld needs.

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Cloud software maximises sheet metal utilisation

Material savings of up to 50 percent at Swiss subcontractor using Bystronic's new nesting service

Toni Räber, joint managing director of AL-Cut AG, a nine-man sheet metalworking subcontractor near Lucerne, Switzerland, is one of the first Bystronic laser profiler users to adopt the manufacturer's new cloud-based ByOptimizer nesting service. Its purpose is to maximise sheet metal usage and reduce the amount of waste material left in the skeleton.

Bystronic, which is also Swiss, has dedicated a massive amount of computing power at its data centre in Niederönz to number-crunching customers' data for calculating the optimal nest for producing a given number and shape of components from any size of sheet.

Cutting plans are normally produced at a manufacturer's premises manually or using either Bystronic's own BySoft 7 software or a third party's nesting system. However, ByOptimizer is able to produce much better material utilisation by placing parts more closely together and it does this very quickly. Significantly, it allows effective use of common line cutting, where a single laser path cuts one side of a component and another side of a second component in a single pass.

Machines have been capable of doing this for years. However, without an intelligent cutting strategy, problems can occur due to heat distorting the components, for example, leading to loss of accuracy. For this reason, its adoption has been slow. ByOptimizer changes all that, as AL-Cut's experience reveals.

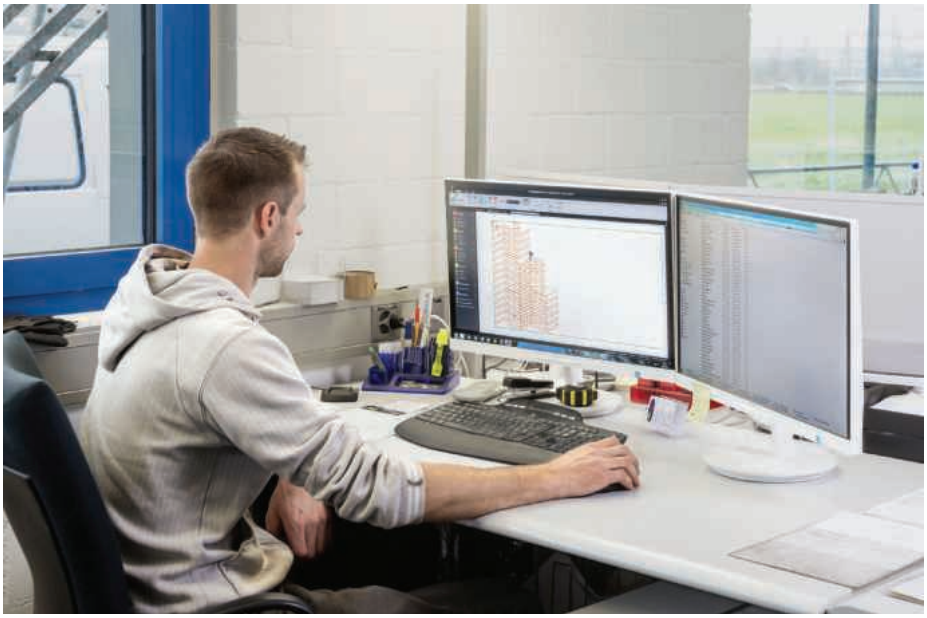
Toni Räber (right) and Thomas Seeholzer perform a final check of the cutting process on the Bystronic CO_2 laser cutting machine's control screen

One day, Mr Räber received an email asking for 800 parts of complex shape to be cut from 10 mm thick mild steel and delivered the next day. AL-Cut's laser cutting expert, Thomas Seeholzer entered the data into the company's BySoft software, from where the file was forwarded to the ByOptimizer online service, which is integrated into BySoft to simplify data processing.

At the server, an algorithm was applied to the data to generate a cutting plan. A database incorporating more than 300 parameters provides comprehensive information about cutting processes and the behaviour of different material. Based on this data, ByOptimizer created the ideal cutting plan for the 800 parts.

All relevant aspects were taken into account, including safe cutting paths and feed rates to minimise heat generation around the sheet, the minimum number of piercings necessary per contour, and whether micro joints should be included in the cutting plan so that cut parts initially remain attached to the skeleton.

After 50 minutes, Thomas Seeholzer received the finished cutting plan, on which parts were placed so close to each other that common line cutting was frequently exploited and any gaps were few and small. A considerable amount of space was saved compared with if the job had been nested locally at AL-Cut. The 800 parts were laser-cut from eleven steel sheets instead of 15, a material saving of approximately 30 percent on this job.



Thomas Seeholzer at AL-Cut preparing a cutting plan that has come back from the ByOptimizer server

Additionally, placing parts so near to each other shortens the cutting path, in this case to less than four hours, so the cycle was finished more quickly and productivity was higher than it would otherwise have been.

Toni Räber concludes: "ByOptimizer speeds the entire workflow, from the quote, which is easier and quicker to calculate accurately, through to optimal grouping of the parts to be cut on the metal sheet, and error-free profiling on the laser. In some cases we have achieved material savings of as much as 50 percent."

Left to right: Bystronic UK engineering apprentice Lewis Wale, managing director David Larcombe, engineering apprentice Joshua Smith and apprentice administrator Liz Hughes

Bystronic UK reinstates apprenticeship scheme

Three apprentices have been taken on by Bystronic UK, marking the first intake since the 1990s. The subsidiary is following in the footsteps of its Swiss parent company, which employs more than 100 apprentices worldwide.

Two of the Coventry trainees joined in the second half of 2015, engineering apprentice Joshua Smith and apprentice administrator Liz Hughes. Engineering apprentice Lewis Wale has been with the firm since August 2013 and has just embarked on an HNC course in electrical engineering and electronics on day-release at North Warwickshire & Hinckley College.

Both Lewis Wale and Joshua Smith shadow Bystronic UK's applications and service engineers in Coventry and on visits to customers in the Midlands during installation and commissioning of CNC laser and waterjet cutting machines. They were recruited via City College Coventry, whose staff regularly visits the company to assess progress.

Liz Hughes is being similarly mentored while she completes successive modules during her 18-month course, which will lead to an NVQ Level 3 in business administration.

David Larcombe, Bystronic UK's managing director, says: "As a former company apprentice from the 1970s, I often reflect on the tremendous career start in engineering that the apprenticeship gave me.

"We are delighted to be in a position to offer young people genuine career opportunities and are convinced that they will provide long-term benefit both to the individuals and to our company."

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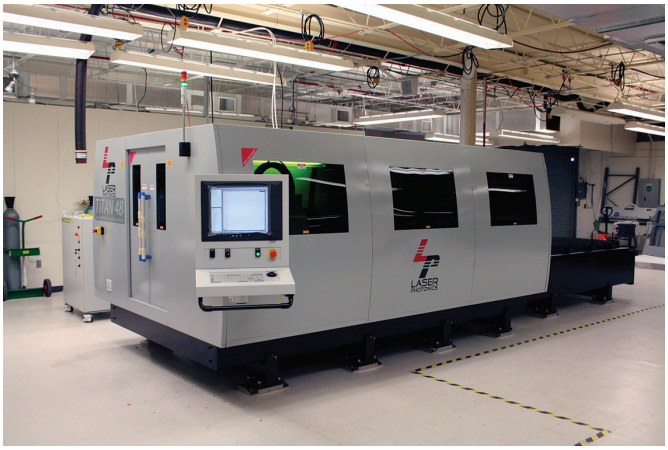
Titan laser cutting system

Fonon Corporation (OTC: FNON) has unveiled ten major updates to the Titan family of large, flat-bed multipurpose laser cutting machines, integrating multiple subsystems and introducing several evolutionary improvements which increase end-user productivity, lower costs over time, minimise the Titan's floor space footprint and reduce its power consumption.

Designed to consume less than 5 percent of the power required by common carbon dioxide (C02) laser systems, the Titan FX cutting machine is a maintenance-free, turnkey system, with an integrated laser source and heat exchange. Its laser is modular, available in 1 kW, 2 kW or 4 kW increments, allowing users to increase the laser cutting power up to 8 kW, and field-upgradeable, empowering users themselves to quickly adapt the system to changes in their production environment. This eliminates many of the high installation and maintenance costs borne by users of typical laser cutting systems.

Until now, the most advanced laser cutting technologies were available only to industrial giants. The redesigned Titan FX laser cutting system, with its drastically-reduced base price, ease of installation and low operational costs opens the door for small and medium-size companies to avail of the most advanced cutting technology.

Technical advancements recently incorporated in many of Fonon's other laser material processing systems allow the Titan FX to adjust dynamically to slight variations in thickness across the metal plate. Additionally, the updated Titan is equipped with a sealed feedback sensor, allowing flawless operation in hash industrial environments. Its frictionless, direct drive linear-motion platform, software-controlled orthogonality and lightweight bridge enable tremendously high acceleration and "cutting on the fly" capabilities.



The new Titan design eliminates several components prone to failure in typical large-format laser cutting systems, increasing the system's long-term reliability.

Together these advancements enhance the user's productivity in terms of laser speed, acceleration, and laser placement accuracy, and have the potential to save users hundreds of thousands of dollars per year.

Further user-centric advancements include the ability to recalibrate the gantry at the press of a single button, ensuring the material is always in alignment, free of seiures and unplanned machine failures. Power wattage upgrades to the laser do not require a specialised field engineer, and all operational steps are designed specifically for user best practices.

As with other Fonon systems delivered under the Laser Photonics brand, the Titan is a true plug-and-play system, requires no consumables, and is maintenance-free.

Dmitriy Nikitin, CTO and interim CEO of Fonon Corporation says: "Until now, the most advanced laser cutting technologies were available only to industrial giants. The redesigned Titan FX laser cutting system, with its drastically-reduced base price, ease of installation and low operational costs opens the door for small and medium-size companies to avail of the most advanced cutting technology."

Fonon's latest laser cutting technology benefits from the company's unique understanding of material behaviour at transition temperature, the point when the material changes properties such as reflectivity and absorption as it transitions from a solid to a liquid state. Cutting machines incorporate advanced lasers which are specially configured for metal cutting, with variable laser beam output parameters; as a result, Fonon products are ideal for cutting a broad variety of metals and metals with changing thicknesses.

When compared to a $C0_2$ laser of equal wattage, Fonon laser cutting technology is three times faster when cutting stainless, mild, or galvanised steel. Laser equipment power consumption is less than one quarter the consumption of a comparable $C0_2$ cutting system, and the equipment has a much longer lifetime.

Dmitriy Nikitin says: "More than ever, manufacturers need to find ways to improve quality, speed, and their financial bottom line, and there is a dramatic increase in demand for laser cutting machines that can efficiently work with reflective metals. We are tremendously pleased to offer the most advanced laser cutting technology to a larger section of manufacturers than ever before, and we are grateful for the opportunity to support the rapid growth of these industries."

Fonon's advanced laser cutting technology is currently incorporated into the new models of the Titan FX line of large, flat-bed laser cutting machines, and is scheduled to be included as optional equipment in all cutting, marking, and engraving products available under the Laser Photonics brand during Q2 2016.

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Endeavour is a gamechanger

FICEP will be previewing its full range of steel plate, beam and angles processing machinery including the best selling Endeavour, the fastest ever automatic CNC line for drilling, milling and marking beams with additional auxiliary axis movement at MACH. The company manufactures the widest range of machines available for fabrication with options to punch, mark, drill, scribe, machine and shear or thermal cut. The latest GEMINI plate processing machine can drill, mark, tap, countersink, mill and cut with Plasma or gas and has been further improved with faster positioning and increased tool change capability offering users more options.

There are systems for every steel processing application from a standalone bandsaw to a fully automatic production line and materials handling system. All controlled with the very latest steel construction software by Ficep's own software company Steel Projects, presenting the latest PLM software (Production Lifecycle Management).

On the FICEP exhibition stand will be a live demonstration of the Endeavour 603 DD, the advanced CNC high performance drilling, milling and scribing equipment for beams, plus features on the new options for milling copes rather than thermal processes.

In-depth training for each client's machine operators is now undertaken at the state-of-the art FICEP academy in Italy to ensure every customer achieves the maximum productivity for their FICEP machines.

FICEP S.p.A was established in 1930 and is located at the foot of the Alps on the northern border between Switzerland and Italy. FICEP has been exclusively engaged in the engineering and manufacturing of machine tools for the metalworking industry.

The FICEP manufacturing complex is comprised of several affiliate FICEP owned companies that collectively encompasses over 1,500,000 square feet. Each specific facility maintains the responsibility for a specific product or product group to maximise efficiency.

FICEP UK's facility located in Wakefield Europort, West Yorkshire, contains spare part stock, hotline support team and FICEP CNC equipment in an extensive showroom facility for customer training and product demonstration. The facility also provides an area to refurbish used equipment and to exhibit other agency products for deburring machines, pipe cutting equipment, material handling.

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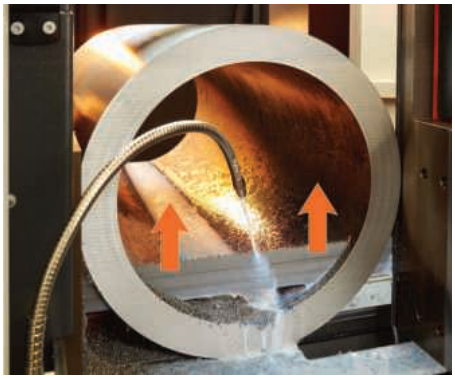
MACH • Hall 4 • Stand 4640

UK launch of new bandsaw for cutting tube

At MACH 2016, KASTO will show for the first time in the UK a new bandsaw, called KASTOwin tube A 5.0, designed specifically for processing tubular material. The blade cuts from the bottom upwards, unlike on other bandsaws where the reverse is the case. The novel action, for which patent applications have been made, reduces wear on the band and avoids damage to its teeth that often occurs when a blade travels downwards into swarf that has accumulated inside the bottom of a tube.

Until now, this problem made it virtually impossible to use a high efficiency, tungsten carbide tipped (TCT) blade for sawing tube, as the delicate teeth were invariably damaged. A bimetal blade was the only option. This is a thing of the past with the KASTOwin tube A 5.0, on which TCT blades may be used without fear of premature wear, resulting in greatly increased productivity.



The automatic saw has a feed mechanism rotated through 180 degrees so that the cutting action starts at the surface supporting the stock. Round tube up to 530 mm in diameter can be processed and shortest cut length is 10 mm. The frequency-controlled drive can be adjusted steplessly to deliver a cutting speed between 12 and 150 metres per minute.

The intelligent SmartControl ensures easy operation and incorporates a new KASTOrespond feature that continuously records the force on the tool, without the need for additional sensor systems that are often fault-prone. An intelligent algorithm continually varies the feed rate so that the force on the blade is maintained at a constant, optimised value. The feature was developed for the KASTOwin tube A 5.0 but is applicable to cutting all types of stock.

KASTOwin bandsaws are innovative and cost-effective

The tube saw is the sixth model to be introduced to the KASTOwin range of bandsaws, which was originally launched at the manufacturer's German factory in May 2014. As a result, the KASTOwin missed the opportunity to be exhibited at the last MACH show by a matter of weeks. The original five fully-automated bandsaws have maximum cutting capacities from 330 to 1,060 mm and are suitable for processing a variety of materials, especially steels, in stockholding and manufacturing. A KASTOwin 3.3 with a maximum cutting capacity of 330 mm diameter or 330 mm x 350 mm will be demonstrated at the show equipped with a hydraulic layer clamping device. The various sizes of saw are similarly constructed and the components used are largely identical. Moreover, 25 percent fewer parts are used in each machine compared with their predecessors, so KASTO is able to offer the saws at considerably lower prices than comparable products. Nevertheless, quality remains high.

The bandsaws feature a frequency-controlled drive that enables cutting speeds of 12 to 150 metres per minute. For all machine sizes, the saw band is hydraulically tightened and looped around hydraulic band guides, which now have interchangeable carbide inserts. The latter save 80 percent of the previous cost of replacing an entire carbide guide.

To reduce idle times, an innovative feature called KASTOsense eliminates the need for a 5 mm stand-off from the material surface, which can waste a lot of time when the saw is programmed to cut tough materials at slower rates. Instead, the saw blade descends straight into the material and stops within microseconds to continue the cut at the programmed infeed rate, without damaging the teeth.

For simple, intuitive operation, KASTOwin saws are equipped with the innovative touch-screen SmartControl unit, which monitors and controls all relevant order requirements and sawing parameters using an in-built material library.

KASTOtec for large volume production sawing

The established range of KASTOtec bandsaws will be represented on the stand by model AC4 KPC with 430 mm cutting capacity. It is designed for operating with tungsten carbide tipped blades, which increases productivity three- to four-fold compared with using standard bimetal blades.

KASTOtec AC-series machines feature a steel / mineral cast composite construction that is six to eight times more vibration-absorbing than cast iron. The machine has a powerful main drive through a rigid, play-free, spur bevel gear delivering 98 percent of the available power directly to the drive wheels.

High precision cuts are a result of having

blade guides as close as possible to the stock on both sides and maintenance-free linear guides for the hydraulic infeed. Together with feedback of cutting force, blade speed and position, they provide consistent feed per tooth, irrespective of the ambient temperature.

The machine at MACH will feature the optional, factory-fitted KASTO Performance Cutting package, designed to raise band speed even further by taking management of vibration to the next level in order to virtually eliminate its effects. The benefits are increased production output and hence lower cost per cut, reduced noise levels, better accuracy, improved surface finish of the cut face and longer blade life.

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MACH • Hall 4 • Stand 4638

Mitre cutting bandsaw

The KASTOfunctional pivot-type bandsawing machine with hydraulic infeed is available in manual, semi-automatic and fully-automatic versions, with suffixes M, U and A respectively. The semi-automatic model will be on the stand at MACH.

It is of solid construction with a robust, torsion-free welded base for rigorous use in workshops, capable of cutting material up to 260 mm round / square. Mitre-cutting to the left at up to 45 degrees and to the right at up to 60 degrees can be performed on tube, section and solid material. The mitre angle can be adjusted without having to alter the material position to achieve the correct cut length.

Precise ballscrew drive ensures exact positioning of the stock prior to cutting. The hydraulically actuated, horizontal clamping vice ensures accurate sawing to length without slippage and also allows short rest pieces, minimising material wastage. Cutting speed is infinitely adjustable from 20 to 110 m/min to suit any type of metal, even tough varieties. The BasicControl with swivelling operator's panel ensures optimum machine operation via function keys. Up to 98 programs can be preselected.

Manual circular sawing machine

KASTOradial is a family of cold circular saws including four manual, pull-down versions designated M4, M6, M7 and M10 and two semi-automatic models, U7 and U10.

With two cutting speeds for universal use in workshops, the KASTOradial M6, which will be on show, is capable of straight cutting and mitre cutting on both sides within 45 degrees. A double vice with quick clamping lever provides security for holding bar stock. A 315 mm diameter HSS saw blade, length measuring stop and re-circulating coolant system are standard equipment.

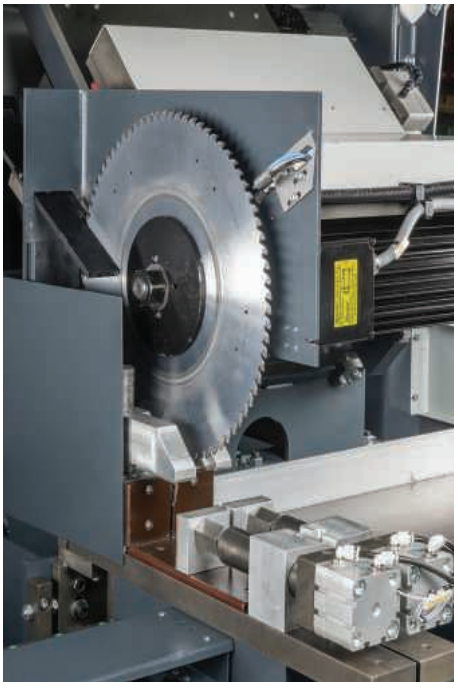
Seven times faster cuts for leading film rigging manufacturer

Doughty Engineering, a leading manufacturer of rigging and lifting equipment for film, TV and theatre, has ordered a new NC circular saw from cutting technology specialist Addison Saws.
The saw, a Profilma 400V from German company Pressta Eisele GmbH, was installed at Doughty's Hampshire manufacturing facility last year. Most significantly, it will accelerate production of the company's wide range of suspension brackets, reducing the cutting time per bracket from approximately one minute to around eight seconds.

Greater number of cuts per hour
With its current sawing line becoming due for scheduled replacement, Doughty began the search for a solution that would deliver a greater number of cuts per hour and reduce the amount of 'finishing' required to components in its bracketing assembly shop.

General manager, Stuart Rodgers says: "Initially, we considered upgrading to the latest versions of the three saws we currently use. As a benchmark, we presently achieve approximately one cut per minute, per saw in aircraft grade aluminium extrusions; we load 3-metre lengths and cut to widths of 30-50 mm. With two saws in operation at any one time, that equates to around 1000 cuts per eight-hour shift.

"Addison Saws, however, were able to demonstrate that by switching to one Profilma 400V circular saw from their Pressta Eisele range, we should achieve one cut every eight seconds, or 450 cuts per hour. That level of performance is seven times faster than one of our existing machines. As a result, we plan to retire two machines, keeping just one in-situ as a backup and freeing up valuable floorspace."



Cutting trials arranged
With Doughty's products being recognised globally for their uncompromising quality, it was essential for Addison to demonstrate that switching to the Profilma 400V saw was a sound business decision. Accordingly, cutting trials were arranged to show the high level of surface finish that was offered by the Pressta Eisele machine.

Specialist roller system
Designed especially for the precise, high-speed cutting of heavy-duty aluminium and ferrous components, the Profilma 400V ordered by Doughty Engineering will be equipped with a six-metre infeed roller table and an intelligent one-metre outfeed/extraction system.

Clean working environment
The outfeed/extractor will automatically differentiate between cut components and trim cuts, removing even the smallest particles of swarf from components and leaving them ready for final polishing, coating and assembly. To help provide the cleanest possible working environment, all machining swarf and trim cuts will be delivered directly to a compactor, ready for recycling.

The Profilma 400V NC circular saw features: fully automatic cutting of aluminium/non-ferrous metals; NC control with touch screen display; piece counter showing target/actual number of pieces; piece multiplier when cutting bundles; indication of cycle time; multiple feed device with a maximum feed of 3,250 mm; table separation before the saw blade retracts, so profile is not touched by the saw blade; electronic material feeder, ball screw spindle and servo motor incl. pneumatic horizontal and vertical clamps; float mounting feeder to balance bend profiles; waste piece from 85 mm; reducer of clamping pressure horizontal and vertical; cycle spray mist device with level indicator and automatic stop; cut-off length from 3 mm and automatic cut-out when bar is finished.

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

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MACH • Hall 4 • Stand 4627

Cutting steel at a record speed

Key industries operating in the world economy require large quantities of case-hardened and heat-treated steel, 16MnCr5 and 42CrMo4, at ever more frequent intervals. Forging plants have adjusted to the increased demand, and there is pressure on machine manufacturers to offer plants enabling the economical machining of this type of material. Behringer GmbH has been stepping up to this challenge for a number of years already, and has revolutionised the world of bandsawing in terms of cutting output, saw blade life and material savings with its Speed Cutting Technology (SC Technology).

"Speed Cutting Technology represents a quantum leap in sawing technology", confirms CEO Christian Behringer. It is the culmination of a successful symbiosis of innovative machine technology and newly developed tools, and is setting whole new standards in terms of speed. It uses extremely thin standard saw blades just 1.1 mm in thickness and 67 mm in height. The minimal thickness of the saw band reduces the cutting forces required per tooth, and the significantly narrower kerf channel saves material. This material saving has a major impact particularly in comparison to conventional large-scale circular sawing plants.

The pivotal issue in any high-performance machining operation is the stability of the overall machine. This is why Behringer produces all the essential components using vibration-absorbing grey cast iron. By using servo technology to control the saw's infeed, not only is an even stock removal process guaranteed during machining, but also the highly precise cutting pressure control helps prevent the blade from overloading.

Economical operation hinges largely on the service life of the tool. Special band guides and a suitable coolant feed system make a significant difference here, meaning that speed and cost-efficiency are no longer contradictory objectives. Impressive proof of the key improvements made in this field are cutting output levels and saw blade service lives which would have been inconceivable up until only recently.

An optimised chip cleaning system efficiently transports the higher number of chips occurring during high-performance sawing out of the cutting area in the chip conveyor located in the machine bed.

Utilising the full potential offered by SC technology imposes stringent demands on the machine concept, in particular the degree of automation. Behringer supplies individually tailored solutions to address this need.

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MACH • Hall 4 • Stand 4629

New GEKA Hydracrop machine

Bringing substantial savings to the production process

In the UK, the demand for stair lifts has grown tenfold over the last 20 years as people progressively live longer and lead fuller lives. Increasingly, many people now opt to stay in their homes in later years, but for some, physical restrictions will make a stair lift a vital requirement.

This fact has inevitably given rise to the need to produce more stair lifts, which in turn has fuelled component manufacturing in this sector.

Fabricon Design, located in Ashton-Under-Lyne, Lancashire, produces in the region of 40,000 components for stair lifts every month. The company specialise in 3Dimensional computer design and prototype production and sampling, however, the surge in the stair lift market has prompted the company to invest in a GEKA HYDRACROP 80S system from Prosaw, to accurately guillotine 90 mm x 6 mm mild steel flat bars to length. The system is fitted with an ALRS automated flat bar feeder, which simply eliminates what can be the cumbersome manipulation of the bars. After cropping the bars to one metre lengths, they are transferred to a CNC machine, where they are drilled and tapped, before being reloaded onto the GEKA system for final cropping, producing individual components of just 50 mm in length.

The installation of the GEKA system has resulted in a number of substantial benefits in the form of cost savings as well as in increased production capacity for the company.

Managing director Mark Bushdyhan says: "We previously utilised our CNC machine to crop the bars, but since we invested in the GEKA system to take over this process, we have seen savings in the region of £20,000 per annum as a result. The acquisition of the GEKA system has also allowed us to almost double our production capacity for this product.

"Since we took delivery of the GEKA system, we've found it a very easy and low-cost machine to maintain, whilst Prosaw have been very helpful in customising the software to suit our production requirements as well as providing us with excellent service."

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MACH • Hall 4 • Stand 4410

Expanded sawing product portfolio

Kaltenbach Ltd, UK Sales and Service Centre for the KALTENBACH Group of companies, will be showing examples and technologies from its newly expanded product portfolio at this year's MACH 2016 exhibition.

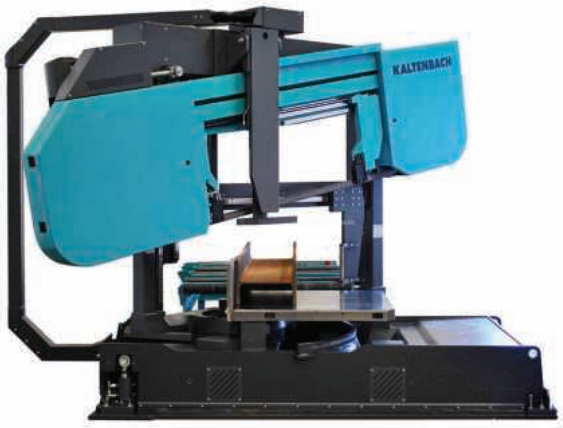
Kaltenbach will feature two examples of its bandsawing machines, the entry level KBS400DG semi-automatic model and the advanced KBS761DG-AFC.

The KBS400DG is a heavy duty, twin-column machine with a capacity of 400 mm W x 350 mm H and bi-directional mitring capability. Powered via an efficient, frequency controlled drive motor, the saw offers versatility and highly reliable performance for cutting smaller section material, either as a stand-alone machine or a full sawing line, when equipped with Kaltenbach materials handling equipment and the optional ProfiCut CNC Control.

The KBS761DG bandsaw represents Kaltenbach's highly successful Servo/Ball screw feed models that are designed for the high performance sawing of structural sections. With a capacity of 750 mm W x 500 mm H, the machine will be demonstrated with the unique AFC system, which automatically adjusts the angle of the saw blade during cutting, resulting in an improved blade life and significantly reducing cutting time using either Bi-Metal or carbide saw blades.

Alongside these machines, Kaltenbach will be demonstrating the equipment and technologies on offer from its newly completed line up of leading industry partners RSA, Stierli-Bieger, Zeman and Zinser.

From RSA, two machines will be on show, the Haeberle pull down circular saw, illustrating the entry level solutions from RSA, and a Turnamat the renowned rotary deburring solution, highly proven in the automotive industries and a perfect complement to any tube sawing line. RSA experts will also be on hand to discuss these and its extensive solutions for high volume sawing in solid materials.



For metal forming, the Stierli-Bieger 220HE machine will be on show as a compact example of its wide range of straightening and bending systems for use across the industry, from engineering workshops through to Bus-Bar manufacturers, rail system producers and steel fabricators.

Making a debut at MACH 2016 will be a Gantry-Type, 'Zinser' plate processing centre, newly launched into the UK industry in 2014. The machine on show will feature the unique Zinser CNC bevel head for plasma cutting and additional rotary table unit for the auxiliary cutting of tubes. Zinser machines can additionally be fitted with a tool-changing drill head for processes where flame cutting with oxy-fuel or plasma is not possible.

Also debuting at Mach 2016 are the latest technologies available from Zeman, a leading manufacturer of robotic steel fabrication systems. Experts will be on hand to present their solutions for steel fabricators, permitting the fully automatic assembly, tacking and final welding of structural steel. As a steel fabricator in its own right, Zemans' solution is highly proven across Europe and offers significant time savings over the full assembly process.

Kaltenbach will use MACH 2016 to present the company and its partners in the UK together for the very first time, with equipment solutions available for businesses across the spectrum of the engineering industry.

As a German family-owned company with over 125 years of experience in metalworking, Kaltenbach is able to face the challenges posed by a constantly changing global market, with complete confidence.

Since its foundation in 1887 the production plant in Lörrach (Germany) has been the parent company and headquarters of Kaltenbach. The company began with the manufacture of machine tools and agricultural machinery whilst specialising in circular sawing machines from 1953.

Kaltenbach gradually extended its product portfolio and expanded from machine manufacturer to system provider. Today, all machines, from band and circular sawing machines to drilling machines and welding robots, to punching-shearing systems, are produced at the facility in Lörrach. Transport systems and shotblast and painting systems are manufactured at two other production sites.

With more than 22 offices and 10 subsidiaries, the company is now able to offer superior consultation and service to customers, in a wide variety of industries including: metals production; metal construction; mechanical engineering; plant engineering and construction; steel trading and vehicle production.

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MACH • Hall 4 • Stand 4630

Building a route to success

For subcontract profilers, structural steel, construction, rail and heavy engineering professionals attending MACH 2016, Kerf Developments will be exhibiting its leading RUR2500 high definition plasma cutting machine. Rapidly becoming the choice machine for the 'heavy industry' sectors, the Kerf RUR2500 will be demonstrating its capabilities using Burny Kaliburn's proprietary UltraSharp technology.

On the stand, Kerf Developments will exhibit the RUR2500 model alongside the company's latest innovation, the Plasmaster 3015. As an entry-level low cost cutting solution, the Plasmaster will be the perfect complement to market leading RUR2500 that utilises the Kaliburn Spirit high definition plasma cutting technology system. The Rochdale manufacturer will be demonstrating the potential of the RUR range with samples of finished parts that will emphasise the cut quality of holes and external edges that can be cut. Capable of cutting faster than a laser on thicker materials, the RUR2500 will highlight its capabilities and production prospects at the show. Designed and manufactured for customers with a high production demand, the RUR incorporates a rigid frame design that is ultrasonically stress relieved and manufactured to highly accurate tolerances to provide remarkable performance. It is this robust build quality and precision cutting that has made the RUR2500 such a popular choice for the structural steel and heavy industry sectors.

The RUR2500 has a cut width of 2 m and the modular design permits table dimensions to be tailored to the demands of the end user. In addition, Kerf engineers at MACH will be keen to demonstrate the flexibility and potential of the wide range of Kaliburn plasma units and the Kemper fume extraction tables. Additional options for advanced CADCAM and nesting solutions as well as a number of fume extraction solutions will also be showcased.

As the UK and Ireland's primary manufacturer of high density plasma cutting and Oxy-fuel cutting equipment and also the UK and Ireland's flagship dealership for the Burny & Kaliburn range of control systems, Kerf will have technical staff on hand at MACH to answer queries and provide solutions to customers cutting and profiling demands.

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MACH • Hall 4 • Stand 4466

Bandsaw feed for heavy workpieces

Sawing machine manufacturer, KASTO, has introduced a new model at the top end of its KASTOwin range of automatic bandsaws. With a cutting capacity of 1,000 mm x 1,060 mm, the machine includes a moveable material support table that allows heavy, bulky stock such as ingots, large tools or forged eccentric shafts to be fed into position easily and reliably, ready for sawing.

The new KASTOwin F 10.6 bandsaw is suitable for cutting heavy, bulky stock such as ingots, large tools and forged eccentric shafts

Called KASTOwin F 10.6, the robust machine simplifies the laborious task of handling large workpieces, especially in the steel processing industry. The 2,600 mm long support table has a 3,700 mm travel and can support stock weighing up to 18 tonnes.

Ballscrew actuation causes the table to travel at 3 m/min over two linear guides, each equipped with four lubricated linear roller bearings. Idle times are minimised and the material is positioned under the saw band to very high accuracy.

A horizontally acting, hydraulic vice on the outfeed side of the saw clamps the material in place. As with all KASTOwin bandsaws, which have maximum cutting capacities down to 330 x 350 mm, the new saw is of steel construction, has a cutting accuracy of ± 0.1 mm per 100 mm of stock length and cutting speeds of up to 150 m/min.

KASTO offers an extensive range of accessories including a laser to project the cutting trajectory, a horizontal hydraulic travelling vice, support surfaces with wear plates and infrared remote control. A wide range of stop, alignment and clamping devices is also available.

The saw has an electrically driven material support table which positions workpieces quickly, reliably and accurately

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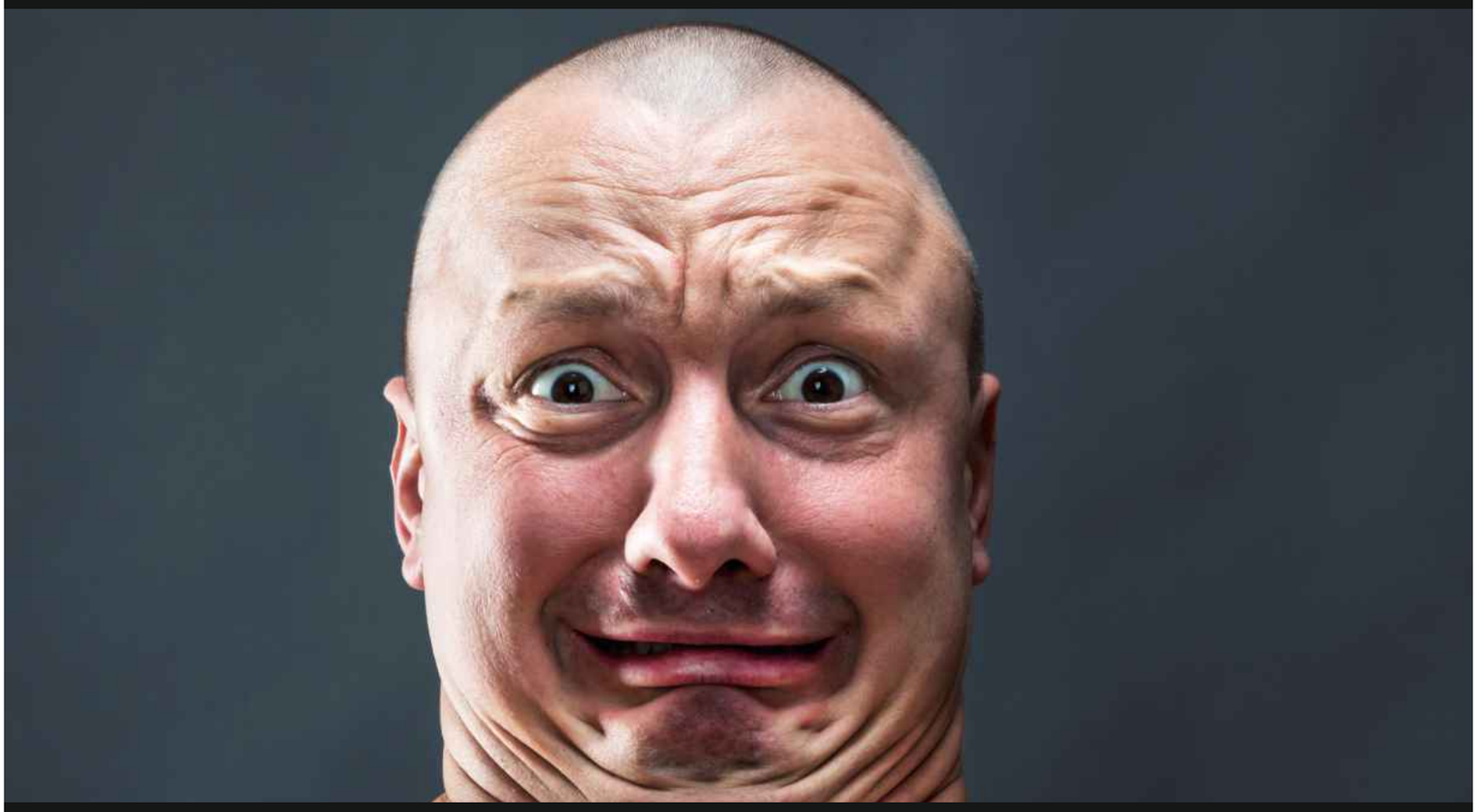
THAT FACE YOU PULL WHEN



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