MONTFORT WERBUNG

CELOS® and Industry 4.0

The full integration of your machine into the company organisation.

DMG MORI

FACT: Every 8 minutes of every

Toolroom Mills

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

Drill & Tap

DT-1 ● 508 x 406 x 394 mm

Mini Mills

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

Office Mill

OM-2A ● 305 x 254 x 305 mm

VF Series VMCs 40 and 50 taper

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

Toolroom Lathes

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

Office Lathe

OL-1 ● 305 x 204 mm

Long Bed Lathes

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

ST Series Lathes

ST-10 ● 355 x 356 mm
ST-10 Y-axis ● 305 x 356 mm
ST-20 ● 381 x 533 mm
ST-20 Y-axis ● 305 x 533 mm
ST-20SS ● 254 x 533 mm
ST-30 ● 533 x 660 mm
ST-30 Y-axis ● 457 x 584 mm
ST-30SS ● 406 x 660 mm
ST-40 ● 648 x 1,118 mm

DS Series Lathes Dual Spindle

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

Big Bore Lathes

ST-25 ● 381 x 533 mm
ST-25 Y-axis ● 305 x 533 mm
ST-35 ● 533 x 660 mm
ST-35 Y-axis ● 457 x 584 mm
ST-45 ● 648 x 1,118 mm

Haas Automation Ltd | 01603 760539

WORLD'S BEST SELLING CNC

WINNERS

INTERNATIONAL DISTRIBUTOR OF THE YEAR 2014
2013 · 2012 · 2011 · 2010
2008 · 2007 · 2006 · 2005

WINNERS OF OVER 50 AWARDS
50

working day another HAAS is sold.

VF TR 5-Axis VMCs

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

Mould Maker VMCs

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

Extended Travel VMCs

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

GR Series Routers

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

Super Speed VMCs

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

Y-Axis Lathes

ST-10 Y-axis ● 305 x 355 mm
ST-20 Y-axis ● 305 x 533 mm
ST-25 Y-axis ● 305 x 533 mm
ST-20SS Y-axis ● 254 x 533 mm
ST-30 Y-axis ● 457 x 584 mm
ST-30SS Y-axis ● 406 x 584 mm
ST-35 Y-axis ● 457 x 584 mm
DS-30 Y-axis ● 457 x 584 mm
DS-30SS Y-axis ● 406 x 584 mm

EC Series HMCs

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

5-Axis Universal Machine

UMC-750 ● 762 x 508 x 508 mm

Super Speed 5-Axis UMC

UMC-750SS ● 762 x 508 x 508 mm

Rotaries, Indexers & Trunnions

| www.haas.co.uk | sales@haas.co.uk

WINNERS DIAMOND AWARD

MTA WINNERS MANUFACTURING INDUSTRY AWARDS

MWP WINNERS Best Service & Support

WALTER

Watch trailer:

POWERFUL, PRECISE, RELIABLE.

The new generation of mills from Walter
Blaxx™ stands for a reliable system which captivates the user with its absolute precision and stands out through its extremely high productivity. The Blaxx™ F5041 and F5141 shoulder mills are therefore based on a newly developed, incredibly robust tool body, which is fitted with the most efficient of Walter indexable inserts, powered by Tiger·tec® Silver.

Find out more about the unbeatable combination of Blaxx™ and Tiger·tec® Silver now: **www.walter-tools.com**

Walter GB LTD.
Bromsgrove, England
+44 (1527) 839 450
service.uk@walter-tools.com

Blaxx™
powered by Tiger·tec® Silver

ENGINEERING subcontractor SEPTEMBER 2015

VOLUME 12 | No.8 ISSN 1742 -5778

www.rbpublishing.co.uk

CONTENTS

NEXT ISSUE OCTOBER 2015

ADVANCED ENGINEERING 2015
OIL & GAS REPORT
5-AXIS MACHINING
CUTTING TOOLS
METAL MARKING
SAWING & CUTTING OFF

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

Publisher: Roger Barber
Email: roger@rbpublishing.co.uk

Assistant editor: John Barber - 01403 242803
Email: john@rbpublishing.co.uk

Accounts: Jackie Barber - 01403 563791

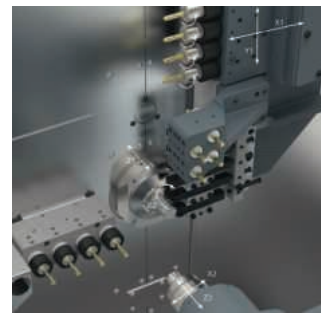
Production manager: Anna Rodrigues - 01472 210712
Email: studio@rbpublishing.co.uk

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

Complex machining with a compact footprint

The SPRINT 32|5 production turning machine from DMG MORI is made in Italy and will be presented for the first time at this year's EMO exhibition in Milan.

The SPRINT 32|5 is designed for both short and long turning of workpieces of up to ø 32 x 600 mm. With a base area of less than 2.8 m², the new development is an extremely compact production facility. The SPRINT 32|5 machines materials in rod form up to 32 mm in diameter using two spindles and a 2-channel controller.



DMG MORI keeps part costs to a minimum in this way. 22 tools on two independent workpiece carriers also make it possible to carry out complex machining processes. The automatic lathe also machines demanding workpieces radially at the main spindle with four driven tools. In total, the machine is equipped with five linear axes and on C-axis for the main spindle. Other options are the unloading device for workpieces up to 600 mm in length, and the high-pressure coolant supply with 120 bar.

As an upgrade, DMG MORI is presenting the SPRINT 32|8 at EMO as another extension of the SPRINT range. The SPRINT 32|8 is equipped with three independent linear carriers for 4-axis machining on the main spindle and offers space for up to 28 tools. The machine has six linear axes in total including a second Y-axis. Two C-axes are available as well, one for the main spindle, one for the counter spindle. In addition to the attainable pluses in performance and flexibility in relation to complex components, the ergonomic operation and the durable construction underline the performance of this innovation.

DMG MORI UK
Tel: 024 76 516120
Email: steve.finn@dmgmori.com
www.dmgmori.com

An essential day out for subcontractors

NORTHERN 15 Manufacturing & Electronics
EventCity | Manchester | M17 8AS
Wed 30th Sept - Thurs 1st Oct 2015

Northern Manufacturing & Electronics, the free-admission manufacturing and engineering showcase, returns to EventCity, Manchester from September 30th to October 1st 2015. This year's event is expected to be significantly larger and will introduce a new feature, RoadRailAir, highlighting the region's major strengths in the automotive, public transport and aerospace manufacturing sectors.

At 28,000 m², EventCity is the UK's second largest exhibition facility outside London, and its newest. Situated at the heart of the North's buoyant manufacturing sector, the venue provides an ideal central location for a show that has rapidly become the key engineering showcase for the region. Easy access from Manchester City Centre and 3,000 free onsite car park places enables a visit to be shoe-horned into even the busiest of diaries.

It's a visit that would be well worthwhile for anyone involved in engineering services. With aerospace and transportation such important industries to the North, it comes as no surprise to learn that production hardware, everything from hand tools to machining centres and subcontracting are exceptionally well-represented.

One of many key attractions of both Southern and Northern Manufacturing is the collection of big-name machinery manufacturers and dealerships in one place. Visitors heading for Northern Manufacturing 2015 to check out the most up-to-date machining centres and manufacturing automation systems in action aren't going to be disappointed. Amada UK returns once more, together with Bystronic, Haas Automation, Bruderer, Trumpf, Yamazaki Mazak and others. There's also plenty of other hardware on show, including industrial cleaning equipment, laser and 3D printing systems from firms such as MecWash Systems and Laser Lines. Renishaw, Nikon, Faro and Olympus are a few examples of the other production and metrology providers exhibiting at the event.

On the subcontracting side, specialist services include plating and surface finishing, laser cutting, precision engineering, castings, fabrication and much more, from firms such as Alucast, Silchrome Plating, Jenks & Cattell, Orbital Fabrications amongst many others. One big advantage of the show is that all engineering disciplines are gathered in one venue, which makes it a very efficient way of solving multiple sourcing issues. Technology Trails guide visitors around the event, and along the way they'll meet all vendors active in that area, which may include activities such as electronics box build or cabling along with precision engineering or fabrication.

Components and OEM parts also comprise a big part of the show. The remarkable range of products spans near enough every requirement: Lee Spring returns with an increased range of Lite Pressure springs, Belleville washers and compression springs designed to meet military specific standards. Expanding its range of cost-effective, modular robolink systems, igus introduces the robolink D direct drive articulated arm, which, according to the company, is a tougher, more durable solution compared with remote drive versions designed for lean automation. Lemo launches a new line of miniature connectors, and familiar names such as Tappex, TR Fastenings, Ambersil and Henkel Loctite are examples of some of the consumables on show.

Business services are also widely represented at Northern 2015. STEGTA, the training and apprenticeships facilitator will be on hand to talk about all apprenticeship and training needs. John Whitby and Ian Parker of STEGTA will also present one of the free technical seminars running over both days of the show, revealing how apprentice schemes can benefit firms and provide an analysis of government-approved training schemes. Also represented is The North West Aerospace Alliance (NWAA), the primary organisation for the aerospace manufacturing sector in the North West. Chief executive, Dr. David Bailey, will present another of the keynote sessions of the 2015 programme, entitled Technology Opportunities and Challenges in the Aerospace Supply Chain.

Access to Northern Manufacturing & Electronics 2015 is free to business visitors, and EventCity provides 3,000 free on-site car parking spaces, with easy accessibility by road or public transport.

To register online for free tickets, simply visit: **www.industrynorth.co.uk** or call 01784 880 890. Visitors can follow all the latest news from the show on Twitter by following @industry_co_uk #northmanf, or on its blog page at **http://blog.industrynorth.co.uk**

For more information, contact:

European Trade & Exhibition Services
Tel: 01784 880890
Email: philv@etes.co.uk
www.industry.co.uk

Join us where the UK Advanced Engineering sectors come together

The UK's largest annual advanced engineering gathering

Pre-register for your FREE entry badge
www.advancedengineeringuk.com

MEDIA & INDUSTRY PARTNERS

ADS AEROSPACE AIRFRAMER Automotive ENGINEER netcomposites Composites UK SAE INTERNATIONAL PRODUCTION ENGINEERING SOLUTIONS
EEF The manufacturers' organisation KTN CATAPULT MAGNA CIM Santander PE UK Trade & Investment

Advanced Engineering UK

4 -5 Nov, NEC, Birmingham, UK

Aero Engineering Show 2015

Composites Engineering Show 2015

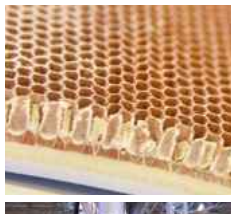
Automotive Engineering Show 2015

Performance Metals Engineering 2015

AEUK OPEN CONFERENCE

NEW for 2015

Enabling **Innovation**



Advanced Engineering UK brings together the engineering supply chain with engineering & decision makers from OEMs and top tier organisations spanning: Aerospace; Automotive; Motorsport; Marine, Civil Engineering, and more...

ETG demonstrates machine versatility in new Permanent Trade Show

At the recent opening of its Permanent Trade Show based in the ETG headquarters in Southam, Warwickshire, no less than five of the 12 machine tools being demonstrated were being shown for the first time.

The latest innovation from Nakamura-Tome, the NTRX-300 is a heavy duty multi-tasking machining centre with full 5-axis capability to offer complete component machining in a single setup.

The Engineering Technology Group is the exclusive distributor for Nakamura-Tome Machine Tools in the UK and offers extensive engineering and technical support throughout the lifetime of the machine.

On the NTRX-300 the X- and Y-axis travel on the machine ensure a machining range of 250 mm wide, further enhanced with the X-axis having a 125 mm travel below the spindle centre to extend the machining range to 250 mm square.

Features within the machining envelope include a B-axis with a 225° rotation, a maximum workpiece turning length of 1150 mm and a distance between spindle centres of 1,350 mm.

Because of the 300's reduced distance from the tool tip to the B-axis centre of rotation, the B-axis resists cutting torques and retains stable machining performance. The X, Y and Z axes are all highly stable, being directly mounted to their respective ball screws to ensure backlash free, high speed and smooth movement.

The NTRX-300 features a robust 18.5 kW tool spindle offering 8,000 rpm (12,000 rpm optional). It is available with either tailstock or twin spindle configurations.

In twin spindle configuration, the LH and RH spindles offer 4,500 rpm with 15 kW powerful motors and up to 30 kW cutting power can be available for turning shaft work with the synchronised spindles. High powered motors are also available for large bar capacity versions at 22 kW.

All these features in a machine mounted on a uniquely designed bed which maximises thermal stability, creates uniform loads during slide movement and features a highly rigid spindle.

The machine features Nakamura's new Smart X control with Windows 8 software, interfacing with the main control based on a Fanuc 31i-B5 5-axis system. It also features a unique in-built

load/unload device, a 40 tool Capto C6 ATC as standard, (60, 80 and 129 capacities optional) and a standard bar capacity of 65 mm with options of 71 mm, 80 mm and 90 mm diameter. Eight or ten inch chucks can be mounted to either spindle.

Another highly innovative machine featured in the Permanent Trade Show is the Hardinge GT27SP super precision lathe, which can be equipped with up to three grinding spindles that makes the machine ideal for producing high quality, high precision parts depending on how the machine is configured.

The grinding spindles can be 30,000, 50,000, 80,000 or 100,000 rpm speeds with surface finishes of 8 micro-inch and exacting part roundness of .000015 inches achievable. The lathe can produce continuous machining accuracy of .0002 inches giving it a machining consistency to support SPC requirements. Accuracy Certification is included with every machine.

ETG is the exclusive distributor for Hardinge Machine Tools in the UK including the Super Precision range. Super Precision machines are a combination of best practice design, high precision manufacture, complex software development, intense testing and certification. Combined with the Hardinge knowledge and experience of producing the most difficult parts and processes, Super Precision turning centres will exceed expectations with as well as the superior .000015" part roundness, 0.000008" (Ra) surface finish achievable.

Features of the new GT27SP lathe include the patented Hardinge interchangeable top plate and the quick change collet ready spindle. The machine features advanced automation capability offering piece part or bar feed. This extends the capability of the machine between the parameters of stand-alone component machining to very high capacity.

As standard the machine's main spindle is a 5C collet ready unit accommodating bar work up to 27 mm diameter. The GT27SP can also be equipped with a 'Big-Bore' version to handle up to 42 mm diameter. The headstock assembly features heavily ribbed construction, allowing minimal heat retention and optimum part size control.

The versatility of the GT27 is further enhanced by the use of the same machine bed to create a CHNC version with either a four station or eight station indexer in place of the top plate.

Engineering Technology Group Tel: 01926 818416
Email: djames@engtechgroup.com www.engtechgroup.com

Leading UK innovator continues to expand and win awards

Royal opening of new building highlights Renishaw's continuing investment for growth

Global precision engineering company Renishaw plc is pleased to announce that the Renishaw Innovation Centre has been formally opened by Her Royal Highness, The Princess Royal, who also presented the company with a Queen's Award for Enterprise in the Innovation category.

The Renishaw Innovation Centre gives the company an additional 153,000 sq ft of space which houses research and development and corporate services staff, as well as demonstration, training and conference facilities. The additional space is also enabling Renishaw's spectroscopy and laser calibration product lines to relocate to the company's headquarters site. The space vacated at the Old Town site in Wotton-under-Edge and the Woodchester site, near Stroud will provide further expansion space as the company continues to develop.

It was designed and constructed by two Gloucester-based businesses who are long-standing suppliers to Renishaw, with Roberts Limbrick architects working closely with Barnwood Construction to develop a building that met Renishaw's current needs, whilst providing for future flexibility. The company was granted planning permission for a 230,000 sq ft building in June 2012 and construction commenced in April 2013. The additional 77,000 sq ft will be constructed as required to meet future growth.

Recognising British innovation

Within the Renishaw Innovation Centre all 40 meeting rooms are named after British innovators, primarily in the fields of science and engineering, but also innovators local to Renishaw's headquarters site such as Tyndale, Jenner and Pitman. The main conferencing facility is named after UK engineering icon Isambard Kingdom Brunel who was responsible for many iconic structures in the West of England region including the Clifton Suspension Bridge and the ss Great Britain. Other rooms are dedicated to significant innovators including Whittle, Faraday, Lovelace, Haslett, Babbage, Turing, Caxton and Stephenson.

Sir David McMurtry comments: "This excellent new building is a place which we hope inspires people and whilst it is very much focused on the future and helping Renishaw and our customers to achieve ever greater technology breakthroughs, we are also very keen to honour those British innovators who have helped us as a society get to where we are today."

Presentation of Queen's Award for Enterprise 2015

As part of her visit to Renishaw, The Princess Royal also presented the company with a Queen's Award for Enterprise 2015 in the Innovation category for the development and manufacture of its RESOLUTE™ family of non-contact, optical position feedback devices. RESOLUTE enables a step change in the performance of motion control systems used in manufacturing and other environments.

Suitable for the most demanding applications, RESOLUTE is the world's first single track fine-pitch optical absolute encoder. It can determine position to a resolution of one nanometre (one billionth of a metre) with motion speeds of up to 100 metres per second for linear position applications and is capable of 32-bit resolution at up to 36,000 rpm for rotary (angle) applications.

Sir David McMurtry, Renishaw's chairman and chief executive said: "We won our first Queen's Award in 1979 for Export Achievement, and whilst we have been fortunate to have been recognised a further seventeen times over the years, to receive a Queen's Award is still very special as they continue to be regarded as the UK's most prestigious awards for recognising commercial and technological success."

35 years of continuing development

The then Princess Anne last visited Renishaw in October 1980 when she opened an extension to the company's first ever commercial premises in Wotton-under-Edge.

At that time Renishaw had just over 100 employees, annual sales of £2 million, all of its employees based at one site, no overseas operations, had just recruited its first apprentice and just won its 2nd Queen's Award.

Today the company has over 4,000 employees, is forecasting annual sales for the year ended June 2015 of between £480 and £510 million, has 15 offices in the UK and an additional 56 offices in 31 countries, including 12 offices in China, has 114 apprentices in training and this year will also recruit a record 70 young graduates, as well as just being honoured with its 18th Queen's Award

Renishaw plc
Tel: 01453 524524
Email: uk@renishaw.com
www.renishaw.com

HRH the Duke of Kent visits Amada

Customers and staff of Kidderminster based machine tool builder, Amada UK, welcomed HRH the Duke of Kent to their headquarters on Tuesday 23rd June 2015. The Duke visited to learn not only about the latest sheet metal technologies but also to meet the company's young talented apprentices.

One of The Duke's major public roles for many years was Vice-Chairman of British Trade International (now known as UK Trade and Investment), a position he held from 1976. He was very actively involved in its work, promoting Britain and British companies by leading overseas trade missions and visiting companies large and small across the United Kingdom. The Duke retired from this role in 2001, but still retains an interest in British business at home and overseas.

Amada UK managing director, Alan Parrott says: "We were really proud to welcome His Royal Highness the Duke of Kent especially considering his work with UK trade and Investment. One of the reasons we came to the UK in the 1970's and are here today 43 years later is because of the warm welcome the Amada organisation received from the UK government".

The Duke spent time with current and newly qualified apprentices learning about new machine technologies, discussing their experiences and the skills they have gained during their time with Amada. During the showroom tour, HRH produced a laser cut and robot formed stainless steel box, by himself.

Alan Parrott continues: "Our young engineers really appreciated the time the Duke spent with them. Our biggest challenge today is to find and develop the talented young people who will help us to continue improving customer support to our UK client base".

The visit comes at an exciting time for Amada UK which, in the last 2 years, has invested £6 million in the Kidderminster facility to support its new activities in Spain and Scandinavia. The company is on course for record sales this year exceeding 100 million Euros.

Amada United Kingdom Ltd
Tel: 01562 749500
Email: info@amada.co.uk
www.amada.co.uk

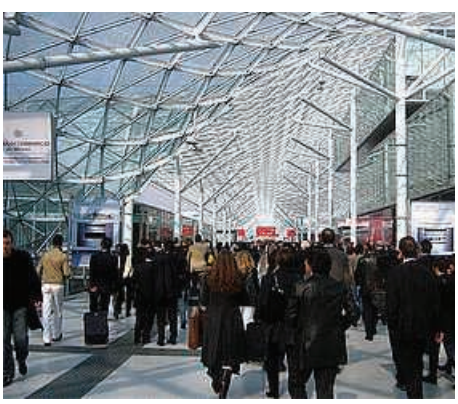
Avanti a Milano

After six years, EMO, the world leading exhibition of machine tools returns to Italy. Promoted by CECIMO, the European Association for Machine Tool Industries, the tradeshow will take place from the 5th to the 10th of October 2015 in the prestigious fieramilano exhibition centre.

The biennial leading machine tool event, whose trademark is owned by CECIMO, has chosen Milan as one of its locations alternating with Hanover. This reflects both the foresight of the organisation, relying on a long-standing experience in the organisation of events and the status of the city in showcasing the expertise of the Italian industry, which ranks fourth worldwide for production and third for export.

More than 110,000 square metres of net exhibition space was already booked six months before the opening of EMO MILANO 2015 and the previous 95,000 sq m of exhibition occupied by the 2009 show has been exceeded. Should the current trend be confirmed it is predicted that the exhibition will occupy 120,000 sq m.

More than 1,300 companies are already registered to exhibit at EMO MILANO 2015, with, of course, Italian companies to the fore, closely followed by the Germans, the Taiwanese, Chinese and Swiss.



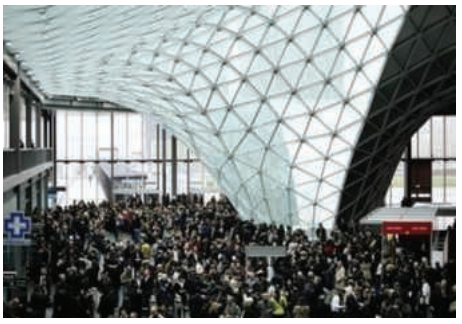
The halls of the exhibition centre of fieramilano Rho-Pero will host the biggest factory showroom in the world, where machine tools, robots, automation, additive manufacturing, mechatronic solutions and auxiliary technologies will be exhibited, expressing the importance of the sector's international production that accounts for 64 billion euros.

"EMO has always been considered the most important event at the disposal of trade operators from the world's manufacturing industry to keep up-to-date on the new production technologies," states Pier Luigi Streparava, appointed by CECIMO as Commissioner General EMO MILANO 2015. "It's exactly for this reason that we decided to include additive manufacturing into the technological index of products of the sector's leading international exhibition. This is one of the technologies that will be increasingly developed in future and to which the tradeshow will dedicate a special in-depth focus".

150,000 visitors from approximately 100 countries: these are the figures expected for EMO MILANO 2015 and which will also take advantage of the show running concurrently with EXPO 2015. On this occasion, Milan will show a completely renovated look and an improved traffic flow, thanks to a revised and strengthened public transport service.

Directly connected with the exhibition centre of fieramilano Rho-Pero, Expo 2015 will offer visitors to EMO MILANO 2015 a unique programme of complementary events, creating really interesting synergies for the hundreds of thousands of visitors who will be coming to Milan from every corner of the globe.

Pier Luigi Streparava continues: "As organisers of this exhibition, we are



committed to transforming the concurrence of the two tradeshows into real opportunities for our operators, by planning 'connection activities' and by activating numerous special services. An example is the Hospitality programme which accurately lists a large range of accommodation options reserved for trade visitors attending EMO MILANO 2015".

"In the first quarter of 2015," declares Alfredo Mariotti, director of EMO MILANO, the index, produced by the Studies Department of UCIMU-SISTEMI PER PRODURRE regarding the quantity of machine tool orders received by Italian manufacturers, registered an increase of 2.2 percent compared to the same period in 2014, making it 6 positive quarters in a row.

The increase in the internal market (+15.4 percent), has been instrumental to this positive trend. This information confirms a new period of development and increase for the use of machine tools in Italy. This will be enhanced with stronger and stronger increases: +5.3 percent in 2015, +5 percent in 2016, +7.4 percent in 2017 (Oxford of Economics figures), to the benefit of EMO MILANO 2015".

"This data, together with the positive forecast on the global use of machine tools, that will reach 60 billion in 2015, 63 billion in 2016 (+5.2 percent), 66 billion in 2017 (+4.8 percent), are a good indication for a successful exhibition," he concludes.

Updated information, special services for exhibitors and visitors, the video advertisement and one of the music tracks from the EMOTION 2015 collection, the CD made to promote the event, are available on the website below.

EMO Milano 2015
Tel: 0039 0226 255 860/861
Email: info@emo-milano.com
www.emo-milano.com

DMG MORI to present seven world premieres

DMG MORI will be confirming its status as a world market leader in the field of metalcutting machine tools with seven world premieres as well as a representative cross-section of its high-tech portfolio at EMO Milan. The event will provide DMG MORI with the perfect showcase for new advanced technologies and innovative products in **Hall 4**.

In the field of turning technology, there are four world firsts: the SPRINT 32|5 production turning machine (including the equally new extension stage to SPRINT 32|8) built in Italy, the second generation of the CTX gamma TC turning & milling machines in two sizes and the NLX 6000|2000 turning/milling centre for large components. The three milling innovations all originate this time from the 4th generation of the duoBLOCK® series.

Other highlights of DMG MORI's trade fair presentation are the introduction of automatic lathes from DMG MORI WASINO, that have been strengthening the DMG MORI product range since 1 April 2015.

Thanks to two Italian production sites, EMO in Milan will be something of a home match for DMG MORI. Since 1969, GILDEMEISTER Italiana S.p.A. from Bergamo has been synonymous with high performance lathe technology and within the Group has a special focus on production and automatic lathe machines.

Now that its site has been modernised and extended last year, DMG MORI will be setting new standards in the manufacture of machine tools. A new 1,200 m² assembly hall has been created, accompanied by a 1,000 m² technology centre, in which customised solutions and innovative high-tech machines are developed and can be presented to customers under production conditions.

The SPRINT 32|5 and its upgrade SPRINT 32|8 are made in Italy, as well as the NLX 2500SY|700 and CTX alpha 500 universal turning machines, the CTX beta 1250 TC turning & milling machining centre, the SPRINT 50 production turning machine and the GMC 20 ISM automatic multi-spindle machine.

SPRINT 32|5 and SPRINT 32|8

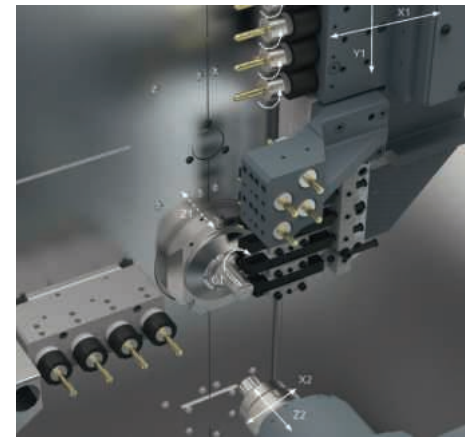
An extension of the successful SPRINT series for parts with diameters of up to 32 mm, the

The world premiere SPRINT 3215

SPRINT 32|5 is designed for both short and long turning of workpieces of up to ø 32 x 600 mm. With a base area of less than 2.8 m², the new development is an extremely compact production facility. The SPRINT 32|5 machines materials in rod form up to 32 mm in diameter using two spindles and a 2-channel controller.

22 tools on two independent workpiece carriers make it possible to carry out complex machining processes. The automatic lathe also machines demanding workpieces radially at the main spindle with four driven tools. In total the machine is equipped with five linear axes and on C-axis for the main spindle. Other options are the unloading device for workpieces up to 600 mm in length, and the high-pressure coolant supply with 120 bar.

As an upgrade, DMG MORI is presenting the SPRINT 32|8 at EMO as another extension of the SPRINT range. The SPRINT 32|8 is equipped with three independent linear carriers for 4-axis machining on the main spindle and offers space for up to 28 tools. The machine has six linear axes in total



The SPRINT 3215 is equipped with five linear axes as well as a C-axis for the main spindle

including a second Y-axis. Two C-axes are also available, one for the main spindle, one for the counter spindle. In addition to the attainable pluses in performance and flexibility in relation to complex components the ergonomic operation and the durable construction underline the performance of this innovation.

CTX gamma TC 2nd Generation

Complete machining with the new compactMASTER® turning/milling spindle, better performance and a bigger working area are the main features of the new CTX gamma 1250 TC and CTX gamma 2000 TC. The indisputable highlight of the two 2nd generation machines from DMG MORI is the ultra-compact turning/milling spindle. Their compact dimensions translate into a space saving of 70 mm, meaning that 550 mm long workpieces can be horizontally drilled out or hollow turned. The elevation in

The world premiere CTX gamma 1250 TC 2nd generation

the X-axis has been increased by 150 mm, thus extending the options for the machining of large workpiece diameters. In addition, the Y-axis now offers 20 mm more travel. The maximum turning length is 1,300 mm in the case of the CTX gamma 1250 TC. The big sister model has a turning length of 2,050 mm. The turning diameter is 700 mm, respectively.

In its development of the compactMASTER turn & mill spindle, DMG MORI has increased the turning torque by 130 percent, meaning that up to 230 Nm is available to users. The spindle operates at speeds of up to 12,000 rpm. The new CTX gamma TC models also have improved dynamics: the feed speeds of 50 m/min in the X, Y and Z directions have been increased by up to 65 percent. With the optional linear drive in the Z-axis, the turning/milling machines achieve up to 60 m/min in fast feed and an acceleration of 1g.

duoBLOCK 4th generation

Strong and precise, the new duoBLOCK 4th generation machining centres excel with their unique rigidity and extremely high precision. Above all, the sophisticated cooling system with comprehensive cooling features on the spindle head, NC round table and in the basic machine guarantees long-term precision even in the standard version. The large modules of the duoBLOCK series also contain numerous options for machine customisation such as the precision package, which includes cooling of the entire feed drive or bed temperature control. Furthermore, the customer can select from the widest range of spindles currently on the market, with torques up to 1600 Nm. In combination with the optional heavy duty machining packages, users get up to 50 percent better milling performance in titanium and Inconel.

The world premieres in the duoBLOCK model series include the DMC 100 U duoBLOCK universal milling machine, the DMC 100 H duoBLOCK and DMC 125 H duoBLOCK horizontal centres. The distance from the spindle to the centre of the table of the two horizontal machining centres has been increased by 200 mm, meaning that now sufficient room is available for long tools up to 900 mm.

NLX 6000|2000

This is a powerful turn & mill machining with torque of up to 12,000 Nm for long parts and large diameters.

With more than 2,300 installed machines the SL series from DMG MORI has written an impressive success story over the last years. The NLX 6000|2000 now opens a new chapter setting new standards in the powerful turn & mill machining of workpieces up to 2,000 mm in length with a diameter of 920 mm, with a chuck diameter of 600 mm. The basis for productive and high-precision machining on the NLX 6000|2000 are the tremendous rigidity of the drive trains, the structure of the machine bed and the flat guides with their high damping characteristics. The outstanding milling performance is guaranteed by the revolver magazine with BMT® technology. The integrated direct drive motor achieves up to 4,000 rpm and a high torque of up to 117 Nm.

The highlight of the NLX 6000|2000 is the application-oriented selection of powerful spindles. The range starts at type B with a spindle diameter of 185 mm. In this case the maximum speed is 1600 rpm, and the torque is up to 7,000 Nm. The range of spindles is rounded off by two spindles, each with impressive torques of up to 12,000 Nm. Type C has a diameter of 285 mm, and for the type D it is an impressive 375 mm.

DMG MORI WASINO

These ultra-precise production lathes have a roundness precision of 0.2 µm for production lines in the automotive industry.

WASINO, a brand belonging to AMADA MACHINE TOOLS CO LTD, has more than 75 years of experience and develops and builds high-precision production lathes for the automotive, optical and other industries. Now that DMG MORI has taken over the lathe portfolio of AMADA, the models are now also being integrated in the global sales and service network of the machine tool manufacturer. The product range includes the G series, the J series and the A series, from which DMG MORI will present two representative models during EMO.

The G07 production turning machine from DMG MORI WASINO

The robust design and low centre of gravity of the WASINO models of the G series make them particularly suitable for applications in which a high degree of mechanical and thermal stability is required. In combination with the linear tool carrier, the G series is thus predestined for use in finishing including for ultra-precision applications. The J-series provides a selection of high-precision and extremely compact automatic revolver lathes that are designed for quality-oriented preparation and finishing of small precision workpieces. The models in the WASINO A series from provide users with the largest number of tool locations, and in the case of the

AD-18S a counter-spindle for demanding 6-side complete machining. The focus of these machines is high-precision machining of complex turn & mill parts.

Therefore the machines are equipped with a Y-axis and space for driven tool. The

A-18S, for instance, can be set up with 18 (driven) tools.

Additionally, with the GG-05, the JJ-1 and the AA-1, the WASINO portfolio offers in each of the three series a two spindle lathe for highly productive serial production.

ECOLINE - new design

With optimised ergonomics and greater stability, the latest design evolution of the ECOLINE model series from DMG MORI underlines the high quality claim of the machine tool manufacturer's entry-level segment. Significantly more robust and scratch-resistant finishes made from anodised aluminium and powder-coated metal cladding provides a high degree of value stability. DMG MORI has also designed the

ECOLINE models to be even more ergonomic with regard to accessibility. The safety windows of the machines can be quickly and easily replaced from the outside. The ecoTurn 450 universal turning machine has furthermore internal chip protection that prevents damage to the window.

DMG MORI UK
Tel: 024 76 516120
Email: steve.finn@dmgmori.com
www.dmgmori.com

SMOOTH Technology the headline act for Mazak

Yamazaki Mazak is placing its new SMOOTH Technology CNC 'family' at the heart of an unprecedented new product launch schedule at EMO 2015.

The Mazak stand (**Hall 7 Stand E01 G01**) will include two new additions to the SMOOTH CNC family, along with a supporting cast of 18 new machines making their world debuts. In total Mazak will exhibit 22 machines at EMO 2015, all of them performing live cutting demonstrations for the duration of the show.

The Mazak theme at the show "It's all about you" further demonstrates the company's continued commitment to providing innovative machine and CNC solutions, designed to make Mazak users more productive, efficient and competitive.

The Mazak stand is separated into seven separate zones, for multi-tasking, 5-axis, turning, vertical machining, horizontal machining, hybrid technology and SMOOTH Technology. The centrepiece of the Mazak stand will be a 3D Theatre featuring three dimensional animated presentations about SMOOTH Technology.

In the SMOOTH Technology Zone, SmoothX, the 5-axis control, which was launched earlier in 2015, will be joined by SmoothG, developed specifically for machines with up to 4-axis simultaneous motion control. This includes vertical and horizontal machining centres and performance turning centres, from 2-axis up to MSY capability.

The exhibition will also see the launch of SmoothC, which has been specifically developed for entry-level machines, streamlined for simplified operation, retaining the classic MAZATROL interface and conversational programming capability, combined with the performance characteristics of new SMOOTH Technology. The new INTEGREX i-400AM will show its ability to generate near net shape components with its additive capability, before finishing them with multi-tasking machining. The INTEGREX i-400AM now also includes capability for full 5-axis machining, enabling complex geometry parts to be produced in a range of materials, including stainless steel, nickel alloys and copper. The machine is equipped with SmoothX control with the management of both additive and subtractive functionality fully integrated into the CNC.

In the 5-axis zone one of the highlights will be the new VARIAXIS i-1050T, combining the perfect combination of 5-axis machining with full turning capability, enabling outstanding cutting performance for large complex workpieces. The i-1050T has a large machining envelope and features a gantry box design with a fully cast structure, to ensure maximum stability and accuracy. Performance is delivered via a high speed Taper 50 spindle capable of 10,000 rpm and 37 kW (40 percent ED) and a powerful 500 rpm 37 kW turning table. The VARIAXIS i-1050T is equipped with SmoothX control.

The Turning Zone will feature the QUICK TURN 250 MSY, a high performance turning centre with integrated milling, second spindle and Y-axis configuration, capable of completing a wide variety of machining operations. The 250 MSY incorporates SmoothG control.

The new QT COMPACT 300 MY has a new global design, manufactured in both Japan and Europe. The machine is a compact and cost-effective option, offering milling and Y-axis capability. The QT COMPACT is equipped with SmoothC Control.

The MEGA TURN 500M S, a vertical turning centre with machining capability and a compact footprint, is capable of outstanding productivity with its high-power integrated turning spindle. The MEGA TURN at EMO is equipped with SmoothC control for enhanced productivity and a number of automation solutions, including an automatic tool changer, auto side door and a FANUC robot for loading.

The highlight of the Vertical Machining Zone will be the new VTC-760C, the next generation of the highly popular VTC 300C II series, which is making its world debut. The machine features a new base structure and the use of a roller linear way system for enhanced rigidity, axis performance and accuracy. The VTC-760C is equipped with SmoothG control.

The VTC 800/30 SLR, incorporates a large rotary table capability for 5-axis machining of workpieces up to 1.5 m in diameter. The VTC 800/30 SLR is equipped with Siemens Sinumerik 840D sl control for Mazak users that have standardised on Siemens control in their manufacturing operations.

The main focus in the Horizontal Zone is likely to be the world debut of the HORIZONTAL CENTER 5000/50, a high performance machine equipped with a 10,000 rpm 50 taper spindle. Specifically, the machine is equipped with a high-speed tool change and boasts a chip-to-chip time of 3.5 seconds, making it ideal for high volume parts operations.

Yamazaki Mazak UK Ltd
Tel: 01905 755755
Email: sales@mazak.co.uk
www.mazak.eu

Take the long view

Sodick EDM - an investment for today and tomorrow

Sodick

A Sodick EDM LINEAR motor machine offers you a whole lot more
More features, more functions, more benefits....
All Sodick EDM machines incorporate LINEAR DRIVE TECHNOLOGY providing our customers with the benefits of higher accuracy with zero backlash and a smoother surface finish. We also include, as standard, all Sodick's trademark features, such as ceramic components, user-friendly software and error-free data conversion. In addition, and to ensure our customers' complete peace of mind, we provide our unique 10-year ACCURACY WARRANTY.

Sodi-Tech EDM sole UK distributor of Sodick EDM technology
Rowley Drive, Baginton, Coventry CV3 4FG Tel. +44 (0)24 76 511 677 Email sales@sodi-techedm.co.uk **www.sodi-techedm.co.uk**

Renishaw to focus on measurement speed, accessibility and simplicity

Renishaw, a world leader in precision engineering technologies, will be exhibiting its extensive range of metrology and additive manufacturing equipment at EMO 2015.

Products highlighted in **Hall 5, Stand D15**, will include new software for the Equator™ flexible gauge, which allows users to create simple gauging routines in minutes, new MODUS 2 metrology software suite which simplifies the programming of co-ordinate measuring machines (CMMs), a new 'pay-as-you-go' machine tool probe system and a simple single-axis tool setter. Further new product announcements will be made ahead of the exhibition.

Making its European trade show debut will be the Primo™ twin-probe system, which brings with it all the advantages of automated setting within a breakthrough 'pay-as-you-go' business model. Recognising that probe systems are the foundation of precision machining, the new Primo system brings high-end manufacturing within reach of companies of all sizes through a combination of minimal upfront costs, a free, comprehensive training package, and immediate parts replacement.

The twin-probe system comprises the Primo Radio Part Setter, Primo Radio 3D Tool Setter and Primo interface, plus three key additional elements: the Primo Credit Token, GoProbe software and Primo Total Protect which provides cover against accidental probe damage. The system is supplied with a six-month credit token which enables unlimited use of the Primo twin-probe system during that period; once the credit expires, users can simply purchase an additional credit token to extend usage.

Also new and supplied as standard with the Primo twin-probe system is user-friendly GoProbe software, which offers a unique combination of software, training materials and user reference tools, including new apps for Apple iOS and Android devices. Designed to make it simple to use Renishaw machine tool probes, GoProbe includes complete part setting, tool setting and probe setup cycles, yet requires no previous probing experience.

The self-study GoProbe training kit, which includes an e-learning course and a training part to practice on, helps to build knowledge and confidence rapidly, so that processes can be optimised as soon as possible. It eliminates the need for extensive knowledge of G-codes, requiring only simple single-line commands, which also makes it easy to progress from basic manual cycles to more complex automated cycles.

Also new for CNC machining centres is the Primo LTS (Length Tool Setter), a single-axis system which allows users to quickly set tool length, check for breakage and compensate for thermal growth. The automated system which is designed to operate in the harshest of environments will be up to ten times faster than manual setting methods.

A further innovation for EMO 2015, which brings 'intelligent speed' to machine tool probing, is Inspection Plus with SupaTouch™ optimisation. This new software package automatically determines and selects the highest feed rates a machine tool can achieve whilst maintaining metrological accuracy. It also uses intelligent in-cycle decision making to implement either a one or two-touch probing strategy for each measurement routine. The result is minimised cycle times and maximised productivity.

At EMO 2015 Renishaw will also show its new INTUO™ gauging software which is now offered with the unique Equator system to simplify and automate the gauging of a wide variety of parts, removing dependence on the skill of manual gauge users. This package also makes an ideal alternative to multiple manual devices such as vernier or digital callipers, micrometres and plug gauges.

With minimal training, the INTUO software allows the programmer to create gauging routines using just a part with an engineering drawing. With the 'Feature Predict' function activated, the programmer uses the joystick to take points on each feature while INTUO does most of the work, by predicting the type of feature, the nominal value and a possible tolerance band. It is then easy to adjust the program to change the number of points taken or to space them evenly, and match nominals and tolerances to the engineering drawing. Shop-floor operators then simply select and run these programs within the user-friendly Renishaw Organiser front-end software.

INTUO with Equator is an ideal alternative

to multiple manual devices such as vernier or digital callipers, micrometres and plug gauges. Equator is highly repeatable and runs fast automated routines, meaning significantly reduced labour costs. With many workshops using hundreds of manual gauges this cost saving can be considerable.

INTUO allows the programmer to create gauging routines using just a part with an engineering drawing. With the Feature Predict function activated, the programmer uses the joystick to take points on each feature while INTUO does most of the work, by predicting the type of feature, the nominal value and a possible tolerance band.

It is then easy to adjust the program to change the number of points taken or to space them evenly, and match nominals and tolerances to the engineering drawing.

It is a simple task to input the actual values for features on the master part, which does not need to be a 'perfect part'. In fact it is preferable that a production part manufactured with the same method and material is used. First the features required are measured on a certified device, like a calibrated manual gauge or any co-ordinate measuring machine (CMM). The values from this master part inspection report can be manually added to a table in Organiser or to the corresponding field in INTUO; changing one will update the other.

Renishaw is also launching the Equator Button Interface (EBI), with simple push-button controls for shop-floor operators, removing the need for a mouse and keyboard. The EBI can be operated by staff wearing gloves and is not affected by shop-floor contamination.

Users of coordinate measuring machines visiting EMO 2015 will also be interested to see how the MODUS 2 metrology software suite brings new levels of clarity and efficiency to the programming and operation of CMMs. Based on the established and highly capable MODUS platform, and supporting Renishaw's range of three and five-axis CMM sensor technologies, MODUS 2 has been designed with usability in mind, including an innovative, easy-to-learn interface and faster programming, resulting in unprecedented levels of productivity with or without a CAD model.

Based on the established and highly capable MODUS platform and supporting Renishaw's suite of 3 and 5-axis CMM sensor technologies, MODUS 2 has been designed with usability in mind.

The user experience for MODUS 2 is also designed to be identical whether the software is connected to a 'live' CMM or working in an offline environment where full simulation with speed control allows measurement sequence development and visualisation.

A complete redesign of the software interface with the introduction of 'Off Surface' motion technology, intelligent measurement strategies, automatic reporting and an interactive virtual CMM environment are just some of the innovations that enhance the user experience. From simple manual CMM operation through to complex part measurement on multi-axis systems, MODUS 2 adapts automatically and only offers functionality relevant to the current task.

Intelligent extraction of CAD data and knowledge of underlying geometry determine the measurement strategy. However, consistency in measurement methods is paramount accross an organisation, and MODUS 2 facilitates this by allowing users to collaborate on data collection properties and parameters such as fitting algorithms and filters.

Visitors will be able to see and interact with demonstrations of GoProbe, INTUO, and MODUS 2 at the Renishaw stand.

Renishaw is also continuing to develop its Web shop (**www.renishaw.com/shop**) with a focus on offering a user-friendly environment which allows customers easy access to a large and increasing range of the company's metrology products at any time of the day. Now live in fourteen countries, with more to be added this year, the Web shop includes Renishaw fixtures for CMMs, vision systems and the Equator gauge; an extensive range of precision styli; CMM accessories such as racks, probe extensions and TP20 modules; and credit tokens for the new PRIMO twin-probe system for machine tools.

Renishaw plc
Tel: 01453 524524
Email: uk@renishaw.com
www.renishaw.com

KASTO to promote latest sawing and storage technologies

KASTO will present numerous innovations at EMO 2015 **HALL 18 Stand A18/B09**. Visitors will have a chance to assess equipment from the two sides of its business: sawing and storage, amongst them the KASTOunitower long material storage system, the new KASTOwin series of bandsaws and the KASTOsort robotic sorting system.

The KASTOunitower tower storage system is available in three variants and is suitable for bar materials, sections, sheet and plate, as well as euro-pallets, boxes and other items. Its height means that it can hold a given amount of stock in a smaller space than floor or cantilever arm storage systems and therefore it is more economical.

An operating gantry crane handles the cassettes that contain the materials. In addition, input and output stations connected to automatic conveying technology or to processing machines allow material flow to be optimised. The tower is, for example, employed as a buffer store in fabrication shops, or for small to medium quantity storage in steel and other stockholding companies. The horizontal bandsaws in the KASTOtec series are designed for processing large workpieces and materials that are difficult to cut. The machines offer highly efficient cutting performance, easy operation and carefully thought out material handling. A ballscrew is used to position the material to be sawn very accurately. Precision balanced drive elements permit very high cutting speeds in combination with smooth running that prolongs blade life. KASTO will be exhibiting the fully automatic KASTOtec AC 4 carbide specification bandsaw with a cutting range of 430 mm.

The KASTOunitower tower storage system is a space-saving, economical alternative to floor and cantilever arm storage systems

The KASTOtec horizontal bandsaw is designed for processing large workpieces and difficult-to-cut materials

The KASTOwin series, introduced in 2014, comprises five fully automatic bandsaws with cutting ranges of up to 1,060 mm. The KASTOwin A 3.3, with a cutting range of 330 mm, and the KASTOwin A 8.6, whose cutting range is 860 mm, will be demonstrated on the KASTO stand.

KASTOwin is a versatile, all-round solution for cutting a variety of materials. As a large number of parts used within the series are identical, the bandsaws have an outstanding price/performance ratio. At the same time, the carefully thought out, robust design permits the highest cutting performance. The touch-screen SmartControl ensures easy operation. It contains a library of material data and automatically sets all necessary cutting parameters.

With the KASTOsort robotic sorting system, cut pieces can be stacked, deburred, cleaned, weighed and marked automatically

In addition, the company will exhibit the KASTOspeed high-performance automatic circular sawing machine in combination with a KASTOsort robotic sorting system. Saws in this series are particularly well suited to economical series production. Optimum positioning of the saw drive and the four-point workpiece clamping permit a very short saw stroke.

KASTOsort delivers a further increase in efficiency by integrating industrial robots with suitable gripping systems. Cut pieces can be removed under automatic control and stacked for optimised packing density, cleaned, deburred, weighed, marked and/or sent to further processing equipment.

KASTO Ltd
Tel: 01908 571590
Email: sales@kasto.uk.com
www.kasto.uk.com

Haas Automation to show new machines and Haas F1 car

Haas Automation will take centre stage at EMO 2015. The US-based manufacturer will use EMO to exhibit a number of high-performance, competitively priced CNC machine tools, as well as the Haas F1 car, which is on schedule to make its debut in the FIA Formula 1 World Championship in 2016.

Haas machines differentiate themselves from the competition in many ways, not least by the high quality, affordable components with which they are built. To help convey this message, visitors to the Haas stand at EMO will be able to see inside the machines, seeing for themselves how they work, how they are constructed and their inherent build quality. There are no secrets or hidden surprises when buying a Haas machine as the company believes that transparency for customers is of paramount importance.

Among the new machines on display will be the Haas UMC-750SS, a Super-Speed version of the company's popular universal 5-axis machining centre. The UMC-750SS is a 5-axis, 40-taper model equipped with a 15,000 rpm inline direct-drive spindle, a high speed 40+1 tool side-mount tool changer and Haas Automation's powerful, high speed machining software. It offers travels of 762 x 508 x 508 mm, 30.5 m/min rapids and an integrated high speed, dual-axis trunnion table.

Also at EMO will be the newly developed Haas DM-1 high-speed 40-taper drill/mill centre. The inline direct-drive spindle turns to 15,000 rpm, and allows high-speed rigid tapping. Furthermore, the spindle is coupled directly to the motor to reduce heat, increase power transmission, and provide excellent surface finishes. The DM-1, which offers a 508 x 406 x 394 mm work cube, provides cutting feed rates to 30.5 m/min for high speed milling, while the machine's 18+1 side-mount tool changer swaps tools quickly to reduce non-cutting time.

Visitors will also be drawn to the new ST-15 big bore turning centre. The machine now provides a maximum cutting capacity of 356 x 406 mm, with a swing of 406 mm over the cross slide. For machine shops wanting additional capability for secondary

operations, a Y-axis version of the ST-15 is also available. The ST-15Y has the same footprint and specifications as the ST-15, but with a maximum capacity of 305 x 406 mm.

Another star on the stand will be the Haas F1 car. As fans already know, the technical partner of the Haas F1 Team is Scuderia Ferrari, located just 200 km from EMO 2015, where the new chassis is undergoing vigorous wind tunnel testing.

Haas Automation Ltd
Tel: 01603 760539
Email: cnc@haas.co.uk
www.haas.co.uk

"Machining Solutions - for You"

Manufacturers' increased productivity, precision, profitability and flexibility are at the heart of GF Machining Solutions' customer-centric stand at EMO.
On **stand C06 in hall 9**, EMO visitors will experience the GF Division's central theme "Machining Solutions-for You." This includes world premieres of products and services, live demonstrations of the best value delivered by GF Machining Solutions' broad portfolio of manufacturing technologies, process expertise, and productivity enhancing services to customers across a wide range of industries.

This technology portfolio that includes milling, electrical discharge machines (EDM), airfoil machining solutions, laser texturing, automation, tooling and spindles along with Customer Services, makes GF Machining Solutions the world's leading provider of manufacturing solutions to the tool and mould making industry and to manufacturers of precision components.

World premieres to be discovered at EMO include the Mikron MILL P 800 U for milling, the CUT E 350 for wire-cutting EDM,

the LASER 400 family of Laser texturing solutions and Customer Services' new rConnect central communications platform for Milling, EDM and Laser. In addition, the stand will feature GF Machining Solutions' deep process expertise across the tool, mould and die industries, and the production of high-value parts; value-adding Customer Services, plus a special VIP area focusing on dedicated solutions for aerospace manufacturers.

Also highlighted will be the first solutions resulting from a strategic cooperation with additive manufacturing leader EOS, Kralling, Germany.

Whether a customer's focus is on cutting costs, exploring new business areas or seeking inspiration from examples, GF Machining Solutions' EMO 2015 stand aims to provoke thought and inspiration among visitors. They will have access to the industry's broadest portfolio of machining solutions and application and process expertise.

GF Machining Solutions Ltd
Tel: 024 76 538666
Email: info.gfms.uk@georgfischer.com
www.gfms.com/EMO2015

Makino introduces automation for high product mix, low volume production

Exchanging fixture plates rather than pallets lowers investment costs

Japanese machine tool manufacturer, Makino, represented in the UK and Ireland by sole agent NCMT, has introduced the new MMC-R robotic fixture plate distribution system to increase machine utilisation and operator efficiency. It is suited to high product mix, low volume production runs, enabling aerospace manufacturers to increase spindle utilisation and reduce setup times through accurate and reliable machine loading, unloading and parts storage.

The MMC-R is designed for flexibility, accommodating a wide variety of customised configurations for simple shop floor integration and improved utilisation of capital assets. A system typically comprises 4- and/or 5-axis horizontal / vertical machining centres, 6-axis robotic transport, work setting station(s), fixture plates and their storage rack(s). An optional 7th axis floor track can be integrated to support additional machining and storage.

Fixture plates are of steel construction, available in a variety of sizes based on machine capacity, whether it is 4- or 5-axis machining that is involved and robot specification. Interfaces provide secure, accurate and repeatable fixture plate transfer between the robot gripper and the machine. By transporting a fixture plate instead of a complete machine pallet, manufacturers benefit from reduced costs.

The fixture plate being delivered to a Makino machining centre

The system can incorporate Makino's MAS-A5 Cell Controller for coordinating fixture plate transfer schedules, allowing increased manufacturing efficiency through reduced machine downtime. The cell controller monitors the conditions of the robot and issues transfer tasks. A human machine interface (HMI) is included for initial setup and alarm/event messaging to ensure in-progress production security.

System provision can include integration of machining technologies, third-party equipment such as a vision system and tool / part measuring equipment, application engineering and fixture design in addition to delivery, commissioning, training and ongoing production support.

A video of MMC-R system operation may be viewed at: **https://www.youtube.com/watch?v=TrBtyU1kr4A**

A fixture plate being selected by robot from the storage racking of an MMC-R system

Titanium machining

Makino also offers what it calls ADVANTiGE to manufacturers of titanium parts, said to provide four times the productivity and tool life when milling titanium, dramatically reducing costs and lead-times.

"ADVANTiGE provides efficiency that no other titanium machining technology has historically offered," says Mark Larson, Makino's Titanium R&D manager, who is located at the US subsidiary's Global Titanium R&D Centre in Mason, Ohio.

"The technology overcomes the traditional challenges of low metal removal rates and limited tool life associated with titanium machining by improving spindle performance and cutting strategies. By

combining all improvements into one package, we are able to break through the limitations of the past."

ADVANTiGE is currently available on Makino's T-series of 5-axis horizontal machining centres. It is composed of several key machining technologies including a high power, high torque spindle, collision protection, a high pressure, high flow coolant system, vibration damping and a rigid machine construction.

The HSK-A125 / 4,000 rpm (optionally 8,000 rpm) integral drive spindle with 150 kW of power and a tool clamping force of 9.8 tonnes is Makino's most powerful to date. It has 1,500 Nm of duty rated torque (1,000 Nm continuous) to handle the high tensile strength of titanium. An advanced, twin servo-drive, A-axis tilting head provides the speed, torque and accuracy necessary to perform full 5-axis roughing and contouring.

Makino's ADVANTiGE titanium machining takes advantage of an HSK-A125 / 4,000 rpm or 8,000 rpm integral drive spindle with 150 kW of power and 1,500 Nm of duty rated torque (1,000 Nm continuous)

Some of the greatest risks to the titanium machining process are accidents and collisions that could result in damage to costly material, the tool or the spindle. ADVANTiGE uses Makino's Collision Safe Guard and Autonomic Spindle Technologies to monitor approaching tool paths and cutting conditions to avoid collisions and adjust cutting forces for higher productivity and profitability.

The high pressure, high flow coolant system delivers large volumes of coolant directly to the cutting zone for increased chip removal from multi-flute tools. The coolant system includes overhead shower, spindle nozzle, and through-spindle coolant for improved cooling, lubrication, and chip evacuation.See video at: **www.youtube.com/watch?v=AUc85xcPj0A&feature=youtube**

By adjusting frictional forces based on low frequency vibration sensing, the ADVANTiGE real-time vibration damping system avoids chatter and cutter damage that could otherwise result from resonance of the machine structure. This vibration suppression enables deeper cuts, higher metal removal rates and reduced tool wear. The rigid construction of Makino's T-series 5-axis horizontal machining centres provides a solid, reliable platform for all other technologies and further suppresses vibration.

NCMT Ltd
Tel: 020 8398 4277
Email: daveburley@ncmt.co.uk
www.ncmt.co.uk

Javelin controls and tracks aircraft parts for Phoenix

Javelin production control software ensures specialist aerospace subcontractor Phoenix CNC Engineering complies with the industry's demand for traceability.

Production planner, Gary Jordan says Javelin was installed at the end of 2013 and quickly became the mainstay of its office and shop floor operations: "As well as running Javelin on a number of computers in the office, we also have a full license in the inspection department, and three Shop Floor Data Capture terminals in the production area."

From left to right: managing director Glenn Richardson, production planner Gary Jordan, technical director John Tolson, production planner Helen Foss, production planner Lisa Shaw, production manager Clive Moore.

Ninety percent of the company's work is manufacturing aerospace components and order books are growing at a considerable rate. Managing director, Glenn Richardson says they needed a system to control and monitor every process. As Javelin has its roots in the aircraft industry, he says it was the perfect robust system for assisting their move away from being a "speed shop" to focusing on long term projects: "We're currently starting work for a newly commissioned aircraft that has 15 years' worth of orders ahead and Javelin ensures we have the opportunity to be part of that."

Gary Jordan says complete traceability is non-negotiable to the aerospace industry, which makes Javelin's powerful Materials Control function essential to Phoenix CNC Engineering's success:

"Because Javelin fully integrates everything we do, we're using it to purchase all materials to the correct specification, and issuing the planned release of materials from our stores to the job card, along with the Goods Received Notes for all materials. This means we can provide complete traceability, which is a massive selling point for us."

The company is currently based in 16,000 square foot premises on the Derbyshire/ Nottinghamshire border, but is looking at the possibility of moving into a purpose-built 40,000 square foot complex in the next two years. As well as Javelin ensuring it is well equipped to manage the planned expansion, Phoenix has recently added two new 5-axis CNC machines to its tally of 22 machine tools, driven by the industry-leading Edgecam CAM software.

The parts Phoenix manufactures are mainly airframe components for aircraft wings, made from aerospace spec aluminium and titanium:

"Javelin's Shop Floor Data Capture function lies at the heart of our production process," adds Gary Jordan. "It shows the status of every job on the shop floor, and gives us the ability to drill down to all the key information. This is particularly valuable when customers ask about their job."

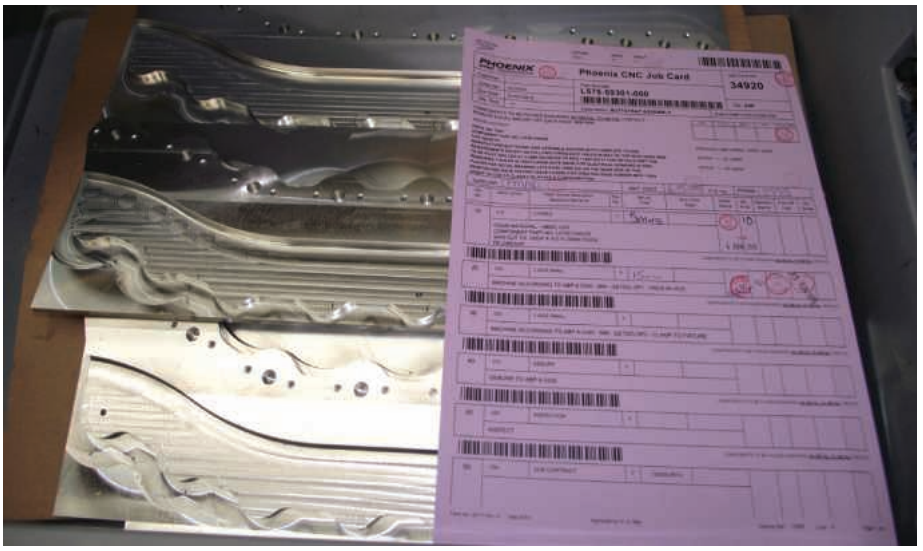
Shop floor workers log on to Javelin with their own personal bar code, then a particular job and operation:

"Each job usually has at least two milling operations, some will have three, some four, all of which are captured on Javelin. Logging all operations in this way, which only takes seconds, keeps us in complete control of every aspect of production." SFDC also enables it to pull up the status of each CNC machine, either by operator or work centre, showing whether they are setting or machining.

Annual turnover now stands at more than £6m and at least 20 batches of parts are produced daily: "We manufacture hundreds of different types of components, and there can be over 1,000 job cards going through the factory at any one time," explains Gary Bailey. "With several hundred imminent jobs due for delivery in the next two months, Javelin is vital for keeping track of where everything is. Office staff and production workers have all embraced Javelin, as they understand fully what we wanted to achieve with it."

He explains that the Javelin operation begins with the estimating and quotation function. The integration means the history round a particular inquiry can be checked quickly to rapidly build a price based on the time needed to make a part and the cost of material. He says that Sales Order Processing is a simple flow operation to enter data and raise the route card. Javelin produces three types of Purchase Order on a regular basis, for subcontractors, production and consumables.

"We don't manufacture anything without



a Javelin Works Order. Route cards are designed in Crystal Reports, and barcoded, so from a production perspective the Works Order contains all the information everyone needs for the operation. We won't launch a job on the shop floor without that."

Before Javelin, Phoenix controlled and monitored all its office and production processes using spreadsheets and Microsoft Word:

"We had to prioritise which Javelin functions we needed to get us up and running, as part of a drip-feed implementation. We had to ensure we had part numbers, routings and bills of materials set up first, but it meant delaying inputting some historical data, such as information to enable the MRP function to look at future demand.

"We're continuing to verify that all the data we've put in over the last few months is 100 percent accurate. In the meantime, while we order materials through Javelin, we still manually calculate the amount we need."

He also intends to link every drawing and photograph with the bill of materials, engineering query notes and any other instructions such as a condition of supply:

"We're also linking photographs of the parts. The system can only be as good as the information we put in, and it takes time to build the data. Javelin has more than delivered what we wanted to achieve at this stage. What excites me now is what it's going to achieve in the future when we've completed all the databases."

Part of the Vero Software Group, Javelin is a flexible, scalable and intelligent production planning and control system offering advanced functionality and value in the key areas of manufacturing and assembly. Javelin allows SME organisations to successfully compete in difficult economic and market conditions, through direct productivity improvements and lower IT infrastructure costs.

Vero Software Ltd
Tel: 01189 756084
Email: info@vero.co.uk
www.javelin.verosoftware.com
www.edgecam.com

Phoenix CNC Engineering
Tel: 0115 946 9896
Email: info@phoenixcnc.co.uk
www.phoenixcnc.co.uk

Under the skin of EDM in the aerospace industry

Essentially every commercial, scientific, and military aeronautical and aerospace piece of hardware has used parts manufactured in part, or completely, using the EDM process. For decades it has been used to manufacture aerospace parts including engine, fuel system, and landing-gear components, as well as other high-stress, high-temperature parts. However, the surface integrity, and therefore safety, of EDM-machined aerospace components has been questioned. Here, specialist EDM equipment supplier, WMT, highlights how the surface integrity of EDM components is no longer such a major concern.

During the 1960s, EDM machines were manual sink EDMs that used relaxation generators with simple RC (resistor-capacitor) circuits. Copper electrodes were used as the early sink EDM machines were designed around this low-cost, electrically conductive material. These machines were not so accurate and slow. Though slow they could scrap a part in the blink of an eye, but it was the only technology capable of machining some complex geometries and the new exotic alloy materials being developed for aerospace use.

The next decade witnessed the introduction of numerically controlled sink and wire EDMs. These machines used high-speed switching transistors in place of the RC circuits to generate AC instead of DC sparks. Brass wire was used on wire EDMs and graphite electrodes used on sinker machines. Of course, these machines were much faster than their predecessors but had a significant drawback.

As the aerospace industry discovered, the EDM process damaged the surface of the components being machined. This damage was a result of the heat generated by the EDM process, and consisted of the recast layer, or white layer, and an annealed Heat Affected Zone (HAZ), which lay directly below the hard recast layer. The recast layer is made up of molten metal particles that have been re-deposited onto the surface of the workpiece. "Both the HAZ and recast layer could also contain micro-cracks that could cause stress failures of safety critical components," explains WMT managing director, Ian Holbeche.

At this time, the HAZ and recast layers could be 0.1 to 0.25 mm thick. One industry standard required that one and a half times the HAZ/recast area be removed by conventional machining or chemical etching. This requirement added an extra step in the manufacturing process, increasing delivery times, as well as adding extra costs related to more processes and waste disposal.

Ian Holbeche says: "Many have referred to EDM in aerospace as a 'necessary evil' as the process is required to make many of the components used in aircraft because of the intricate shapes, tough alloys, and very tight tolerances involved. However, it also recognised the dangers of the damaged surfaces resulting from the process. The 'burnt' or carbonised material that comprises the recast layer could flake off of EDM-machined components during operation, producing potentially damaging contamination within the assembly housing of these components."

During the 80s and 90s, EDM generators continued to be refined. More advanced circuits were used to filter out noise, control spark generation, monitor spark gaps, and automatically make continuous adjustments to the burn conditions. These refinements resulted in a more stable, predictable, and safe process. Newer high-tech generators produced less recast layer, a smaller HAZ, and were less likely to compromise the surface integrity of the components.

Modern EDM machines have significantly evolved from their predecessors. Today, detailed testing has shown EDM machines leave no measurable HAZ and produce recast layers of less than 0.01 mm. Micro-cracks are almost non-existent. These machines can produce components with finishes measuring 0.5 micron Ry, tolerances in the sub-micron range, and leave the surface of any part virtually undamaged.

"Manufacturing demands are driving EDM machine manufacturers to develop machines that will maintain extreme accuracy while completing jobs faster," Ian Holbeche states. "Wire diameters have been reduced to just 0.02 mm and fine-hole drilling machines can produce clean, accurate holes measuring just 11 micron in diameter."

The application of EDM as a process requires electrolysis, the production of chemical changes by the passage of an electrical current through an electrolyte (a non-metallic electrical conductor through which current is carried by the movement of agitated ions).

During wire EDM operation stray energy in the dielectric fluid, produced by the cutting process itself, interacts with contaminants in the flushing fluid to disrupt the surface of the workpiece. The major result of this process in all materials is an increased heat-affected zone, or white layer, on the surface. Depending upon the workpiece material being cut, the visible results of this action will vary.

The current-carrying EDM wire commonly discharges particles as well as produces the cutting action on the workpiece. The stray current, once thought inevitable, causes detrimental surface effects such as bluing of titanium; cobalt binder depletion of carbide; anodic oxidation of aluminium; rusting of ferrous materials, and eventual micro-cracking of all materials.

This last effect had prohibited increased use of wire EDM in medical, aerospace and ordnance applications because that condition would render parts either unsafe or inoperable to the specifications required.

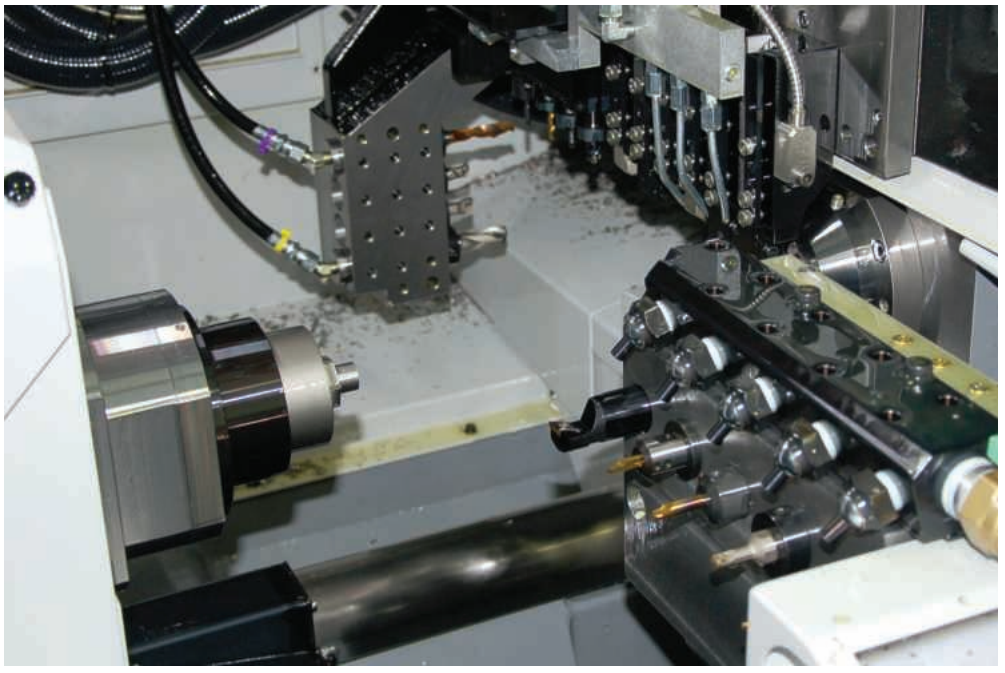
So, the challenge facing EDM builders was to engineer a power supply that would minimise, or even eliminate, the interaction of the stray current and contaminants on the workpiece surface. Various builders have

taken various routes to solve this with anti-electrolysis (AE) generators. ONA offers its Easycut generator, which provides a cut that is 100 per cent free from electrolyte corrosion, without affecting the speed of 450 mm2/min with 0.33 mm diameter wire, while also preserving the surface integrity of the material being cut, with a surface finish of 0.2 micron Ra – 6 VDI. Featuring new technology, Excetek's range of wire EDM machine tools are equipped with its EF Electrolysis Free AC generator that has RTS (real-time sparking). With an extremely fast response time RTS provides feedback to negate ineffective discharges by automatically adjusting cutting conditions to improve machining efficiency.

Ian Holbeche concludes: "The aerospace and other leading industry sectors have recognised that EDM is a valuable, viable process to manufacture components. Industry testing indicates today's technologically advanced machines do not damage the surface of the material as in the past. As a result, manufacturers may now be able to use EDM to manufacture more components, possibly eliminating secondary machining operations, reducing costs and decreasing delivery times."

Warwick Machine Tools
Tel: 01676 534534
Email: sales@warwickmachinetools.co.uk
www.warwickmachinetools.co.uk

Time saving demonstrations of up to 25%



Pre-order trials with C & M Precision on existing components, involving the world's fastest CNC sliding head turn-mill centre, demonstrated cycle time savings of up to 25 percent against existing Citizen machines installed just five years ago.

Managing director John Cable explains: "The advances in Citizen's machining technology really came home to us, so we have ordered the Citizen A32 which will enable us to switch simple work from our four Citizen top-of-the-range M32s and Citizen M16. This will free up spindle capacity for new contracts we have recently won for some very complex, high value components.

C & M Precision based in Maldon, Essex, was set up in 1992 and supplies the connector, hydraulic, marine, medical, defence and lighting industries while also producing a range of electro-mechanical fittings for the mining sector and components for prestige seats for aerospace.

Materials processed include mild and high carbon steels, brass, aluminium and a range of stainless steels to produce parts in batches varying from 250 single orders to regular contracts involving supply of 10,000 parts a month. This is where the existing Citizen sliding head machines have scored, with Joghn Cable's subcontract operation achieving consistency, high precision and total reliability.

"While the A32 is fast, with its 45 m/min rapid movements and quick processing, our M-Series machines cannot be beaten for very complex parts where orders are won and savings made by combining a multitude of different part features into a single cost-effective cycle," continues John Cable. "However, when it comes to more simple components that still benefit from single operational cycles and where we face highly competitive pricing and short lead time demands, we see the A32 as being our workhorse."

He then confirms how his company will be increasing output of certain hydraulic components from current 72 parts an hour on existing M32s, to 95 per hour on the new A32. He also forecasts on some parts, that they will now be processed at rates of well over 100 per hour.

"We know this will be achieved as in the trials we ran cycles using the same tools and maintained proven cutting data from the M-Series. However, we still have the added advantage of the enhanced rigidity from the heavier duty A32 cast frame and overall speed of operation, which gives us even more potential gains to look forward to under full production conditions."

Claimed to be the world's fastest 32 mm CNC sliding head, the Citizen A32-VII offers 32 mm large-diameter machining at an unbeatable low price. Although inexpensive, the machine is strong, powerful and rigid giving it exceptional cutting performance making it ideally suited to heavy machining.

With features like a rapid feed rate of 45 m/min, high speed processing with the latest NC unit and Citizen's unique Cincom Control technology, it achieves 30 percent higher productivity than previous machines. To maintain consistent high-accuracy machining the design takes thermal displacement into account carefully considering factors such as the shape of the bed and the placement of the electrical cabinet.

The machine is equipped, as standard, with seven axes, six turning tools, four rotary tools for cross-machining, nine tools for back-end machining and five tools for front-end machining, providing a total of 23 tools and allowing great flexibility. Many different tooling configurations are available to tailor the machine to your requirements.

Maximum cutting length is 320 mm in one chucking. However, with the optional long work piece unit, components up to 600 mm can be machined.

The main spindle is driven by a 5.5 / 7.5 kW motor and the sub-spindle has a 2.2 / 3.7 kW drive. The rotary tool drive also has a 1 kW, AC spindle motor with a maximum speed of 5,000 rpm. Rapid traverse rate is increased to 45 m/min for a large reduction in idle time from previous models.

Comprehensive standard equipment, space-saving design, easy operation, low running costs and high productivity, all at an extremely attractive price, makes the A32-VII a must-have purchase for both newcomers to sliding head and existing users looking to increase their capacity.

Citizen Machinery
Tel: 01923 691500
Email: gbryant@citizenmachinery.co.uk
www.citizenmachinery.co.uk

C & M Precision Ltd
Tel: 01621 852569
Email: office@onehitnc.com
www.onehitcnc.com

MILLS CNC

www.millscnc.co.uk

01926 736736

Great news for manufacturers.

Not so good for our competitors!

INFINITE OPPORTUNITIES

Mills CNC
Advanced Technology Open House
4th and 5th November 2015

Doosan DNM Mark II verticals now available with the Siemens 828D Control.

DOOSAN

Component manufacturers who preferred their machine tools to have Siemens Controls have been at a disadvantage.

Because, no matter how much they wanted a Doosan DNM Mark II vertical machining centre with a Siemens Control...none were available. And that meant they probably had to make do with a machine that wasn't necessarily their first choice.

We're sorry about that.

But the good news is that Doosan DNM Mark II machines are now available from Mills CNC with the Siemens 828D Control and on-board Shopmill conversational programming software. We're confident that this will go down well with manufacturers...but less so perhaps with our competitors.

Long-term partnership helps to deliver success at Hymec

Founded in 1978, Hymec Aerospace Group has grown into a global provider of precision manufactured components for the aerospace, defence, medical, telecommunications and motorsport sectors. Hymec's customer base is a global one and this is reflected by it having manufacturing plants in the USA and Thailand as well as its main 85,000 ft^2 facility in Plymouth, Devon, with a satellite facility for design and development work in Newton Abbott.

Initially Hymec was a 'make to print' company, but around 20 years ago it developed a strategic plan for growth which has seen it develop into a partner with its customers, integrating everything from machining, assembly, and storage facilities that allow it to 'ship to stock' many of the precision machined components, sheet metal and structural assemblies that it produces.

As a Tier One supplier to leading aerospace companies Hymec also works on short-, medium-, or long-term projects, across a range of materials from light alloys through to more exotic, harder to machine alloys, whilst also providing heat treatment, penetrative flaw detection and specialised finishing services for customers. As a result of this diversification it has developed its processes, technology and the skills of its employees in order to match the expectations of customers.

Throughout its history, machining has been the core competence of Hymec, with the bulk of its machining capability being developed in partnership with Matchmaker CNC. Hymec currently has around 80 CNC machine tools at its main factory in Plymouth, with 65 of these being supplied by Matchmaker CNC. This long-term partnership began in 2003 when Hymec invested in four Mitsubishi MH5Bn horizontal machining centres to increase productivity, These were complemented by numerous Fadal and Matchmaker and Matchmaker Tongtai machines being installed. With the acquisition by Hymec of Harbourne Engineering, the company decided to further embrace horizontal machining centres, all from Matchmaker CNC.

One of several Kiwa KH-45 multi-pallet horizontal machining centres installed by Matchmaker CN at Hymec

These included several, Japan-built, Kiwa KH-45, 400 mm multi-pallet size horizontal machining centres. While the Kiwa KH-45 is designed to grow with the user's production needs, Hymec specified multi-pallets from the outset, also taking the option of 220 tools on each machine. With their 12,000 revs/min and 22 kW, these Kiwa machines are ideal for the light alloy work undertaken by Hymec for its aerospace customers. Such was the impact of the Kiwas that an additional two machines have been installed at Hymec.

More recently, Hymec has turned its focus on to other areas of aerospace component manufacture and is now embarking on a programme of investment to provide a leading source for machining harder, more exotic alloys and, with larger airframe components in mind. This is reflected in its latest acquisition, a Unisign Unipro5P, again supplied by Matchmaker CNC. With its 2 m bed length and ability to provide a pendulum machining option the Unipro 5P provides a full 5-axis machining capability on a much larger scale than previously available from Hymec. The machine's 60 m/min traverse rates, and 8 m/sec2 acceleration make it ideal for the type of work that Hymec is targeting.

The installation of the Unisign machine was a major step-change for Hymec and was one that was fully supported by Matchmaker CNC, creating training groups for Hymec staff to provide the necessary assistance to create a new way of thinking in order to maximise the machine's potential.

Group director and co-owner, Richard Elliott says: "The learning curve once the Unisign was installed was a steep one , but the advantages that we have seen and the new business we have already won, as a result of having the Unisign machine, is extremely encouraging. Our longer-term plans will see additional Unisign machines being installed at Hymec. Matchmaker CNC has been a highly valued and worthy partner for Hymec over the years and, without its commitment to our business, we would not be where we are today."

Hymec's new Unisign Unipro 5P 5-axis machining centre

Matchmaker CNC
Tel: 01372 844999
Email: cdonhue@matchmakermc.co.uk
www.matchmakermc.co.uk

CITIZEN
Micro HumanTech

Catch the NEW WAVE
of Citizen Machinery

Our designers innovate to create advanced CNC machining technology, thus reducing your manufacturing costs and helping you to increase your profits. Join us at our **Open House event** and see the latest multiple axis **Citizen Cincom CNC** sliding head and **Miyano** fixed head turning centres in action. The event will showcase the reinvented Cincom L32 range and the new generation Miyano BNJ, offering market leading features of outstanding productivity, fast set-ups and adaptable tooling configurations to help **'future-proof'** your investment.

Don't miss the opportunity to secure your **'early bird'** deal with trade-in on your existing machines and attractive finance packages to fund your investment.

Register today to book your free place at **www.citizenmachinery.co.uk** or click on the QR Code below.

The new sliding headstock L32 has a choice of models offering B-axis to both spindles; Y2 axis; 32mm bar capacity with oversize options, with/without guide bush, changeable by the operator.

Innovative Manufacturing

Citizen Machinery
New Machine – Open House Event
22 – 24 September 2015

Cincom Miyano

Combination-machining: turning and skiving

Skiving machining of gearings is proving highly productive, owing to process continuity. Users are focussing on this technology as an alternative to broaching and shaping, where the machine and tool have to be perfectly in tune to produce components of the highest quality. EMAG has succeeded in adapting the application for its standard turning machine platform. For pilot and medium size batches, internal and external gearings are machined at greater productivity rates, better quality and, owing to the machine's universal use, greater flexibility.

If you think of combining hobbing and shaping with a continuous axial roll-off, you can get an approximate idea of skiving. In theory, this process is nothing new, but proves efficient, as it achieves high cutting speeds with more teeth engaged at any one time, possible due to the diagonal arrangement of the tool and workpiece axes.

Whereas hobbing is based on the worm gear drive, the principle of skiving is based on the helical gear drive, which EMAG studied thoroughly over the past two years with high expectations. The objective was to adapt skiving technology for use on a standard turning machine, where better access and greater efficiency can be achieved, leading to trials and developments on a specific design for the tool spindle and on the clamping of the workpiece. As the engineers soon found out, workpiece clamping was of great importance for the gear quality achieved. However, they proceeded with the goal of utilising a design with standard components.

VLC 250 with base unit for skiving

For example, workpiece clamping tasks used a modified standard power chuck. The EMAG VLC 250 standard vertical turning machine has already proven its flexibility, capable of various applications that, in addition to the machining of gearings up to module 4, can also be used as a fully-fledged, universal turning-and-milling centre.

The flexible use of different technologies makes the VLC 250 suitable for a large range of applications.

Philipp Ruckwied, head of technologies for the Defined Cutting Edge at EMAG, states: "The universality of the machine and the productivity levels achieved using the skiving process are very encouraging. Our trials did, however, concentrate on the process itself. For instance, it generates great forces that must be controlled. On the other hand, we also felt obliged to deliver reproducible component quality and to offer the necessary quality control system to achieve it." To summarise, EMAG has developed a competitive solution for the integration of skiving on the basis of a standard machine.

The comprehensive range of benefits cannot be ignored

The traditional EMAG customer is primarily a manufacturer of medium and large component batches. Skiving, however, has proven itself a process best suited for the manufacturer of one-offs and small or medium batch runs. Despite this gap, the engineers at Salach see sufficient potential in the newly discovered technology. This includes internal gearings that have, until now, been generated using the broaching or shaping process. Compared to shaping, the skiving process is 2 to 3 times more productive and the lifetime of its tools is 2 to 3 times better. Tool life expectancy is also higher than with broaching, despite that process' costly tools.

For these reasons, manufacturers that

produce gears in appropriate quantities express interest in this technology, whereas the automotive industry is holding back and waiting further developments; a situation that, according to Philipp Ruckwied, will soon change:

"We are seeing successful advancements in tool technology, i.e. the tool manufacturers have, for some time now, been busy developing new substrate and coating combinations for the skiving gears."

Another advantage of skiving is that both rough- and finish-machining operations can be carried out in the same setup. With the turning work completed in one setup, reclamping errors are avoided and runouts are, to a large degree, eliminated. All told, the process being used on standard machines has benefits that should not be ignored. Based on this conviction, EMAG has successfully concluded a large number of customer trials, is ready with its pilot series and is already quoting the machines. Provided tooling is soon available for the required dimensions for the substrates, the process will take off with manufacturers of large batch runs. EMAG can already machine workpieces with diameters of 70 to 250 mm.

Internal gearing generated using the skiving process

Advantages include: high component quality through pre-machining of the tip diameter and subsequent gear cutting in one setup; machining times are 5 times faster than those achieved with conventional turning and shaping on two machines; no component logistics between operations; no additional loading times.

EWAG (UK) Ltd
Tel: 01902 376090
Email: info@uk.emag.com
www.emag.com

Investment in latest technology reaps dividends

Bay Engineering is a precision engineering company based in Weymouth, Dorset, established in 2001 by directors Steve Balem and Darren Taylor as a management buyout of ESA Precision Engineering, a company that had been trading for over 25 years.

Five years ago, Bay Engineering made use of assistance offered by Dormen, the Dorset business mentoring service which links experienced business people with companies. Dormen suggested Frank Guinn as a mentor.

"When Dormen first approached us we thought it sounded too good to be true," explains Darren Taylor. "After the crash things went a bit quiet in 2009 and all manufacturing companies were affected.

"We were jogging along OK and decided to accept Dormen's offer of mentoring. They put us in touch with Frank Guinn, who had an electronics background. We had a meeting and he got us asking ourselves the questions we should have been asking. It was good to have an outside point of view and our confidence grew. Because we were meeting with him every month, we were more motivated to put in place things that we'd decided to do.

"We moved into a new purpose built 6,000 ft^2 factory in 2012 and, bought a great deal of new equipment. We are looking to grow our workforce from 13 to 20 people."

Continued investment in not just technology but also its staff has enabled the company to maintain its high quality and keep its competitive edge in subcontracting for the pharmaceutical, motorsport, electronics and oil & gas industries.

"Our highly skilled workforce can tackle anything; from a one-off through to a large quantity of complex CAD components," explains Darren Taylor. "Our aim is to ensure complete customer satisfaction by producing accurate work of excellent quality, getting it right to tolerance and finish.

"We've earned an impressive reputation for our professional and honest attitude and friendly 'can-do' approach to engineering. This, combined with our workshop capacity, will ensure our customers receive a good job, on time and on budget.

Bay Engineering has seen significant growth over the past five years. In 2010, just after the recession, we were turning over £320,000. This rose to £1.3 m in 2014 and I'm very happy to say we're on target for £1.5 m this year."

"As well as our precision engineering expertise and inspection capabilities, we pride ourselves on our efficiency and teamwork," continues Darren Taylor. "We have a fully documented system in process and final inspection procedures, which are rigorously implemented to ensure we manufacture to the highest standard.

"As part of ISO 9001, all components we machine are fully traceable from the material purchased, to programmer, to operator, to inspection, to goods outbound, giving complete confidence and peace of mind to all our customers."

Steve Balem comments: "We've a culture of continuous investment in the latest technology and have seven Haas CNC mills and a Haas lathe. Our most recent installations were a VF-2 and a VF-4. The Haas machines are brilliant. For what you pay, they are the best production machines available.

"We can machine sizes up to 1,270 mm x 508 mm x 635 mm. The mills are equipped with two Haas 4-axis rotaries. We also have a Super Speed Haas vertical with a spindle speed of 12,000 rpm that ensures rapid removal of material with superb finishes.

"Our CAD system is One-CNC XR5, which works seamlessly with Haas machines. We have a CAD station next to each mill, hardwired in for programming and file transfer. All linked via a server meaning any programs are available on every machine at any time."

"Innovation in CNC machining never stops," concludes Darren Taylor. "As a technology, it only goes forward, not back. For this reason, CNC machining will never become a sunset industry. For the past five years, our company has grown at a very speedy pace, due in no small part to our investment in reliable and cost-effective Haas CNC machines."

Haas Automation Ltd
Tel: 01603 760539
Email: cnc@haas.co.uk
www.haas.co.uk

The personal touch

Mills CNC's new 'Control Centre' facility will make machining demonstrations even more personal and effective

There's something new and different for customers and visitors to see and experience at Mills CNC's Technology Campus.

The company has recently created, within its Showroom and Machining Demonstration area, a new, modern and purpose-built Control Centre facility where visitors can, using the latest interactive touch screen technology, learn more about the different Fanuc, Heidenhain and Siemens CNC Control Systems and integrated conversational programming software, available on Doosan machines.

The Control Centre provides a quiet, informal and practical learning environment, away from, although adjacent to, Mills' busy Machine Tool Showroom.

Technical director, Tony Dale explains: "The Control Centre enhances the customer experience. When a customer arranges a machining demonstration at the Campus it's not uncommon for a number of their production staff turn up.

"Whilst this isn't a problem per se, it can result in four or five people peering, often over each other's shoulders, at the machine's control - not that ideal for the people at the back of the group.

"Now, by using the Control Centre, we can take customers into a dedicated learning environment away from the hustle and bustle of the demonstration area, and go through the different machine tool control options with them using the large 65" interactive touch screen."

The Control Centre is particularly useful to help explain to those customers unfamiliar with conversational programming software, such as Manual Guide and ShopMill, plus the features, benefits and intricacies of these systems.

The onboard 3D graphics, animated simulations and screen prompts for trouble-free set-up and programming embedded into these software systems are easier to see, appreciate and understand when presented and explained on a large screen in a relaxed environment.

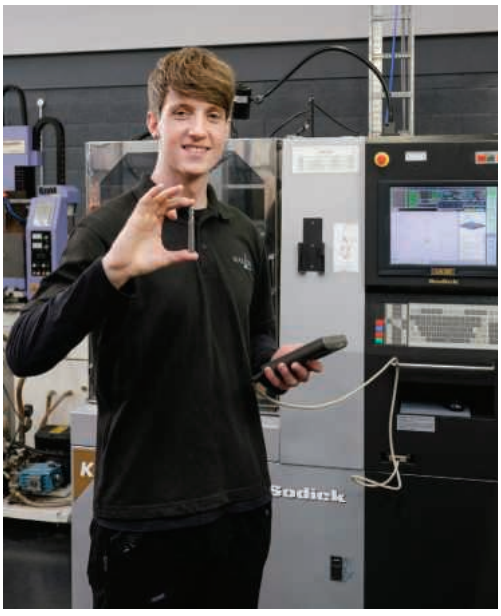
Tony Dale concludes: "The Control Centre is another example of Mills thinking outside the box and is one that further enhances a customer's experience when they visit us."

Mills CNC Ltd
Tel: 01926 736736
Email: sales@millscnc.co.uk
www.millscnc.co.uk

Sodick helps meet demand for coolant-enabled tooling

Marlor Tooling, a forward-thinking manufacturer and remanufacturer of carbide cutting tools, has invested in the latest Sodick K3HN small hole EDM to help it meet rising demand for cutters featuring integral coolant holes. Installed by Sodi-Tech EDM, the machine has helped reduce lead-time from weeks to days, and ensured the company continues to meet the stringent quality demands of blue chip customers in the aerospace and automotive sectors.

With a history dating back some 40 years, Marlor Tooling is an ambitious, Peterborough-based business that today turns over £3.5 million and employs 40 people. However, this is no ordinary cutting tool manufacturer. Everything the company produces is non-standard, typically supplied in batches of 1 to 1000-off.



Sodick Technology installed at Marlor, STPR186-4, tooling machined by Marlor using Sodick Technology

"We mainly produce milling cutters and drills, predominantly for aerospace and automotive customers, but also some for the oil industry," states technical director, Jonathan Forsyth. "Every cutter we produce is what we consider 'special' in that it will feature a longer flute or an odd diameter or corner radius."

To help ensure its 'special' cutters are produced with maximum quality, Marlor recently relocated to purpose-built premises that it considers to be the most modern in the country for a manufacturer of bespoke cutting tools.

"We always wanted a purpose-built plant because our previous facility had stanchions supporting the ceiling that restricted where we could place machines," explains Jeremy Forsyth. "Now we have perfect flow in production, which also means we can react quicker to customer demands."

Taking pride of place in the new factory is a Sodick K3HN small hole EDM, which was acquired to replace an eight-year-old machine by another manufacturer.

"We are seeing more and more demand to produce carbide cutting tools featuring integral coolant feed holes," continues Jeremy Forsyth. "Many of our customers, particularly in aerospace, are faced with machining tough materials such as heat-resistant super alloys, and tools with internal coolant can extend tool life by a factor of three."

The coolant holes produced by the Sodick K3HN typically measure 1.0-1.5mm in diameter and up to 250mm in length. In most cases the process requires the generation of a main 'down-hole' which passes almost through the entire length of the tool. This feeds several exit holes at the cutting end of the tool, usually one on each edge.

"Quality demands have moved on and we get the perfect hole with the K3HN," says Jeremy Forsyth. "Furthermore, the length of time required to produce the holes is now less."

He says that Marlor selected the Sodick K3HN based mainly on its innovative use of water as opposed to the conventional dielectric fluids deployed by other EDM machines:

"Water is the latest technology for this type of machine," he says. "Not only is it more environmentally friendly, it produces a higher quality, more consistent hole, there is no discolouration or damage to the tool, and the spark is more precisely controlled."

Installed in November 2014, the Sodick K3HN has seen good utilisation at Marlor's new plant. The machine is the company's first CNC hole drill and Marlor can now load a batch of tools during the day and walk away, or leave the machine to run unmanned overnight.

"Because the cycle time is more predictable, we can now quote lead-times more accurately," adds Jeremy Forsyth. "Before the machine was installed we were quoting around two weeks, whereas now it's just a few days. This is all because the process is more stable. As well as producing coolant holes in new cutters, we also use the K3HN to add coolant holes into existing cutters sent to us by customers. Moving forward we are targeting more and more aerospace accounts, changing our customers' thinking when it comes to the benefits of integral coolant."

Sodi-Tech EDM Ltd
Tel: 024 76 511677
Email: sales@sodi-techedm.co.uk
www.sodi-techedm.co.uk

Marlor Tooling
Tel 01733 404800
Email: info@marlor.co.uk
www.marlor.co.uk

Need simultaneous 5-axis machining? Think KAFO

The UK's machining's environment is dominated by the need to produce complex components as efficiently as possible without any detriment to quality. Industries such as aerospace, energy, motorsport, medical and many others are driving demand for high performance machining centres capable of performing operations in five axes simultaneously. With this in mind, Kao Fong Machinery (KAFO) has released its KFO-620-5AX into the UK market via sole agent, TDT Technology.

The KAFO KFO-620-5AX 5-axis machining centre is of travelling column structure. Its 620 by 520 by 460 mm X, Y and Z axes are built using heavy duty, roller type linear guideways, all of which are covered using stainless steel, waterproof covers.

The machine's structural parts are manufactured from high quality Meehanite cast iron that is both annealed and stress relieved. Indeed, the very design of the machine was created using FEA to determine the optimum structure for machining parts in five axes.

The precision rotary/tilting table on the KFO-620-5AX allows for either 3+2 or 5-axis simultaneous machining. The B-axis offers a tilt of -40° to +110°, while the C-axis delivers 360° of continuous rotation to ensure access to even the most complex of components. Both the B and C axes are servo motor driven, with an option for direct drive motors.

The direct drive table is supplied by LCM of Italy and the benefit for customers is vast, as there is no worm and wheel to damage in the event of a collision. Conversely, competitor machines featuring worm and wheel tables would be faced with sending the table back to the factory for repair following a collision, which is not an uncommon event in simultaneous 5-axis machining. Because the LCM table has nothing to damage, it would simply be a case of resetting the motors to zero and continuing.

The KFO-620-5AX, which has a footprint of 4045 by 3278 mm, is supplied as standard with a 12,000 rpm direct drive spindle, although options are available to utilise a 15,000 rpm 40-taper spindle (DIN, BT, CAT) or a 20,000 rpm HSK 63 spindle. A 24-station toolchanger is offered as standard, with options for 32 or 40 stations if required. To help minimise idle time, tool change can be completed in 2 seconds tool to tool, and 5 seconds chip to chip. Rapid traverse rates in the three principal axes are 36 m/min. It's worth pointing out that each of the five axes on the machine is laser calibrated for linear positioning and angular precision.

The T-slot table measures 650 mm in diameter and can accommodate parts weighing up to 300 kg. For heavy cutting operations, an innovative chip removal system and spindle oil cooler are supplied as standard, while further options available to customers include: a Heidenhain TT140 tool measuring system; 20 bar through-spindle coolant; Heidenhain optical linear scales in the X, Y and Z axes; Heidenhain optical encoders in the B and C axes; a Heidenhain infrared probe for automatic kinematic measurement and calibration of 5-axis positioning.

In conclusion, the KFO-620-5AX is a well specified machine of high quality build that is ideally suited to the 5-axis machining tasks taking place at UK manufacturers. With an extremely attractive performance-price ratio, the machine is expected to prove highly popular.

TDT Technology Ltd
Tel: 01788 570411
Email: sales@tdt-technology.co.uk
www.tdt-technology.co.uk

Subcontractor helps keep Warbirds in the air

When Suffolk-based Eye Tech Engineering was created by Maurice Hammond back in 1985, its ambition was simply to provide a precision subcontract service for customers local to it in East Anglia. However, 30 years later those ambitions have changed somewhat, with the business now split 50/50 between the original subcontracting and the restoration of the iconic Rolls-Royce Merlin engines and component parts for the vintage aircraft industry.

The path to Merlin engine restoration began very early on through Maurice Hammond's skill at flying model aircraft, which, when funds allowed lead to him gaining his own pilots license. Being an engineer he began investigating the mechanical aspect of the aircraft he was flying and undaunted by the aura that surrounded aeronautics, he built his own plane in 1991. Now well and truly bitten by the bug he then bought two identical, but damaged planes and built one good one from the parts. This led to the full restoration of a WW2 Harvard Warbird. Through the connections he made doing this began the manufacture of replacement aircraft parts, which included anything from pistons to propellers, on a commercial basis.

With further aircraft restorations, including a Hawker Hurricane and a P51 Mustang, under his belt, Maurice gained approval to overhaul the Rolls Royce Merlin engines in his own plane, which in turn led in turn to requests from other enthusiasts for a similar service. In the 15 years that Eye Tech has been restoring Rolls-Royce Merlins, a total of 30 engines have been overhauled and the time required restricts 'production' to just two engines per year. Whilst the manufacture of new parts for the Rolls-Royce Merlin engines is strictly controlled in the UK, Eye Tech has seen an increased demand for parts from enthusiasts all over the world and this side of the business now accounts for 50 percent of the company's turnover, with the balance coming from general subcontracting, producing everything from plastic pulleys through to precision engineered parts for food labelling equipment.

To help maintain production and efficiency Eye Tech has recently taken delivery of three machines from XYZ Machine Tools: an XYZ 3000 manual turret mill, an XYZ Mini Mill 560 machining centre and, it was one of the first customers for XYZ's innovative 2-OP portable vertical machining centre.

"We knew we had to replace a number of obsolete machines from another manufacturer, as they were becoming unreliable and spares were getting harder and harder to locate as the company was no longer in business. Being unsure which way to turn for replacements we asked our freelance maintenance contractor and without hesitation he suggested XYZ. We then visited the XYZ showroom and were suitably impressed by the solid cast beds used on the machines and the fact that the range suited our needs completely with the machine footprints, making it easier for installation in the restricted floorspace that we have," explains Maurice Hammond.

Leah Young operating the XYZ 2-OP

The lack of floorspace was instrumental in the decision to purchase the XYZ 2-OP portable vertical machining centre. Whilst this machine is designed to be relocated anywhere in a factory, at Eye Tech it remains in one location, fitting perfectly in the limited available space between two other machining centres. With Maurice concentrating on manual machining and the Merlin engine restoration business, the day-to-day running of the machine shop has been handed over to his daughter Leah Young, who joined the business in 2004.

"The XYZ 2-OP is being used as a stand-alone machining centre producing a variety of small parts that need milling, drilling, tapping and profiling. The compact footprint is perfect for our situation, but with its toolchanger and impressive capacity for a machine its size it will help to improve our productivity," she says.

For a machine with just a 1220 by 760 mm footprint, the XYZ 2-OP is a highly capable machine tool with a 50-6000 revs/min, 3 hp, BT30 spindle, eight position toolchanger, axis travels of 355 mm (X), 305 mm (Y) and 455 mm (Z) and feedrates up to 15 m/min.

Maurice Hammond flying one of his P51 Mustangs

The machine table at 457 mm by 381 mm has the capacity to hold components up to 250 kg. Control is provided by the versatile ProtoTRAK system, that's both quick and easy to learn.

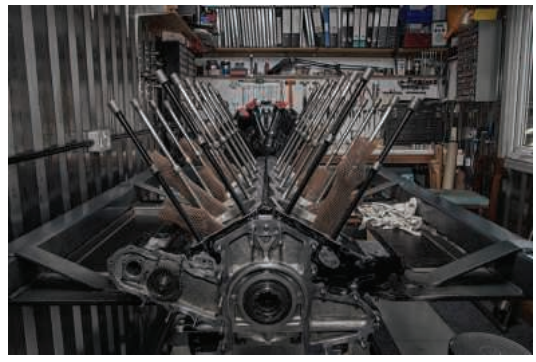
The XYZ Mini Mill 560 is also under the watchful eye of Leah Young and it is being used for small to medium batch work of between 25 and 1000 off components. Much like the XYZ 2-OP the XYZ Mini Mill 560 packs a powerful punch with its 15 hp/8000 rpm spindle and axis travels of 560 x 400 x 500mm (xyz), all of which is supported on a 3100 kg solid cast base and column.

To ensure a quick transition from their old machines to the new XYZ mills Eye Tech accepted the free training on offer at XYZ's Nuneaton showroom. Once that was completed they also had the reassurance of the ongoing support provided by XYZ for all its customers, with access to the applications engineers with any questions they may have had when programing the Siemens 828D ShopMill Control on the Mini Mill 560 or the ProtoTRAK control on the 2-OP.

Maurice Hammond working the manual XYZ 3000 turret mill

The XYZ 3000 mill is very much Maurice's domain, with his preference for manual machining. It is used predominantly for jig and fixture type work making full use of its 780 x 410 mm x 406 mm travel and Newall DP700 digital readout system for positional accuracy. With just an inch of headroom to spare, installation involved removing a wall over the Easter holiday and making use of that access to bring all three machines in at the same time.

"What has been most reassuring about the purchase of these three machines from XYZ is the level of customer service. Everyone we have spoken to has been helpful, the applications engineers are quick to respond to any issues we may have with programming the machines and they always call you back when they say they will. It is also nice to know, should they ever be needed, that XYZ stocks parts for all their machines and a service engineer can be with you very quickly with the tools needed to get you back into production," says Leah Young.



A partly refurbished Rolls-Royce Merlin engine

XYZ Machine Tools
Tel: 01823 674200
Email: nigel.atherton@xyzmachinetools.com
www.xyzmachinetools.com

Victor launches new machine for large part machining

The popularity of the Victor VTurn V760 vertical turning centre has now seen the introduction of the larger Vturn-V1000 for larger diameter components.

The new addition to the Victor Vturn Vertical Range highlights the company's recognition of customer demand for an increased capacity VTL. For manufacturers producing large parts that demand heavy cutting, the configuration of a VTL and the natural fall of swarf from the work area provide instantaneous benefits, something that Victor has recognised from its market research.

The Vturn-V1000 offers a swing over bed of 1100 mm with a maximum turning diameter of 1 m and an overall turning length of 850 mm. The new VTurn V1000 provides an X and Z-axis stroke of 500+40 and 850 mm respectively. The standard solid chuck has a diameter of 24 inches with optional larger chucks of 28, 32 or 40 inch also available.

Within its small footprint, the Vturn-V1000 accepts parts up to a maximum load capacity of 1250 kg. The rigid frame of the machine is essential to enable end users to machine such large parts. For conducting heavy cutting operations, the Vturn-V1000 has a 12 station Bolt Mounted Turret (BMT-85) accepting a maximum tool shank diameter of 32 mm with boring bars up to 60 mm (80 mm optional) possible. An optional 12 station BMT-85 Turret with Live Tooling is also available, while the milling motor has an output of 7kW.

To accommodate such heavy payloads and large diameter tools, the V1000 has a 45 kW spindle motor with a 2 stage ZF gearbox as standard. The X and Z axes servo motors have a respective output of 4 and 7 kW. These dimensions instil confidence in the end user that they are investing in an extremely rigid and robust machine tool from Victor, a company regarded as the UK's benchmark in heavy duty machine tools that deliver longevity and performance for years to come. Guaranteeing a robust platform, the Vturn-V1000 has a footprint of 2510 by 4155 by 3550 mm in the width, length and height, a total weight of 16,000 kg.

Victor CNC
Tel: 01706 648485
Email: sales@victorcnc.com
www.victorcnc.com

Mitutoyo 'coordinating' quality at Express Engineering

Mitutoyo UK recently completed the installation of the company's largest ever coordinating measuring machine sold in the UK. The Crysta-Apex C CMM (measuring volume 2000 x 4005 x 2005 mm X,Y,Z) enables Express Engineering to undertake the rapid, accurate inspection of large oil & gas components including huge wellheads. Established in 1973, Express Engineering has grown from its origins as a precision engineering and tool-making company, to what is now a leading global contract manufacturing group.

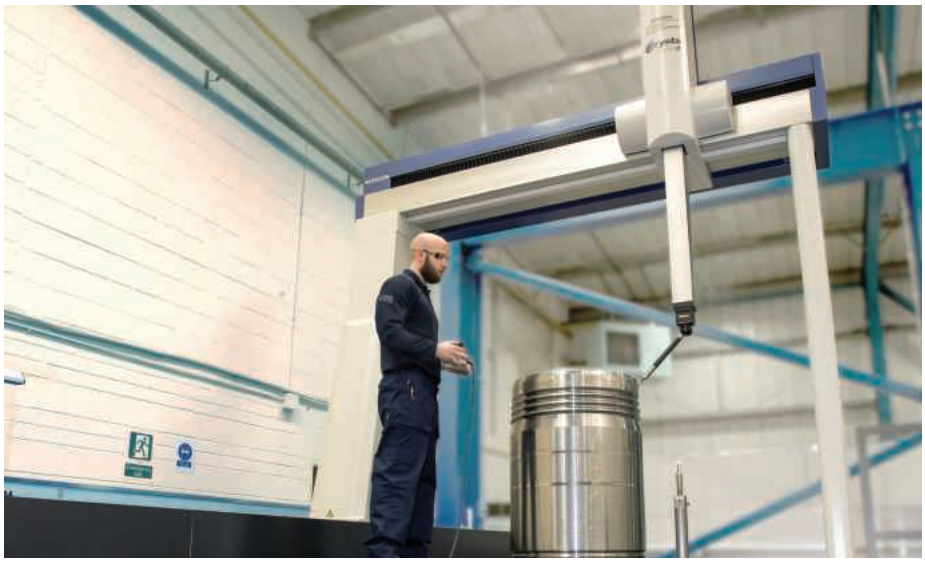
Express Engineering supplies the global oil and gas market with a wide range of highly integrated precision machined components, kits of parts and fully assembled pressure tested products, including wellheads, christmas tree valves, manifolds, completions, tooling, flowlines and connections.

Over the past four decades the company has earned an enviable reputation for producing high integrity products from a range of traceable materials. This has enabled Express Engineering to gain both national and international accreditations from a multitude of multinational companies, such as Aker Solutions, Cameron, FMC Technologies, GE Oil & Gas, Schlumberger, NOV and Weatherford.

Express Engineering has a skilled workforce of approximately 300 people at its Tyneside oil and gas headquarters where it boasts 160,000 ft^2 of manufacturing space that accommodates more than 70 machine tools, including advanced CNC vertical boring, turning and milling machines.

Given their critical nature and the environments they operate in, the quality of the products manufactured by Express Engineering are of paramount importance to the company. In addition to regular in-process, on-machine checks, the quality of the company's output is assured by comprehensive final inspection routines performed by a range of inspection aids, including Mitutoyo CMMs that are located strategically throughout the Gateshead facility.

Consequently, having invited quotes for an extremely large, very precise coordinate measuring machine with the volumetric capacity to enable the efficient



measurement of the company's largest components, an order was soon placed for what turned out to be the largest Mitutoyo CMM ever installed in the UK.

This recently installed Mitutoyo CMM is an adapted version of a large capacity Mitutoyo Crysta-Apex C, model 204020. To enable oversize components to stand upright when being measured, the CMM was modified by an extended Z-axis and a 1.2 m diameter hole bored through its granite measuring table. Riser plates were fitted to elevate the granite table and a lower component support was located beneath the hole. These modifications enable extra-large components such as two metre high, four tonne wellheads to be lowered by crane through the table and accurately measured at a single setting.

Express Engineering quality manager, Bill Mole says: "Our company is accredited to ISO 9001:2008 and aerospace standard AS9100; we maintain a quality management system which meets the requirements of both of these standards and other more extensive customer and industry requirements.

"Our quality personnel are a highly motivated team with vast practical experience and an excellent understanding of our customers' documentation requirements within the oil & gas sector.

"Previous to purchasing our new Mitutoyo CMM, to inspect our increasing range of larger components with demanding dimensional tolerances, such as wellheads that stand two metres high, we would make a partial inspection on one of our larger CMMs, then reposition the component to complete the inspection routine.

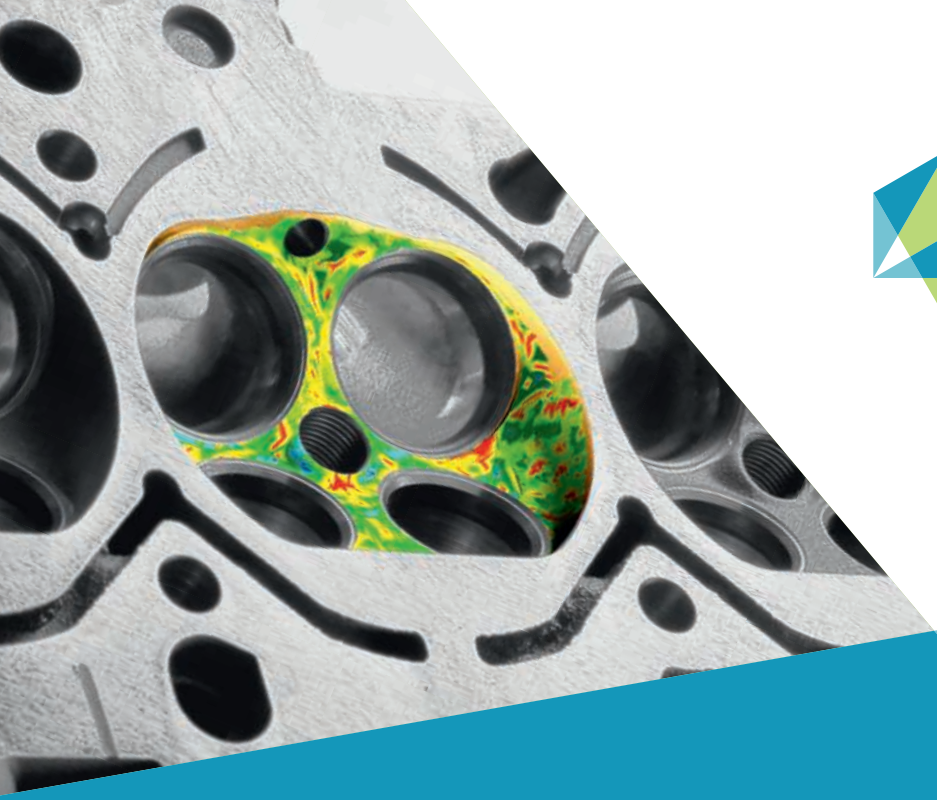
"Although our previous inspection techniques were accurate, the volume of wellheads, and other large oil and gas industry components we now manufacture, meant that we needed to find a quicker, more efficient solution.

"As our existing seven Mitutoyo CMMs have proven very reliable, and given the outstanding service and back-up we have always received from Mitutoyo UK, we approached the manufacturer with our capacity needs and accuracy requirements.

"Given the challenging delivery times that are often required by the global oil and gas industry, we have made significant investments in the best available CNC machine tools to help reduce our lead times and to ensure the best possible manufacturing standards.

"Not only does our new CMM help us to adhere to the most challenging of component lead times, it is a perfect example of Express Engineering's continuing commitment to ensuring the highest standards of manufactured quality."

Mitutoyo UK
Tel: 01264 353123
Email: philip.fisher@mitutoyo.co.uk
www.mitutoyo.co.uk



HEXAGON
METROLOGY

PC-DMIS EMS

Efficiency, Flexibility and Quick Access

PC-DMIS - the flagship software package for Hexagon Metrology measurement devices and a range of other measurement equipment in the marketplace.

www.hexagonmetrology.co.uk

Hexagon Metrology presents new release

QUINDOS 7.10 continues to set the standard for high-precision software in the powertrain field

Hexagon Metrology has announced a new release of QUINDOS, the powerful dimensional inspection software for coordinate measuring machines and gear inspection centres. The latest release, QUINDOS 7.10, focuses on usability while also adding support for the latest Hexagon Metrology non-contact sensors, including the HP-L laser scanning sensor, the PRECITEC LR optical sensor and the HP-O interferometric solution.

In future, this optical technology will be complemented by tactile roughness measurement options, and the new QUINDOS roughness module is already prepared for such inspections. Boasting standard-compliant evaluation in accordance with ISO 4287 and ISO 1356, it gives the ability to determine and automatically log the mass, shape and position of a component in a single process.

Also integrated into QUINDOS 7.10 are the current ISO 14405-1 linear length dimension size elements as per the latest geometric production specification (GPS), and completely new evaluation algorithms. Users benefit from intuitive controls for entering the dimensions and modifiers, and direct control of the implemented drawing specification via an instruction dialogue.

To aid measuring program creation, the basic QUINDOS package now includes probe visualisation functions for designing moving paths and enables the integration of security bodies (box and cylinder) for automatic path generation which simplifies programming.

Statistical handling has also received a user-friendly overhaul in QUINDOS 7.10, with complete redesigns of the statistics feature overview module and STCGRA option. Adding several new features to prior functionality, these modifications allow more intuitive operations without jeopardising compatibility with existing programs.

"For over 30 years, QUINDOS has been continually developed to support the latest cutting-edge technologies, and the new version continues this tradition. These updates will bring a positive impact for operators at all levels," says Dr. Günter Moritz, QUINDOS creator and chief developer at Hexagon Metrology.

As well as the integration of new technologies, QUINDOS' core competency in special geometries has been expanded to include several substantial gearing packages. These options support standardised measurement and standard-compliant evaluation of Hirth gearings, metric ISO threads and gear racks, with step-by-step guides helping users from parameter entry to selecting evaluation strategies and automated report creation.

QUINDOS 7.10 is distributed in both 32-bit and 64-bit form.

New retrofit controller for CMMs

A new retrofit controller for updating almost any coordinate measuring machine is now available in the UK from Hexagon Metrology.

The measurement solutions provider has unveiled the RC1, which is designed to extend the working life of a CMM by upgrading its technology so that users can benefit from the latest standards in performance and productivity.

The RC1 controller features R-TUNE technology, which automatically and rapidly adjusts the machine's system components without the need for any specialist support. It uses the same technology platform as Hexagon Metrology's established range of DC controllers.

Thanks to its modular and scalable hardware architecture, the RC1 can interface with CMMs from most

manufacturers and select the correct configuration option for the update process.

The RC1 not only supports Hexagon Metrology's range of probe heads, including motorised indexing probe head versions, but also heads and probes from other makers. Linear temperature compensation of machine axes is also available as an optional extra.

The new product launch coincides with the opening of Hexagon Metrology's second user showroom at Telford where it offers a range of reconditioned CMMs equipped with the latest software and firmware including the new RC1 controller.

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

Hexagon Metrology plc
Tel: 0870 4462667
Email: enquiry.uk@hexagonmetrology.com
www.hexagonmetrology.com

RENISHAW
apply innovation™

Optimise productivity and profits...

Superior system flexibility

Unrivalled performance

Maximum security

RMP40, RLP40 and RMP40M

RMP60, RMP600 and RMP60M

RTS

...with Renishaw radio probe systems

Frequency Hopping Spread Spectrum (FHSS) technology enables use of Renishaw probes and tool setters for the widest range of machine tool applications including tool and part setting, in-process gauging and on machine verification. When used with the latest RMI-Q transmitter/receiver up to four separate Renishaw probes can be used on one machine, interference free, so you can increase productivity, profits and confidence in your manufacturing.

For more information visit www.renishaw.com/mtp or call 01453 524111

Renishaw plc New Mills, Wotton-under-Edge, Gloucestershire, GL12 8JR United Kingdom
T +44 (0)1453 524524 F +44 (0)1453 524901 E uk@renishaw.com
www.renishaw.com

Bowers announces Materials Testing Seminar date

With the largest selection of portable and bench hardness testers currently available within the UK, Bowers Group has evolved into an all-inclusive materials testing quality instrument supplier, with cost-effective solutions to coating thickness, surface finish and many other disciplines now available.

The Bowers Materials Testing Seminar will give customers an insight in to the principles of hardness testing, along with an overview of the solutions available from Bowers and then a full afternoon hands-on workshop.

The agenda will include a welcome and introduction to Bowers Group and brief showroom tour, a basic introduction to hardness testing, an overview of Innovatest product range. After lunch, a Hands-on Workshop will cover the use of all hardness testing machines (Vickers, Rockwell, Brinell and Universal hardness testers) as well as portable equipment for hardness, surface roughness and ultrasonic and coating thickness.

Attendees are invited to bring their own material or components to be tested on the day by experts from Bowers and Innovatest.

Bowers will be showcasing the NEW FALCON 500 series which is the new advanced Vickers hardness testing system from Innovatest. The FALCON 500 series is an advanced Micro Vickers hardness testing machine, ideally suited for performing CHD/Nht/Rhtare testing or weld joints hardness testing as detailed in various international standards such as EN ISO 9015.

The FALCON 500 series has the option of overview and full view autofocus zoom cameras with additional surface illumination, which gives an overview or full view of the sample or samples to be tested. IMPRESSIONS "click and go" functionality allows random test point selection on the screen, while the high speed motorised X-Y stage perfectly positions the selected test point under the indenter and measuring objective.

Attendees are also invited to explore the full product range that Bowers has to offer. Solutions on show include a comprehensive display of bore gauging and precision hand tools from Bowers and Moore & Wright, with non-contact measurement from Baty International. Swiss-manufactured measuring instruments from Sylvac and Trimos with inclination systems from Wyler are available to experience first-hand. Discover surface, form and roundness solutions from Accretech, along with inspection solutions for the oil & gas sector from Gagemaker.

The Seminar will be held on 16th September 2015 at Bowers' new Sales Office and Demonstration Suite in Camberley, Surrey. There is no charge to attend this event, but spaces are limited. Visit **www.bowersgroup.co.uk** to register to attend the event.

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

Already working in some of the most challenging industries such as oil & gas, defence, aerospace and automotive, Bowers delivers cost-effective solutions to the most testing measurement problems, further strengthening its reputation for the superior quality, accuracy and usability of its precision measuring equipment. Striving for excellence in both the comprehensive range of products supplied and the many services offered to its customers, the Group's aim is to build on this hard-won reputation and continue to exceed customers' expectations.

Bowers supplies UK industry with an unrivalled choice of high quality precision measuring equipment, bespoke system design and laboratory-based UKAS calibration services. Its pre-eminent position in the metrology market allows Bowers UK to provide its customers with a truly complete metrology service. Customers also benefit from the 'one stop shop' nature of centralised sales, service, training and customer support for the complete range of Bowers, Moore & Wright, Baty International and CV Instruments products.

Bowers Group
Tel: 08708 509050
Email: new@bowers.co.uk
www.bowers.co.uk

Mitutoyo

Providing **world-class** metrology products, services and solutions

With over 80 years' experience and representation in over 100 countries, Mitutoyo are recognised as the world's foremost manufacturer of precision measuring equipment and a provider of related services.

Visit us online at www.mitutoyo.co.uk







City & Guilds
Approved Centre

DIMENSIONAL METROLOGY CITY & GUILDS AWARD (Level 2)

Mitutoyo alongside City & Guilds exclusively offer the first National Qualification in Dimensional Metrology
Find out more, or book your place at ***www.mitutoyo.co.uk/education***

Bruker introduces Contour Elite 3D optical microscopes

True high-definition imaging combined with ultra-precision 3D surface metrology

Bruker Corporation has announced the release of its new Contour Elite 3D Optical Microscopes, which for the first time fully integrate high-definition microscopy imaging with industry-leading three-dimensional (3D) optical metrology functionality.

This latest generation of Bruker interferometric optical technology delivers the high-speed operation, accuracy, and repeatability that top-level R&D and production QC requires and adds the imaging and display advantages commonly associated with confocal microscopy. For those only familiar with imaging microscopes, Contour Elite systems add the ability to acquire quantitative measurements with significantly higher density sampling. The combination of high-throughput sub-nanometer vertical resolution metrology with enhanced imaging capability makes the Contour Elite microscopes ideal for a broad spectrum of metrology applications in industries ranging from precision machining and microelectronics to optical components and medical devices.

"Our previous Bruker system has been a workhorse for rapid, accurate measurement results, but now with the new Contour Elite 3D optical microscope we can simultaneously acquire nanometer-scale metrology data and true images of our clients' samples," explains Thomas F. Fister, Ph.D, senior director of Analytical Services at Evans Analytical Lab, CA, USA. "The ability to use high-definition and colour imaging also allows us to segment the data based on colour, adding another powerful capability to our measurement services. The Contour Elite makes locating sample surfaces very intuitive, and the stunning images are great for reporting results to our clients."

"The Contour Elite microscopes are the first commercially available white light interferometry-based metrology systems that combine proprietary highest resolution imaging algorithms with innovative hardware enhancements to obtain both nanometer-scale metrology data and high-definition true images of samples," adds Kent Health, general manager of Bruker's Stylus and Optical Metrology Business. "Successful characterisation of samples in research institutions, industrial R&D facilities and QA/QC labs requires accurate measurements, crisp imaging and rapid throughput, all of which are combined here in a single platform. Contour Elite is a true successor of Bruker's long-standing tradition of pushing the boundaries of measurement capability while taking the complexity out of operation and analysis."

The Contour Elite microscopes are the latest generation of Bruker's surface profiler brand, featuring more than 30 years of technological innovations. The new models take the platform to new heights of functionality by tightly integrating advanced 3D optical metrology technology, true high-definition imaging, patent-pending illumination design, and proprietary software algorithms for data processing, analysis and visualisation. Intuitive operation and new ease-of-use features make Contour Elite systems quickly productive for both operators without extensive training, as well as for experienced users. The result is the industry's best available lateral and vertical resolution in a 3D optical microscope, providing users with superior imagery, extremely repeatable measurement data, accelerated measurement throughput, and simple yet highly customisable operation and data analysis.

For more than 50 years, Bruker has enabled scientists to make breakthrough discoveries and develop new applications that improve the quality of human life. Bruker's high-performance, scientific research instruments and high-value analytical solutions enable scientists to explore life and materials at molecular, cellular and microscopic levels.

In close cooperation with our customers, Bruker is enabling innovation, productivity and customer success in life science molecular research, in applied and pharma applications, in microscopy, nano-analysis and industrial applications, as well as in cell biology, preclinical imaging, clinical research, microbiology and molecular diagnostics.

Bruker UK
Tel: 024 76 855200
Email: sales.uk@bruker.com
www.bruker.com

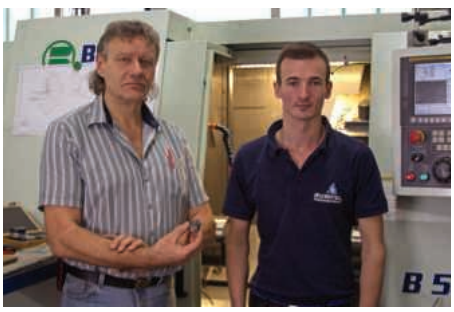
Blum turbo-charges productivity for automotive manufacturer

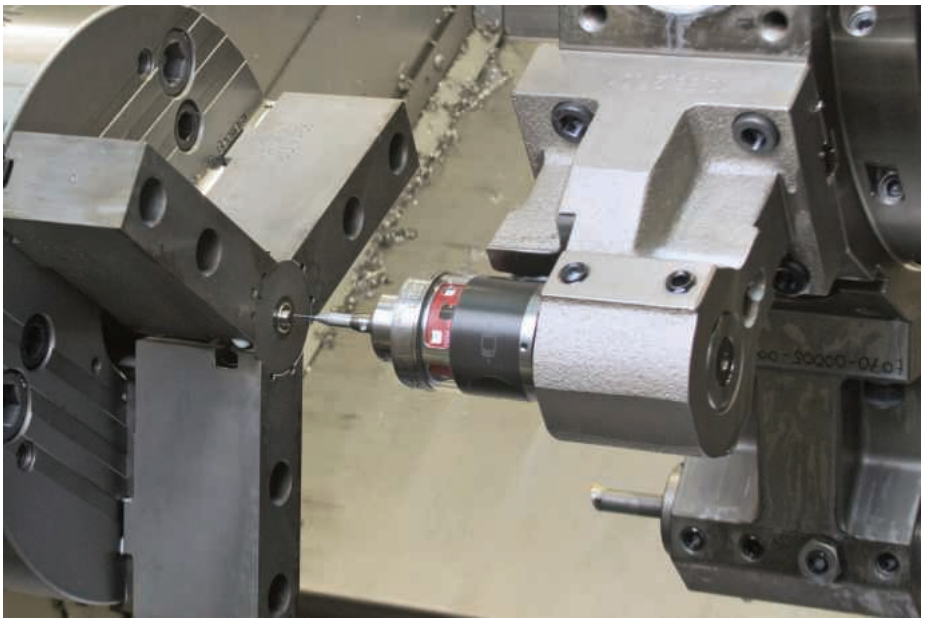
Often faced with the challenge of complex and almost uncontrollable machining processes, RUMPEL Präzisionstechnik specialises in the machining of high-alloyed materials and investment castings. This is also true for the turning process of turbine wheels for turbochargers of Continental AG. With over 50 years of experience and the use of the measuring system TC54-10 from Blum-Novotest, the company has achieved stabilisation of the complete machining process and time savings of 20 percent.

Founded by Eugen Rumpel in 1955 as a turning shop, RUMPEL Präzisionstechnik in the Upper Swabia region of Germany has a long history of machining high-alloy materials and the machining of investment castings. "The combination of high-alloy materials and investment casting is very common. Therefore it made sense to combine these two areas of expertise in one company", says Hermann Rumpel, the current managing director. The daily challenge for the 70 employees is to machine materials such as Nimonic, Monel or Inconel to the highest quality standard.

RUMPEL Präzisionstechnik focuses on stainless and heat resistant materials, valve steels, nickel-based and titanium alloys and various special materials. The end customers of the German market leader are primarily automotive manufacturers of turbochargers, such as Continental AG. Flexibility is a priority in the whole company. "Our piece numbers are in the range of one piece in the manufacturing of prototypes up to serial production involving lot sizes of up to 20,000 units. The annual requirement may well be up to 100,000 units," Hermann Rumpel emphasises.

The difficulty in the turning process of turbine wheels for turbochargers is the controllability of the process. The diameter





as well as the length of the pin on the rear side of the turbine wheel is machined on a Biglia 565 YS double spindle mill with a Fanuc 18i control system. To be able to meet the small tolerances of 0.012 mm in combination with the difficult to machine materials, each workpiece had to be measured manually after manual pre-turning and again after one of the two finishing cuts. Then the correction values had to be entered manually in the machine control. Consequently the production was very low.

Blum delivers the solution

A Blum Novotest touch probe was purchased to make the manufacturing process a bit simpler. "The original idea behind it was the determination of the workpiece alignment on the lathe," Gerhard Englisch, the works manager of RUMPEL Präzisionstechnik explains. After further trials to optimise the turning process it became obvious that the measuring task is still more complex than expected. Michael von Rechenberg, the responsible machine operator reports: "I simply tested what the probe is capable of doing. Finally we found out that we are able to monitor the whole process with the aid of the machine control and the probe software."

Consequently it would be possible to implement a closed process chain using the wireless measuring system that uses infrared transmission. The formerly performed manually steps become redundant because the probe automatically detects the current dimension after each machining step and can also correct it immediately by the machine control. The BLUM touch probe also performs the automatic tool breakage detection. This means that the machine control will issue a fault message if the measured dimension is completely out of tolerance because the cutting edge is broken. Compared with the former process it was possible to achieve time savings of 20 percent through the redundancy of the manual measuring times alone. This is without considering the additional savings from machine downtime and re-working. "The straightforward interplay between the BLUM measuring cycles with the machine control allows us to achieve these enormous savings," says Gerhard Englisch.

RUMPEL Präzisionstechnik is dealing with many different tool manufacturers and their products and in this particular turning process tool wear plays a significant role. In the machining process the measuring result cannot always be transferred 1:1 on the in-feed dimension. While for conventional steel the measured 5 µm can be set as the in-feed direct, for this special investment casting a certain amount of experience is necessary to achieve the desired result.

This is the starting point for the Blum-Novotest system. Michael von Rechenberg explains: "By measuring both finishing cuts we are able to ensure that for

each job the cutting pressure is the same and hence we can meet our tolerances." That ensures highest process reliability. Moreover the tool cost can be brought down by means of the BLUM measuring system. On the one hand the touch probe immediately detects tool breakage and on the other hand, the tools can be used to the actual end of the tool lifetime. While the average tool cost of the industry is about three percent of turnover, RUMPEL

Präzisionstechnik utilises about 10 percent of the overall turnover for the procurement of machining tools alone.

The advantage of the BLUM touch probe is a higher measuring force, so the cooling lubricant is simply forced through during measurement. A further probe for a second mill has already been ordered. The new machining centre is also equipped with a BLUM touch probe. RUMPEL also gained positive experience with the service and training services of BLUM during the installation of a TC50 in a further 5-axis machine, and Blum-Novotest are able to offer immediate solutions for any further requirements.

Now, the turning process can be completely monitored by means of the BLUM touch probe. Process reliability was increased to the maximum and the process times reduced by 20 percent. Rejects could be brought down to a minimum, which is worth hard cash in case of test components that in some cases can cost several hundred

Euros. Gerhard Englisch concludes: "Currently different processes in the turning and milling fields are examined for their potential for optimisation with the aid of the BLUM measuring systems. We rely on a partner with whom we can achieve our high quality standards. We have found this partner in Blum-Novotest GmbH."

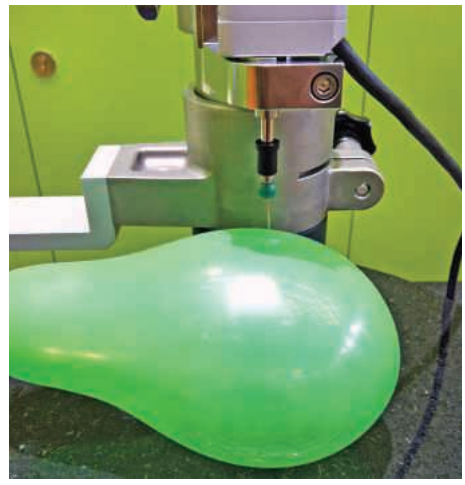
Blum Novotest Ltd
Tel: 01283 569691
Email: david@blum-novotest.co.uk
www.blum-novotest.com

Length gauge avoids marking or deforming delicate surfaces

Non-contact inspection by laser scanning or other optical systems ensures that delicate components are not damaged while they are being measured and soft or compressible materials are not deformed. The disadvantage is that non-tactile measuring cannot match the precision of touch probes and photoelectric scanning of linear encoder graduations.

To address the problem of how to measure sensitive components accurately, HEIDENHAIN has introduced a new length gauge that ensures the tactile probe it carries imparts negligible force to the surface being inspected. It is a result of an extremely low measuring force curve between 0.01 N and 0.07 N over the 12 mm measuring range. If a pin were to replace the standard probe contact, the pressure would not be sufficient to burst a balloon.

Called METRO 1281 MW, the length gauge can, for example, safely inspect small plastic gears, glass objects, semiconductor wafers or polished medical components without scratching the surface. Transparent or reflective materials that can present



difficulties when scanning optically can likewise be measured simply and exactly.

High precision ball bearing guides are a core component of the METRO 1281 MW. The combination of these guides and high-precision photoelectric scanning achieves repeatability of less than 0.03 µm over the full measuring range. The length gauge system accuracy lies within ±0.2 µm.

In addition to having a low measuring force, the unit features a Zerodur precision graduation with a 2 µm signal period. Zerodur has a thermal coefficient of expansion of almost 0 ppm/K in the 0°C to 50°C range, so ambient temperature effectively has no influence on expansion of the scale during normal operating conditions.

Based in Burgess Hill, West Sussex since 1969, HEIDENHAIN (GB) Ltd is a wholly owned subsidiary of Dr. Johannes Heidenhain GmbH. Employing 21 people, the company is a sales, service, and distribution centre for the UK and Eire for the complete range of products manufactured by HEIDENHAIN. Product application and customer service support is provided on CNC control systems, digital readouts, linear and rotary encoders, length gauges, measuring probes and machine calibration equipment.

HEIDENHAIN (GB) Ltd
Tel: 01444 247711
Email: sales@heidenhaingb.com
www.heidenhaingb.com

Always a step ahead

JBO Thread Gauges from Stocdon in Cheltenham, has over 30 years experience in specialist tooling and is committed to bringing customers the best.

JBO Thread Gauges are the ultimate solution for precision thread measuring across Europe and the UK. With additional recent success in Asia, JBO's 70+ year track record in this programme is unmistakable. Stocdon provides over 10,000 different thread dimensions and tolerances, covering threads from 0.5 – 250 mm diameter that have enormous resistance to wear and of the highest precision. The world's largest range of TiCN coated, calibrated HSS Thread Plug Limit gauges are available exclusively from Stocdon.

In addition to the wide range, the development of MultiCheck dramatically cuts the time taken in checking threads over a specified depth by measurement with a depth gauge. The MultiCheck has a depth measuring sleeve which is screwed in and the depth up to four times normal thread diameter can be read easily off the sleeve. If this is not sufficient, then there is a Vernier MultiCheck with 0.1 mm resolution, or a digital readout MultiCheck with 0.01 mm.

JBO are always working on better and easier measuring, and so have developed eMultiCheck a simple, user-friendly automated system for incorporating both thread and thread depth. This system is worth a demonstration and can reduce the thread testing cycle by around 80 percent, ideal for high volume production and recurring measurements.

JBO's commitment to quality, development and technological advancements is well known throughout Europe and each product is manufactured in accordance with DIN EN ISO 9001, conforming to national and international standards. All gauges are checked and certified, using a highly sophisticated testing process which takes place separately from production, in climate-controlled conditions to ensure the gauges are perfectly accurate.

Delighted Stocdon customers have noted the quality of the tools, and Stocdon states that the only way to truly understand this enthusiasm is to try these great,

cost-effective, problem-free thread gauges first-hand.

Stocdon's reputation is widespread in various sectors ranging from engineering merchants and the valve industry to aerospace and motorsport.

Stocdon Ltd
Tel: 01242-241123
contact@stocdon.co.uk
www.stocdon.co.uk

Metrology robot for automated optical quality assurance

Alicona's high resolution optical 3D metrology sensor head, combined with a 6-axis, automatic or manual robot, provides users a 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 work pieces 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.

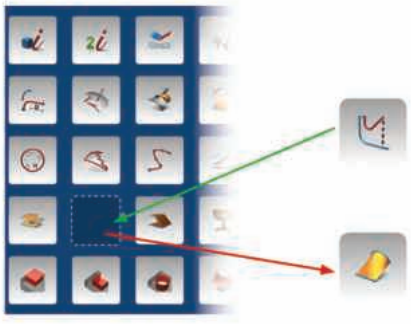
It is especially useful to measure small features on large items such as discs, and turbine blades and also for measuring critical defects in larger objects. All measurements are taken on an accurate 3D model of the surface, allowing the measurement position to be identified and placed according to requirements. This 3D model is saved in a database providing a quality assurance record.

Alicona UK Ltd
Tel: 01732 746670
Email: sales.uk@alicona.com
www.alicona.com

OPEN MIND launches hyperMILL 2015.1

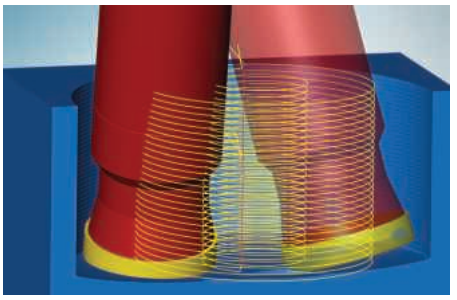
The latest version of OPEN MIND's CAM/CAD suite hyperMILL® has now been launched to deliver a host of new optimisations, machining strategies and intuitive features that can further exploit the possibilities of modern CNC machines whilst enhancing ease of use.

There are five outstanding highlights in the latest package that include new functions for 2D and 5-axis machining. These features can considerably reduce programming times and enable efficient machining whilst numerous powerful extensions in hyperCAD®-S, the CAD system for CAM users will deliver real added value.



The most important expansion in hyperMILL 2015.1 is a 5-axis helical drilling strategy. This helical drilling cycle generates helical tool paths with the tool plunging into the material quickly. This eliminates the need for pre-drilling operations. By setting the milling tool inclination based on five axes, the user can benefit from efficient and tool-friendly machining with rapid swarf removal. Particularly suited to difficult to cut materials, this strategy improves cycle times and tool life considerably.

With internal process quality control becoming increasingly important, there are three new probing cycles featured in hyperMILL 2015.1. These include the measurement of rectangle and circle elements as well as measuring parallel to the axis. The touch probe is easy to program in all cycles, just like a tool in hyperMILL. This enables users to choose between three measuring functions, the informative process control, active process control and zero-point definition. By delivering these features, OPEN MIND will drastically improve process reliability for customers. With the 'informative process control'



feature, it is possible to create measuring data for the individual component geometries and access it from the controller, a major plus for any machine shop.

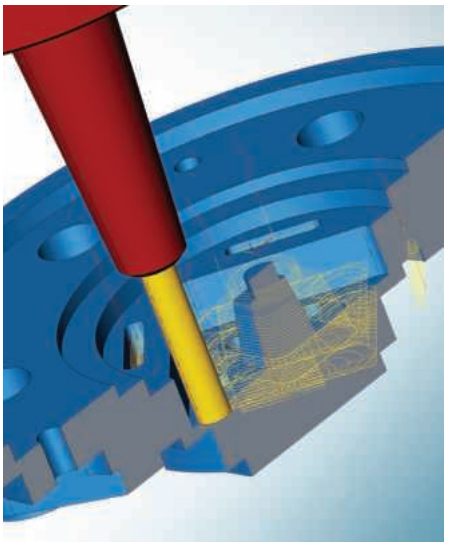
The 'active process control' feature allows probing cycles to be integrated into the machining process in order to actively control parameters. Deviations in dimensional accuracy can be processed in the controller for actual machining based upon the off-set value. This exceptional benefit is complemented by the new 'zero-point definition' tool. This new addition makes it possible to quickly and reliably define the component zero-point, providing more precise and efficient machining. In addition to this, all movements are checked for collisions on both 3- and 5-axis machine tools.

CAD for CAM users

hyperCAD-S, the CAD element within the hyperMILL suite is also unveiling new innovations. Toolbars can be individually customised and the desired commands can be pasted into or deleted from the toolbars via a drag and drop facility. This enables the programmer to personalise the system for streamlined operation and programming times. Another new feature is the improved clipping plane. The clipping plane function is used to generate a planar section through a component. The selected clipping plane remains active within other functions, but does not affect the existing geometry of the component. This function makes it easier to analyse components whilst tool and tool paths remain unaffected.

Another hyperCAD-S highlight is the 'print box' function. This is a powerful tool for creating manufacturing plans. Users can compile or print out individual views as well as clipping planes and areas to create manufacturing documentation. Component dimensions and text information are automatically adopted into the view and can be moved, hidden or shown there. All these functions have been developed to make hyperMILL work even faster and smarter for the end user.

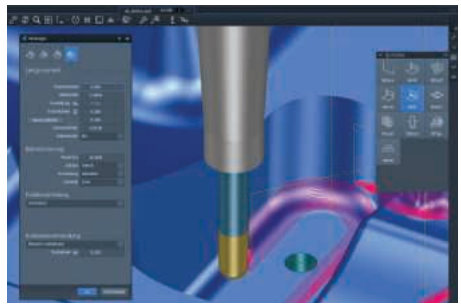
OPEN MIND Technologies AG is a leading developer of CAM/CAD software and postprocessors for designing and manufacturing complex moulds and parts. OPEN MIND is one of the five largest providers of CAM solutions according to the NC market analysis Report 2013 compiled by CIMdata, a market research company. OPEN MIND offers an extensive range of products from 2D feature-oriented solutions for milling standard parts through to software for 5-axis simultaneous machining.



With its hyperMILL software, which is used in the automotive, tool and mould manufacturing, mechanical engineering, medical and aerospace, and watch and jewellery industries, OPEN MIND Technologies AG is represented in all the important markets in Asia, Europe and America. OPEN MIND Technologies AG is a Mensch und Maschine company (**www.mum.de**).

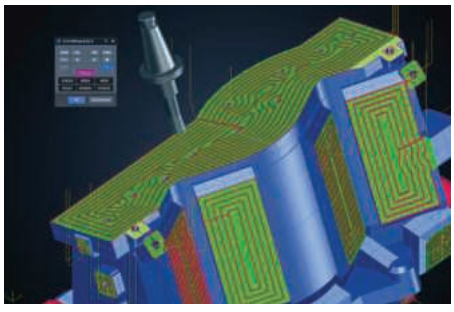
OPEN MIND Technologies
Tel: 01869 290003
Email: adrian.smith@openmind-tech.com
www.openmind-tech.com

Tebis Version 4 is arriving



This summer sees the launch of the new Version 4.0 Tebis software. Tebis, the process provider for the development, design and manufacturing of models, mold tools and components, has further optimised its CADCAM software. With this update, customers will not only be able to design processes more efficiently but thanks to the new, user-friendlier user interface, man and machine can interact more intuitively.

Version 4.0 of its CADCAM software and the manufacturing-related Tebis Consulting enables Tebis to now deliver even greater process efficiency in the development, design, and manufacturing of models,



molding tools, and components to its customers. The new user interface enables the operator to display and hide menus in the function panel as needed. Work surfaces can be individually customised, stored, and managed. The program also suggests work environments designed for specific applications and users will now receive much more feedback.

The new version also enables the automated and very easy processing of small parts such as coiling and trim steels or inserts. Thanks to the automated process, the often separately provided die surfaces and solid data of the individual parts can be combined to a single precise unit, which then perfectly matches the finished part. The software uses all wall thicknesses and machining actions to calculate a total surface. Contour surfaces and any required resets are also generated automatically. With the standardised process, companies making thousands of small parts every year would enjoy substantial time savings and reduce the risk of errors.

Tebis provides companies with virtual machines so they can utilise their machining centres with no interruption. The parameters for a run time calculation have been added to these virtual machines. Using the maximum speed and acceleration of each axis, the software calculates the run time for every NC program. It also takes into account the maximum processing speed of the controller, the machine macros and the number of NC blocks calculated in advance by the controller. The transparent representation of the entire machining cycle allows companies to better utilise their machines.

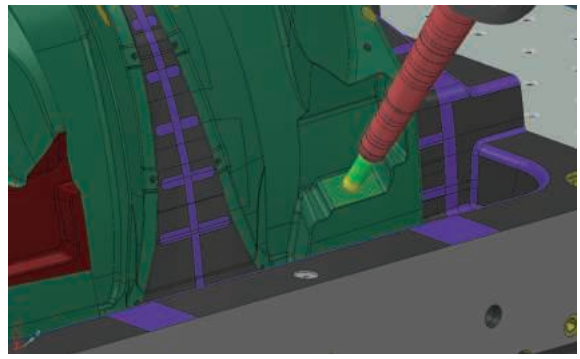
Tebis UK Ltd
Tel: 024 7615 8178
Email: jill.purser@tebisuk.co.uk
www.tebis.com

Delcam webinar on PowerMILL now online

Delcam has made available for download its recent webinar on the Advanced Simulation & Verification module in the 2015 R2 release of the company's PowerMill programming software for 5-axis and high-speed machining.

To download the webinar, please go to **www.delcam.com/software/powermill/webinar/index.asp**

The webinar demonstrates how PowerMILL can undertake complete verification of a project for machine-tool issues such as collisions, rather than having to undertake verification of each individual toolpath in turn. Comprehensive verification is shown, including how to ensure that the machine tool is capable of running the proposed strategy, as well as methods for checking for both machine-tool collisions and tooling collisions, during cutting moves and all leads and links, including machine-tool movements as tool changes are executed. PowerMILL generates a detailed list of any problems found for the complete project so that these can be fixed on a case-by-case basis.



As well as highlighting potential collisions, warnings can also be flagged for near misses. The user can specify a clearance value and, when the machine tool comes within this value, it will turn yellow in colour to highlight a near miss. The clearance distance is shown in the display so that a decision can be made on whether to keep or change the toolpath.

Also demonstrated are a new PowerMILL dialogue that can be used to track and adjust the position of the machine tool, and the special toolbar to simulate and adjust the configuration and tool axis of a 3+2 machine or any equipment with incremental rotary axes.

The dialogue presents data on the position of the machine tool, together with the limits set for each axis. It includes a slider to jog the machine components into position during the simulation and displays a warning if any axis limit is exceeded. The toolbar can be used to edit the tool axis and the orientation of the machine tool. This allows quick and easy updates to existing toolpaths with the new parameters. Warnings appear automatically in the event of machine-tool collisions or axis-limit violations.

Delcam Ltd
Tel: 0121 683 1081
Email: marketing@delcam.com
www.delcam.com

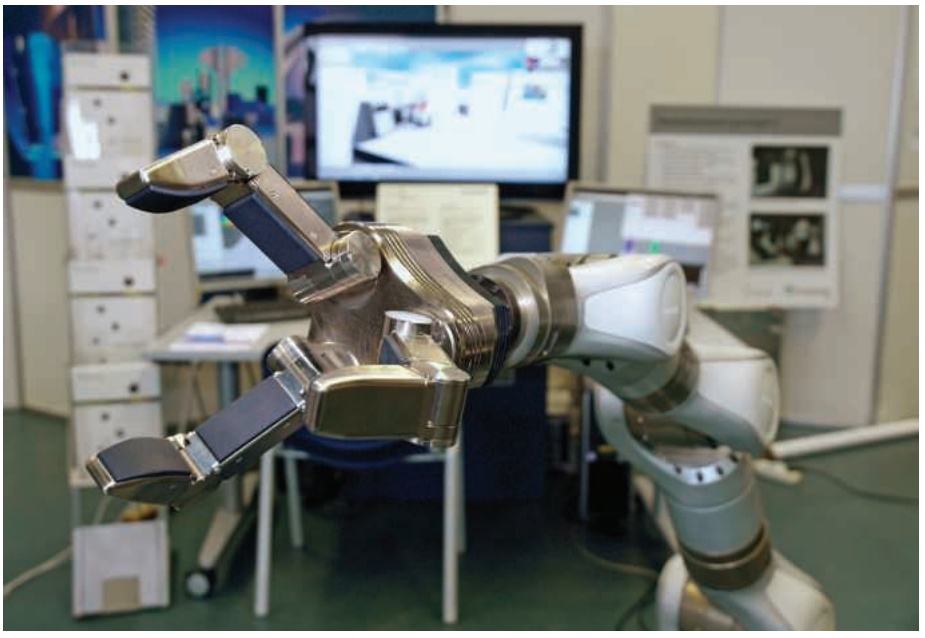
SCHUNK set to grip crowds at Northern Manufacturing 2015

At the Northern Manufacturing 2015 exhibition in Manchester, SCHUNK will once again be promoting its Synergy Concept alongside a number of new products that have been launched recently.

Many manufacturers have now recognised they can improve surface finishes and tool service lives by utilising the innovative TRIBOS system; and at Northern Manufacturing from the 30th September to the 1st of October, the latest interfaces will be on show. These new interfaces deliver a higher level of standardisation for the precision tool holding systems for micro machining and are now available with the TRIBOS RM and TRIBOS MINI ranges.

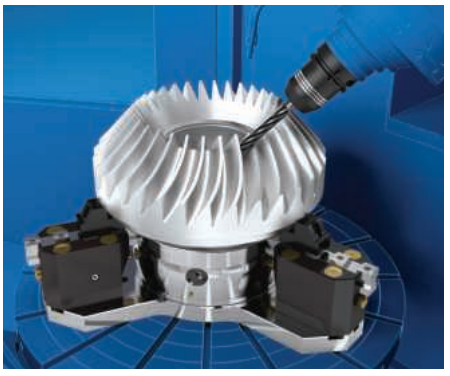
The TRIBOS-Mini that has been designed for high-speed micro applications can now be integrated with a high-speed HSK-E 20 spindle interface. The clamping technology experts at SCHUNK believe this newly standardised interface is superior to many short taper interfaces due to its accuracy at high speeds.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

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



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

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



Since the whole process is carried out within the elastic range of aluminum, the clamping operation can be repeated several thousand times. In contrast to conventional clamping blocks, the clamping force of this clamping method is carried out at the circumference of the whole workpiece contour and not just along an axis. Due to the clamping depth of only a few millimetres, the workpiece is fully accessible from five sides.

SCHUNK Intec Ltd
Tel: 01908 611127
Email: info@gb.schunk.com
www.gb.schunk.com

Grip strength

Chick Workholding Solutions

Get your teeth into vital productivity and cost savings with Chick System 5 workholding equipment - from 1st MTA.

- Fast, simple and secure
- Pinpoint location for machining accuracy
- Optimised parts nesting
- Fully utilised cutting envelopes
- Minimised cycle times
- Maximum set-up flexibility

Increased throughput, better quality and faster return on investment - all from your existing machines.

Call 1st MTA today to see how Chick workholding can hunt out improvements in your manufacturing operations.

1st MTA MACHINE TOOL ACCESSORIES

Email: enquiries@1mta.com Freephone: 0800 783 0510

Fax: 0800 783 0517 www.1mta.com

Bespoke solution costs 2.5 times less

Turned parts subcontractor, Empire Manufacturing bought its first vertical machining centre (VMC), a Leadwell V32i, in April this year. Its purpose is to fulfil regular orders placed by an existing customer for rotational parts requiring a lot of additional milling, too much for the eight Star sliding-head turn-mill centres on site to tackle economically.

The EN16T steel dowel component, measuring 20 mm in diameter by 40 mm long, is a price-sensitive part for a pump. Manufacturing cost had to be minimised to win the business, which meant presenting a large number of components simultaneously to the VMC spindle.

Multi-loading decreases the load/unload time and the number of tool changes per component, reducing spindle downtime. A process is therefore more efficient and capacity is increased by utilising more of the machine envelope. The operator is able to walk away from the machine to carry out other tasks and the manufacturing cost-per-part is reduced.

Empire Manufacturing turned to workholding specialists 1st Machine Tool Accessories (1st MTA) for a solution. After analysing the application, it suggested using two US-made Chick System 5 1550 Qwik-Loks, but not fitted with the standard, dual station jaw sets. Instead, they were equipped with solid aluminium faceplates that act like zero-point pallet changers and repeat within microns.

With two machined recesses on the undersides that snap onto the Qwik-Lok slide assembly in the bases, the faceplates are secured in a matter of seconds. The solid, high tensile aluminium faceplates are fully machinable, facilitating bespoke fixture designs. The system is completely sealed against ingress of swarf and coolant.

In this application, the faceplates incorporate Mitee Bite Uniforce machinable clamps, also from the US, which were machined with semi-cylindrical recesses to hold the dowel components after they have been turned and ground. Clamping of each component is achieved by tightening a single M6 socket screw, which applies a pressure of 6,675 N, more than sufficient to secure the dowel components for roughing, finishing and chamfer-milling around the circumference.

Two faceplates securing a total of 120 components are presented to the spindle and profile-milled in a 40-minute cycle on the VMC. The faceplates are then removed and replaced with two identical faceplates that have been pre-loaded outside the machine with 120 steel dowel blanks whilst the machine has been running.

Faceplate exchange takes a couple of minutes, resulting in minimal machine downtime. Subsequently releasing 120 dowels from their Mitee Bite clamps, counting and packing them into boxes and reloading the faceplates with fresh dowel blanks ready for the next cycle takes 15 minutes. The operator therefore has around 25 minutes of walk-away time to complete other tasks during every cycle.

Stuart Wade, a director of the family-run subcontract machine shop comments: "If we were to secure the round dowels in two conventional vices side by side on the VMC table, we could only mount four of them on the machine, as a third dowel in a vice jaw would almost certainly spin as it is milled.

"Using two Chick Qwik-Loks with dual station jaws we would double the number to eight dowels, but that is still a fraction of the number that we can put under spindle using the Chick faceplates and Mitee Bite clamping arrangement recommended by 1st MTA.

"It is not only an effective solution but an economical one as well. We were shocked at the £20,000 price of a zero-point clamping system we looked at early on, whereas the 1st MTA package cost only £8,000."

Empire Manufacturing now has a highly capable and repeatable system for manufacturing 8,000 to 10,000 pump dowels per month over a single 9-hour shift plus 40 minutes unattended running at the end of each day. The ± 0.1mm tolerance on the milled periphery is easily held, as is the required high standard of surface finish.

After a small production backlog has been eliminated, the VMC will complete the current on-going dowel production quantities in two weeks per month. Other work will be taken on to fill the remainder of the machine time, helping to amortise the capital investment even faster.

1st MTA Ltd
Tel: 01725 512517
Email: enquiries@1mta.com
www.1mta.com

Leader sees the attraction of magnetic workholding solutions

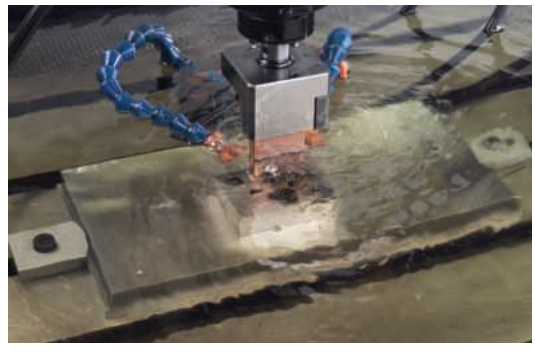
Tamworth-based workholding specialist, Leader Chuck Systems, has recently expanded its product portfolio for securing workpieces during machining operations with the addition of the extensive range of magnetic fixturing systems from Walmag Magnetics. These include permanent magnet, electromagnet and electro-permanent systems for grinding, turning, drilling and milling, as well as wire and die sink EDM machining.

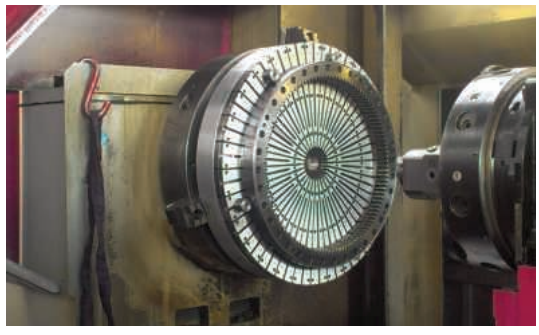
"Fixing the workpiece on a magnetised chuck allows easy access to five faces for the machine tool making it an effective way of holding the raw material for simultaneous 5-axis or 3+2 positional milling operations," explains managing director, Mark Jones.

He continues: "Previously part of the Walker Magnetics Group, Walmag has an established reputation for developing and manufacturing high performance workholding solutions using various magnetic technologies. With a depth of application knowledge built up over many years the Walmag staff can provide extensive information and offer manufacturing industry focused advice on aspects of workholding using magnetic force."

Designed to be robust and totally maintenance free, the range of Walmag permanent magnetic chucks are ideal for grinding. However, they can be used for all the above mentioned operations. Activated by physically moving a handle they operate with no electrical power supply, so they are easy to install and can be quickly transferred between different machines if required. A permanent magnetic system does not generate any heat so there is no risk of thermal deformation of the pole plate or the workpiece, helping to maintain machining accuracy.

The magnetic field in electromagnet fixture systems is generated by coils supplied with a DC current. The field is activated by a control unit that allows quick magnetisation of the workpiece. With the coil sizes designed to suit the application a very strong magnetic field can be created resulting in a tight clamping of the workpiece, and they are typically suited to grinding and turning operations. Thanks to the powerful magnetic field it is possible to reliably clamp even rough workpieces, as it can overcome any gaps between the workpiece and the chuck. The control unit allows the magnetic force to be varied to suit the application and operation can be manual, automatic or combined, and chuck sizes can be matched to suit the workpiece.





Combining permanent and electromagnetic technology the electropermanent magnetic range offers high clamping forces for heavy milling operations. As power is only required during clamping and unclamping the chuck is fail safe in operation, all machining is done without any current. The minimal requirement of electrical current means that no significant heat is generated, minimising the thermal impact of the chuck on the machining accuracy. This makes the technology suitable for high precise grinding. The control unit allows the operation to be automated and the chucks can be produced in various sizes from standard dimensions to several meters in length and width.

For EDM applications a special low power magnetic field is used to minimise any influence on the sparked material, and the chucks are constructed to be submerged in the die-electric fluid. As well as the range of chucks Walmag also produces a full range of accessories designed to aid the capability of the magnetic solutions available.

Based in the Czech Republic, Walmag can trace its involvement with magnetics back to 1960. Over 60 highly skilled staff work at the company's 30,000 ft^2 facility in Kromeriz, near Brno, producing standard and bespoke magnetic clamping chucks for a global manufacturing industry.

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

Leader Chuck Systems Ltd
Tel: 01827 700000
Email: mjones@leaderchuck.com
www.leaderchuck.com

ITC gets a hold on precision boring with new toolholders

To correspond with the launch of its extensive line of Micro 100 boring and internal turning tools, Industrial Tooling Corporation (ITC) has now launched the new range of QTH and QTHM toolholders.

The MicroQuik line of solid carbide boring, threading, grooving and profiling tools has rapidly established a reputation for its impervious tool life, innovative geometries and machining performance. Now, the established series of cutting tools for turning centres, sliding head lathes and machining centres has been given a productivity boost with the introduction of the 3-point locating and locking toolholder line.

The QTH and QTHM toolholders have a unique 3-point locate and lock design that guarantees centreline repeatability of +/-0.1 mm when changing from one solid carbide tool shank to the next. The system works with a rotating locking screw that pushes the tool insert downwards and back against a locating pin to deliver unparalleled rigidity, repeatability and tool life. This allows solid carbide boring, threading, grooving and profiling tools to be interchanged within 30 seconds, a tool changeover time that will drastically cut machine downtime and improve setup procedures.

The new toolholders are precision ground for a concentricity of less than +/-0.01 mm and are heat treated to extend their tool life. In addition, the holders have a through hole and adaptor for through-coolant machine tools. The QTH series are imperial dimension holders with shank diameters of 0.5, 0.625, 0.75, 1 and 1.25 inch and an overall length of 2.750 inches. The internal diameter for clamping the carbide tool shank varies from 0.1875 to 0.5 inch whilst an extended length version is available with an overall toolholder length of 5.8 inches.

For metric machine shops, the QTHM line of toolholders is available with a diverse range of dimensions to suit all machine types. The QTHM series is available in all standard sizes that include 12, 16, 20, 22, 25 and 32 mm shanks. This diverse range of shank diameters makes the QTHM and the QTH ideal for installation on sliding head turning centres with small toolholder capacity and platen availability.

Industrial Tooling Corporation Ltd
Tel: 01827 304500
Email: sales@itc-ltd.co.uk
www.itc-ltd.co.uk

MANOK stationary chuck from Hainbuch

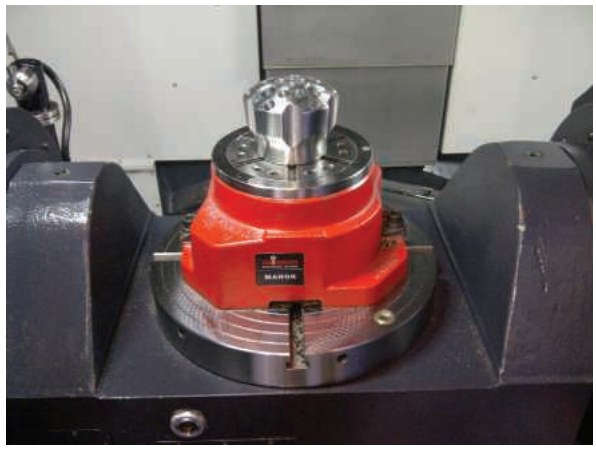
If you are looking for the 'complete' workholding solution, look no further than the impressive MANOK stationary chuck from Hainbuch, now available for immediate delivery. The price-performance ratio generates a rapid ROI and its flexibility has astounded the marketplace with advanced power, precision and rigidity.

Ideal for 5-axis machining and stationary workholding applications, the chuck operates with a pull-back action, so components are positively pulled against any internal stop to give incredible power and rigidity whilst reducing vibration during heavy duty milling operations.

To improve setup and changeover times, the MANOK incorporates a manual changing fixture that changes the clamping heads quickly and easily in a couple of seconds. In addition, customers can mount an end-stop inside the MANOK in no time at all by simply fastening the inside end-stop directly onto your machine tool table or by mounting a front end-stop on the face of the clamping taper.

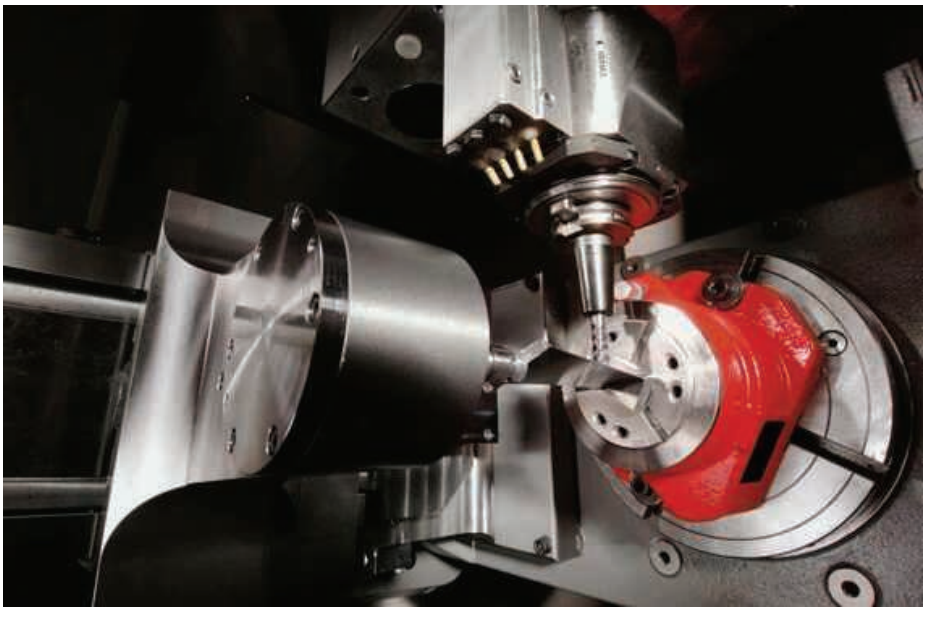
Incredibly powerful and flexible, the MANOK is versatile and simple to operate and its application range is almost limitless. The MANOK can be applied to milling machines and CNC machining centres, CMMs, pallet clamping applications, broaching machines, angle plates and indexible heads, grinding machines, drilling machines and even used as a fixed desktop assembly station.

To highlight the flexibility and application range of the Hainbuch MANOK system, it can be applied to a host of machining applications. Just a few of these applications include angle clamping for horizontal bar-work, claw clamping for use in applications that demand the utmost in rigidity, clamping round stock to provide fast alignment of bar stock, positioning with a dowel pin to incorporate fastening elements, machining with a workpiece carrier to reduce setup times by 80 percent, possible work with an axial collar and also machining with a side end-stop.



However, the possibilities don't end there. The MANOK can work with a host of end-stop variations. To this end, the MANOK can work with a depth end-stop to increase rigidity and achieve Z-axis repeatability of 0.005 mm and a front end-stop for pulling parts onto the end-stop. The front end-stop is extremely rigid and achieves a clamping actuation of 0.02 mm without a torque wrench and 0.005 mm with a torque wrench. Additionally, the clamping head face can also be used as an end-stop to deliver a clamping actuation of 0.01 mm and 0.04 mm respectively with and without a torque wrench.

With an application range that is only limited by the imagination of the end user, the MANOK is undoubtedly the most flexible, versatile workholding system on the market. Furthermore, by reducing setup times, increasing flexibility and offering exceptional repeatability levels, is there any reason not to order your MANOK system now.



For 60 years Hainbuch has been constantly developing new clamping solutions focusing on essential customer requirements. Setup times and cost savings, flexibility, productivity, energy efficiency and security. All that you expect from clamping solutions. Hainbuch products have these essentials including CE certification and the promise to be environmentally friendly.

Quality is very important to the company and is an essential part of the Hainbuch corporate philosophy. This is evident not only from their multiple certified ISO 9001 certification, but incorporated into the products. Hainbuch wants to develop and produce not only a high quality product, but one that is also environmentally friendly and sustainable.

A naturally compliant business management and a commitment to the environment are part of the corporate identity. In the foreground are the responsible use of resources, reducing emissions and waste, and minimisation of risks. The ultimate goal is in the performance with emphasis on environmental protection.

Hainbuch UK
Tel. 01543 478710
Email: nick.peter@hainbuch.co.uk
www.hainbuch.com

Brown & Holmes expands with Mytec

Brown & Holmes is now the sole UK and Ireland agent for Mytec hydraulic expanding clamping tools.

Mytec Hydraclamp solutions offer pioneering, seal-less connection technology for hydraulic expansion clamping tools. The range delivers a superior clamping system for increased productivity, higher precision and more profitability in testing, measuring and stock removal manufacturing. Mytec hydraulic expanding clamping tools have been designed to surpass traditional clamping in precision, clamping force and transferred torque for lathing, hobbing, grinding, testing and measuring.

The range can be used in workpiece clamping, gearwheel production and tool clamping. Mytec Hydra expansion arbors and Hydra expansion chucks are also available in two versions, depending upon the application. System RS offers replaceable sleeve and precision, while System SL is seal-less and offers ultra-high precision.

Known as a leader in workholding solutions and the design and manufacture of jigs and fixtures, Brown & Holmes has also been busy expanding its product division. Along with the Mytec range, the company is now the sole UK and Ireland supplier for Tsudakoma rotary indexing tables, FORKARDT rotary indexing tables, Fresmark ARNOLD high pressure vices and TFA Alfa universal segment clamping systems. The company also stocks a wide range of high value, quality gauges.

From its Tamworth base, Brown and Holmes provides customers with a complete turnkey solution from project management, design and manufacture through to support and installation.

Brown & Holmes was established in 1939 and its solutions now cover a wide range of industries including aerospace, automotive, defense, pump and valve and the oil sector. Brown & Holmes offers a wide range of high quality workholding products. The product range includes an extensive selection of cost-effective gauges designed for a wide range of industrial applications. Brown & Holmes are also the sole UK agents for the

popular Mytec range of hydraulic expanding clamping tools, Tsudakoma rotary indexing tables, Fresmark ARNOLD high pressure vices, FORKARDT rotary workholding, and TFA Alfa universal segment clamping systems. The company also supply a range of quality, cost-effective gauges.

Brown & Holmes (Tamworth) Ltd
Tel: 01827 63591
Email: info@brownandholmes.co.uk
www.brownandholmes.co.uk

50x diameter drills from WNT

WNT's range of WTX solid carbide drills has been developed further with the introduction of drills up to 50 x diameter for drilling steel and cast iron, and 30 x diameter for aluminium components. With the correct setup it is possible to drill to these depths without the need for a pecking cycle, making the WTX drills even more productive.

For steel and cast iron components the choice is the WTX deep hole drill type UNI, while the WTX deep hole drill type ALU is the choice for aluminium components. Both drills share common features, such as the 135 degree point angle and straight cutting edge that helps to reduce cutting forces. A key feature is the use of four guide lands (six on the ALU drills) that help the drill to maintain alignment and accuracy to h7. For improved swarf clearance and performance the drills also feature polished flutes and through tool coolant. Differentiating the two types of drill are the coatings used. For Type UNI drills a TiAlN multi-layer coating is applied, while for the Type ALU a special DLC (Diamond Like Carbon) coating is used.

These new drills will provide a real alternative to gundrilling as customer test reports are proving. For example in the drilling of a crankshaft in 42CrMoS4 chrome molybdenum steel the customer was drilling 12 holes per shaft using a 5.00 mm diameter gundrill. The cutting data was 78 m/min at 0.03 mm/rev feedrate (144mm/min). By switching to the WNT WTX Type UNI drill the surface speed was increased to 81 m/min, feed upped to 0.1 mm/rev (500 mm/min). This gave a cycle time saving of 26 seconds per hole or 5.25 minutes per crankshaft. Not only that, but tool life virtually doubled from 50 crankshafts/drill to 97.

The WNT WTX Deep Hole Drill range covers diameters from 2.00 mm through to 12.00 mm in a variety of increments for diameter to length ratios of 16 x, 20 x, 25 x, and 30 x and between 3.00 mm and 9.00 mm for 40 x diameter, with 50 x diameter restricted to sizes between 3.00mm and 6.80 mm. Use of the drills is straightforward, with the only requirements for efficient use being the drilling of a pilot hole to 3 x drill diameter and an initial reduction in speed and feed when entering the pilot hole and a reduction in speed just as the drill is retracted from the finish drilled hole.

"These new extensions to the WTX solid carbide drill range are delivering significant cycle time reductions for those companies making use of them. They bring the world of deep hole drilling within reach of any machine shop, and without the need for any specialist equipment or skills," says Tony Pennington, managing director, WNT (UK).

New milling range creates entry point for high performance milling

WNT (UK)'s latest introduction is a new range of four-flute solid carbide milling cutters that create a solution for those companies wanting to develop a high performance milling capability. These new cutters are a result of feedback from customers and bring the benefits of high performance milling to those with shorter batch runs. The arrival of these four-flute solid carbide slot /end mills gives customers an entry point into high performance machining.

The cutters are part of WNT's Mastertool portfolio which makes use of high volume manufacturing techniques to lower individual cutter prices that, along with new coating technology, means that customers now have a mid-cost solution that allows them to maximise cutting data on a range of milling applications.

Ideally suited to machining steel, stainless steel, heat resistant alloys, light alloys and cast iron components, the new four-flute solid carbide cutters can operate at surface speeds of between 20 and 100 m/min (heat resistant alloys and between 110 and 300 m/min for other materials, with feedrates up to 0.07mm/tooth dependant on cutter diameter and application. A variety of milling strategies can be employed when using these new slot and end mills, including full slot, ramping, shoulder, and helical milling, making them an extremely versatile cutter.

WNT (UK) Ltd
Tel: 0800 073 2 073
Email: tony.pennington@wnt.com
www.wnt.com

Jabro® Solid² - Seco's next generation of innovative solid carbide milling cutters - take flexibility, performance and productivity to new heights. Featuring optimised geometries, special edge preparations and a new, highly durable coating technology, these cutters are anything but run of the mill.

INSPIRATION THROUGH
INNOVATION

Manufacturing Best-Practice Event
23 & 24 September Seco Tools (UK) Ltd

DEFINITELY NOT RUN OF THE MILL

SECO'S RANGE OF **JABRO® SOLID²** MILLING CUTTERS

WWW.SECOTOOLS.COM

SECO

New Beyond Drive from Kennametal

Increased performance and improves wear identification

With significantly longer tool life and improved edge utilisation in field tests, Kennametal´s newly launched Beyond Drive™ portfolio of cutting inserts are being called the new gold standard for turning. Adding a new titanium oxy-carbonitride outer coating (TiOCN) not only increases wear and abrasion-resistance for lower temperatures and longer tool life, its bronze colour is an effective wear indicator as opposed to black-surfaced inserts.

Where inserts had been thrown away early in favour of safety because of poor wear identification, operators are now reporting notably longer service life per edge, even in aggressive environments. Depending on the application, field tests are showing up to 30 percent more parts per edge.

Beyond Drive is an entire portfolio of new grades and geometries that emphasise ease of selection and use across work materials and turning conditions. Specific customer demands addressed by Beyond Drive include reduction of notch wear in demanding applications and reduction of crater wear in difficult materials, all while improving wear identification.

Beyond Drive is specifically designed for leveraging improved performance and longer life in many critical turning tasks across steels, stainless steels, cast irons, and high-temperature alloys. By cutting costs, avoiding waste, and producing many more higher-quality parts per cutting edge, manufacturers in transportation, energy, general engineering, and more are taking a significant leap forward in productivity and increased capacity.

For example, the Beyond Drive MR (medium roughing) insert has a high positive rake angle that works with the smoothly curved cutting edge to reduce cutting forces and extend tool life. In terms of chip flow, it´s like nothing ever seen before, says Kennametal turning expert Lothar Unglaub.

Indexable double sided inserts are subject to high cutting forces, and are commonly seen as less stable. MR´s rake profile without the points of load concentration results in an extremely stable insert body, despite the high positive rake. Even with high depth-of-cut applications, turning processes are safer and more stable, ensuring lower load on the machine tool and workpiece.

Additionally, MR inserts also feature formed-in coolant channels that deliver flood coolant efficiently to the cutting edge. Improved heat control translates into smoother cutting and extended tool life.

Total System Solutions

Adding the benefit of increased stability to Beyond Drive´s design and performance advantages is Kennametal´s KM4XTM spindle connection. Sizing the right spindle connection with the right machine tool helps optimise the productivity of the entire system. The combination of the KM4X system´s high clamping force and interference level leads to a robust connection and extremely high stiffness and bending capacity for greatly improved performance. KM4X overcomes the limitation on bending capacity present in other connections, allowing maximum available spindle power and torque to be utilised in critical operations like turning of high-strength materials.

In short, the KM4X connection is capable of performing right up to the machine tool´s full potential, which drives the most out of the cutting edge, Combined with the latest Beyond Drive portfolio, turning can be far more productive and cost-effective

Another advantage is running dry, where Beyond Drive performs very well. Coolants can cost a lot of money and add processing and disposal concerns. Even in very aggressive turning environments involving external scale or heavy, interrupted cuts,

Beyond Drive is showing increased performance.

For example, in one test for a plant producing cast-iron transmission components, with no change in feed, spindle speed, or depth of cut, Beyond Drive completed 325 pieces per cutting edge compared to 200 pieces for the plant´s current inserts. Not only was this a phenomenal increase in parts per edge, projected machine hours freed per year totalled 125 while the number of inserts required per year dropped from 813 to 500.

A stronger supply chain that gets more parts to market reliably is the foundation of a healthy and growing manufacturing industry. Beyond Drive is a truly exciting development that promises more higher-quality parts per shift, more efficient machine utilisation, and longer tool life.

Kennametal U.K Ltd
Tel: 01384 408060
Email: anna.mason@kennametal.com
www.kennametal.com

MAPAL high performance Inconel drill

Seeking to improve both tool life and cutting speeds when drilling bushes fabricated from Inconel™ 718, a leading subcontract supplier to the aerospace industry recently approached precision cutting tool expert MAPAL for advice. After carefully investigating the requirements, MAPAL's engineers were able to offer an off-the-shelf tool that boosted tool life by a factor of four while also allowing the drilling time for each bush to be reduced to one-third of that previously needed.

Because of their exceptional resistance to oxidation and corrosion, and their ability to retain their strength over a very wide temperature range, Inconel alloys are widely used in the aerospace industry. These alloys, however, have a reputation for being difficult to machine, not least because of their propensity for rapid work hardening.

This was the root of the challenge faced by an aerospace subcontract manufacturer when performing a deceptively simple drilling operation on Inconel bushes for use in a high-performance airframe assembly.

The task was apparently straightforward. The required bore diameter was 10 mm, the depth less than 25 mm, and the required surface finish Ra = 1.1. The company found, however, that it was virtually impossible to achieve a tool life significantly greater than 130 holes, even with low speed and feed rates. After evaluating drills from several suppliers without achieving significant improvements, the difficulties were explained to MAPAL.

As MAPAL has wide experience of working in the aerospace industry and, in particular, is fully conversant the special requirements associated with machining Inconel alloys, it was able to put forward a very straightforward and cost-effective solution. Simply switch to using a solid carbide drill from the company's MEGA-Drill-Inox range.

Specially developed for machining special materials, these drills have a very sharp cutting edge with special cutting edge preparation. In addition, they have optimised chip spaces with rounded geometry to ensure clean chip flow and they feature an MxF coating that gives them an exceptionally high resistance to wear.

The company is now exclusively using MAPAL MEGA-Drill-Inox drills for its production of Inconel bushes.

MAPAL Ltd Tel: 01788 574700 Email:sales@ukmapal.com www.mapal.com

Rainford offers the solution for hard machining

Building upon the success of the Union Tool range of hard milling tools, Rainford Precision is now delighted to announce the arrival of a new range of ball nosed end mills from Union Tool. The new UDCBF and UDCLBF have been added to the UDC range for processing tungsten carbides, ceramics, zirconium, silicon carbide and nitride materials up to a hardness of 90 HRA (up to 80HRc).

Capable of cutting materials in their hard or fired state, Rainford Precision has undoubtedly carved a niche for delivering tooling solutions beyond the remit of virtually all competitor tooling products. The new UDCBF and UDCLBF are aimed at manufacturers in the aerospace, automotive and mould & die sectors that are processing hard materials via conventional and time consuming processes such as grinding, EDM wire and EDM spark erosion.

If you are familiar with grinding and EDM machining particularly hard materials, the benefit of cutting tools capable of doing the job are obvious with astounding cost benefits. The UDC range can eliminate the time, labour, material and overall cost implications of programming and producing an electrode and also setting up and machining with an electrode; making the cost of manufacture negligible in comparison to EDM and grinding.

The new diamond coated UDCBF and UDCLBF are both ideal for machining glass filled plastics, cemented carbides and hard, brittle materials. However, the tools demand a cutting strategy that requires machine tools capable of cutting from 20,000 to 30,000 rpm with feed rates in the region of 750 mm/min. The UDCBF is available in diameters of 0.6, 0.7, 0.8, 0.9, 1, 1.2, 1.5 and 2 mm with a cut length from 0.42 to 1.4 mm with an overall tool length of 50 mm. With a 4 mm shank diameter and a 16 degree taper angle, the UDCBF has been consciously designed to optimise rigidity whilst achieving sufficient reach for intricate machining applications.

Rainford Precision Machines Ltd
Tel: 01744 889726
Email: sales@rainfordprecision.com
www.precisiondrills.co.uk
www.rainfordprecision.com

Insert something outstanding

Seco's new Duratomic insert grade performance astounds leading distributor

Seco's recently-introduced new, next-generation Duratomic insert technology is proving itself up and down the country amongst precision component manufacturers and cutting tool distributors and dealers looking for the latest and most innovative and productive turning solutions.

Typical of the response and reaction to the new Duratomic insert grades is a leading tooling and cutting tool distributor located in the South West who, in a recent machining trial, put Seco's Duratomic® TP2501 grade through its paces.

Seco's area business manager, Tony Butterworth says: "The TP2501 grade was used to machine a large precipitated stainless steel component. The new grade was benchmarked against a competitor product (insert) under the same test conditions using the same cutting data (e.g. speed rate 120m/min, feed rate 0.32mm/rev, depth of cut 3 mm)."

To machine the part using the competitor product required a total of three insert edges to be used. However, with the new TP2501 grade the part was machined to completion using just one edge, a significant improvement in insert edge productivity and one that represents a considerable reduction in the cost-per-part.

"TP2501 is an incredibly tough and wear resistant grade that improves productivity, performance and process reliability.

"The grade has been designed to machine a wide range of steels where unstable machining conditions exist, and where heavy-duty, interrupted cuts are the norm''

Manufacturing Best-Practice Event

23rd-24th September

Be at the cutting edge…Source suppliers… Network…Learn…Be Inspired

INSPIRATION THROUGH INNOVATION

Seco Tools are hosting a free to attend Inspiration through Innovation event in September that will bring together the latest innovative, proven products and solutions from across the industry showcased in one venue across two intense days.

This exhibition and comprehensive programme of seminars will put you at the heart of the industry and its community. Knowledge gained from being able to see and interact with live demonstrations, peers and colleagues will be invaluable.

Seco Tools (UK) Ltd
Tel: 01789 764220
Email: mike.fleming@secotools.com
www.secotools.com/uk

OSG cutting tools with the HAIMER Safe-Lock System

In April 2015 the OSG Corporation, a world leader in round cutting tools, and HAIMER GmbH, a market leader in tool holding technology, signed a strategic partnership and licensing agreement. The OSG Group is bringing their round endmill cutting tools to the global market with the HAIMER Safe-LockTM-System.

As a licensed partner, OSG will be offering their cutting tool shanks with the patented pull out protection system, Safe-LockTM from HAIMER.

The OSG Group, Japanese market leader for solid carbide endmills, has begun offering their high quality cutting tools with the HAIMER Safe-LockTM system worldwide.

The unique Safe-LockTM design in cutting tools and toolholders combines a high precision press fit clamping with a positive form locking mechanism.

This prevents round cutting tools from being rotated or completely pulled out from its tool holder during heavy machining. The combination of symmetrical pull out protection, highest concentricity and excellent balance of the Safe-LockTM system, results in a vibration free machining process.

This leads to a more efficient metal removal rate, that is superior when compared to conventional milling chucks or weldon shanked cutting tools and toolholders.

OSG has been testing various systems for pull out security over the past several months. Only the technology of the Safe-LockTM system could convince the high-tech Japanese company. Jiro Osawa, technical managing director at OSG headquarters and CEO for North America, explains: ''Our field testing proved that the combination of our endmills with Safe-LockTM resulted in higher rpms and feed rates even with difficult-to-machine materials. This enables our customers to obtain a significant increase in their current metal removal rates, while at the same time having a higher security in their machining processes. Safe-LockTM also has a very positive effect on tool wear''

OSG is headquartered in Toyokawa, south east from Tokyo, where it has its solid carbide endmill production, coating facilities and production halls with the most modern CNC grinding machines. Due to these manufacturing capabilities, the company is able to insure the highest level of quality and availability of their tools.

An additional global production network enables the demands of local markets and customer needs to be met with fast delivery and the highest of service and support.

Since its launch in 2007, the Safe-LockTM System has developed very successfully and excited many international customers. Last year alone, the growth was four times higher compared to previous years. This boom can be attributed to recognising that the productivity increases resulting from the pull out protection is not restricted to typical aerospace applications but the cost and time savings can also be used in any typical milling application.

The Safe-LockTM System from HAIMER is an integrated pull out protection for round cutting tools that uses a friction and form locking system. It increases process security, enables a higher metal removal rate and provides results that are significantly better than conventional tool clamping systems.

OSG UK
Tel: 01268 567660
www.osg-uk.com

Lower costs per steel component

New GC4305 from Sandvik Coromant for shorter cycle times in the automotive industry

In the automotive industry, steel continues to be the most important material by far. To further optimise steel machining processes in this industry, Sandvik Coromant has developed GC4305, an insert that offers both extremely high metal removal rates and stable conditions. With its outstanding performance at high cutting data and its dry machining capability, it offers companies the benefit of reduced cycle times and lower costs per component.

Cutting tool and tooling systems specialist Sandvik Coromant has introduced the new GC4305, an insert for steel turning that maximises metal removal rates, shortens processing times and enables superior component quality. The outstanding performance it delivers at high temperatures and high cutting data makes GC4305 especially efficient at cutting steel components. With the company's wear-resistant Inveio™ coating, this new grade of insert achieves the long tool life that is so crucial in the highly competitive

automotive industry. The innovative, heat-resistant cutting material is also suitable for dry machining, making it the ideal solution for automotive component manufacturers seeking to avoid the stresses to which tools are subjected from unwanted temperature fluctuations. This, too, results in a longer tool life. In combination with the high processing speeds typical of dry machining, costs per component can be substantially reduced. Costs are further lowered by decreasing costs for cooling lubricant, recycling and disposal, thanks to, among other things, the elimination of cooling lubricants and associated wastes, lower capital investment, and cheaper disposal of chips.

Sandvik Coromant is a global leading supplier of cutting tools, tooling solutions and know-how to the metalworking industry. With extensive investments in research and development the company create unique innovations and set new productivity standards together with customers. These include the world's major automotive, aerospace and energy industries. Sandvik Coromant has 8500 employees and is represented in 130 countries. The company are part of the business area Sandvik Machining Solutions within the global industrial group Sandvik.

Sandvik Coromant
Tel: 0121 504 5400
Email: uk.coromant@sandvik
www.sandvik.coromant.com

HK3D Solutions prints the path to 3D success with new 500SLS range

Now available from HK3D Solutions is the latest ProX™ 500 and 500 Plus Selective Laser Sintering (SLS®) production 3D printers from 3D Systems. Introducing the next-generation technology, the 500SLS series of 3D Systems printing machines can create injection mould parts without the time or expense of manufacturing tooling.

These new 'production systems' have been designed to create a smooth integration with your manufacturing workflow whilst empowering you to rethink your entire production and supply chain strategies. The new ProX 500 and 500 Plus provide advanced product performance, reduce total manufacturing costs and also enable the end user to bring complex manufacturing processes in-house and under control.

The ProX 500 and 500 Plus incorporate 3D Systems market leading Selective Laser Sintering (SLS) technology that uses a high-powered laser to fuse small particles of plastic into a three-dimensional part. The laser selectively fuses powdered material by scanning cross sections generated from a 3D model of the part, which are generated from a CAD file or scanned data.

Commenting upon the UK introduction of this exciting new line of 3D production systems, HK3D Solutions managing director, Steven Wilcox says: "We are delighted to be presenting the latest technology from 3D Systems. The ProX 500 and 500 Plus range incorporate groundbreaking technology that is supported by our team of technical experts. We have over 60 years of experience in delivering manufacturing technology to the manufacturing sector. This guarantees that our application team are the best positioned engineers to explore each and every opportunity with the end user. This new machine will be on demonstration in our Rugby showroom very soon and we look forward to inviting the manufacturing industry to explore the benefits this revolutionary new technology."

Printing in DuraForm® ProX plastic material, produces parts with superior mechanical properties, precision, resolution, surface finish and edge definition compared to any other SLS system. The ProX 500 and 500 Plus can be utilised with a range of DuraForm materials that include the DuraForm ProX extra strong and durable engineered production plastic, the ProX GF that is glass filled (GF) to generate stiff components with high heat deflection or the DuraForm ProX AF+, which is a unique aluminium and fibre filled plastic for higher heat deflection with a cast-metal appearance.

What this gives the end user is completed components that are functional prototypes generated with unrivalled speed. Furthermore, the ProX 500 and 500 Plus generate parts that demonstrate outstanding resolution, surface finish and edge definition, so parts can be taken from the 3D printer and in many cases applied to industrial applications. The included state-of-the art Material Quality Centre (MQC) module ensures unrivalled material recyclability for efficient, clean and automated production.

For manufacturers that may be new to the 3D printing pantheon, the ProX 500 and 500 Plus are user friendly, intuitive and easy to setup. Once you have gained confidence, the potential is endless. The new SLS machines will streamline your workflow with its automated production tools and powder handling and recycling functions. Additionally, the mobile production controls allow

you to get the most from every second to maximise your investment with a remarkably high throughput, material efficiency and process consistency.

If you are considering taking your first step into the world of 3D printing, or an expert user of legacy equipment, the latest 3D Systems range of 3D Printing machines are the most comprehensive, productive and user friendly platforms available. All this is supported extensively in the UK by HK3D Solutions.

Commenting upon the software that drives the ProX™ 500 and 500 Plus, David Cullen, senior director engineering, SLS at 3D Systems says: "All software is programmed and supported in-house. There is no need for any 3rd party software, since the printers are sold with all required client and control software. The SPC (3DL Manager) is the most advanced in the market. Data capture and recording is included in the ProX 500 software. This data can be exported. Some of the data includes material type, density and total usage along with all machine operational functions such as heater set points, duty cycle, O2 levels and so on."

"The print preparation software includes file repair, cutting (with multiple styles), re-sizing, rotational capability, scanning preview just to name a few. Additionally, user freedom is a key feature as customers can change key parameters (open access) such as laser power, scan spacing, rotational scanning, scan order, outline parameters, scale and offsets. Many of these parameters can be part based or Z height changes. So you can have 20 parts in the same print job with different processing parameters."

With regard to the hardware behind these ingenious new machines, David Cullen continues: "The machines utilise dual APL (add powder layer) technology. This improves MP and eliminates surface defects such as orange peel. Furthermore, the Material Quality Control system (MQC) is an automated powder handling system. It reduces resources required for sieving, blending and powder loading operations. This gives on-demand powder delivery to the printers. The MQC also incorporates a remote Cooling Station. This reduces cool down time and reduces possible oxidation of material during cool down."

3D Systems provides the most advanced and comprehensive 3D digital design and fabrication solutions available today, including 3D printers, print materials and cloud-sourced custom parts. Its powerful ecosystem transforms entire industries by empowering professionals and consumers everywhere to bring their ideas to life using its vast material selection, including plastics, metals, ceramics and edibles. 3DS' leading personalised medicine capabilities save lives and include end-to-end simulation, training and planning, and printing of surgical instruments and devices for personalised surgery and patient specific medical and dental devices. Its democratised 3D digital design, fabrication and inspection products provide seamless interoperability and incorporate the latest immersive computing technologies. 3DS' products and services disrupt traditional methods, deliver improved results and empower its customers to manufacture the future now.

HK 3D
Tel: 01788 577288
Email: info@hkholdings.co.uk
www.hkh3d.com

Chairplan increases turnover and profitability with 123insight

Family-run business Chairplan Ltd, based in Royston, Hertfordshire, manufactures a range of high quality chairs. Back in the early 2000's they purchased a stock control system which later became the manufacturing offering for a popular accounts system. However, they found out that they had been effectively beta testing it for the developers. Director, Chris Roberts says: "We thought it was going to solve all of the problems that we had, which was running out of stock, traceability, the usual problems. We were in fact, unbeknown to us, guinea pigs. It was a horrendous situation. Truthfully, it got to a situation where we thought we would go bust, because during the time this was happening it delayed us getting invoices out. It completely overshadowed any idea we had of using a stock system. The vendors came on site and did what they considered was a repair, until it became obvious that they could not cope with the way we were ordering, and we couldn't change either because that's how we worked."

Around 2005 the company subsequently reverted to a combination of Excel spreadsheets and a paper-based system, operating JIT (Just in Time). Chris recalls; "It seems like a very backward move but it was the only way forward for us. My husband John was continually counting; either stock for purchasing or stock to fulfil orders. It wasn't accurate or cost-effective. Quite often he'd have to jump in the car and drive to however many suppliers to source parts. It was a silly situation but we couldn't find a way out of it."

Around 2012 the company took the decision to instigate a rebrand, aiming to create more up-market, contemporary products. They hired consultant Richard Battersby from Carter Wells Business Solutions, with part of his brief also being to restructure production. Richard recommended that they attend a 123insight Evaluation Workshop, but Chris wasn't confident; "I was just very sceptical, as was John. We couldn't really see that this was going to be for us. Richard suggested that we attend a local workshop at Hatfield University although both John and I were reluctant to go." Chris was finally persuaded to attend in the Summer of 2012, and was pleasantly surprised; "I think past fears really got in the way. We went to the Evaluation Workshop and I actually really enjoyed it. It was interesting and relaxed. We got enough out of it for us to understand that we really ought to try and have a go at this."

Chairplan subscribed in October 2012, and Chris Roberts, together with a colleague, attended the no-obligation training the same month. Between October and December they set about reshaping their existing data using 123insight's data import toolkit. Chairplan transferred their data over the Christmas period and went live on January 2nd 2013. Instantly staff noticed benefits. Paperwork reduced by 15 to 20 percent, and the paperwork that was generated was of more use. Savings were made on stationery, as 123insight can print completely branded invoices and reports. Where staff would previously only receive a works order with a product code they now have a complete bill of materials detailing all required components. Stock reduced by eight percent, with only the right products being held and stock-takes requiring much less time than before. Purchasing also saw a knock-on effect, as Chairplan were able to purchase more products in bulk due to better forward planning and understanding of ongoing demands.

The final proof that 123insight had worked well was in the numbers. By the end of 2014 the company's turnover was up 30 percent, with profitability also up 10 percent.

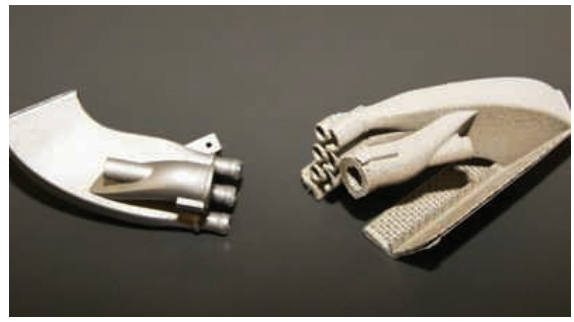
2015 saw Chairplan's rebrand launch, and now that all of their stock and production issues have been resolved Chris is excited about the future. She concluded; "I would say the return on investment with 123insight is immediate. It covers all the bases, and the factory staff are happy with it. 123insight is the only system we trust, and we trust it implicitly."

123 Insight Ltd
Tel: 01489 860851
Email: info@123insight.com
www.123insight.com

United Grinding Group plans joint venture for additive process with inspire AG

On May 1, 2015, Körber subsidiary United Grinding Group signed a cooperation agreement with university-affiliated inspire AG for a joint venture that will specialise in additive production processes. This includes a variety of laser-based processes as well as 3D printing. The joint venture, which will be managed collectively by both partners, will develop a future-oriented production process and thereby benefit from current research results. ETH Zurich has made significant investments in inspire AG.

The joint venture, named "Irpd AG", with headquarters in St. Gallen, Switzerland, concentrates on the manufacture of industrial metal or plastic prototypes up to the production of small series of complex workpieces. As a result, the joint venture focuses on innovative production processes, in particular on Selective Laser Sintering (SLS), Selective Laser Melting (SLM) and 3D printing. With this joint venture, the United Grinding Group expands its competence outside the Körber Group's business area of tool machines with future-oriented additive production processes and laser-based production technology.



inspire AG brings parts of its own centre of excellence, inspire IRPD (inspire Institute for Rapid Product Development), to the joint venture. By working with United Grinding, inspire IRPD gets a knowledgeable partner to work with on further developing and professionalising production processes. "As one of the world's leading providers in hard finishing, we are the ideal partner for inspire IRPD with our experience in standardised production and knowledgeable customer approach," confirms Stephan Nell, CEO of United Grinding Group AG. "The company offers extensive expertise in future-oriented production techniques which we would like to jointly develop on the basis of our experience in industrial series production."

"We are pleased to be able to further expand our activities in this important, future-oriented field together with inspire IRPD, an institute with excellent technological expertise," confirms Richard Bauer, CEO of the Körber Group. "Additive production processes are of strategically high relevance for us as an innovative technology group."

The location will remain the campus of inspire IRPD in St. Gallen on the grounds of the Swiss Federal Laboratory for Materials Testing (EMPA). This will facilitate among other things the continuation of the knowledge transfer and the exchange of experiences in the area of material research between the centre of excellence.

United Grinding Group AG
Tel: 0041 31 3560124
www.grinding.ch

Flatbed laser cutting of composites

The use of composite materials is increasing significantly in UK manufacturing, due to the advantages they offer in terms of light weight, high strength and corrosion resistance. Some challenges exist however, in the profiling of intricate geometry with acceptable quality. Traditional methods of machining, for example routing and shearing, can cause delamination of the material and loose fibres can remain at the edges which may cause problems of contamination.

Tec Systems Ltd has developed a flatbed laser cutting machine which offers an ideal solution for laser cutting of composites such as carbon fibre reinforced plastics, PEEK and other similar materials.

Composite flatbed laser cutting machine
Fitted with a solid state fibre laser as standard, the laser system is compact and highly efficient, requiring less electrical power and cooling water than traditional laser sources. Since the laser has excellent beam quality, the kerf width can be minimised which results in improvements in cut quality and speed of processing. The exact choice of laser source (power, wavelength, spot size) is made according to the application and Tec Systems can recommend the most appropriate solution based on application trials.

The machine is designed for manual loading by an operator, and the cutting bed has an XY table of 2 m by 1 m. A CNC controlled Z-axis adjusts the height to cope with different thicknesses of sheet. An automatic power-operated door is raised at the end of the cutting cycle, allowing the operator to promptly unload the machine.

To achieve the optimum results, a galvo head scans the profile and offers very high speed cutting (with the option of multi-pass cutting to achieve the required edge quality), in conjunction with the XY CNC interpolation which allows the cutting area to be moved dynamically over the machine bed to ensure that the results are consistent over the full size of the cutting bed.

Tec Systems works with all the major laser source manufacturers and can therefore incorporate the laser source of choice to suit customer preference and the specific application.

Tec Systems Ltd
Tel: 01509 815186
Email: sales@t-e-c-systems.com
www.t-e-c-systems.com

Food industry fabricator introduces subcontract waterjet cutting service

Established in 2012, Atom Fabs produces stainless steel, aluminium and plastic components for maintenance applications in the food industry, as well as bespoke machines for rotational moulding of plastic components.

Started by four engineers, Tom Hopkins, Lee Chant, Gavin Smillie and Richard Osborne, the company now employs 28 staff and the factory in Chard, Somerset, is working to full capacity.

Part of the reason for this rapid expansion was the formation last year of a new division, called Westcountry Waterjet, to provide cutting services to firms in Somerset and beyond. The initiative was prompted by the purchase towards the end of last year of the company's first waterjet cutter, a ByJet Smart 3015 twin-head machine from Bystronic (UK).

It was needed to automate production of profiles that were being cut by hand using saws and other conventional machinery. The idea was to speed delivery of profiles up to 25 mm thick to the food fabrication section as well as components made from up to 20 mm steel to the division that manufactures the moulding machines.

Capable of processing sheet and plate up to three metres by 1.5 metres, the ByJet Smart was the ideal size for the company. As the machine has two cutting heads, profiling productivity was high and it was soon obvious that there was a lot of spare capacity. So the decision was made to establish Westcountry Waterjet to offer cutting services to other manufacturers.

Lee Chant had already sounded out a couple of local firms and knew that they would be interested. One needs composites materials profiled while the other is a specialist glass company, for which 20 mm blanks are cut in preparation for periscope lens production.

Since then, a lot of additional work has been won, much of it requiring cutting of plastics owing to the relevant expertise within the Chard company. In a single day during March this year, three jobs were received. One involved cutting 100 mm thick, military grade PTFE into circular blanks for the customer to turn into seals; another required adhesive-backed foam of 25 mm thickness to be profiled for a cigarette manufacturing machine; and a third contract entailed processing of 25 mm aluminium and polycarbonate.

Formation of the new division has been so successful that three-quarters of the jobs being put on the ByJet Smart is now subcontract work and only one-quarter is for internal consumption. To keep pace with the higher workload, the company has started 24-hour operations in the factory, six days a week.

Components produced recently for in-house use included press brake tooling made from 60 mm thick S355 steel. Tom Hopkins, who has moved over to concentrate on the Westcountry Waterjet operation, commented that such tools and other tightly toleranced parts can be machined to ±50 microns on the waterjet, provided that slower profiling speeds are selected.

Bystronic UK provides today's UK and Irish manufacturer with laser cutting, waterjet cutting and bending systems along with software that streamline the process chain and minimises waste to increase profit.

Located in Coventry, Bystronic UK provides sales, service, training and support to customers throughout the UK and Ireland. Established in the UK for over 100 years as both Edwards Pearson and Pullmax UK, Bystronic UK has a vast experience and are centrally located to support the UK industry.

Left to right: Lee Chant, Atom Fabs; Tom Hopkins, Westcountry Waterjet; Allan Tovey, Bystronic (UK)'s regional sales manager

Bystronic UK Ltd
Tel: 0844 848 5850
Email: david.larcombe@bystronic.com
www.bystronic.com

OMAX® JetMachining® Centers provide premium high-precision abrasive waterjet cutting.

THE POWER OF ABRASION.

Just as erosive forces create intricate rock patterns, advanced abrasive waterjet technology enables OMAX JetMachining Centers to cut complex workpieces from virtually any material with the utmost precision and speed. **Experience the power of OMAX.** #TruthInWaterjet

ADVANCED ABRASIVE WATERJET SYSTEMS | 800.838.0343 | WWW.OMAX.COM

OMAX®

Specialist metals subcontractor chooses WJS

Water Jet Sweden might be renowned for supplying new turnkey solutions, but a retrofit enquiry to another OEM's waterjet machine earned its latest order.

In April, WJS UK was approached by a leading specialist metals stockholder and service centre with a view to providing abrasive hoppers and a sludge removal system to its existing waterjet machine. The current system had been overtaken by new business growth and the current facility was struggling to keep up with current and forecast demand.

It was decided by the customer that, rather than invest in the retrofit of its existing single head machine, it would investigate the market to find what current technology could offer them the improved performance needed. Given the high dependency and demands on the system for just in time deliveries, attributes such as reliability, accuracy, and uptime and support were also high on the list.

The customer, who wishes to remain unnamed due to issues regarding confidentiality, invited six suppliers to visit its facility to understand the requirements and come back with proposals. After extensive test cutting at WJS UK's Wetherby-based technical centre, the Swedish company won the order.

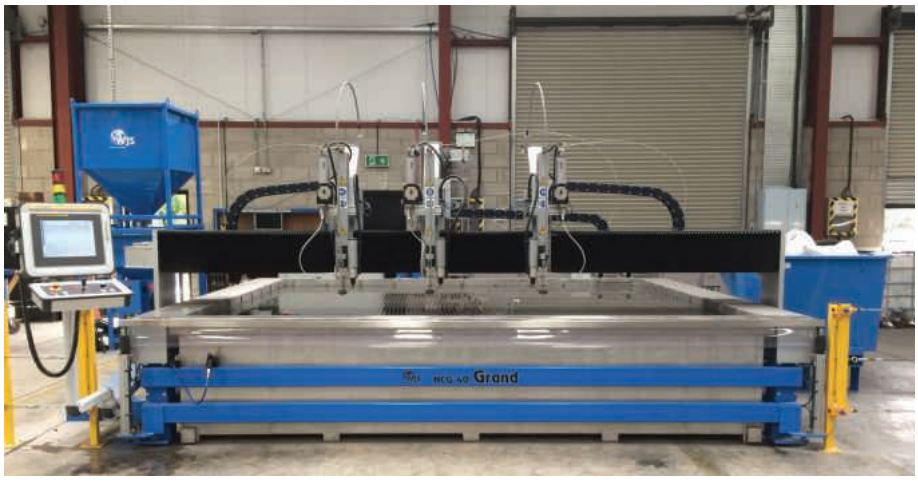
The customer explains: "The WJS sample pieces were faster and of a significantly better quality than our current system that has cnc taper angle control. Having three heads makes us 50 percent more productive than with twin heads, which allows us to better serve more of our customers. We studied the benefits of using taper angle control, which yielded a saving of some 10 percent on total cut time on a particular part. However, with WJS's conventional 2D heads we could common line cut a 200 mm edge of two workpieces in 70 mm thick titanium that yielded a 35 percent time saving and also more efficient material nesting. We could also program straight from their database and cut with a good quality part first time, with no trial and error, which means a lot when cutting expensive materials."

Water Jet Sweden proposed an NC Premium 4030T with three abrasive cutting heads, linked to a pair of intensifier pumps. This contrasted with many of the other OEM proposals which were mostly single and twin head solutions. In proposing a three head machine with two pumps, the customer was afforded redundancy during maintenance and productivity when required. Running costs are always at the forefront in choosing a system but are not the only criteria. 4000 or 6000 bar, abrasive flow rates, nozzle and orifice diameters, number of pumps and heads, taper angle technology, all effect productivity, quality and cost.

The customer adds: "WJS carried out an extensive study on our typical parts in a variety of thickness and for the quantities required. They could provide all and any of the mentioned configurations and technologies, so we were comfortable that we were receiving an unbiased technical recommendation. In the end, we opted for 4000 bar technology with three cutting heads and without any form of taper angle control. Whilst CNC compensation of taper was heavily promoted to us by some manufacturers, in practice none of them could cut our part first time and with the same quality as the 2D configuration demonstrated by Water Jet Sweden."

Due to the efficiency of the WJS system, the customer saved on abrasive consumption by some 40 percent from its current setup, abrasive being the largest single cost of waterjet cutting:

"In our journey, we learned so much about waterjet cutting as what suited others didn't necessarily suit ourselves. However the great comfort and confidence we took was in being able to work together with a supplier to configure a machine specifically suited to our current and future requirements. When we visited the Water Jet Sweden factory in Ronneby, we could immediately see why these machines last for 20+ years. It's all in the experience, design, detail and quality."



WJS UK Ltd
Tel: 01937 845499
Email: info@wjsuk.com
www.waterjetsweden.co.uk

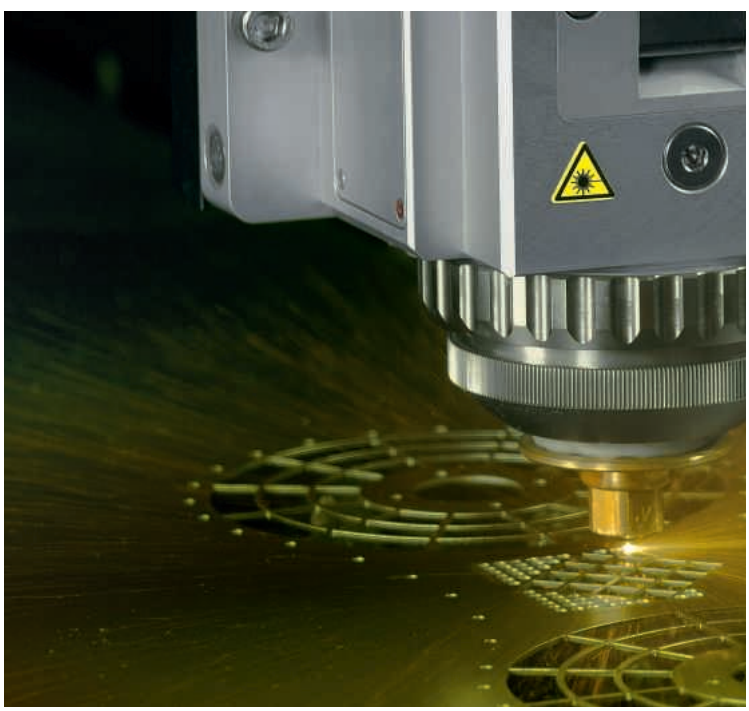
Bystronic

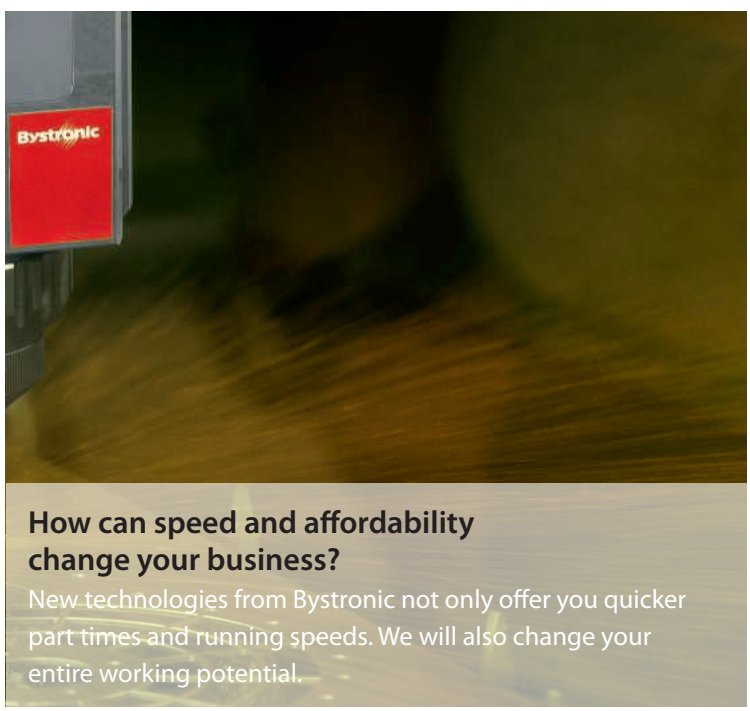
Best choice.

Open House:
Drive up your productivity

13th – 15th October 2015, Coventry

Book Online
www.bystronic.co.uk





How can speed and affordability change your business?

New technologies from Bystronic not only offer you quicker part times and running speeds. We will also change your entire working potential.

Abrasive waterjet improves capacity at fabricating shop

As part of an initiative to bolster material-cutting capabilities, Walsh Manufacturing had to decide between plasma, laser or abrasive waterjet technologies. The Cleveland, Ohio fabricating shop was at the scheduling mercy of three separate outside suppliers for its cutting work, and the resultant delays hindered Walsh's business growth.

While its suppliers provided the shortest turnarounds possible, Walsh still had to factor in all their ever-changing schedules when determining its job delivery times. More often than not, the added time resulted in lost work because Walsh was unable to meet extremely tight customer deliveries. This is when the shop opted to bring all the cutting work of its fabricating operations in-house. Of the three technologies under consideration, an abrasive waterjet machine made the cut.

"For us, lasers seem more suited for high-volume production work," explains Michael Herman, owner of Walsh Manufacturing. "Our lot sizes are as few as one piece or as many as 100 and jobs change over often and daily. We were simply unable to justify the cost of a laser system, and it lacked the flexibility in terms of material types and thicknesses we'd be able to cut."

After Walsh evaluated plasma-cutting technology, it seemed to make the most sense for the shop's needs. This was until Joe Trzaska, mechanical engineer at Walsh Manufacturing, attended a comparative cutting seminar at a trade show and learned about the benefits and capabilities of abrasive waterjet cutting.

"We really hadn't given a waterjet machine much thought. But after the seminar, we knew we wanted one, then had to decide on what model," says Joe Trzaska. "We considered several brands, including MAXIEM® from OMAX Corporation. The MAXIEM machine price point was right in our range, and to get its level of accuracy with a plasma cutter would have been at a cost that far exceeded that of the waterjet machine."

Walsh decided on the MAXIEM 2030 JetMachining® Center, which was acquired in early 2014. The machine can easily cut sheets of material up to 10' x 6' quickly and accurately in workpiece thicknesses that can range from 10 gauge up to 2", all while holding tolerances within +/- 0.005".

MAXIEM machines come equipped with the easy-to-use Intelli-MAX® Software Suite that eliminates the need for complicated G-code programming knowledge. Walsh also relies heavily on the software's ability to easily work with SigmaNEST® Companion part nesting software to maximise material utilisation. The shop also outfitted its machine with a large-capacity garnet abrasive-collection hopper unit and OMAX's Collision Sensing Terrain Follower. The sensing system automatically adjusts machine Z-axis heights to accommodate uneven stock surfaces and changing thicknesses without the need for special programming.

Originating from a modest welding shop over 50 years ago, Walsh Manufacturing has grown to its current size of 19 employees. In addition to welding and fabrication, the shop produces parts cleaning/washing systems, painting lines, dust-collection systems as well as other custom machinery. Half the shop's jobs are those special custom-engineered single or multiple-stage manufacturing line systems, while general contract fabrication work makes up the

remainder. Walsh serves a wide variety of customers from walk-ins to paint, stamping, fastener and automotive supply companies. The shop's primary customer base spans North America, with some of its custom systems finding homes in European factories.

As far as lead times are concerned, the shop might build a full custom system within 18 weeks or knock out an order for two fabricated brackets in a couple of hours to fulfill a same-day delivery. Some months over 50 projects will circulate through the shop, while other months only five or so really big projects will make up the bulk of the work. And many day-to-day short-run fabrication orders that must be completed as soon as possible are typically interspersed within those scheduled jobs.

Because Walsh gets jobs out the door faster than ever before with the MAXIEM, it has significantly increased its capacity to take on more work. In fact, the shop now offers its waterjet cutting services to other outside shops and tackles completely new and different types of jobs, such as prototype work, that are beyond its usual fabrication ones.

The SigmaNest nesting software working in conjunction with the MAXIEM's Intelli-MAX software is also a key contributor to faster part processing at Walsh. The shop can cut multiple jobs/parts from one sheet and in single setups. Plus, the software nests/arranges parts inside of one another, so slug material that was once discarded is now used for other smaller parts. This gives the shop its best yield per sheet, and for some jobs, the resulting material savings has been as high as 50 percent.

"With the OMAX software, there's no need to make full detailed drawings," explains Joe Trzaska. "If you can copy and

paste, you can use the software. And in most cases, I send part programs to the waterjet machine over our internal network, and the job is cut by the time the actual part prints make it out to the shop."

Walsh uses its MAXIEM to accurately cut overall part profiles, holes and other features that may then be finished on milling machines or in secondary operations. This is especially beneficial on those parts that can require up to 100 tapped holes. In these instances, the waterjet machine cuts the tap-size holes, which not only speeds the tapping portion of part processing, but also ensures that tapped holes are located in the exact required positions.

Additionally, Walsh reduces material handling time with the MAXIEM by cutting multiple stacked sheets of material simultaneously. For one job, the shop stacked eight individual sheets of material and got 11 parts out of each, for a total of 88 parts generated in basically the same amount of time required to cut one sheet.

These particular parts measured 16" x 25", and each required five holes cut as well as their profiles. According to Joe Trzaska, the multiple-sheet setup and speed of the MAXIEM equated to pumping out one completed part in under 30 seconds.

Among all its stacked and single-sheet jobs, Walsh typically cuts thicknesses up to 1.5" in 6061 aluminum and 2" in steel. And no matter the material thickness, the shop relies on the MAXIEM's Collision Sensing Terrain Follower. The system prevents nozzle damage in the event of the material bowing or warping as parts are cut from it.

The Terrain Follower also allows the shop to load the machine with multiple sheets of material each with different thicknesses. The MAXIEM then easily moves from one sheet to the next while automatically adjusting its Z-axis height accordingly.

UK Distributor:
Aquajet Machining Systems Ltd
Tel: 01244 409199
Email: peter.lucas@omax.com
www.omax.com

Waterjet manufacturer helps take solar car to the next dimension

Waterjet systems manufacturer Jet Edge Inc. recently helped the University of Minnesota Solar Vehicle Project (UMNSVP) by waterjetting several fiberglass composite chassis components for the team's new "Eos" car.

Jet Edge is one of several Minnesota companies helping the student solar car team design and manufacture its two-person Cruiser Class car that was due to compete in the 3-day Formula Sun Grand Prix track race at Circuit of the Americas in Austin, Texas in July and the 3000 km (1877 mile) World Solar Challenge in Australia in October.

The 40-member student-run team has been working on Eos for a year and a half and plans," says team engineer Jacob Herbers. Until its launch, all design improvements have been kept under wraps.

Eos is the UMNSVP's 12th car since the project's inception in 1990. The project has raced numerous times in both the American Solar Challenge and the World Solar Challenge. Over the years, the project's teams have placed either first or second 15 times and have travelled to Canada, Australia, Japan, and Taiwan. The project has given students invaluable real world experience as they are responsible for designing, funding, building, testing, and racing each vehicle. It also has helped advance solar technology by serving as an innovation test bed, and has helped advance electric motor technologies, paving the way for today's successful electric car companies.

"There are hundreds of different parts in the car, including the carbon composite outer shell, the carbon and fiberglass composite chassis panels, aluminum and

steel mechanical components, solar cells, electric motors and controllers, lithium-ion batteries, electrical wiring, etc," explains Jacob Herbers. "Our project would be impossible without the help of local manufacturers, who have helped us with layups, laser-cutting, tube bending, CNC milling and lathing, heat-treating, soldering and waterjet cutting."

He explains that the car's chassis components and other parts are cut from as light of material as possible to help the car achieve faster speeds. The team's previous car topped out at 80 miles per hour.

"The finished weight is estimated to be 500 pounds," he says. "Every added pound of weight on the car would cause us to have to drive slower in the race."

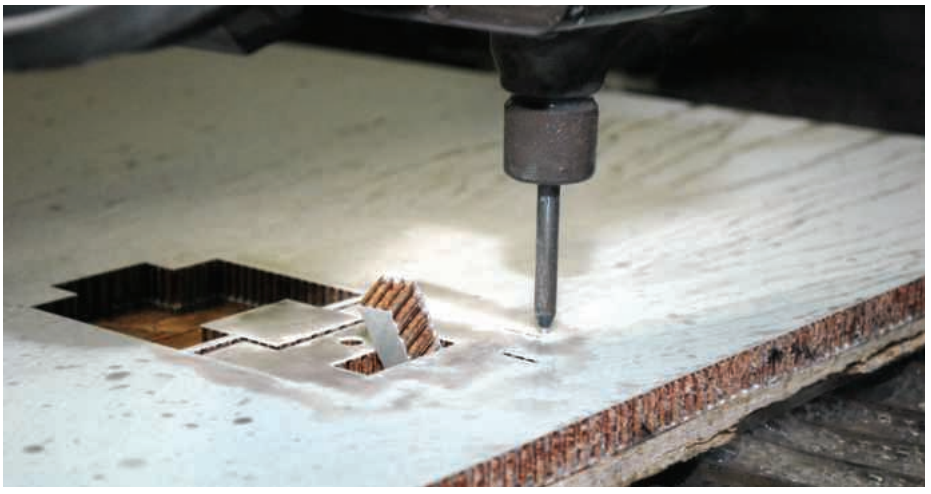
Jet Edge's role in the project was to cut 14 parts from a 0.53" thick composite material that consisted of a layer of fiberglass on either side of 0.5" thick aramid honeycomb core. The waterjet manufacturer cut the parts in its St. Michael test lab, using its latest EDGE X-5® 5-axis waterjet cutting system.

Prior to cutting the parts, Jet Edge's R&D engineer Michael Wheeler and machinist Brian Wallace worked with the team to create DXF files from 3D files supplied by the team. They then used IGEMS waterjet CAD/CAM/nesting software to produce the complicated bevels and to create the CNC programs. While the parts were already nested by the team, Wallace fine-tuned the nesting using IGEMS to save material.

"We cut the parts at 78,000 psi using a 0.010/0.030 orifice/nozzle combination," says Brian Wallace. "We used 0.4 pounds per minute of 80 grit garnet abrasive. We cut the holes at 10 inches per minute and the external shapes at 60 inches per minute and adjusted the speed down appropriately for the bevels cuts. We only had one sheet of material to work with, so we utilised our nesting software to get the most parts out of that sheet. It took about 30 minutes to cut all 14 parts."

"This was first time I've cut a honeycombed composite material with the 5-axis," Wallace said. "It worked perfectly. We probably could have cut the part without abrasive, but we didn't have a lot of material to experiment with, so I decided to use abrasive. The material wasn't hard, but with the honeycomb and the bevels, you're cutting through open areas that interrupt the waterjet, and you are cutting through thicker and thinner material as it bevels."

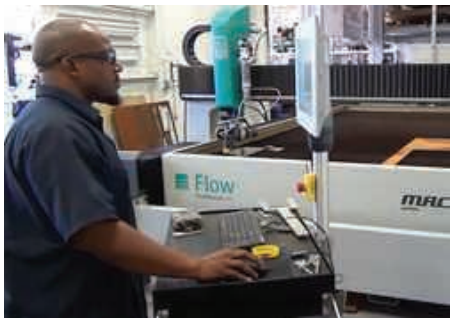
To Jacob Herbers' knowledge, the team has always used waterjet to cut its composite components. "It is very precise and ensures a good fit when we assemble the chassis panels," he says.



Aquablast Ltd
Tel: 01502 714143
Email: sales@aquablast.co.uk
www.aquablast.co.uk
www.jetedge.com

Flow Waterjet and workshops for warriors

Workshops for Warriors assist the transition of veterans and Wounded Warriors into civilian careers. In 2013, Flow provided Workshops for Warriors with a high-speed, high-precision Mach 2 2040c waterjet system with Dynamic Waterjet® taper control, HyPlex Prime® 55,000 psi pump and FlowMaster Intelligent Control software. Veterans complete a three day familiarisation course that covers FlowMaster® Software and operator training. Upon finishing the course, veterans receive a Flow certificate of completion. Currently, there have been over 175 graduates of the Workshops for Warriors program, 80% of which are between the ages of 18 to 34. Average starting pay is $22/hour after graduation.



To see the Mach 2c in action at Workshops for Warriors, watch the video at **www.WorkshopsForWarriors.org**

"We are proud to partner with Flow in the training, certification, and placement of Wounded Warriors and veterans into manufacturing careers," says Hernán Luis y Prado chairman of Workshops for Warriors.

Workshops for Warriors is an accredited educational facility and a 501 (c) three nonprofit organisation that provides compressed training, certification, and placement of Wounded Warriors and Veterans into manufacturing careers, at no cost to them. The company places graduates into careers in CAD/CAM, CNC machining, welding and fabrication careers across America ready to work. This proven vocational training program has a 100 percent placement rate, is scalable and modular, and is being replicated across the United States. Veterans face significant barriers to employment and need high quality training that culminates in portable, stackable, and industry-recognised credentials. With 1,000,000 additional veterans expected to transition out of Active Duty over the next five years, America owes its returning heroes a chance to earn a living wage and serve once again in the civilian workforce.

Flow UK Ltd
Tel: 01455 895300
Email: info-uk@flowcorp.com
www.flowwaterjet.com

Custom-made solutions

WARDJet is a company whose passion lies in creating custom applications to personalise your waterjet to the needs of your business. WARDJet has a reputation for being innovative and creative, not only in waterjet cutting machines, but in automation. The company specialises in integrating multiple processes into one single system, auto-mating your work cell so that you have as many processes in one place as possible. From adding a drill and tap, so you can do light machining on a waterjet, to ink jet printing, material handling and conveyor systems and dozens of other unique features, WARDJet is dedicated to making what others call 'impossible' a reality. WARDJet is a group of highly creative individuals who can scarcely resist a challenge, taking on challenges in various industries. It is the aim of WARDJet to help you constantly innovate, integrate and automate, and hone down processes to the highest of efficiency.

WARDJet is currently developing a brand new oxyfuel combo system to be supplied to a customer in the UK. It is customising a Z-2043 waterjet cutting system with an oxyfuel torch. The torch is integrated directly into a WARDJet waterjet cutting system, so they will work together seamlessly.

If you have a custom need with the aim to automate your work cell and to have as many processes in one place as possible, contact WARDJet UK who will be able to help.

Meanwhile, WardJet has introduced the brand new WARDKit Series of waterjet cutting systems. Never before has a manufacturer offered a top-of-the-line waterjet system that they currently sell in kit form. The WARDKit is virtually identical to the highly accurate Emerald Series of waterjets but costs about 40 percent less. In fact, WARDKit waterjet owners get the same quality, engineering, software, and design of the Emerald Series in an easy-to-assemble kit manufactured entirely in America.

Adding a waterjet to your shop has never been easier, more affordable, or more fun.

View the video at: **www.youtube.com/watch?v=xox9fneHuRY**

WARDJet UK Ltd
Tel: 0114 221 8002
Email: peastburn@wardjet.com
www.wardjet.com

Cutting edge investment

Morgan Advanced Materials has responded to increased customer demand with a further major investment in state-of-the-art production equipment at its Composites & Defence Systems business in Coventry. A six-figure sum has been invested in a new high-specification waterjet cutting machine which is further optimising cutting quality and consistency while also improving throughput.

The Coventry facility is established as a global centre of excellence for composite materials and has specific expertise in the production of armour systems to protect both individuals and vehicles. Accurate cutting is crucial to finished product quality and performance and the water jet cutter accurately recreates CAD designs in a variety of materials from fibre glass and commercial composites to the high-protection materials used in the international defence sector.

Duncan Eldridge, president of Morgan Advanced Materials - Composites & Defence Systems, explains: "Much of our cutting was previously undertaken manually but business growth and increased demand have driven the latest investment to automate and so speed up processing. The new equipment is guaranteeing cutting consistency and quality across a broad range of applications, enabling us to maintain the reputation for quality we have developed over many decades."

Morgan Advanced Materials is a global materials engineering company which designs and manufactures a wide range of high specification products with extraordinary properties, across multiple sectors and geographies.

From an extensive range of advanced materials it produces components, assemblies and systems that deliver significantly enhanced performance for customers' products and processes. The engineered solutions are produced to very high tolerances and many are designed for use in extreme environments.

The company thrives on breakthrough innovation. Its materials scientists and applications engineers work in close collaboration with customers to create outstanding, highly differentiated products that perform more efficiently, more reliably and for longer.

Morgan Advanced Materials has a global presence with over 10,000 employees across 50 countries serving specialist markets in the energy, transport, healthcare, electronics, petrochemical and industrial sectors. It is listed on the London Stock Exchange in the engineering sector.

For more information on Morgan Advanced Materials visit:
www.morganadvancedmaterials.com

Morgan Advanced Materials
Tel: 01299 827000

Waterjet cutting services and more

Three multi-headed waterjet cutting machines are the core of the company's operation at Control Waterjet. They have a cutting area of 4 m by 3 m and a two ton lifting capacity. In short, there is little that it has come across have found that is beyond its ability to cut. With these machines most materials can be cut up to 250 mm thick.

Control Waterjet is one of the longest established subcontract waterjet cutting companies in the UK, yet has maintained its flexible and friendly approach to business. It will turn around your enquiries within one business day, in the form of a written fixed quotation which is price checked to make sure you are getting the best deal. All quotations are free of charge and instant access to your information is available to all staff.

The company operates the latest CAD/CAM software, which guarantees your profiles will be cut accurately whilst utilising your material to its maximum by nesting. It can work from your DXF, DWG, AI, PDF or reproduce your hand drawn sketches.

Excellent ties with material suppliers ensure that you get material at the best price, alternatively, it can work with your free issue material.

Control Waterjet also offers far more than just waterjet cutting. By listening to customers, the team have worked hard to bring together a number of value added services; services which adhere to the same quality and service standards waterjet customers currently enjoy. Customers can save time effort and money by allowing Control Waterjet to handle secondary processes such as polishing, powder coating, aqua-blasting, bending, milling, drilling, tapping, countersink, counterbore, turning, deburring and rumbling.

Control Waterjet has been providing waterjet cutting services for almost three decades now. You don't survive in this industry for that long without understanding your customers' needs: speed, efficiency, accuracy, flexibility, competitive pricing, and delivering on them.

Seeing the difference is simple; just send an email detailing your enquiry, or pick up the phone to discuss your requirements. You'll find the team friendly, knowledgeable and experienced. Your quote will be turned around in under 24 hours and you will find it will also be very competitive on price.

So when you next need some material cut, whether it's glass, grass or anything in between, contact:

Control Waterjet
Tel: 01246 284000
Email: sales@controlwaterjet.co.uk
www.controlwaterjet.co.uk

Behringer Group bares its teeth

Following the successful launch of Behringer's HBE Dynamic series in 2013, this year's "World of Saws" Open House took sawing technology to a whole new level with a raft of new technology and solutions on show. The bi-annual event took place over three days at Behringer's impressive headquarters in Kirchardt, Germany. There were 800-900 visitors expected through the doors, from 31 different countries, representing a 10 percent increase on the 2013 event.

"The Open House is designed to show the world what Behringer can offer, from band sawing to circular sawing as well as steel processing from Vernet-Behringer," says Simon Smith, MD of Behringer UK. "It is the place to launch new products into the market. Behringer is well-known for supplying a range of billet machines and mitre machines in commensurate diameters for straight and mitre cutting as well as circular sawing.

"Materials are generally ferrous and non-ferrous, but new alloys are appearing, due to the growth in aerospace and high-performance engineering. A UK customer came to this year's event to source a new machine as he has new materials to process.

"We have in the region of 1,000 Behringer machines in the UK, with some stockholder customers having between 40 and 50 machines. Our UK Service Centre supports the existing customer network, including spare parts and support. Spare parts will constitute a significant part of our sales this year. Parts ordered from Behringer before 14.00 are generally delivered the next day and our technical support provides them with the knowledge they need when ordering. Efficient after sales support brings in business. We operate an 'open door' policy to numerous saw blade suppliers and regional service providers."

Highlights of this year's "World of Saws" included the new HBE 563A and 663A models. These universal band sawing machines are competitively priced and are aimed at a wide spectrum of markets, including aerospace manufacturers and stockholders. They are designed to cut both hard material and aluminium. One important feature is that, due to the angle of the bow, the swarf falls away from the machine into a trough. The bow is also heavier than competitive machines for greater stability. They are particularly efficient in cutting Inconel, nickel alloys and aluminium at medium speeds.

There are two controls available, the BT35 and the BT65. The market tends to prefer the simpler BT35 as it helps the operator to 'feel' what he is cutting, while the BT 65 is suited to more sophisticated processes with a built-in touchscreen

The new HBE-Dynamic series delivers impressive performance, ease-of-use and economical cutting. The band saw series consists of 6 models in the cutting range from 260 mm to 700 mm, covering an extensive field of applications in the steel trade, machine and tool building and in metalworking businesses.

With the new, standard features, the HBE Dynamic defines a new standard for flexible applications. The saw feed by Servo Drive with Auto-Feed-Control for instance provides precise downfeed movements and thus high cutting performance with low tool costs. The standard cutting pressure control consistently prevents overloading of the saw blade. The double clamping vice provides good, safe clamping in automatic mode and flexibility in single cuts. The optional mechanical stop enables rest pieces to be almost completely sawn, saving costly material - efficiency that certainly pays off.

The Speed-Cutting technology by BEHRINGER has revolutionised the band saw market in terms of cutting performance, blade life and material savings. Using 1.1 mm thin, 67 mm high standard saw blades, a minimum material consumption by the cutting kerf is ensured. Especially when compared to conventional large circular saws, this material saving is considerably significant.

The precise saw feed by Servo Drive with Auto-Feed-Control provides a constant chip load as well as a sensitive regulation based on varying material qualities and wear conditions of the saw blade. Overloading of the blade is thereby consistently avoided.

For economical use, the service life of the tool plays a vital role. Special band guides and a suitable coolant system increase the efficiency significantly. Speed and cost efficiency are no longer in contrast. This is demonstrated very impressively by cutting performance and blade life which were until recently considered unthinkable.

Another highlight was the VA-L 560 NC2 that offers an increased diameter size of 200 mm. Designed specifically for cutting aluminium, the Behringer-Eisele VA-L 560 NC2 sawing system sets new standards. In solid material as well as in pipes and profiles with sophisticated cross-sectional geometry, the powerful machine scores with unparalleled high output.

The VA-L is designed for using carbide tipped circular saw blades with a diameter of 500 mm to 560 mm. With the XL package it is possible to achieve a cutting range of 240 mm round or 340 x 175 mm square material, using a 620 mm diameter blade. In addition to the XL package, an optional layer

clamping device is available, enabling the machine to cut several profiles with each cut utilising the enlarged cutting range perfectly. The robust overall design with the latest drive technology in the feed axis and a very stiff saw blade guiding ensure an optimum, low vibration sawing process with excellent cutting performance, excellent surface quality at maximum availability.

When asked how he saw the future for developments in sawing technology, he pointed out that monitoring of coolant was an important factor: "Customers want to get longer blade life and more out of their machines. Many companies don't even test the condition of their coolant. Some check the concentrate levels and sometimes clean them.

"Behringer has offered a filtration unit for trials to customers as particles on the blade are a real problem. The filtration units were introduced four years ago and, although there is a cost to these units, they reap rewards in the long run," explains Simon Smith.

The Vernet-Behringer HDX Evo saw and drilling/milling line is a highly successful and flexible automated machine. A sawing and drilling line was recently installed at a UK company with an automatic gripper on the outward side. It was purchased as a 15 year investment and is an indication of how the construction market has bounced back from the depths of the recession in 2008.

Simon Smith explains: "Fabricators had to diversify in order to survive. Demand is increasing, but automation is not necessarily commensurate with that growth."

Behringer has now installed a number of these lines into the UK. The 500 mm x-axis feature enables additional machining features that provide additional benefits to the customers. Simon Smith is pleased to announce that further orders of these heavy-duty high-performance lines have been secured with UK customers since the Open House in Germany.

Behringer Ltd
Tel: 01296 668259
Email: simon.smith@behringerltd.co.uk
www.behringerltd.co.uk

A stroll down Mazak alley

The Armstrong Works in Newcastle-upon-Tyne is being resurrected as the new home for the Reece Group, which has big plans for one of the UK's iconic manufacturing sites, with CNC machining at its heart.

When BAE Systems announced it was shutting the Armstrong Works in Newcastle in mid-2012 there was understandable concern that one of the UK's historic manufacturing sites was about to close its doors for the final time.

Three years later a renewed optimism surrounds the site, due to its acquisition by the Reece Group, an ambitious holding company behind five engineering firms that range from pipecoiling and minefield clearance equipment, through to road repair machines and subcontract manufacturing. The Armstrong Works, as it is known locally, is different in two key ways: its history and its sheer scale. The works itself was originally established in 1847 and over the years has made cars, locomotives, aircraft and most recently, the Challenger Tank for the British Army.

Reece Group acquired the site in August 2013 with the intention of moving the majority of its businesses in the North East onto the one site. By this stage the company included the Responsive Group, a highly successful subcontract engineering company located in multiple workshops, which was acquired in November 2012.

Responsive Group was home to more than 40 machine tools, including a large number of Mazak machines, which needed to be moved with minimal impact on production capability. "The plan was basically to move a machine at a time," says Tim Rutter, chief transformation officer at Reece Group.

"Dovetailing the move plan to our production schedules was crucial as it would minimise individual machine downtime."

The move plan revolved around the acquisition of new machines including a SLANT TURN NEXUS. Tim Rutter continues: "We got one of the new Mazaks, the SLANT TURN NEXUS 550M, setup and commissioned in the Armstrong Works before we decommissioned the equivalent machine in Team Valley, which meant we didn't lose any production capacity during the move. We rely on the SLANT TURN NEXUS to do all of our large turning, so it was an obvious one to duplicate."

However, Reece Group didn't stop there. "We also knew we wanted another INTEGREX to complement the e-420 machine at Team Valley, which is a three metre-bed large machine with 600 mm diameter. We've got two smaller INTEGREX machines, j-400s which we've bought to do specific jobs on, they're great machines, really versatile, but are limited in length."

The decision was made therefore to purchase an INTEGREX i-400 which was the first full 5-axis machine. "Like with the SLANT TURN NEXUS we put the new machine in here straight away and got it commissioned, running and working, before we moved the INTEGREX at Team Valley," says Tim Rutter.

The close working relationship with Mazak service engineers has also been vital in delivering the relocation plan. Tim Rutter continues: "There's a lot more to moving a machine tool than just unplugging it and putting it on the back of a truck. Mazak's service engineers have been an enormous help in stripping the machine down into a transportable package, reinstalling the machine, siting it on the floor, re-levelling it, calibrating and getting it back to the original working condition." Crucially, the transformation has been completed with minimal impact on production or financial performance.

In the Armstrong Works, most of the Mazak machines are grouped together into one area. "I call it Mazak alley, because as you walk down the facility you are flanked on both sides by Mazaks," says Tim Rutter.

However, there are more Mazak machines than those just in 'Mazak alley'. "Responsive Engineering has a business unit called Rapid Solutions which is being targeted at the new product development and prototype market," says Tim Rutter. "The customer type is different with shorter lead times and we are using different technology, much more entry-level milling and turning technology such as Mazak Quick Turn Smart 200 and 300M turning centres, a Vertical Centre Smart VCS530A and a larger VTC 300C offering larger capacity pendulum machining capability."

Yamazaki Mazak UK Ltd
Tel: 01905 755755
Email: sales@mazak.co.uk
www.mazakeu.com

Mate introduces Roller Solutions Tooling

Mate Precision Tooling introduces Roller Solutions™ Tooling. This new tooling family allows fabricators to quickly and cost effectively create rib, shear, offset and pincher features in sheet metal. Compared to traditional methods utilising progressive forming tools, Mate Roller Solutions dramatically increases productivity when creating detailed metal forms.

Roller Solutions Tooling is available in the following configurations: Rolling Rib tooling dramatically reduces the time taken to create stiffening ribs in products requiring additional strengthening. Ribs may be created in any contour, and started or ended anywhere on the sheet; Rolling Shear tooling is used for slitting and nibbling operations. It improves these functions by virtually eliminating burrs and reducing scrap. The rolling shear can be used to perform high-speed straight line and contour cutting; Rolling Offset tooling creates offsets and eliminates the need for press break secondary forming operations. This tooling can quickly create straight line and contoured offsets; Rolling Pincher tooling allows parts to be quickly and cleanly separated from surrounding metal without burrs. By utilising precise scoring, this tooling creates parts that easily snap from the sheet with high quality edges.

Designed for thick-turret B-station applications, all four Mate Roller Solutions tooling handle high-speed applications, equal to the programmed table travel speed. The tooling works well on a wide range of materials including stainless steel, mild steel and aluminum. The tooling is another great Mate solution for reducing or eliminating expensive secondary operations.

Mate Precision Tooling was founded in 1962 and was originally located in Minneapolis, Minnesota, quickly becoming a specialist in the design, manufacture and marketing of punch press tooling. In the early years, the company operated only in the local market. It soon became apparent there was a need for a national specialist in punch press tooling. In 1967, Mate filled this void by expanding into the national market using innovative marketing techniques that

today are widely taken for granted: guaranteed delivery dates; standard catalogs and price lists; and a toll-free number. Today, Mate is a leading manufacturer of superior products and solutions for sheet metal fabricators worldwide.

Mate Tooling Solutions Ltd
Tel: 01604 630646
Email: info@matetoolingsolutions.co.uk
www.matetoolingsolutions.co.uk
www.mate.com.

LVD expands its series of electric press brakes

LVD Company nv has expanded its Dyna-Press Series of compact, portable, high-speed electric press brakes with two 24 ton models that offer higher capacity and a longer working length.

Engineered for cost efficient bending

The Dyna-Press series are ideal for cost efficient bending of small parts. Rapid acceleration and deceleration of the electrical servo-driven ram delivers bending speeds up to 25 mm/s. The new models can handle bend lengths up to 1250 mm and have 24 tons of bending force. The coupling of the ram and servomotors is realised through two heavy duty ball screws to distribute force and tonnage evenly across the working length.

Compact design

Compact and portable with a footprint of just 1140 x 1760 mm, the new Dyna-Press models save on valuable floor space and can still be conveniently relocated using a standard forklift.

Two models 24/12

Dyna-Press 24/12 standard models are equipped with two CNC controlled axes (X, R) and additional Z1 and Z2-axes for the Dyna-Press 24/12 Plus model. An extensive range of upper and lower tools are available for and can be used on the Dyna-Press.

The Dyna-Press 24/12 standard model has a 12" touch screen which allows operators to easily adjust individual parameters. The 24/12 Plus model offers TOUCH-B Lite control which enables the operator to create and simulate 2D-designs on a 15" touch screen. Additionally the TOUCH-B controller is compatible with LVD's offline bending CAM software CADMAN-B®.

Nozzle changer available on Electra FL

Following the successful integration of the nozzle changer on its CO_2 laser systems, LVD is extending the option to the Electra, LVD's high-speed fiber laser cutting system. Featuring storage for 10 nozzles, the option brings greater autonomy, reduces piercing times and increases overall throughput on the machine.

Materials and thickness can vary throughout the production day. With the nozzle changer the laser cutting machine will select the right nozzle for every job, requiring no operator intervention. The automatic nozzle changer is available on the Electra FL 2 kW, 3 kW and 4 kW models.

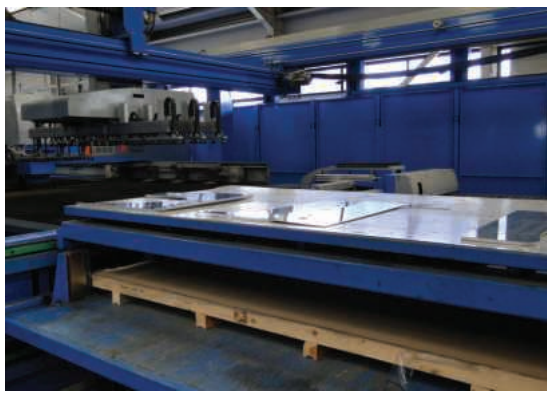
LVD-Pullmax Ltd
Tel: 01295 676800
Email: sales@lvduk.com
www.lvdgroup.com

Prima Power guides Indicators International in the right direction

To enable it to offer high quality aluminium and stainless steel fabrications to its customers at competitive cost, Indicators International invested in a Prima Power LPe6f servo-electric punch/fibre laser combination cell, and a Finn Power E6 servo-electric punching cell.

From its factory in Magherafelt, Northern Ireland, Indicators International produces kits of parts for a major bus manufacturer. These are shipped around the world to the bus company's assembly facilities, enabling it to deliver buses not only in the UK, but as far away as Hong Kong. In addition, Indicators International works with architectural and construction companies producing items such as specialist fascias, petrol station canopies and passenger information systems.

Quality is extremely important as the majority of the panels it produces are visible aesthetic parts, such as the external panels for buses and the architectural features it manufactures. As well as ISO 9001, the company has to comply with the exacting quality standards of its customers, offering full component traceability and instilling a culture of high quality amongst its employees. Tom Diamond, director at Indicators International says: "We process around 600 tonnes of material each year and, to achieve the right quality, we need to consider factors such as ripples in the sheet, material hardness, corrosion and static electricity. We have a lot of experience in this field and the automated handling on the Prima Power machines contributes significantly to maintaining high quality standards on thin materials which are easily marked."



Indicators International uses Prima Power NC Express to programme the LPe6f and, as bus designs are frequently bespoke, it imports bills of material from the company's MRP system, and DXF files from the customer for component geometry. Kits of parts are then nested across a number of sheets of material to optimise material utilisation. Sean O'Loughlin, engineer at Indicators International says: "NC Express is very easy to use and it automatically takes account of the different handling systems on the LPe6f. Parts less than 500 mm square go down the chute onto a conveyor which takes them outside the machine enclosure, while the robot arm picks off larger parts, sorting them into piles, ready for subsequent operations such as folding, assembly and welding." The production queue set up by NC Express is sent to the LPe6f control unit, so the operator can see exactly what is being made. In addition, if there is an urgent change to the production requirements, the queue can be easily edited on the machine enabling the company to respond to last minute requests and, thanks to the flexible manufacturing possible on the machine, without undue disruption.

The servo-electric E6 punching cell replaced a hydraulic punching machine, which costs twice as much to run. The low power consumption of both the E6 and the LPe6f deliver important savings. To gain further energy savings, the company has installed a dedicated compressor to serve the two Prima Power machines, which means that the main factory compressor can be turned off when the machines are working out of hours. The E6 has a Compact Express material store enabling it to run unattended, tagging parts into the sheet. The machine is also ideal for louvered panels as these can be more difficult for robot unloading.

However, where possible, the company is moving more towards laser cutting and punching in one operation on the LPe6f. Tom Diamond says: "Edge quality is very important, and from trials it was clear that the fibre laser gave much better results. One of the roof panels we make has 1000's of 3 mm holes in it. We punch these using a 60 hole cluster tool. The profile is then laser cut and the finished part unloaded using the robot''

Very few parts produced by Indicators International don't go through the Prima Power machines, so reliability and after sales service are very important. Tom Diamond concludes: "The machine reliability is good and we get extremely fast response when parts need replacing. We can rely on Prima Power's technical knowledge and ability and we would not be able to operate without the two machines."

Prima Power UK Ltd
Tel: 0844 4996241
Tel: 02476 645588
Email paul.downs@primapower.com
www.primapower.com

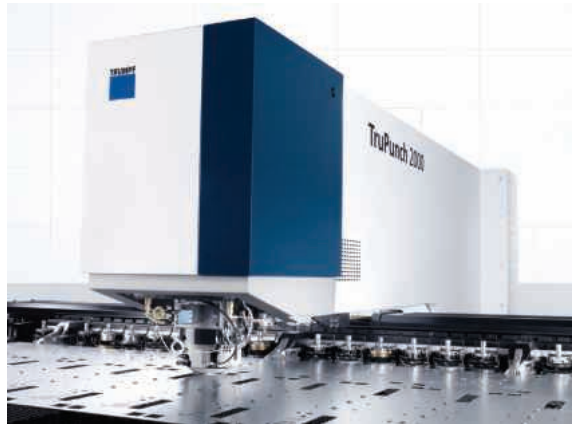
Entry-level punching machine with cost-effective automation

With such high focus on laser production in the modern machine shop, there is a tendency to see punching and profiling as old technology, but this is far from the truth. TRUMPF continually develops this method too because it still has a major contribution to economical sheet metalworking. Indeed, its latest development, the TruPunch 2000, is being demonstrated for the first time in the UK at the TRUMPF Open House.

High axis speeds of up to 108 m/min, short setup times and maximum stroke rate of 900 per minute when punching and 1,600 when marking makes the TruPunch 2000 the most productive and flexible machine in its class. This is a basic and affordable machine based on a time-tested concept for proven parts accuracy.

This new addition to the TruPunch range is designed to make it cost effective for any manufacturer to enter the world of automated production. The combination of high performance and low investment cost means the machine is even economical when operated at low capacity.

The TruPunch 2000 can be supplied as a stand-alone or automated machine or one whose automation is added as opportunities arise. The machine itself has a small footprint and, as automation comes in the form of SheetMaster Compact, the automated version can be comfortably accommodated even when production space is at a premium.



Brush tables with loading and unloading aids ensure careful materials' handling and the large selection of TRUMPF tools available with the machine enables a wide variety of parts to be produced. This is largely thanks to 360° tool rotation and when this ability is combined with TRUMPF MultiTool, the possibilities are significantly increased.

The on-demand drive feature means that the punching head hydraulics always work at an optimum power level. Not only does this limit power consumption but also means that less noise is generated during non-productive times. Additional gains in process reliability and efficient material utilisation are made possible by skeleton-free processing without the need for repositioning and in only one clamping operation.

TRUMPF Ltd
Tel: 0844 482 0188
Email: sales@uk.trumpf.com
www.uk.trumpf.com

New version software for bending production

Three years after the successful launch of AICONs BendingStudio a new version, BendingStudio 2.0, is now available. The new version introduces many new features, which facilitate daily work in bending production.

The main innovation is "data service". If BendingStudio is installed on several workstations, interconnected users benefit from a shared access to the same stored content. Users at the shop floor or in the office can create, call up, or even modify component data and inspection plans. This optimises work processes: The planning process can be physically separated from production, so that operation there is not disturbed or interrupted. That saves time and money.

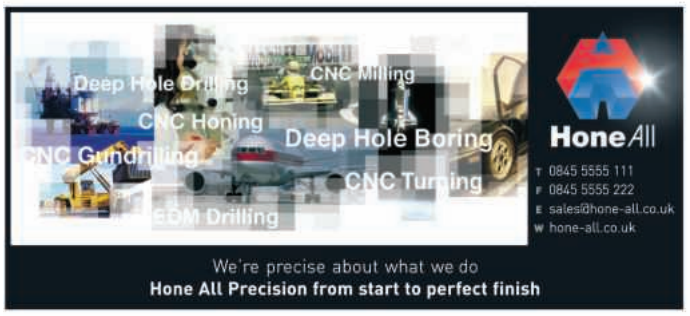
On top of this, data organisation has been completely revised. Content is now arranged in tree structure, i.e. in thematic groups with up to four subfolders, which guarantees a better and clearer survey.

Another new module is "CAD reverse engineering". A component's bending data are automatically derived from CAD, and a bending program is created. Users simply upload their IGES or STEP data into the software, which are then displayed in the program. The bent part can be extracted, and a complete bending program is provided within only a few minutes.

The element "BD Freeform" is a new correction strategy for bend in bend and bends with correctable radii. For this, the user selects a freeform-gauge inspection. The optical measuring system TubeInspect captures tubes with freeform bends within seconds, and the program calculates the corresponding correction data. In 2012, BendingStudio had its world premiere at TUBE in Düsseldorf, Germany. Since then, it has continuously been complemented and optimised. New customers and established TubeInspect customers use the program and appreciate the facilitations in their daily work. BendingStudio connects all data and processes around production of bended parts. From production and process planning to manufacturing and quality control. It is the only tool to meet and combine these requirements with emphasis on metrological processes.

Holders of appropriate licenses and a valid software maintenance contract will receive the new BendingStudio Version 2.0 with the next software update.

AICON 3D Systems GmbH
Tel: 0049 53158 00075
Email: guenter.suilmann@aicon.de
www.aicon3d.com



VERTICAL MACHINING CENTERS

ROMI D SERIES

Capability to perform in multiple industries sectors from toolrooms through to high volume production machining.

ROMI **D 1250**

- Siemens 828D or Fanuc 0i-MD
- Table size: 1,320 x 560 mm
- X/Y/Z axes: 1,270 / 610 / 640 mm
- Spindle speeds: 8,000 / 10,000 rpm
- Number of tools: 30 (standard)
- Max. spindle power: 25 kW

ROMI **D 800**

ROMI **D 1000**

ROMI **D 1500**

WE HAVE THE MACHINE FOR EVERY APPLICATION

ROMI

Romi Machines UK Limited
Leigh Road Swift Valley Industrial Estate
Rugby Warwickshire CV21 1DS
Telephone 01788 544221 **www.romiuk.com**

Official Sponsor

worldskills SãoPaulo2015

Legendary Performance

Dragonskin

...In Milling

Introducing the next generation Milling grades from WNT featuring **Dragonskin** high performance coating technology. Advanced coating structures mean even higher durability, faster cutting speeds and improved process security leading to **increases in tool life of up to 80%** across a wide range of material types. For more information or to receive a free product sample, contact us now.

TOTAL TOOLING = QUALITY x SERVICE ^{2}

WNT

WNT United Kingdom Ltd. • Sheffield Business Park • Sheffield S9 1XU • Tel. 0800 073 2 073 • wnt-uk@wnt.com • www.wnt.com