



ENGINEERING

subcontractor

MAY 2017

Mazak

Technical support and service

Providing unsurpassed support for over 40 years, Mazak-qualified service personnel offer year-round technical advice and assistance for your Mazak CNC metal-cutting machines and laser processing machines.

www.mazakeu.co.uk

It's all about you

Mazak

Your Partner for Innovation

High Precision,
High Versatility

EMCOTURN E25 Compact CNC Lathe Centre

Uncompromising quality right down to the last detail at a very reasonable price. With an extremely solid machine base, a thermosymmetric spindle headstock, high-precision spindle bearings, preloaded roller guideways in all axes, a fast tool turret and your choice of Sinumerik 828D or Fanuc Oi TD – with dialogue programming.

Key benefits and features;

SMALL FOOT PRINT – MAXIMUM OUTPUT

- For bar stock and magazine bar feeding upto Ø 25mm (1") and power chucking upto Ø 85mm
- Pneumatic chucking for delicate and plastic work pieces
- Optional 'C' Axis Driven tooling capability
- The latest cutting edge control technology with Siemens Sinumerik 828D or Fanuc OiT with Shop Turn or Manual Guide
- 12 Position VDI16 Tool Turret 6 driven stations optional
- Compact machine construction with small footprint area
- Required space 1700mm x 1270mm
- Main Spindle Speed range 60 – 6300 rpm
- Power 5.5 kw



EMCO is a major distributor for Industrial & Educational CNC Machines
Call us on 02392 637 100 or visit **www.emco.co.uk**

CONTENTS

SPECIAL REPORT - SANDVIK COROMANT	4
AUTOMOTIVE REPORT	8
METAL CUTTING	14
SPECIAL REPORT - MILLING	20
FEATURE - LUBRICATION	22
CUTTING TOOLS	28
WORKHOLDING	36
FEATURE - MEASUREMENT & INSPECTION	42
CADCAM	56
FEATURE - METAL MARKING	60
SAWING & CUTTING OFF	66
FEATURE - WATERJET MACHINING	70
WELDING	78
CLASSIFIED SECTION	82

NEXT ISSUE JUNE 2017

MOTORSPORT REPORT
5-AXIS MACHINING
CUTTING TOOLS
SAWING & CUTTING OFF
WORKHOLDING

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

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

Editor: John Barber - 01403 266022
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

Engineering Subcontractor is a controlled circulation magazine, available free to selected personnel, at the discretion of the publisher. Please complete and email back the Reader Registration Sheet if you would like to apply for a regular free copy. This material is copyright. No part of this publication may be reproduced without express written permission. Please contact the publisher.

Mazak puts the focus on after-sales support

Yamazaki Mazak's commitment to excellence extends far beyond machine supply and specification, with customers not only receiving state-of-the-art machine tool technology but also the highest level of support throughout the course of the equipment's operational life.

This support begins initially at installation, where a dedicated Mazak technical support expert undertakes key aspects of the process, including checking of power and air connections, machine alignments, positioning of the tool magazine and guarding, along with the testing of all machine and safety functions. But it doesn't stop there.

Mazak's customer service focuses heavily on after-sales support, including training, project engineering, application support, service packages and the relocation of existing machinery. In short, Mazak is dedicated to providing the step-by-step support needed by customers to achieve optimum productivity from their machines.

With nearly 100 dedicated support staff, Mazak has the most comprehensive customer support operation of any machine tool manufacturer in the UK. Mazak's European Technology Centre, which is based at its European Headquarters in Worcester, also plays a key role in supporting the machine specification process. At any one time, it houses around 20 different Mazak machines, from entry-level turning centres through to the largest multitasking centres. Mazak's applications support team can schedule pre-order cutting demonstrations to ensure that the machine specification ideally matches customer requirements.

Alan Mucklow, managing director at Yamazaki Mazak UK & Ireland comments: "Our philosophy is that we don't just sell machine tools, we sell whole life machine support, and as a machine tool manufacturer we recognise how crucial this support is for allowing our customers to realise the full value and capabilities of their machinery."

Proving the impact Mazak's after-sales support has, one customer commented: "The service engineers in particular have been very good. They've come along and educated and trained our guys which means that we can do a lot of the more basic maintenance jobs very quickly on our own. Mazak also helped us from a technical standpoint, taking drawings and turning them into finished components. The level of support has been brilliant."

"The relationship with Mazak has been central to our transformation. We found with Mazak that they didn't just try to sell us machines, they actually looked at the whole business and the sort of work we were doing before making any recommendations. They've worked with us, developing staff and our machining processes, which has enabled us to grow and move into new sectors."



Engineer working on an INTEGREX machine

Yamazaki Mazak UK Ltd Tel: 01905 755755
Email: sales@mazak.co.uk
www.mazakeu.co.uk/customer-support/services



75th year celebration marked by launch of new innovations

At the recent 75th anniversary celebration at the Sandvik Coromant headquarters in Sandviken, Sweden, vice president marketing and communications, Björn Roodzant explained to the gathered press that Sandvik Coromant was "proud of the past but focussed on the future." He enthused about the launch of two revolutionary innovations, the new PrimeTurning™ technology and the new CoroTurn suite of IIoT solutions.

People - passion - technology

These three words sum up the philosophy that has run through the company since it was set up in Sandviken in 1862 by Göran Fredrik Göransson, who believed that the future was to design added value products for customers and to be able to understand their needs. This philosophy was a driving force behind the foundation in 1942 of Sandvik Coromant, when Wilhelm Haglund was assigned the job as manager for a new production unit for cemented carbide tools in Sandviken.



The first indexable inserts for turning were introduced in 1957 along with T-Max tool holders. This was followed in 1969 by heat-resistant coated indexable inserts and in 1971 by a multi-task concept. A major milestone was the launch of Coromant Capto™ in 1990. This was followed by Silent Tools in 2008, Inveio™ coating technology in 2013 and CoroPlus® in 2016.

Today Sandvik Coromant operates in 150 countries with 8,300 employees. The company introduces six new products every day with two new releases in CoroPack and 520 patent families per year. It also claims to invest twice as much in R & D than its competitors. Björn Roodzant explained: "We offer applications rather than just selling tools. Our mantra is quality, reliability and productivity." This focus is even more important with the advent of Industry 4.0 and Sandvik Coromant believes that data via sensors in tools will be a major part of its offering. Online training is also a key area for the company with over 30,000 engineers being trained each year.

Opening up the yellow coat

President of Sandvik Machining Solutions, Klas Forsström described PrimeTurning as a milestone in the company's history. He also explained that Industry 4.0 provides opportunities for companies to narrow the knowledge gap, particularly with the move to stronger, lighter materials and more complex designs, to use more multi-task machines and to introduce more advanced programming for a higher degree of customisation.

He explained that the "virtual yellow coat" represents Sandvik Coromant's commitment to provide 70 percent of answers for customers online: "Innovation is in our DNA," he said. "Sharing of knowledge is vital in order to stay ahead of the competition and make customers more productive."

Industry's first 'all directional turning' solution offers improved machining flexibility, productivity and tool life

Sandvik Coromant has unveiled a revolutionary new turning concept that offers improved machining flexibility and the potential for significant productivity gains.

The company's PrimeTurning™ methodology and supporting tools provide manufacturers, particularly in aerospace and automotive sectors, with the industry's first true 'all directional turning' solution.



Unlike conventional turning operations, which have remained largely unchanged for decades, PrimeTurning allows machine shops to complete longitudinal (forward and back), facing and profiling operations with a single tool. The methodology is based on the tool entering the component at the chuck and removing material as it travels towards the end of the component. This allows for the application of a small entering angle, higher lead angle and the possibility of machining with higher cutting parameters. Furthermore, conventional turning (from part-end to chuck) can be performed using the same tools.

Sandvik Coromant believes that some applications could see productivity increases in excess of 50 percent through the deployment of PrimeTurning rather than conventional techniques. Some of these improvements are due to the small entering angle and higher lead angle, which creates thinner, wider chips that spread the load and heat away from the nose radius. The result is both increased cutting data and extended tool life. In addition, as cutting is performed in the direction moving away from the shoulder, there is no danger of chip jamming (a common and unwanted effect of conventional longitudinal turning). Higher

machine utilisation due to reduced setup time and fewer production stops for tool changes also enhances overall productivity.

PrimeTurning will be particularly beneficial to manufacturing industries such as aerospace and automotive where there is a need to perform external turning operations in big batch productions or where multiple set-ups and tool changes are often required.

"Experienced operators know that a small entering angle allows for increased feed rates," says Håkan Ericksson, global product specialist at Sandvik Coromant. "However, in conventional turning they are restricted to using entering angles of around 90° to reach the shoulder and avoid the long, curved chips that a small entering angle characteristically delivers. PrimeTurning solves these problems by combining a perfect reach at the shoulder and the application of 25-30° entering angles with excellent chip control and maintained tolerances. This innovation presents countless possibilities to perform turning operations in much more efficient and productive ways. It's not just a new tool, but a totally new way of turning."

PrimeTurning is initially supported by the introduction of two dedicated CoroTurn® Prime turning tools and the PrimeTurning code generator, which supplies optimised programming codes and techniques. CoroTurn Prime inserts have three



The new PrimeTurning™ methodology and CoroTurn® Prime A-Type and B-Type tools from Sandvik Coromant enable turning in all directions for the first time

edges/corners: one for longitudinal turning, one for facing and one for profiling, thus delivering efficient edge utilisation and longer tool life.

Two unique and dedicated inserts are offered: CoroTurn Prime A-type features three 35° corners and is designed for light roughing, finishing and profiling, while CoroTurn Prime B-type with its ultra-strong corners is designed specifically for rough machining. Suitable for ISO P (steel), S

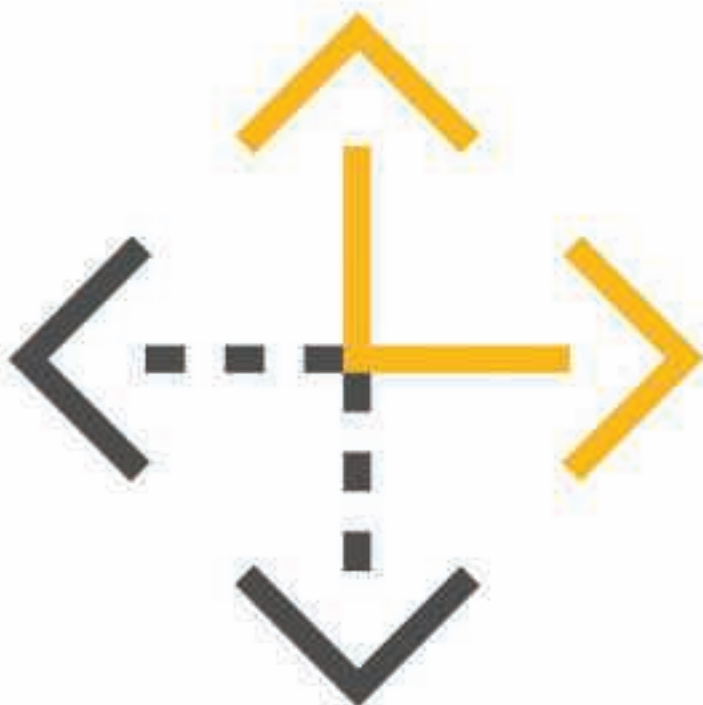
(heat-resistant super alloys and titanium) and M (stainless steel) category materials, nine CoroTurn Prime A-type and six CoroTurn Prime B-type inserts are currently available, with expansion to other materials envisioned for the future. The inserts are supported by 52 variants of tool holder, including Coromant Capto®, CoroTurn QS and shanks.

The PrimeTurning code generator not only ensures maximum output but also process security with suitably adjusted feed rate and entry radius parameters. It creates ISO codes that are compatible with various CNC systems.

Part of global industrial engineering group Sandvik, Sandvik Coromant is at the forefront of manufacturing tools, machining solutions and knowledge that drive industry standards and innovations demanded by the metalworking industry now and into the next industrial era. Educational support, extensive R&D investment and strong customer partnerships ensure the development of machining technologies that change, lead and drive the future of manufacturing. Sandvik Coromant owns over 3,100 patents worldwide, employs over 8,500 staff, and is represented in 150 countries.

Video link: www.youtube.com/watch?v=nCYihCotzHw

www.sandvikcoromant.com/primeturning



CoroPlus helps manufacturing plants access Industry 4.0

Sandvik Coromant also presented its CoroPlus® suite of IIoT solutions as part of the company's contribution to manufacturing in Industry 4.0. The CoroPlus concept is designed specifically to improve the control of productivity and costs through a combination of connected machining and access to manufacturing data and expert knowledge.

The CoroPlus suite consists of tools and software that can send and/or receive data. Using connected technology and machining knowledge from Sandvik Coromant, the suite makes it possible to reduce data waste and improve manufacturing processes in design and planning and in-machining.

With CoroPlus, users not only get access to Sandvik Coromant product and application data through connected software, but with sensor-equipped tools they can adjust, control and monitor machining performance in real time. The CoroPlus concept demonstrates how the machine shop's productivity can be increased via accurate on-site data dashboards, through the cloud and via integration with the user's software and machine environment. CoroPlus connects into existing software environments through open Application Programming Interfaces (APIs), offering two-way connectivity and accurate data.

The main benefit the CoroPlus concept offers is the ability to optimise manufacturing through better understanding and insight into what's



The CoroPlus suite of IIoT connectivity solutions from Sandvik Coromant helps manufacturers prepare for Industry 4.0

happening in the workshop and machining environment. Access to accurate tool and application data inside the existing workflow enables considerable time savings to be made. Also, specific sensor-equipped solutions can be controlled to ensure breakages are avoided and performance is secured, with data intelligence collected live throughout the machining process.



The new Sandvik Coromant suite consists of the CoroPlus ToolGuide which connects directly to a user's CAM or tool management software, the CoroPlus ToolLibrary which enables the user to create virtual tool assemblies from any supplier's ISO 13399 standard tool catalogue, the CoroBore® + remote tool set-up system, the in-cut monitoring solution Silent Tools™ +, the Promos 3+ data collector which monitors tools and processes in real time, and the PrimeTurning™ code generator which creates ISO programming codes that are compatible with various CNC systems.

Video link: www.youtube.com/watch?v=IRQGx2h9pR4

www.coroplus.sandvikcoromant

For more information, contact:

Sandvik Coromant UK

Tel: 0121 504 5400

Email: uk.coromant@sandvik.com



ANOTHER



FROM

HURCO®

TMM10i



An amazing
£16,000
off list price

For a limited time only...
2 machines remaining



Check out our YouTube channel
for a video preview

STARRING

18kW spindle motor
360Nm maximum torque
77mm bar capacity
12 station VDI40 Duplomatic servo turret
Driven tools, all stations

FEATURING

Renishaw tool presetter
Partscatcher
10 inch chuck with hard jaws
Swarf conveyor
Max 4 conversational control

ALWAYS A HAPPY ENDING

12 months warranty and
2 days training included
Service and applications support lines
Extended warranty available
16 engineers, spread countrywide

NOW SHOWING AT OUR HIGH WYCOMBE DEMO CENTRE
CALL 01494 442222 FOR MORE DETAILS

MACHINING CENTRES

TURNING CENTRES

5 AXIS

DOUBLE COLUMN

SUPERIOR CONTROLS



HURCO®
EUROPE

Halifax Road • Cressex Business Park • High Wycombe HP12 3SN
Tel: (01494) 442222 • Fax: (01494) 443350
sales@hurco.co.uk • service@hurco.co.uk • www.hurco.co.uk

MAPAL drills into cost reduction processes at Ford Engine Plant

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

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

As a core tooling supplier to Ford Bridgend, MAPAL has a tooling engineer permanently based at the plant. Discussing his role at BEP, MAPAL UK's Wayne Keepins says: "MAPAL tools now account for upward of 90 percent of all PCD tools on-site, 80 percent of the milling tools and an ever-increasing share of the solid carbide drilling products, which is the result of the



MAPAL Group acquiring the Miller brand of German holemaking products. To become a leading supplier to Ford Bridgend, MAPAL has committed extensive resources to ensure the company benefits from our technical expertise and the evolution of our R&D efforts. This is underpinned by my daily on-site presence to support any cutting tool queries."

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

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

Stepping up to the mark

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

Wayne Keepins says: "To improve efficiency, productivity, tool life and reduce costs, we have to go beyond replacing previous holemaking tools. We have to design completely new concepts. One example is the machining of valve seats on the 1.5 and 1.6 litre engine line. The previous process used three different indexable insert tools to undertake four processes. The operations included machining the throat blend on intake ports, semi-finishing the intake valve seat, piloting the valve guide and then finishing the valve



seat and guide. We developed a new combination tool that would reduce the overall process from three tools to two, which would reduce costs, setup times and enhance productivity."

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

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



Concluding on the installation of hundreds of PCD and solid carbide multi-function and combination tooling lines at Ford Bridgend, Wayne Keepins says: "To establish such a partnership with one of the world's most recognised brands is credit to our dedication to the customer. We are on-site five days a week looking to continuously develop and implement new innovations. In parallel to this, the existing standard and bespoke product lines are supplied with uncompromising service levels. MAPAL has a manufacturing facility in Rugby that services, regrinds, retips and returns used products to the Ford shop-floor in an 'as-new' condition whilst new tools are also manufactured in the UK and delivered directly to the Ford engine plant as and when required."

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

Endless rotation axis for the automotive industry

Morgan Advanced Materials, a global leader in the development and application of advanced material technologies, has launched a flexible rotary distributor to help customers in the automotive industry maximise efficiencies and reduce maintenance costs.

The latest innovation from Morgan's Electrical Carbon business can be used in six axis robots, welding turntables and trunnions. The component allows for cumbersome cables to be replaced by a slip ring transmitter, which also comprises a full 360-degree rotating axis, with an unlimited angle manoeuvrability that eliminates defective drag chains. As a result, the unit can offer continuous rotation. As the system does not have to operate in reverse, this can deliver cost and time savings, while offering customers greater flexibility in terms of programming.

The slip ring can be utilised for continuous rotating transmission across a host of precision applications including welding, handling and gluing. Significantly, the system can operate 24 hours a day, for between five and eight years. Effectively eliminating the need for any costly downtime or recurring maintenance works, it delivers a full return on investment in as little as 12 months.

In contrast, a traditional cable carrier system has an average life-cycle of just 12 months. At any given time, the robot is limited to $\pm 310^\circ$ turns in either direction. A traditional system is also constrained by ongoing maintenance costs as a result of trailing cables and potential subsequent damage to the robot.

The endless rotating robot axis from Morgan's Refoka® product offering provides a comprehensive solution as the system is



capable of housing both data, media and electrical currents, within a single compact interface.

Ingo Carnott, key account manager, automation at Morgan, comments: "In an on-demand environment, product optimisation and performance remain critical components of the global automotive industry. As a value-add partner to the sector, we have therefore invested heavily in developing new problem-solving tools. Critically, these solutions not only enable customers to meet engineering challenges, safely and efficiently, they also deliver wider commercial benefits as a result of their ability to boost overall productivity through improved operational effectiveness."

The advanced technology, which has a high current >200A and 24V power supply, provides a range of flexible programming options which can help streamline data through a fast PROFINET certified Ethernet cable/connection, or for the transmission of video signals and media such as air, cooling water, primer or oil. Crucially, the components are all contained within a single robust housing unit, offering a level of protection in line with IP67.

The technology is also supported by a remote diagnostic facility. Customers can benefit from live data analysis across the whole PROFINET-certified system.

Thanks to the internal shielding and metal housing unit, the system is fully protected, ensuring full functionality in Electromagnetic

compatibility-critical environments, particularly those where welding equipment is used.

Morgan offers a range of standard solutions to meet the varied automation demands of the automotive industry, and can offer custom-made solutions to meet specific customer requirements.

For further information, visit: www.morganelectricalmaterials.com/rotating-axis

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. 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.

Morgan Advanced Materials

Tel: 01299 827000

Email: marketing@morganplc.com

www.morganplc.com



High-quality stainless steel for the automotive industry

Ugitech increases its capacity in quality assurance about 50 percent

Whether brake system, fuel injector or airbag pressure sensor, the principle of zero defects has long been the standard in the automotive industry for steel products for safety-critical components. To meet the rising demand for flawless stainless steel, Ugitech has invested almost €2 m in a new ultrasonic testing unit. This step has allowed the subsidiary of the SCHMOLZ + BICKENBACH Group to increase capacity in quality assurance considerably. Ugitech now tests almost 35,000 tonnes annually of steel rod intended for the automotive industry for internal and surface defects, thereby contributing to the production of high-quality automotive components.



The automotive industry is an important sales market for the French stainless steel producer Ugitech. The new ultrasonic testing unit installed at its Ugine site in France demonstrates the company's commitment to this market. With the new system technology, the steel producer has around 50 percent more capacity in quality assurance for high-quality steel bar.

The non-destructive testing is used for quality control and assurance of steel bar in accordance with the highest technical standards. For steel in which material inclusions or surface defects would constitute functional risks for the use of the component, this type of testing is indispensable. This is also an effective way of ensuring that steel bar with material defects is rejected from further processing. Following machining of the steel bar, the part's thickness in some cases is less than 0.5 mm depending on the specific part. Consistently flawless quality of the bar steel core and surface is essential for reliable component stability.

Ugitech is one of the leading manufacturers of stainless steel long products worldwide. The company's main products include billets, bar stock, wire rod, and drawn wire that the company produces in its own steel mill and in its rolling mills and wire-drawing plants. The stainless steels are known for their excellent mechanical properties. They are used to manufacture a wide range of parts, such as e.g. valves, turbine components, welding wire or surgical instruments.

Ugitech S. A. Tel: 0033 47989 3012

Email: frederique.tissot@ugitech.com www.ugitech.com



TURN MORE THAN JUST
A QUICK PROFIT ON THE NEW
BROTHER MX2-SERIES



With five-axis DD table, turning function and new high speed control the M140X2 multi-tasking machine allows workpieces previously produced on machining centres and turning centres to be integrated onto a single machine.

KEY FEATURES

- New powerful C00 control with built-in PLC
 - X/Y/Z: 200 x 440 x 305mm
 - A-axis 120-30°
 - C-axis 360°
- DD Motor with max speed of 2,000rpm in 0.3 secs
 - 55Nm of torque for turning
- Rapids 50m/min & 0.9 sec tool change
 - 22 tool ATC & BBT spindle
- 16,000rpm spindle or 10k high torque version
- High pressure CTS & swarf management system

See the MX2 in action via :

WWW.WMTCNC.COM

WDS quick release pins specified for automotive production line

The European new car market is currently in a period of unprecedented growth. Just last year, released figures showed a rise of 11.2 percent in August. To keep up with demand, manufacturers are making regular improvements to their production lines. The autosport division for one German car manufacturer turned to machine tool specialist KMT Ltd to develop tooling for producing exhaust mufflers. KMT used WDS Component Parts Ltd. quick release pins to affect fast swap over of jig assemblies.

Single-Minute Exchange of Dies (SMED) is one of the buzzwords that will be familiar to anyone who works within a Lean manufacturing environment. Put simply, it refers to the practice of simplifying and speeding up the process of equipment change overs on the production line. With many manufacturers now using a single production line to produce multiple components, SMED is used to maximise the efficiency of changing from one assembly jig to another.

The key to a fast changeover lies in specifying reliable yet simple fixturing components. Overly complicated fixturing will slow down the process and reduce productivity, while un-reliable components may allow the jig to slip, which will result in wastage. KMT is a leading manufacturer of precision machine tools and is all too aware of the challenges presented. When it was asked to design a machine tool for manufacturing exhaust mufflers on high-performance, executive cars it approached WDS for a fixturing solution.

Adrian Degg, technical director at KMT,

says: "An exhaust muffler is a far more precise piece of engineering than many people realise. It's largely responsible for the back pressure, which can affect the car's performance, efficiency and reliability. It also has a role in creating the car's exhaust note, which is an important part of the driving experience with performance cars.

"Part of the design brief for the project was that it must be able to quickly accommodate different assembly jigs so that mufflers for different cars could be produced from the same line. We decided to use WDS fixturing components because of the reputation the company has for product quality. I called the sales office to explain what was needed and was directed towards the quick release pins."

The quick release pins feature an ergonomic, cast aluminium T-handle with a release button integrated into its head to guard against accidental release. The body is constructed from 17-4 ph grade stainless steel for long lasting, robust reliability. When the jig is moved into position the pins are simply dropped into place without the need for any additional tooling. A hole and ring is included on the handle for easy attachment to a lanyard, preventing the component from becoming lost during changeover.

Adrian Degg says: "It's a simple solution to the application which negates the need for spanners or screw drivers while guaranteeing the accuracy of the positioning without the risk of the pin coming loose during operation due to vibrations or knocks.

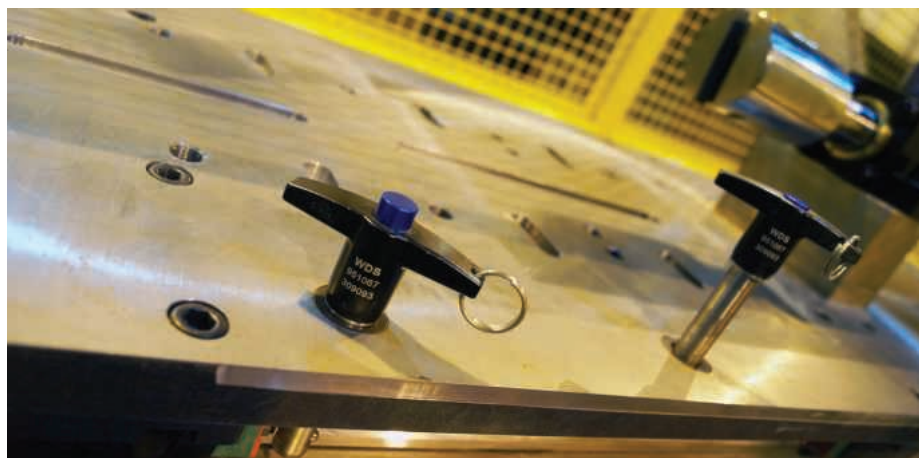


"Of course, it's the customer service that's just as important in this case. Having helped me to source the component I needed, the sales person was able to process the order and secure next day delivery. Unlike most component suppliers, there wasn't a small order surcharge which meant I was able to order the precise quantity I needed there and then, safe in the knowledge that should I require more I could order them and have them in my hand 24 hours later."

No engineer can be expected to have the required expertise and knowledge to source and specify each individual component when designing a new machine. Machine tools, process equipment, handling equipment etc. are all becoming ever more complex and specialised, and each design requires hundreds of small components that literally hold the equipment together.

This is why it's important to find a supplier that is able to offer technical support in addition to a wide range of standard components. Free 3D CAD downloads should be available for all catalogue parts as well as a customisation service that allows customers to fit the component to their design, rather than modifying their design to fit the component.

WDS Component Parts Ltd
Tel: 0113 2909852
Email: sgray@wdsLtd.co.uk
www.wdsLtd.co.uk



Asquith demonstrates mould tool expertise with Audi installations

As part of the globally renowned VW Group, Audi is undoubtedly a jewel in the German crown of automotive ingenuity. So, when Catalonia-based Audi Tooling Barcelona (ATB) wanted to ramp up its machining capability at its new 'Toolmaking Tryout Centre', the prestigious automotive brand opted for a ZAYER NEOS 6000, which is available in the UK from Asquith Butler.

Based in Martorell, Spain, the ATB facility manufactures, trials and tests tooling for automotive body parts prior to the tools being shipped to production facilities around the world. Employing over 150 employees, ATB trials its tools with three 2,500 ton hydraulic tryout presses, a ZAYER TEBAS 6000 and now the NEOS 6000, which can process components up to 5 m.

The new high speed gantry milling machine has been installed to support the previously supplied ZAYER TEBAS 6000 model that was supplied in 2015. The initial TEBAS model has more than fulfilled expectations for the demanding German car manufacturer, this has seen the second machine, the NEOS 6000 installed at ATB. The overwhelming success in Barcelona has

noted other ZAYER machines being procured throughout the Volkswagen Group. This includes a ZAYER NEOS 4000 machine installation at Volkswagen Mexico and a ZAYER TEBAS 6000 in Volkswagen Brazil.

The impressive ZAYER machines have foundations made from polymer concrete that are spring mounted. This prevents vibration in the vicinity and enhances the surface finishes on the mould tools that are manufactured. With a maximum operating speed of 24,000 revolutions per minute, the latest NEOS 6000 machine processes the press tools extremely dynamically and precisely. Audi Toolmaking places great importance on the efficiency of the equipment it uses and the company is delighted with the acquisitions from ZAYER.

The NEOS 6000 has a table area of 5.5 m by 4 m with an axis travel of 6 m by 4.5 m by 1.5 m in the X, Y and Z axes. Processing parts in this exceptionally large work envelope is conducted with astounding



speed and precision, demonstrated by a rapid feed rate of 50 m/min and a working feed of 20 m/min. As well as astonishing speed, the NEOS 6000 is extremely powerful with a 43 kW spindle motor that demonstrates incredible operational speed via the Heidenhain TNC 640 CNC control unit with HR 550 FS wireless handwheel.

Asquith Butler Ltd
Tel: 01484 726620
Email: phinchcliffe@asquithbutler.com
www.asquithbutler.com

Mollart re-engineers automotive sector crankshaft drilling

Process re-engineering carried out by Mollart Engineering at an automotive plant in the UK has extended tool life by over 40 percent when drilling oil feed holes on forged steel crankshafts, while saving production times by increasing drill feed rates from 180 to 500 mm/min.

Installed following extensive production trials and product process approval, the improvement in gundrilling was based on the latest Botek Typ 113-HP gundrill development producing 5.3 mm holes by 100 mm deep in the pins of crankshafts. As part of the supply contract, negotiated by Mollart's tooling director Chris Barker, is the on-going provision of a re-grinding and coating service for tools that are used under around-the-clock production conditions.

Chris Barker says: "The change in gundrilling technology has generated massive savings plus the added security and predictability in the process with known tool life and spindle up time. We are now working with the company's engineers to extend the use of HP drills elsewhere."

The Typ 113-HP drill has a special nose

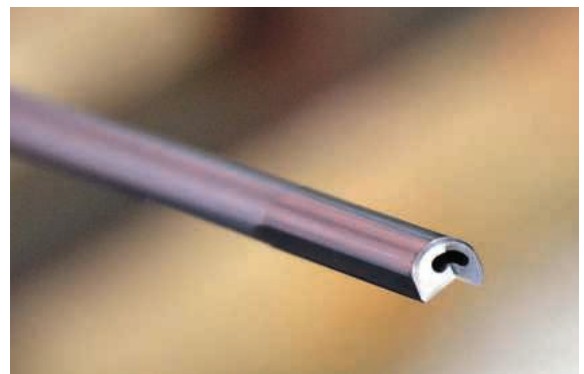
grind with highly polished flutes and a kidney-shaped coolant channel to ensure maximum evacuation of chips from the cutting zone. The drill series is suitable for use over a wide range of materials from aluminum to high strength steels.

The two-spindle special purpose gundrill machine is being run at 4,200 revs/min and neat oil passes through the drill at 70 bar pressure.

The Mollart Engineering group of companies is a precision mechanical engineering business with an international reputation in the pioneering development and building of deep hole drilling machine tools, tooling, including gundrills, deep hole boring and bore finishing.

It also has a high level of expertise as a subcontract machinist and fabricator based on adding value to deep hole processing and general machining.

Mollart has its headquarters, design and



manufacturing operations in Chessington, Surrey plus a modern production facility in Resolven, South Wales. On both sites, multi-axis machining is carried out on complex, often high value components, along with part fabrication and the ability to assemble components in the ISO 7 cleanroom facility.

Mollart Ltd
Tel: 0208 391 2282
Email: mark.dore@mollart.co.uk
www.mollart.com

Star user reaches production milestone with zero downtime

When Willstar Precision Engineering bought its first sliding head lathe just over three years ago, the company thoroughly reviewed the marketplace and it was the reputation for service and reliability that led the Birmingham subcontractor to buy from Star GB. Three years later and the company has produced over 1 million parts on the machine without a single call-out.

Previously running fixed head turning centres and machining centres, the family run business found itself machining large batch runs of small turned parts that were better suited to sliding head technology. Upon doing its due diligence, Willstar Precision Engineering spoke with numerous subcontractors that were running machine tools from Star GB and also its competitors.

Tony Starkey, managing director of Willstar Precision Engineering, says: "We spoke with a lot of subcontractors regarding Star GB and competitor machines. After all, a new machine tool is a large investment and we wanted to guarantee we were making the right decision for our business. The feedback from Star GB users was consistent. The machines have a reputation for being very reliable, well built, highly productive and supported by exceptional service. Unfortunately the feedback regarding some competitor machines wasn't so generous.

"We bought a Star SR-20J, and the machine has never given us a day of trouble. In fact, we've just produced our 1 millionth part without a single engineer call out or unscheduled downtime. I guess everything the other Star GB customers said about reliability and service was spot on."

The 7-axis Star SR-20J was primarily bought to free capacity from the company's fixed head turning centres, provide a more suitable platform for machining parts in the 8 mm diameter range and give the Birmingham business the ability to run lights-out machining.

The results have proven staggering. Tony Starkey explains: "The previous fixed head CNC lathes didn't have sub-spindle facility, so we had to undertake second operation machining. Additionally, our two fixed head turning centres couldn't be run unmanned. By giving us one-hit machining through front and sub-spindle machining, the Star SR-20J



drastically improved productivity and eliminated second-ops. This also gave us the facility for lights-out machining.

Furthermore, the kinematics of the Star SR-20J and the close positioning of cutting tools to the workpiece significantly reduced cycle times. We can now do at least 5 times more work on the Star sliding head lathe than on our fixed head machines. We used to produce 500 parts a day on the fixed head machines and now we can turn out over 3,000 parts a day on the Star SR-20J.

As an example, we used to produce an aluminium barrel nut on a fixed head machine and this required cross drilling and tapping, end face slotting as well as comprehensive turning operations. On the fixed head machine the total cycle time was two minutes 10 seconds, which included three second operations. This is now produced on the Star SR-20J in just 37 seconds with no second operations. This staggering cycle time reduction is emphasised by the fact that this part is machined in batches of 2,500. Using lights-out machining on the Star, this batch is now finished in 24 hours."

The subcontractor manufactures engine and manifold mounting fixtures and bolts for the automotive aftermarket sector as well as

washroom and sanitation equipment that varies from hinges, pins, cubicle legs and much more. Producing these components from stainless steel, mild steel and brass gives the company greater confidence in running its Star machine around the clock. The machine has run for upwards of 16 hours a day, five days a week plus frequent weekend working for over three years and the Star GB engineers still haven't received a call for breakdowns or unscheduled maintenance.

Success brings second Star

The ability of Willstar Precision Engineering to reduce lead times and improve its throughput with the Star SR-20J has now seen the company take delivery of its second Star GB sliding head turning centre, a Star SR-32J. Tony Starkey concludes: "Our 20 mm machine was reaching capacity and reliability, performance and productivity of the Star machines. As for the service and support, it's been exceptional. When we need it, it's there."

Star Micronics GB
Tel: 01332 864455
Email sales@stargb.com
www.stargb.com

DON'T LET YOUR INVESTMENT GO UP IN FLAMES!



 **kraft & bauer uk**

AUTOMATIC FIRE SUPPRESSANT SYSTEMS (WILL FIT TO ANY MACHINE)

Kraft & Bauer UK. Units 1 & 17 Steeple House, Percy Street, Coventry, West Midlands. CV1 3BY
02476 22 94 77 www.kraftandbauer.co.uk sales@kraftandbauer.co.uk

XYZ successfully launches new 5-axis machine

UMC-5X The Challenger makes a big impression

The addition of a full simultaneous 5-axis, gantry-style machine with a trunnion table machining centre to its range is another example of how XYZ Machine Tools is not only expanding its selection of machines but also continuing to deliver exceptional functionality and performance at a very competitive price point for its customers. The UMC-5X provides high specification, with features expected of machines costing considerably more.

XYZ managing director Nigel Atherton says: "We took our time in sourcing the UMC-5X in order to be confident that we had the right solution to 5-axis machining to meet the needs of a wide variety of customers, from those just starting out in the 5-axis arena, to those already well-versed in this technology. The machine is a perfect fit with our existing range in that it combines excellent value for money with extremely high specifications, which we know will make it attractive to XYZ customers."

Performance and price are the key advantages of the UMC-5X and specific features back this up, from the outstanding performance of the B and C axes through to the innovative control features presented by the Siemens 840DSL Shopmill control (Heidenhain iTNC 640 HSCI option). The careful consideration of features and benefits has resulted in a machine that delivers for a wide range of users from the aerospace, medical, automotive, mould & die and general engineering sectors.

A key feature of the UMC-5X is that, due to the table configuration and machine design, when the table is tilted 90° towards the rear (component facing forward), there remains 500 mm of Y axis travel forward of the table surface. This is much greater than many competitors' machines, including those that quote the same axis travels as the UMC-5X, allowing larger workpieces to be machined.

The Challenger continues XYZ Machine Tools' success in delivering machines that combine high performance with a competitive price point, allowing more companies to enter the growing 5-axis machining market.

Nigel Atherton says: "Six years ago, we had our best year ever and when I say best year ever I mean profit. We were busy, busy sending machines out of the door, but we



were not busy, busy with orders coming in. We have just had an absolutely scorching March, which means April's sales will be good. Based on how well it's going so far, it could even be our best year ever. 'We are selling good value machine tools. In this new machine we have a really super animal.

"We have seen our VMC business go down a little in the last twelve months, so we reacted by introducing the LR range. I don't see why we cannot sell 100 of these a year. We are also now on the approved supplier list of a number of well-known blue chip companies, which makes it a lot easier for them to buy from us.

"In a nutshell, we have products that are still selling and we are slowly creeping along in technology. The important thing for customers to know is that whether you are a Rolls-Royce or a Fred in the shed we will treat you exactly the same."

XYZ believes that the time is right for its typical customer to have the opportunity of purchasing a vertical machining centre with multi face machining and 5-axis simultaneous capability.

The company also wants to offer existing users of this type of product an opportunity

to purchase a machine that offers accuracy, precision and cost-effective machining.

Mike Corbett, applications manager at XYZ, explains: "We do feel that we have some features on our machine that will push or challenge others in the market.

"There are two possible market places for us with this product. We have got people that may already have an existing 3-axis machine or maybe a machine with a 4th axis on who need to improve their productivity and so a multi-faced machining capability is better for them. Then there are those who are moving and venturing into making aerospace parts where they do require full, simultaneous 5-axis capability. So, there are two areas where we as a company can benefit from bringing this particular product to market.

"Most companies want to be efficient and to reduce costs within their business. They should be looking at how they can make their cost-per-part less. They want to attract work which gives them maximum profit and it's the profit that counts. People want to keep the machines busy and they want to keep them running, hopefully 24/7 every day of every week. You need to employ

people on the shop floor for this to happen and that is of course good for the economy. With this machine, we believe that we can help companies achieve all of those aims."

There are numerous key features and benefits of an XYZ UMC-5X machine. The Gantry-type design adds greater rigidity and performance with a solid cast base and column developed using finite element analysis. C-axis rotation via direct drive with low maintenance, high torque motor provides 90 revs/min whilst $\pm 12^\circ$ on the tilting A-axis, gives 2.5 sec for full movement. Front loading offers ease of access and the machine has high accuracy Heidenhain LC183 linear scales on the X, Y and Z axes. Further key benefits include 36 m/min feedrates in X, Y and Z axes. 600 mm axis travel in X and Y (500 mm in Z) and a 600 mm diameter table. Traori/Kinematic functions during 5-axis simultaneous machining offer improved accuracy, with the option of 24, 32, 48 or 60 position side-mounted toolchanger.

The new machine also features high precision rotary scales on rotating B and C axes and In-line direct drive, 35 kW, 12,000/15,000 revs/min spindle (with optional 25 kW, 18,000/24,000 revs/min

motorised spindle). Each machine comes fitted with a Siemens 840 DSL ShopMill control system with the iTNC 640 HSCI from Heidenhain also an option. Built-in thermal growth compensation for improved accuracy and repeatability is also a key feature and Integrated patented Smart Machining Technology provides improved productivity. Each machine weights 2,400 kg, 3,500 kg and 4,600 kg.

Nigel Atherton concludes: "In its price

bracket, this is at the forefront of 5-axis machining."

XYZ Machine Tools

Tel: 01823 674200

Email: nigel.atherton@xyzmachinetools.com

www.xyzmachinetools.com



FANUC

100% Genuine - FANUC Service

If the most reliable controls in the world require support contact the manufacturer direct. We offer you:

- Exclusively FANUC original spare parts
- Support for all FANUC controls fitted to any machine tool
- Experienced engineers factory trained at FANUC Japan
- Competitive maintenance contracts
- System data backup to reduce downtime.

For all enquiries call: **024 7605 3001**
service@fanuc.co.uk



WWW.FANUC.EU

Turning and milling centres for complex chucked parts

The machines in the VMC MT series from EMAG are ideal production systems for chucked parts with complex geometries. Whether they are used for prototype production or for fast changes in small production runs, the VMC MT series is ideally designed to meet the demands of flexible production situations thanks to the ergonomic accessibility of the machining area and the bottom-mounted workpiece spindle.

Offering several equipment options for the customer to choose from, the basic design of the VMC 300 MT, VMC 450 MT or VMC 600 MT remains the same. The machine base is made of Mineralit® polymer concrete featuring particularly good damping properties. The turning and milling spindle is mounted on a compound slide with X- and Z-axes to produce excellent, fast machining results. The workpiece itself is clamped on one of the three bottom-mounted spindles available, 49, 83, or 103 kW, each tailored to the machining job to suit the customer's demands. Thanks to the designed accessibility to their machining area, workpieces can be easily loaded by hand, using a crane, or, alternatively, they can be connected to robots or gantry loaders using an NC-controlled loading hatch on the side. This maintains excellent access to the workpiece and clamping chuck.

Focusing on universal use

Universality is the main feature of the VMC MT series, which can be configured to suit



almost any customer demand. For example, not only is the whole range of turning, drilling and milling technologies available, but the turning and milling spindle is also available in two versions, with a rating of either 26.4 kW or 43 kW. However, the use of a tool magazine allows the most complex geometries to be achieved with a wide variety of parts, making the VMC MT machine a genuine wonder of productivity.

Various magazines with up to 80 tool positions can be selected. The wide choice of tools is also a striking feature when it comes to retooling times and the overall equipment effectiveness (OEE) can be increased by up to 30 percent as a result.

Only the clamping method must be tailored to the workpiece, the tool buffer is fitted with an adequate number of tools at all times. The operating condition of each tool is ensured by a laser measuring bridge outside the machining area that checks the wear, the diameter of the tools and the tip distance to base of turning tools to ensure that the machine produces a perfect production result every time. An interchangeable radio probe can be used for quality management purposes and to check the workpiece quality.



Ergonomics right down to the very last detail

The VMC MT series is not just convincing in terms of its machining quality. EMAG's decades of experience with vertical turning machines also comes to the fore in the excellent ergonomics of the machines. Both the machining area and all maintenance components are easy to access, demonstrating that the design of the machine was centered on small production runs with a wide range of workpieces and on prototype production. Machine operators can take advantage of the tailored working conditions, which also help to make the machine so productive.



With the VMC MT series, EMAG offers a new machine system for chucked parts suited to the production even of the most complex workpieces in many different manufacturing scenarios thanks to its flexibility. Whether components for the aircraft industry, trucks, construction or agricultural machinery, the universal nature of VMC MT Series makes it relevant for almost every sector. The machines are an all-around solution for chucked parts, above all for frequently changing component families that take advantage of their highly flexible adaptability.

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



Simultaneous three tool cutting in a single cycle

Turn-milling cycles using up to three tools simultaneously enables the Miyano BNE-51MSY to machine both ends of a workpiece created from 51 mm bar in a single cycle.

The fixed head main spindle and 2-axis secondary spindle Miyano BNE-51MSY also has the advantage of synchronised and superimposed control which is applied to both 12-station all-driven turrets, one with 3-axes of travel, the other with 2-axes available. Not only does this configuration effectively reduce cycle times, but it also increases the levels of flexibility to maximise utilisation of tooling and its performance when setting single operational sequences.

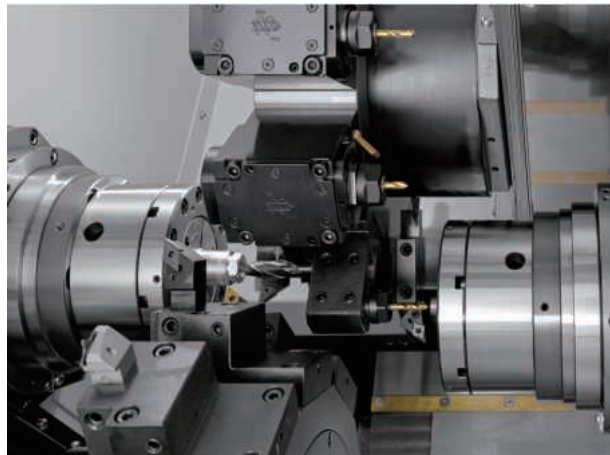
The eight tonne Miyano BNE-51MSY fixed head turn-mill centre has been developed to maximise heavy cutting cycles and the potential for creating a fine machined finish while providing a basis for extended tool life especially on difficult to machine materials. This is achieved through the benefit of a single heavy slant bed casting with high precision hand scraped square guideways.

The fixed main spindle is 15 kW and the

2-axis secondary spindle is powered by a 7.5 kW drive with 150 mm stroke in X3, and 450 mm stroke in Z3. Both spindle arrangements have a 51 mm capacity and deliver up to 5,000 revs/min.

The ability to carry multiple tools in both highly rigid and hydraulically clamped, large curvic coupling 12-station all-driven turrets enable simultaneous service to either or both spindles which considerably increases operational flexibility. Overlapped tooling applications further reduce non-cutting time. Indeed, both 12-station turrets have ample torque to each position to maximise milling performance for instance, and the 2.2 KW drives have 6,000 revs/min available while developing up to 25 Nm of torque.

The configuration of turret axes enables the upper turret HD1 to provide X1, Z1 and Y1 travels of 190 mm, 380 mm and



Miyano BNE-51MSY can perform three tool simultaneous cutting

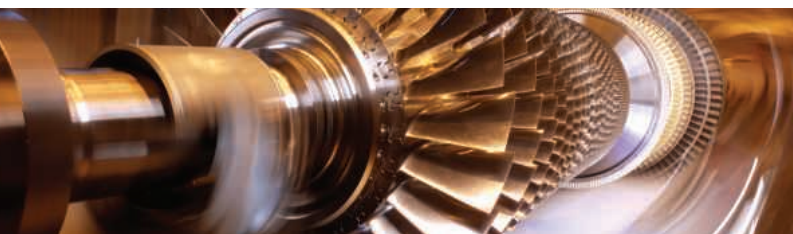
+/- 40 mm while the lower turret HD2, has X2 travels of 190 mm and Z2 of 175 mm.

Citizen Machinery UK Ltd

Tel: 01923 691500

Email: dwilkins@citizenmachinery.co.uk

www.citizenmachinery.co.uk



www.leadercnc.co.uk • sales@leadercnc.co.uk • 024 7635 3874



HIGH PRODUCTION SMALL PART MACHINING

Quality Craftsmanship – Made in Japan
Small Footprint but Big on Cutting Power!

Only Kitamura offers solid construction with craftsmanship in hand scraping in a space saving compact HMC design. These HMC's offer increased productivity with ultra-high speeds, unmatched accuracy and rigid, precise cutting power.

Compact • Lowest Cost • Highest Specification

Positioning Accuracy $\pm 0.002\text{mm}$ • Repeatability $\pm 0.001\text{mm}$

SIMPLIFY THE COMPLICATED

MYCENTER® HX250iG

**10x faster direct
drive 4th axis
(300rpm)**

**50% faster tool
change (0.9sec)**

**5x faster processing
speeds (67 million
pulse encoder)**

**World's fastest
rapid rates
(60m/min)**

**Touch screen
display Arumatik-Mi
control**

**Optional 10 station
APC and 102 tool field
upgrades available**

**15,000rpm and
optional 30,000rpm
spindles available**

The path to successful milling

By Torbjörn Wikblom, product management milling tools, Sandvik Coromant

In business today, machine shops are constantly looking for ways to maximise profit. How tooling is utilised has a dramatic effect on overall production costs and output. Using the right tools and cutting strategies allows manufacturers to run machines in the most productive way, resulting in reduced component costs and production time. Sandvik Coromant examines five key milling considerations that are designed to help maximise productivity and profitability: entering angle; pitch; cutter position; cutter engagement and roll-in technique.

There are many things that need to be considered to ensure efficiency in milling operations, such as using the right milling tool, with the correct diameter and appropriate number of teeth. Further factors include deploying the right speed and feed, at the correct axial and radial depth of cut. However, there are many more important considerations to ensure tools are applied in the most efficient manner, many of which are often overlooked. For instance, the entering angle and pitch can have a very influential effect on cutter performance, as can tool positioning, cutter engagement and how to approach a workpiece.

Entering angle

To highlight the effect of different entering angles, a 90° cutter can easily be used as a face mill, and often is simply because it's available, but it won't be as productive or cost-effective as using a 45° cutter. Face milling a component with a 90° cutter instead of a 45° cutter will result in a 30 percent reduction in productivity, and productivity directly influences profitability.

Ultimately, the lead and entering angle affect the metal removal rates and tool life. Furthermore, as the entering angle decreases, so does chip thickness, and due to this there exists the opportunity to increase feed rate in compensation. A growing number of machine shops today use small cutting depths and high-feed rates as a way to boost productivity, typically using cutters with a very small entering angle, such as 10° or using a round insert concept able to provide a chip thinning effect. The feed can be increased because the chip is being thinned out by a factor of almost six times, compared to a 45° face milling cutter. Where this strategy lacks depth of cut, it can be more than compensated in feed rate.

High-feed cutters with 10° entering angle mean that extreme table feeds can also be deployed due to thin chip formation. In addition, high axial cutting forces serve to stabilise the spindle and limit vibration tendencies, making these cutters favourable for long tool assemblies and/or unstable setups.

For 45° cutters, these are the general first choice for face milling as they offer well balanced radial and axial cutting forces, along with smooth entry into cut. They have a low vibration tendency and are suitable for short-chipping materials, such as grey cast iron, which easily frills if excessive radial forces act on the gradually-reducing amount of material left at the end of a cut.

With regard to 90° cutters, the main application is square shoulder milling. Here, mostly radial forces are generated in the direction of feed, which makes them good for milling parts where vibration could be an

issue. What's more, the surface is not exposed to high axial pressure, which is advantageous when milling weak structures or thin walls. Important to note is that there is no chip thinning effect with 90° cutters. The programmed feed rate per tooth is equal to the actual chip thickness.

So, what of round inserts? Well, these are ideal for efficient heavy roughing and general purpose milling.

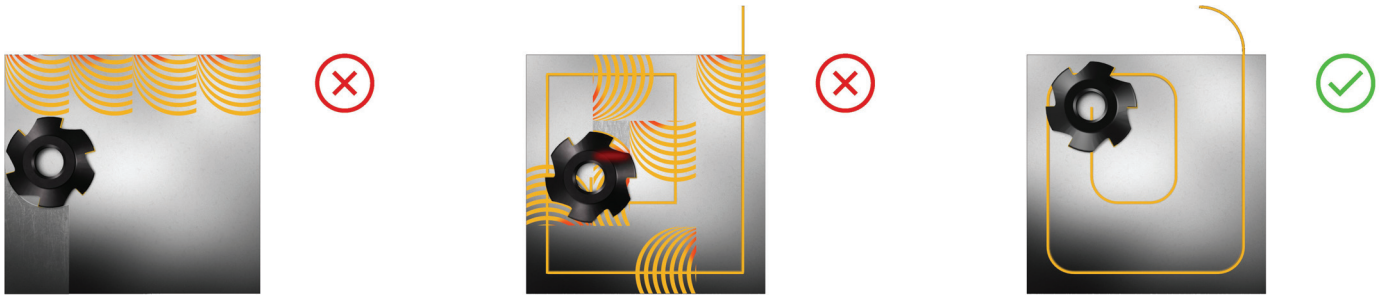
Round inserts are a particularly good choice for machining titanium and HRSA's, although not best when trying to obtain high quality surface finish. This is because the entering angle changes from 0 up to 90°, altering the cutting force direction along the edge radius and, consequently, the pressure. Round inserts are unique in that chip thickness changes based on cutting depth. Chips thin-out as depth decreases. So, at smaller cutting depths, the feed rate must be increased to ensure proper chip thickness and greater productivity.

Pitch

By increasing the number of cutting edges, the table feed can be increased, while retaining the same cutting speed and feed per tooth without generating any more heat at the cutting edge. However, tighter spacing means less chip evacuation space. Also, a drawback of increasing the number of inserts in a cutter is that it could affect the vibration tendency negatively, if the setup is not rigid enough. Different cutter pitches are available to help optimise the application, and choosing the right one is important as it can affect productivity, stability and power consumption.



Heat and vibration can be reduced by positioning the cutter so that 70 percent of the cutter diameter is engaged



Rolling clockwise with continuous engagement into the cut keeps the chip thin on exit and reduces vibration, thereby improving tool life

Typically, three pitches are offered: coarse, close and extra close. Coarse pitch cutters feature a low number of inserts. They are first choice for unstable operations due to the low cutting forces they impart. Full slotting operations and long chipping ISO N materials both benefit from the application of coarse pitch cutters.

Close pitch cutters offer a moderate number of inserts which can be either evenly or differentially spaced. They are the number one choice for general purpose roughing in stable conditions. Further attributes include good productivity and chip space for roughing in all material groups.

Extra close pitch cutters feature a high number of evenly spaced inserts. These are first choice for low radial depth of cut applications and for higher feed rates in short chipping ISO K materials, roughing and finishing, as well as roughing in ISO S materials. This is due to even chip load in combination with round inserts.

Cutter position

How machine shops enter a workpiece is very important. Here, the first thing to consider is how the chips are being formed, since this can seriously affect tool life. The golden rule is, thick to thin chips. This will save time and money, and ensure a stable process. In contrast, thick chips on exit will simply lead to edge failure and poor tool life. Importantly, it is the cutter position that forms the chip.

When milling a full slot, for example, moving down the centre of the workpiece produces a chip that goes from thin to thin. Although the chip is thin on exit, this method causes problems because there is nowhere for the heat to go other than into the tool or workpiece, not the chip because the chip is non-existent at that point. Upon entry, the cutter is rubbing rather than shearing the material, causing heat and vibration.

This can be improved, however, by positioning the cutter so that 70 percent of the cutter diameter is engaged. The result is 90 percent chip thickness on entrance, leading to less stress on the insert, immediate cutting action, climb milling or down milling and the formation of thick-to-thin chips that will dissipate heat and produce less insert stress.

Be careful not to move the cutter in the wrong direction. If this happens, even though the cutter might still be at 70 percent diameter engagement, thin-to-thick chips will be produced, leading to the same problems as when the cutter moves down the middle of the workpiece, namely poor tool life and higher costs.

Cutter positioning, engagement and roll-in techniques

When milling a component, it is advisable to keep the cutter constantly engaged. A milling insert is continuously in and out of cut, which leads to reduced tool life. To help combat this unwanted effect, correct cutter

positioning and engagement are fundamental. However, constant engagement comes with a caveat. Sharp changes of direction when constantly engaged will put inserts under stress and lead to thick chip formation when exiting the cut, hence rolling around corners is recommended.

Many operators will testify to witnessing poor surface finish when going straight into a cut, as well as a terrible noise. Most simply turn down the feed to alleviate the problem, but productivity is being compromised. The simple programming solution to this is rolling clockwise into the cut. Using this soft and smooth entry strategy can really improve tool life and optimise wear patterns. It keeps the chip thin on exit and reduces vibration.

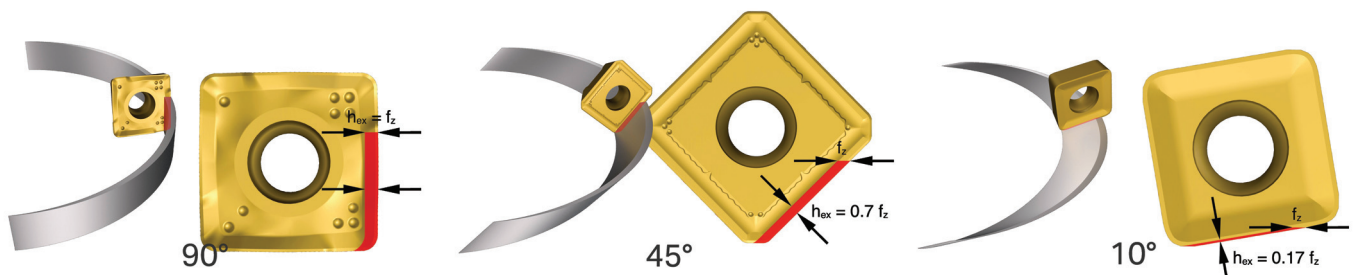
The roll-in technique is recommended when entering the workpiece, while rolling around corners is preferred to sharp changes of direction when the cutter is constantly engaged.

Sandvik Coromant

Tel: 0121 504 5400

Email: uk.coromant@sandvik.com

www.sandvik.coromant.com/uk



A 90° cutter can easily be used as a face mill, and often is simply because it's available, but it won't be as productive or cost effective as using a 45° cutter. High-feed cutters with 10° entering angle mean that extreme table feeds can also be deployed due to thin chip formation

Bio-based S787 exceeds expectations in titanium machining

A longtime customer of Hangsterfer's Laboratories, Makino offers a wide range of high-precision metal cutting and EDM machinery. Makino's Process R&D Group (Mason, Ohio) has successfully run Hangsterfer's S-787 VEG-ESTER™ semi-synthetic metalworking fluid for six years in a wide variety of applications and Makino technologies: "The Hangsterfer's S-787 has met, and continues to meet our criteria for machining performance, health/safety/environmental compliance, cleanliness, foam control, and protection to critical machine components. Sustainable and repeatable performance has been achieved on titanium and other aerospace materials, as well as traditional metallurgy throughout this time period."

Hangsterfer's Laboratories, Inc. researches, develops, and manufactures the Next Generation® of metalworking fluids and lubricants in an ISO 9001 approved facility in Mantua, New Jersey, USA. Hangsterfer's prides itself in its Bio-based renewable resource technologies. The company's concern for environmental conservation initiatives has always been at the forefront of its operations, as well as promoting environmental awareness to the business community.

In a culture of continuous improvement in environmental responsibility, all employees at Hangsterfer's play key roles in environmental stewardship. Jaclyn Connor, regulatory affairs specialist at Hangsterfer's, says: "We do a lot of toxicity testing on our products to make sure they are safe for workers and the environment. This costs money, of course, but we see it as a benefit."

The development of S-787 was no different. This Bio-based coolant has been a success for Hangsterfer's customers, meeting and exceeding environmental goals, and resulting in significant savings on bulk coolant purchases.

Hangsterfer's S-787 is a chlorine-free vegetable based semi-synthetic that represents the Next Generation® in

technology. What really sets it apart from competitor coolants is that it's free of boron, chlorine, formaldehyde, and secondary amines. These unique characteristics allow for excellent results in high-pressure applications with exotic aerospace and medical alloys, like titanium. The natural translucent formula provides good workpiece visibility (no foaming), and reduces coolant consumption significantly.

Hangsterfer's customers report up to 50 percent less usage with S-787 compared to other coolants, due to less drag out. S-787 results in an excellent finish and improved tool life as well, which according to customer reports, has not been seen in other coolants.

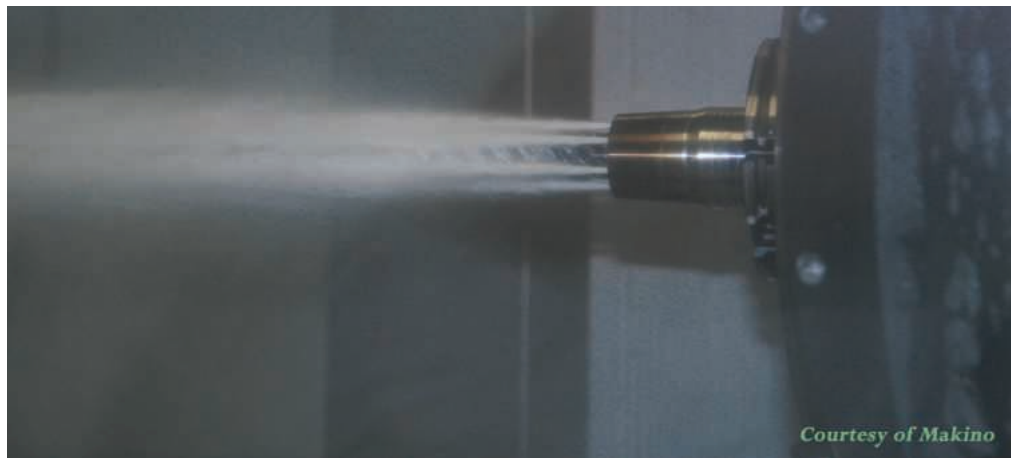
Because it is non-hazardous and non-toxic, S-787 has a less pungent odour, and leaves machine walls cleaner than other

happy for the switch, and experience no skin irritation. We believe our work environment is healthier and cleaner because of S-787."

Brian Zirkleback, of A-Z Welding and Machine Inc, says: "The health benefits alone were the reason for our decision to try something new. Since we have made the transition, the machines are cleaner, parts come out spotless with no residue, and our usage has gone down."

Livekey Tool and Machine has been using S-787 coolant for two years, with excellent results. "It has stayed clean in the sump, with little to no odour. It has also kept the inside of the CNC machines cleaner. Compared to other products, S-787 is superior in cutter lifespan, and rust prevention on machine parts."

Although there is not yet conclusive data on reduced workers' compensation claims,



coolants. It's easier on the skin too. Several operators shared their success with S-787:

James Hostetler, of TMS Titanium, says: "Over the last six months we have changed most of our saws to Hangsterfer's S-787 with immediate improvements such as cleaner work areas, longer blade life and better cuts. It's less greasy and messy than the previous coolant which saves us time cleaning parts after cutting as well as getting the coolant back out of the saw fines for reuse." Tim Moore of Special Mine Services stated a reduction in coolant consumption close to 30 percent.

Tim Moore explains: "We no longer have a pungent coolant odor; our employees are

Hangsterfer's customers are most certainly enjoying a cleaner and safer work environment, with improved employee morale. And while the savings on reduced coolant usage is significant, there is also cost savings in machine cleaning and longevity. Once again, Hangsterfer's is Supreme to Them All™.

MacInnes Tooling Ltd
Tel: 01436 676913
Email: sales@macinnes.co.uk
www.macinnes.co.uk

Quaker Chemical and Houghton International to combine



Quaker Chemical Corporation and Houghton International Inc., companies with a combined 250-year history as providers of process fluids, chemical specialties, and technical expertise to the global primary metals and metalworking industries, have announced that they have executed a definitive agreement to combine the companies. Both Quaker Chemical and Houghton International are headquartered in the Philadelphia area.

"The proposed combination of Quaker Chemical and Houghton International represents the next phase of our evolution, and stays true to the vision of growing in our core specialties," says Michael F. Barry, chairman and CEO of Quaker Chemical. "Joining forces with Houghton International combines two highly complementary businesses, each having a long history of building tremendous expertise, technology and customer-centric cultures dedicated to



delivering long-term sustainable value to customers, shareholders and associates. The new company will capitalise on best practices and expertise from both businesses."

Houghton International and Quaker Chemical are both known for a commitment to innovation in a highly specialised and technologically demanding industry.

Combining Quaker Chemical's and Houghton International's product solutions and service offerings will allow the new company to better serve customers in the automotive, aerospace, heavy equipment, metals, mining, machinery, marine, offshore, and container industries. The business will have one of the world's most expansive metalworking platforms comprised of specialty products that include removal fluids, forming fluids, protecting fluids, heat treating fluids, industrial lubricants and greases.

The expanded portfolio is expected to

generate significant cross-selling opportunities and allow further expansion into growth markets that include India, Korea, Japan, and Mexico.

By combining resources, the new company will increase the breadth of its innovative technology, accelerate its product development initiatives and time to market, and diversify its long-term R&D pipeline.

The company's customer-intimate business model will be further strengthened with an expanded chemical management offering. The enhanced portfolio, industry-expert associates and applications expertise will enable the combined company to bring additional value to its customers' overall performance and operations. The companies will continue to operate independently until the transaction is completed.

Quaker Chemical B.V.

Tel: 0031 297 544644

Email: barnagal@quakerchem.com

www.quakerchem.com

rhenus FU 800

THE FUTURE OF COOLANT

**Safer process.
Safer profit.**



**EXCELLENT PERFORMANCE. NO LABELLING REQUIREMENTS.
QUICKLY ACCEPTED BY MACHINE OPERATORS AND PROCESS OWNERS.**

www.rhenuslub.de/en/fu-800-coolant.html

LOCAL DISTRIBUTORS



A coolant that uniquely combines performance and health and safety

rhenus FU 800: no label, high performance and future-proof

Rhenus Lub has introduced the innovative rhenus FU 800 coolant, a fluid that is free from amines, boric acid and formaldehyde depots. The new product already meets the strictest health and safety requirements, meaning additional labelling requirements are not necessary.

Manufacturer Rhenus Lub has followed a simple principle with the new composition of rhenus FU 800 and that is to consistently avoid potentially hazardous ingredients to achieve a high level of acceptance among machine operators and responsible decision-makers. Disagreement have prevailed for some time between scientists and manufacturers concerning ingredients and thresholds. For researchers and lawmakers at national and European level, thresholds are liable to change. Substances regarded as harmless today may be categorised as posing a risk to health tomorrow. When lawmakers tighten up legislation, this is often based on more precise measuring techniques or new scientific findings. Users can therefore play it safe if from the outset by avoiding ingredients that are already at risk of being legislated against sometime in the future.

What's not in the product can't harm you.

Users and manufacturers are therefore following a principle that makes perfect sense. Substances that are absent from the fluids cannot cause skin irritation, health hazards or any other harm.

Although responsibility for protecting workers always lies with the employer, Rhenus Lub believes it begins with the manufacture of coolants. Dr Hans-Jürgen Schlindwein, head of laboratory for Water-Miscible Coolants at Rhenus Lub, says: "We see health and safety today as a preventative measure that we offer our customers, namely users in the metal machining industry."

Compliance with health and safety standards and environmental responsibility are therefore firmly rooted in the company, and are ensured by means of quality management and health and safety management systems such as ISO 9001,



14001 and OHSAS 18001. Dr Hans-Jürgen Schlindwein says: "We use these standards to formulate our coolants. In formulating rhenus FU 800, we have consistently avoided all ingredients that are the subject of intense debate at the moment. Our new fluid is therefore the prime example of a modern coolant, combining all beneficial properties into one. It is safe, performs well and has no labelling requirements, making it future-proof for the machining sector."

Future-proof as a result of an innovative composition

In formulating rhenus FU 800, researchers at Rhenus Lub, the German lubricant specialist, are breaking new ground, consistently avoiding amine and boric acid-based additives and also a formaldehyde depot. In addition, a new emulsifier system has also been developed especially for rhenus FU 800, which foams less and has good flushing properties.

Why exclude amine and boric acid-based ingredients? For 25 years, Dr Hans Jürgen Schlindwein has been a pioneer in the development of environmentally friendly fluids with outstanding health and safety properties

Dr Hans Jürgen Schlindwein says: "The consistent amine-free composition of coolants prevents the build-up of dangerous nitrosamines. Any build-up of carcinogenic

compounds from impurities that may be present in the amines is also ruled out in the absence of amines."

Alongside the amine-free composition, the exclusion of boric acid was also an important step for the research and development team at Rhenus Lub in developing cutting-edge lubricants that are environmentally friendly. This is because, under the latest EU legislation, boric acid is suspected of being toxic for reproduction and therefore damaging to the human genome.

Dr Hans Jürgen Schlindwein explains: "As a specialist manufacturer of coolants, we therefore face a particular challenge. Boric acid, bonded as boric acid alkanol-amine ester, has long been a key ingredient in the composition of high-performance water-miscible coolants."

Furthermore, the exclusion of the formaldehyde depot is also an example of approaching coolants in a sustainable and responsible manner. Using formaldehyde depots in the coolant prevents the growth of bacteria. Formaldehyde, the main component in the formaldehyde depots, is categorised as a 1B carcinogen. Therefore, there is the risk that the formaldehyde depots will be given a similar categorisation.

Dr Hans Jürgen Schlindwein continues: "But it's possible to do without it. Without there being a statutory requirement to do

so, and far surpassing the health and safety standards for users, we have found a way to replace these substances with innovative formulations and ingredients. And have done so without raising the pH value."

What users want is a coolant without labelling requirements

This consistent selection of ingredients means that there are no labelling requirements for rhenus FU 800. This brings a clear benefit to users in the metal machining industry, since labelling requirements can cause serious difficulties for them.

Since 1 June 2015, preparations, including coolants, have to be categorised under the GHS/CLP Regulation (Globally Harmonised System, Regulation on Classification, Labelling and Packaging of Substances and Mixtures). The aim of the globally harmonised system is to standardise the protection of human health and the environment, making it more transparent and comparable.

Where there are no labelling requirements, workers feel reassured and companies benefit from a number of concrete operational advantages. If



labelling is required, this must be provided and monitored, requiring workers to be trained for the relevant level of hazard. Plants and machinery also has to be modified in some circumstances, at considerable cost.

Dr Hans Jürgen Schlindwein says: "it only makes sense for users to work with coolants that have no labelling requirements and pH values that are very kind to skin, particularly in the case of amine-free coolants."

High performance, contrary to misconceptions

Many users still believe that for a coolant to perform well, it must have added amines and boric acid. rhenus FU 800 puts this misconception to rest once and for all. In a range of practical tests, the innovative coolant has proven that it performs at least as well as amine and boric acid-based fluids. Testing has also demonstrated that rhenus FU 800 can be universally used in demanding machining applications, for example in the aviation industry, where many workpieces have to be milled from a single solid piece of material, ranging from grey cast iron to aluminium through to titanium. In numerous tests conducted at 14 customer premises on 18 machines, the new coolant has yet to reach the limits of its performance.

Rhenus Lub GmbH

Tel: 0049 216158690

Email: vertrieb@rhenusweb.de

www.rhenuslub.de

Coolant Maintenance Equipment



Tramp oil belt skimmers.

Type B as shown with magnetic mount
30mm x 400mm belt. £160.00

Type C with 60mm x 600mm belt and magnetic mount. £165.00
Plus carriage and VAT



Nice coolant mixing valve

with graduated rotary dial £105.00
Plus carriage and VAT



Javelin coolant filtration system.

You won't believe how simple and effective it is. Filters the coolant every time you use the machine. £390.00
Plus carriage and VAT

MacInnes Tooling Ltd, UK distributor of Hangsterfer's operator friendly coolants, no formaldehyde, no boric acid, no hazard warning labels, just technically advanced coolants designed to reduce hassle and cost.



sales@macinnes.co.uk

Tel. 01436 676913



Reduce Coolant/Oil Costs with Great H&S/Environmental Benefits



- Up to 50% coolant saving
 - Reduced topping up
- Swarf value
 - Improved price for swarf without coolant
- Up to 90% saving in disposal
 - Reduction in disposal cost to remove coolant
- Improved housekeeping
 - No coolant collecting outside the machine or leaking on the floor
- Manpower reduction
 - No manual intervention to empty coolant in swarf bin as it is done automatically
 - Only swarf will require emptying from the bin
- Environment
 - Not only recycling coolant but NO external power required or outside coolant leaks



Neat Oil Saver



* Typ. Usage
Sliding Head Machine

Tel: 07557 107892 Email: sales@wogaard.com www.wogaard.com

With the Wogaard Coolant and Oil Saver no stone is left unturned

Technoset has an enviable reputation for supplying complex components to the aerospace industry built up over a number of years. More recently the company has steadily increased its manufacturing capabilities and staff skills to move further up the industry's tiered supply chain. At this level every little detail counts, which is why the Wogaard Coolant Saver plays a part in the ongoing business development.

Part of the Techno Group, Rugby-based Technoset is a precision engineering company specialising in one-hit manufacturing of ultra-high precision turned and milled components. Having continually invested in the latest fixed and sliding head CNC machine tools with up to 13 axes, driven tooling and full turning and milling capabilities, the company is able to offer a high degree of flexibility to its customers.

Continued success for the company means investigating and evaluating every potential business advantage. As managing director, Kevan Kane points out: "Even at the high-end of sophisticated parts that we produce for our customers there is still a need to look for efficiencies and enhancements. We are under constant pressure to improve the operation of the business. These pressures could be financial or environmental, or a combination of these key drivers. It could even be peer-pressure from other members of the Midlands Aerospace Alliance or Coventry and Warwickshire Aerospace Forum to do better."

One of the most recent improvements on



the shopfloor has come from the installation of the Wogaard Coolant Saver. The simplistic design and execution of both the Wogaard Coolant and Oil Saver belies the potential benefits it can provide to manufacturing companies. Using very few component elements it efficiently collects the cutting fluid which is normally dragged out of the machine tool by the swarf that is evacuated by the automatic chip conveyor or swarf auger and wasted. The neat oil or water miscible (soluble oil) cutting fluid is reclaimed by siphoning it from the chip-container and returning it to the machine tools main coolant tank for reuse.

Using a vacuum generated within its body to draw the fluid out of any container, the Wogaard unit is powered by the machine's coolant pump, so no additional power source is required and fitting remains a straightforward operation requiring just a few pipe joints that can be specified in an

optional fitting kit available for most popular machine tools.

Kevan Kane says: "You must consider with coolant you are not only buying coolant, but you need to pay to dispose of it. So, waste is a great consideration. We initially tested the Coolant Saver on one machine, and the benefits were both clear and immediate. It was then a case of fitting a unit to all of our milling machines and all of the fixed-head turning centres. We also fitted the new Oil Saver to our sliding head machines, where the savings on neat oil and disposal of waste have an impact on the business bottom line that is even more dramatic."

The downtime for any machine tool waiting for the coolant levels to be replenished has been reduced to a minimum, and the operators appreciate not having to fill the sump so often.

Kevan Kane continues: "We run a core day with overtime. The nature of the material we machine plus the tight tolerances required do not lend themselves to running 'lights out'. However, we often leave the batch running on the machine at the end of the day, which we can now do confidently knowing that the sumps will not alarm out because the coolant level is low."

Each of the Coolant and Oil Savers has been installed in-house by Technoset staff. While the initial investment required to purchase and fit the units is very reasonable the benefits are very long lasting.

Kevan Kane says: "In a year or so we will have the accurate figures on the savings achieved, but right now it is just making life much more simple for all of us."



Today, except for one, each of the machine tools on the shopfloor has a Wogaard unit fitted and the housekeeping on the shopfloor is much improved.

Kevin Kane concludes: "We like to think that we are a forward-thinking company. As such, no stone should be unturned; you should look at the business from every facet. There is simply no way we would go back to a shopfloor without the Coolant and Oil Savers fitted to the machines. Walk around now and the swarf bins are dry with material that is ready to be responsibly recycled. And we know the coolant, be it oil or water-based, is getting reclaimed and recycled quickly and efficiently back into the same machine tool's sump so there is never any worry about cross contamination."



Christian and Preben Woergaard launched Wogaard with the unique and innovative Coolant Saver product with a focus on cost-cutting and optimisation for the manufacturing industry. Both have vast experience in the industry from design to maintenance and noticed the coolant wastage produced by CNC machines and the impact on companies in both costs and environmentally. The team then went to work and designed an innovative product to reclaim this wastage, using the machines wasted power to operate the unit so avoiding additional energy usage and cost. Primary customers for Coolant Saver are CNC machine shops, of all sizes, that are constantly looking to improve their competitive edge and reduce any impact on the environment from day-to-day manufacturing processes.

The last four years has seen the introduction of Jason Hutt to the team and the product has launched into the Global market. Many companies have enjoyed great cost saving and environmental benefits of the award-winning products.



Wogaard has focused on working with good technical distribution partners globally and is stocking in UK, USA, Denmark, Australia and this list is growing.

2016 saw some great milestones in the company with over 2,000 units supplied and installed in machine shops across the world and the introduction of new products including the Oil Saver typically for Swiss-type sliding head lathes.

Wogaard Ltd
Tel: 07557 107892
Email: Jh@wogaard.com
www.wogaard.com

Less wear, higher efficiency

New high-temperature grease for heavily loaded rolling bearings

The new Klübersynth BHE 46-403 has been developed to meet the requirements of long-term lubrication of rolling bearings subject to high loads. The innovative lubricant design of the fully synthetic, high-temperature grease reliably contributes to extending the component life across a wide service temperature range. Additives were carefully selected to provide wear and corrosion protection, and reduce frictional resistance for long runtimes. Thus, a lasting increase in efficiency can be attained depending on the component design.

Cornelia Recker, from the Business Unit Bearing Industry at Klüber Lubrication, says: "The new rolling bearing grease was especially developed for the lifetime and high-temperature lubrication of rolling bearings subject to sliding friction, i.e. tapered roller bearings, cylindrical roller bearings and spherical roller bearings. Such applications are found, for example, in wheel bearings in cars, in the transport units

of the steel industry and in machines of the agriculture and building industry as well as in textile and paper making machines."

Klübersynth BHE 46-403 can also be used as a sealing grease or for the lubrication of rolling bearing seals, thus contributing to product streamlining and minimising the risk of lubricant mix-ups.

Klüber Lubrication is one of the world's leading manufacturers of speciality lubricants, offering high-end tribological solutions to virtually all industries and markets worldwide. Most products are developed and made to specific customer requirements. During its more than 80 years of existence, Klüber Lubrication has provided high-quality lubricants, thorough consultation and extensive services, which has earned it an excellent reputation in the market. The company holds all common industrial certifications and operates a testing section hardly rivalled in the lubricants industry. The company offers approximately 2,000 different speciality



lubricants, many of them developed and manufactured to specific customer requirements. With competent and customer-oriented consulting and wide-ranging services, its employees have established Klüber Lubrication's excellent reputation as a partner to industry and trade.

Klüber Lubrication Great Britain Ltd
Tel: 01422 205115
Email: sales@uk.klueber.com
www.klueberuk.com

Vero Waveform saves tool costs

Trials carried out with Seco Tools show that Vero Software's powerful, game-changing Waveform roughing strategy can save nearly £130,000 on cutting tool costs for 1,000 parts, compared with conventional machining strategies.

This reflects savings of almost £13,000 on 100 parts and over £100 per part.

The results came from trials using a Seco 20 mm tool, cutting components from EN24 steel. Vero's strategic partnership manager, Wesley Tonks, says: "Tool life is dependent on how the tool is implemented within the machining process. We always state the increase in material removal rates when utilising the Waveform strategy instead of traditional machining methods. However, there are additional massive financial benefits to be realised with the reduction in tooling costs.

"Because the Waveform strategy, while utilising the full flute length of the tool, gives improved stability, less stress, and improved swarf evacuation, ensuring even wear, a financially beneficial regrind programme can be introduced."

And Waveform increases the tool life before each regrind is required. For example, during the trial, the £357 tool was reground four times, as well as there being 275 minutes between each regrind. This meant the total tool life going from 60 minutes with conventional machining, to 1,100 minutes with Waveform. Waveform also speeded up the operation, reducing the

cycle time from 22.5 minutes to 7.5 minutes.

On a production run of 1,000 parts, the tool costs using conventional machining were £133,875, falling to just £4,125 with Waveform. This represents a saving of £129,750.

Even cutting Titanium, Waveform extends tool life from 150 minutes to 360, with three regrinds, delivering savings of £42,910 when cutting 1,000 components.

Waveform was originally part of Vero Software's Edgecam milling package, but has recently been adapted for turning and is now also included in Alphacam, WorkNC and Surfcam. As well as the extensive

machines will expose manufacturing production facilities to increased savings."

Headquartered in England, Vero Software designs, develops, and supplies CAD/CAM and CAE software that radically enhances the efficiency of design and manufacturing processes. This provides customers with exceptional value through high productivity gains and significantly reducing time to market. The company's world-renowned brands include Alphacam, Cabinet Vision, Edgecam, Machining STRATEGIST, PEPS, Radan, SMIRT, SURFCAM, WorkNC and VISI, along with the production control MRP system Javelin.

Cost Benefits Based on Tool Life

Strategy	Waveform	Conventional
20mm Tool Cost	£357.00	£357.00
3 Regrinds	£190.50	0
Total Cost / Tool	£547.50	£357.00
Tool Life (mins)	360	150
Cost / min	£1.52	£2.38
Production Time (mins)	7	22.5
Tool Cost / Part	£10.84	£53.55
Cost / 100 parts	£1,084	£5,355
Cost / 500 parts	£5,320	£26,775
Cost / 1000 parts	£10,640	£53,550
		Saving £42,910

Titanium

Strategy	Waveform	Conventional
20mm Tool Cost	£357.00	£357.00
4 Regrinds	£254.00	£0.00
Total Cost / Tool	£611.00	£357.00
Tool Life (mins)	1100	60
Cost / min	£0.55	£5.95
Production Time (mins)	7.5	22.5
Tool Cost / Part	£4.13	£133.88
Cost / 100 parts	£413	£13,388
Cost / 500 parts	£2,063	£66,938
Cost / 1000 parts	£4,125	£133,875
		Saving £129,750

EN24

savings brought about by the constant chip load, Waveform also delivers considerably improved material removal rates, minimum tool vibration, deeper cuts, and increased speeds and feed rates, with a smooth toolpath which avoids sharp changes in direction, maintaining the machine's velocity.

The toolpath is automatically adjusted to compensate for load fluctuations. Tool engagement is decreased in concave areas and stepover adjusted between passes to maintain the desired engagement. In convex areas, the opposite happens. As the material falls away the toolpath stepover is increased to maintain the tool engagement.

Wesley Tonks says: "To conclude, it is very typical to have smaller batch sizes but to realise savings the whole manufacturing operation needs to be appreciated. Looking at where particular tools are being used and consumed across many operations and

Despite the diversity of application, these solutions have one thing in common: they all address the rising challenges of achieving manufacturing efficiencies and bring huge value to the operations in which they are deployed.

The Vero stable includes mechanical design and manufacturing software that is specialised for a range of niche sectors such as those found within the mould and die making sector. Both the VISI and WorkNC product families incorporate specific process knowledge that enables the designer or machinist to achieve complex and precise components in a fraction of the time used by more generic CAD/CAM software systems.

Vero UK Ltd

Tel: 01189 756084

Email: stewart.bint@verosoftware.com

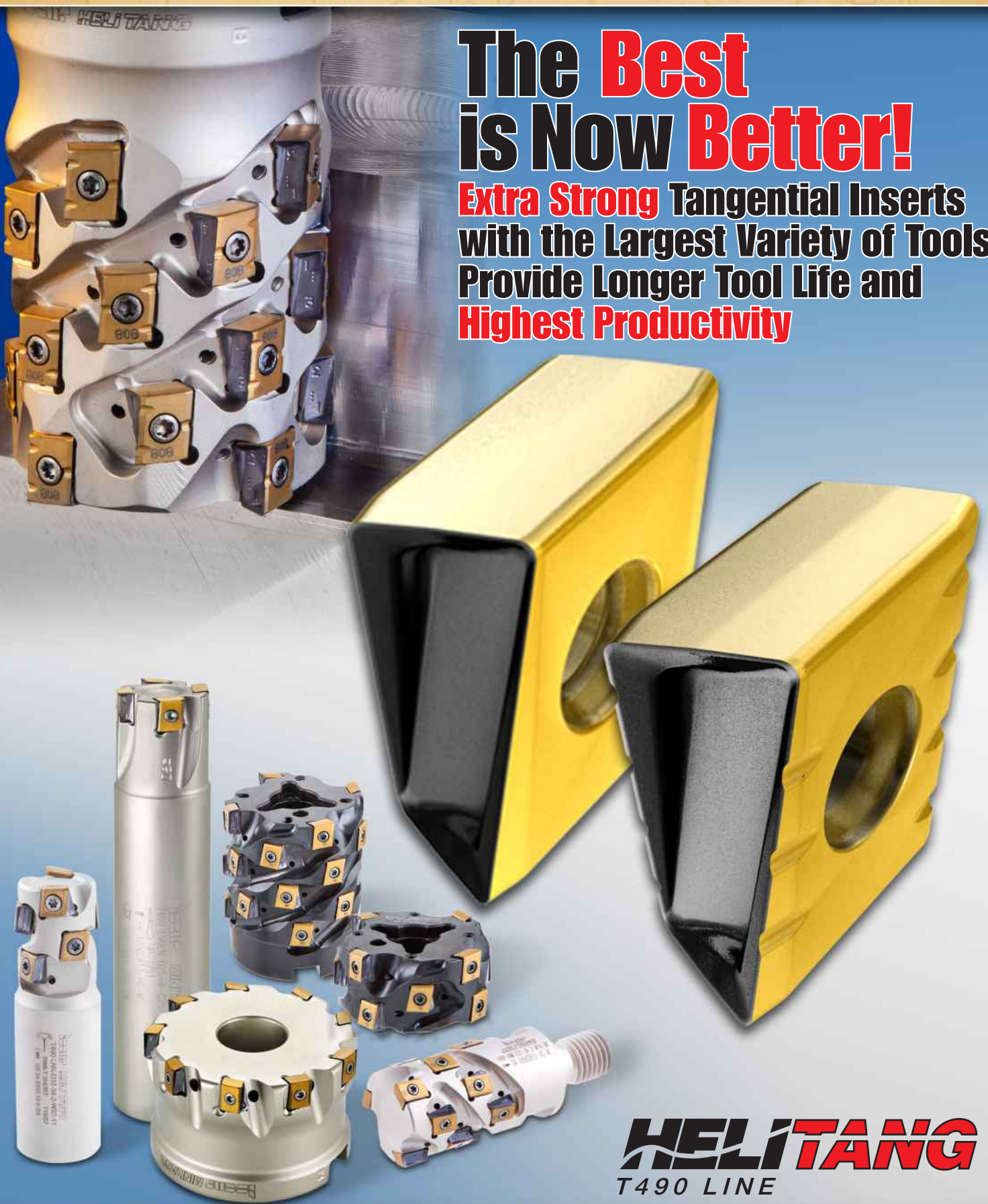
www.verosoftware.com



IQ **STARTUP**
MACHINING INTELLIGENTLY

**The Best
is Now Better!**

Extra Strong Tangential Inserts
with the Largest Variety of Tools
Provide Longer Tool Life and
Highest Productivity



HELI TANG
T490 LINE

Machining Intelligently
ISCAR HIGH Q LINES

Member IMC Group
iscar
www.iscar.co.uk

MPS1 Drill Series – now with 8 X D flute length

MPS1 drills have been designed with the aim of double performance: to use the very highest cutting parameters or to obtain extra-long tool life. This has been achieved by combining the best of proven existing features together with the very latest state-of-the-art technology. This technology has now been expanded into the latest addition to the series, an 8 x D flute length type, now available as standard.

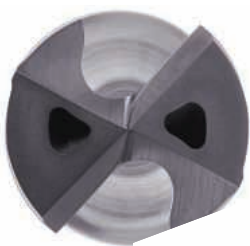
Cutting edge

MPS1 drills also use a newly designed straighter cutting edge that was found to offer a smoother cutting action for improved penetration at the highest feeds and speeds. The edge also works effectively in tandem with the new Miracle Sigma based coating to provide excellent tool life.

Proven features

The reworked double margin flute is part of the proven existing technology that provides the highest hole accuracy, efficient chip evacuation and smooth surface finishes. Mitsubishi's innovative Tri-Coolant holes are optimised for MQL and have also shown to greatly improve coolant flow where it matters most, at the cutting point of the drill. Extensive flow dynamics research revealed not just the benefits of extra volume, but also the way in which the coolant flowed more efficiently from the hole. It was found that by optimising the shape, more than double the amount of coolant is discharged and at greater speeds than with conventional round type through coolant holes. It is this combination of extra flow and improved delivery to the cutting point that is critical for effectively removing chips. The efficient removal of chips enables continuous high performance across a wide range of work materials and applications.

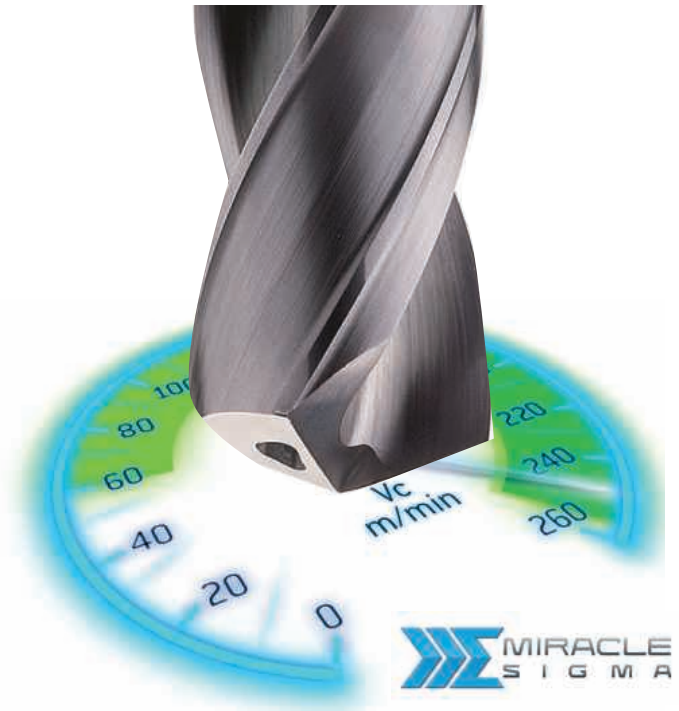
Tri-Coolant holes



- Increased coolant volume
- Optimised flow at the margin
- Faster chip evacuation



DIN 6535 shank and through holes optimised for MQL use



MIRACLE SIGMA coating

The new MIRACLE SIGMA based PVD accumulated Al-Ti-Cr-N coating provides the protection needed to ensure longer tool life, especially at the higher cutting speeds and feeds that are demanded by today's modern production environment.

Additionally, the polished Zero- μ surface of the coating provides several important assets such as excellent resistance to welding and a very low coefficient of friction for a sharper but reliable cutting action. The smooth surface also helps greatly towards efficient chip evacuation, an important aspect of overall performance considering the extra material generated by higher feeds and speeds. Typical cutting speeds when drilling carbon steel of around 160 m/min can be increased to 220 m/min and feed rates upped from 0.25 mm/rev to 0.35 mm/rev that gives a huge overall linear feed increase from 1,600 mm/min to 3,080 mm/min. The important carbide substrate provides the toughness and hardness required to compliment the performance of the new coating.

Drills are available from $\varnothing 3.0$ – $\varnothing 20$ l/d x 3, l/d x 5 and l/d x 8.

MMC Hardmetal UK Ltd Tel: 01827 312312

Email: sales@mitsubishicarbide.co.uk www.mitsubishicarbide.co.uk

Delivery next day not some day

Order by 6:30pm and we guarantee next day delivery on over 45,000 tools with 99% ex-stock availability. It means, with WNT, you could deliver the job before other suppliers deliver the tool.

Tel. 0800 073 2 073 · wnt-uk@wnt.com · www.wnt.com

TOTAL TOOLING = QUALITY x SERVICE²



Drilling tool with chip spoilers

KOMET has developed a new PCD drilling tool for drilling water and freeze plugs, which, thanks to its innovative chip spoilers, prevents chip build-up in components.

Engine blocks generally contain "water plugs" or "freeze plugs", which in the event that the coolant freezes prevent damage to the engine. The KOMET GROUP has a specific range of tools to create the drill holes for these plugs, including a particularly efficient brand new PCD drilling tool equipped with "chip spoilers", which are highly effective at preventing chip build-up in components. The key to this is KOMET's use of additive manufacturing, which makes it possible to construct highly intricate chip spoilers with optimised, curved cooling channels.

Although the chip space on a conventional drilling tool is open to the side and the front, the chip spoiler on every cutting edge covers the groove frontally and radially. That leaves only a narrow gap of a few tenths of a millimetre between the spoiler and the cutting edge of the tool, through which any chips that are produced

can run off. The spoiler channel then guides them reliably out of the drill hole. In this way, the new water-plug drilling tool can be used to prevent chips remaining in the drill hole. Furthermore, initial experiences in production have shown that the cost of monitoring chips remaining in components has reduced considerably.

The KOMET Group is one of the leading single-source suppliers of precision tools and markets technologically trend-setting solutions and premium products for the machining process. The internationally successful Group has been one of the leaders in innovation and technology in the sector for almost 100 years and focuses on consistently developing and implementing innovative ideas, efficient solutions and high-quality products.



The new KOMET JEL PCD drilling tool for drilling water plugs includes chip spoilers manufactured using the generative process of laser melting. This means they fit intricately in the tool and provide reliable chip removal

KOMET UK Ltd
Tel: 01827 302518
Email: info.uk@kometgroup.com
www.kometgroup.com

Dawson Shanahan publishes new tooling guide

Precision engineering specialist Dawson Shanahan has published a comprehensive new guide on tooling for manufacture. It discusses the importance of high quality tooling for manufacturers and explains the costs associated with the process.

Tooling, the process of designing and engineering the tools that are necessary to manufacture parts or components, is an essential part of the manufacturing process. However, the types and costs of tooling vary significantly, which means companies are often left confused over costs and quotes and, as such, fail to get good value for money.

The guide, entitled 'Tooling for manufacture: A guide to the engineering process', clears up common misconceptions about tooling and provides practical advice to manufacturers to enable them to get the best tooling at the right price for them.

The guide also goes on to explain how effective planning and product design stages are key to tooling, drawing attention to how considering the method of

manufacture can help to achieve lower part costs.

Jeff Kiernan, commercial director at Dawson Shanahan, says: "Although tooling is an essential requirement for most manufacturers, there isn't an industry-wide standard for calculating tooling pricing and costs. This makes it very difficult for manufacturers to compare prices and quotes from project to project and achieve value for money. Our guide is designed to help manufacturers overcome this issue, by providing them with more information on the process and outlining how they can benefit from cost effective tooling of a high standard.

"At Dawson Shanahan, our approach is to work with each customer, clearly explaining how our tooling costs are calculated and then finding the solution that works best for both parties. This approach ensures our customers get a good deal and an end product they'll be pleased with."

Dawson Shanahan's new guide to tooling is available for free as a download from the



company's website. With over 70 years' experience, Dawson Shanahan Limited is a leading global specialist in cold forming and machining of high precision, customer specified copper, aluminium, ferrous and assembled components.

Dawson Shanahan (Wales) Ltd
Tel: 01938 551700
Email: info@dawson-shanahan.co.uk
www.dawson-shanahan.co.uk

Problem solved at E H Thompson with help from WNT

For a long-established machine shop, EH Thompson, which trades as Thompson Precision Engineering, doesn't think of itself as an engineering business but more of an industrial problem solver. While undertaking what may be classed as general subcontract work, the company, founded in 1939 as a specialist scientific instrument maker, developed to specialise in project-based work, taking on design, machining and finishing of a wide range of components and assemblies that others thought impossible.

This ability to solve problems is hard-wired into Thompson Precision Engineering, as no sooner had it started business manufacturing scientific instruments it had to turn its skills to manufacturing munitions and other defence hardware, as World War Two took hold. Once hostilities ended, the need to replace this volume production saw it become a key supplier to Ford Motor Company. The manufacture of automotive and then high pressure hydraulic systems continued until the 1980s when the 'global economy' raised its head. The volume business started to erode and attention shifted to high precision aerospace manufacture, focussed on safety critical parts. As part of this work it subcontracted work to JH May, a pattern

maker and prototyping specialist, which it purchased in 2003.

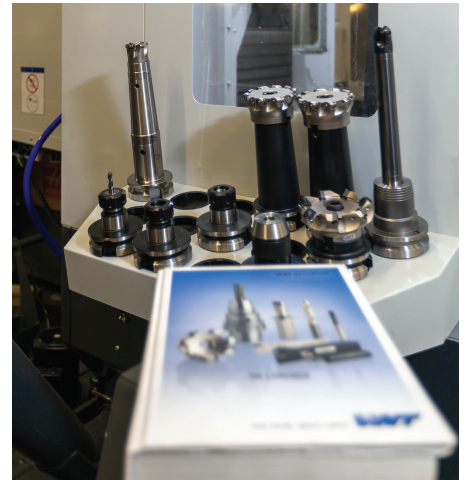
Highlighting Thompson Precision Engineering's versatility and ingenuity, it is currently working on two projects that couldn't be more diverse but make full use of the company's engineering and bespoke project expertise. One is a commission to build a full size replica of the Lockheed 5B Vega used by Amelia Earhart in 1932 to fly across the Atlantic Ocean and then non-stop across the United States. This replica will be a composite of wood, fibre glass and aluminium and will eventually be hung, on display, 30 feet above the ground. The second current project is more engineering-based, in the shape of a project to machine a series of architectural elements. The main constraints were intricate cutter paths and the customer specification that the parts be machined from solid 316 stainless steel billets, the largest of which weighs in at three tonnes, with just 0.5 tonnes remaining once machining is complete. With such large volumes of material being removed, plus the high value of the parts being machined, a review of milling strategies was called for and EH Thompson turned to WNT for assistance.

"The roughing cycle for the largest piece involves many 100's of hours cutting and on top of that we have a series of single finishing cycles each of 100 plus hours to contend with. This means we need confidence in the cutters to be able to operate lights out," says production manager, Ian Cain. Another challenge in machining these pieces were the tool extensions that were required. For the rough machining the button-style cutters had to have a gauge length of 250 mm and for finishing this had to be extended to 350 mm.

Working with WNT's technical sales engineer Adam Cross, a machining strategy



The WNT 100 mm facemills and other tooling that will reduce this 316 stainless steel billet from 3 tonnes to 0.5 tonnes over many 100s of hours of machining cycle



was developed that would allow lights-out machining making use of sister tooling.

"Tool life was the key in this project, more to the point consistent tool life. We had to know that the cutters would last a certain amount of time in order that we could have the confidence to leave the machine running unmanned, which is not often done on materials such as 316 stainless, but the length of the roughing and finishing cycles demanded it. Working with Adam, we achieved this and while we were not chasing



Ian Cain (green shirt) and Adam Cross discuss the scale of the machining required on these architectural pieces

CoroTurn® Prime and PrimeTurning™

The biggest
innovation in turning
...since turning

→ See it to believe it!

www.sandvik.coromant.com/primeturning

SANDVIK
Coromant

seconds on cycle time we still achieved very competitive performance with WNT's help for such a testing application".

On both the roughing and finishing operations WNT selected its Dragonskin HCN 5235 grade of indexable inserts, which are capable of delivering significant cycle time reductions on stainless steel and heat resistant alloys. Machining times are being cut by as much as 40 percent, with tool life increases of 50 percent being reported across a range of applications.

"With cycle time being less of a priority we focused on getting tool life to a point that we were happy with. That said, using the WNT System 2510 RS 100 mm diameter button cutters with RPHX 1204M8EN-M31 HCN 5235 inserts, we achieved cutting data of 186 m/min with a feed/tooth of 0.35 mm. To assist with the tool life we also ran the cutters dry, as applying coolant would have introduced an element of thermal shocking that would have reduced the life of the inserts," says Adam Cross.

For the finishing operation, a WNT System K 2000 32 mm copy milling cutter was used with ROHX 3250 R16-FM3 WAN2210 inserts. The tool life for these cutters on the finishing cuts was incredibly good, running



Thompson Precision has a wide capability, including 5-axis machining and 7-axis robot machining

at 200 m/min surface speed and 0.15 mm/tooth feed rate. The tool assemblies are a mixture of BT40/50 and HSK to suit the variety of spindles available at EH Thompson. The surface finish of the end product is very important so the quality achieved during the final machining operation has to be exceptional. The tools have to be super accurate in terms of setup, as E H Thompson can't risk any mismatch when sister tooling is called up. This all

formed part of the support provided by WNT.

"This project is typical of what we achieve on a regular basis here at Thompson Precision Engineering," says managing director, Simon Terry. The partnership with WNT ensures that we achieve the machining criteria needed to deliver the parts to specification, alongside our policy to invest in the best tooling, software and plant for the job.

"In this case we purchased a brand new EC1600 horizontal machining centre from Haas in order to ensure we had the machining capacity. Much of our business now comes from existing customers and word of mouth. We have a reputation as innovative engineers who can apply our knowledge to solve complex problems. We are repaid by winning exciting and interesting engineering conundrums such as this.

WNT (UK) Ltd

Tel: 0800 0732073

Email: tony.pennington@wnt.com

www.wnt.com/uk

Grooving improvements on large components

New clamping system from Walter

Following the introduction last year by tooling expert Walter GB of an extended range of grooving blades and through-coolant tool holders for the Walter Cut-SX single-edged grooving system, tool life increases of up to 200 percent are being achieved while built-up edge formation and crater wear are both being minimised.

The system is now available with strengthened, smaller diameter shanks and in four variants.

G20242R/L grooving blades can be supplied as left- and right-handed variants, in both standard and contra versions. The contra design is particularly useful when grooving in the immediate vicinity of the machine spindle, when traditionally the tool shank reduces the available clearance.

G2012-P tool holders with through coolant are now also available in shank diameters of 12 mm and 16 mm, complementing the existing 20 mm and 25 mm versions. The smaller sizes will prove especially suitable for use on multi-spindle autos, for example.

Walter Cut-SX tools feature precisely-matched grooving inserts and insert holders, a 'rounded' positive locking insert shape with form fit underside and a sturdy top clamp.

Compared to conventional inserts, Walter Cut-SX offers significantly increased process reliability because a positive locking insert cannot be 'lost' during machining, for example when the insert is pulled from the holder as the workpiece and bar separates during part off.

In addition to these standard tools, Walter GB has also now announced a new clamping system that offers tool life increases of up to 30 percent and greater process reliability for grooving and roughing slots in large components.

For example, in the machining of turbine shafts of up to three metres diameter by 15 metres long, where slots of up to 100 mm wide and deep are required, a widely-used approach is to apply a 19 mm wide grooving insert and to progressively open up the slot in steps of 8-10 mm.

With Walter's stable clamping system,



Walter's new clamping system offers tool life increases of up to 30 percent and greater process reliability for grooving and roughing slots

slots can be expanded by up to 18 mm in each pass and the improved chip breaking for these innovative geometries enables swarf to be generated cleanly and reliably, leading to improved process reliability.

Walter GB Ltd

Tel: 01527 839450

Email: ashley.battison@walter-tools.com

www.walter-tools.com

Tool choice made easy

Dormer Pramet introduces a brand new Pramet catalogue

The new 2017 indexable publication is the company's largest in its history, containing more than 1,000 pages of products and machining advice for a wide range of applications.

It is the first regular edition where all Pramet turning, milling and hole-making tools have been presented together in one printed, multi-lingual publication, for numerous countries.

In total more than 60,000 copies have been produced, in 20 different languages.

As well as including all the latest new products announced over the last three years, significant improvements have been made to support easier use of the catalogue.

To help customers find exactly which product they need in a fast and easy way, various navigators are available. Detailed information to help find the right cutting tool is available directly in the product page, including a set of icons presenting possible tool applications, achievable surface quality and type of cut.

Radek Hudós, marketing and communication manager at Dormer Pramet, says: "This new publication is more than just an update of our older indexable catalogue, which was last published in 2014.

"It is a brand new publication entirely, providing the user with much more detailed information on our products, including advice on choosing the right tool and how to successfully use it.

"We have prioritised the most relevant information to support customers with choosing a product, such as the application area of each insert, grade and suitability for use in specific working conditions. And that is not all. We also include the influences of cutting fluids in continual cut, when to apply cooling and when to avoid it.

"Thanks to a brand new page template,



the detail on our inserts is absolutely identical across the whole catalogue. We have also tried to make the most important sections, such as the product pages, as universal as possible by keeping them text free. A lot of text has been replaced with easy to understand icons that can be used across multiple languages."

For more information regarding the Pramet 2017 catalogue or to request a hard copy, contact your Dormer Pramet sales representative. Alternatively, visit www.dormerpramet.com to view or download an electronic version.

A brief online tutorial has also been produced to guide users on using the new publication. Visit the Dormer Pramet YouTube channel: www.youtube.com.dormerpramet for more details.

The merger of round tools manufacturer Dormer Tools and cemented carbide tooling specialist Pramet Tools was instigated in 2014. The combined product program now encompasses a comprehensive range of rotary and indexable drilling, milling, threading and turning tools for the general engineering sector. An expanded sales and technical support service extends to over 30 offices serving more than 100 markets worldwide. These are supported by state-of-the-art production facilities in Europe and South America and a global distribution network.

Dormer Pramet
Tel: 0870 850 4466
Email: simon.winstanley@dormertools.com
www.dormerpramet.com

GUHRING are expanding

Operating from a new 55,000 sq ft high-tech manufacturing facility enables us to react quickly and competently to the continuous changes in machining technology.

Guhring Limited | Estone Drive | Aston Hall Road | Birmingham B6 6BQ | 0121 7495544



Boring head with built-in smart damper for fast, vibration-free operation

Taking precision holmaking to new heights, Industrial Tooling Corporation (ITC) has now introduced the new SW Smart Damper boring head with a built-in anti-vibration mechanism. Developed by BIG KAISER, a global leader in premium high-precision tooling systems and solutions for the metal-working industries, the new rough boring head has been developed to improve productivity and performance for end users.

The new twin-cutting head for rough boring makes it easy to create deep bores in a range of materials such as iron and steel with remarkable speed and without vibration, chatter and the consequent noise. This means that faster machining and higher productivity levels are achieved, thus saving the customer money.

The SW Smart Damper can operate at cutting speeds of up to 200 m/min in steel at a length of 8 x D without chattering. This is four times faster than the 50 m/min maximum chatterless cutting speed attainable without the SW Smart Damper. BIG KAISER has achieved this breakthrough thanks to a patented construction design



that consists of a metal body with special rubber dampers inside. Furthermore, the Smart Damper requires no oil, so maintenance requirement and the risk of oil contaminating the machine tool are minimised. If the bar vibrates, the metal weights or friction dampers will compensate for the vibration by adjusting their position.

Moreover, the SW Smart Damper can perform two roughing operations without needing to change any components. One configuration is for high speed operation whereby inserts are of the same diameter and length. The second setup for high stock removal tasks sees the inserts installed with diameter and height offsets. This is made

possible by the tool body providing perfectly stable supports for insert holders of varying heights and lengths.

"Our innovative and patented oil-free SW Smart Damper brings unparalleled production speeds to the world of vibration-free boring. This new addition to our already comprehensive family of boring tools will allow our customers to do more in less time, hence increasing their production and saving money," says Peter Elmer, CEO at BIG KAISER.

BIG KAISER also offers a wide range of smart damper products that each features an integrated damping system to eliminate chatter. These products include a precision EWD boring head with a digital display as well as a whole range of tools for turning, boring and milling tasks. For further details, contact:

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

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

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

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

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

tools are sent away to be reground, saving the associated costs.

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

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



Horn's new DR Small reamers cover four size ranges: 7.6 to 8.0 mm, 8.1 to 9.6 mm, 9.7 to 11.1 mm and 11.2 to 13.1 mm.

Horn Cutting Tools Ltd
Tel: 01425 481800
Email: info@phorn.co.uk
www.phorn.co.uk

Onwards and upwards for clamping technology specialists

David Bridgens, MD of RÖHM UK, explains his optimism to Engineering Subcontractor's John Barber

John – "How have the last twelve months been for RÖHM worldwide?"

David – "Domestically business was good. We were on the plus side for our order intake for 2016. Having said that, the first quarter was particularly good."

"Internationally it was challenging as 60 percent of what we do comes from Germany. France we did well as did some of our smaller subsidiaries. Undoubtedly the biggest issue for us was Brexit as we buy products from Germany in Euros. This impacts on our productivity. We were much more profitable in 2015 than 2016, but we have just enjoyed our best January for three years."

John – "I understand the Engineering Technology Group (ETG) is now a supply partner for RÖHM GmbH. How important are relationships with supply partners for the company?"

David – "If we can develop relationships with suppliers who can help promote our products on their machines, this is a good thing. A challenge for us is to get on the machine from the point of sale. ETG has helped us with that. Supplier relationships are an integral part of our business. When people invest in our product it's about selling the added value. The value, quality



and precision is built into all of our products."

John – "RÖHM serves a number of important industry sectors ranging from automotive to energy. Is there a particular area that is experiencing growth at the moment and do you foresee future success in new areas?"

David – "The automotive industry is a mainstay sector for us. Aerospace will continue to be buoyant and we will also continue to work with the oil industry. The medical industry takes us into other areas such as small parts machining. We know that we can provide companies with the right solution."

John – "The company certainly has an impressive range of products. Could you explain about the Orange Line and the products that it offers?"

David – "We carry eight product groups in total. Drill chucks, centres and lathes and vices. These are all attractive products for distribution. Then we also offer power chucks, automation, tool clamping, mandrells and collet chucks."

"The Orange line was introduced to bring the price point down a little bit and to make it more attractive to the general market. It's a much smaller range of the typically top sellers. The range is suitable for most applications and comes at a sensible price point."

John – "RÖHM HQ is located in Sontheim, Germany. What does the company offer in terms of training and service?"

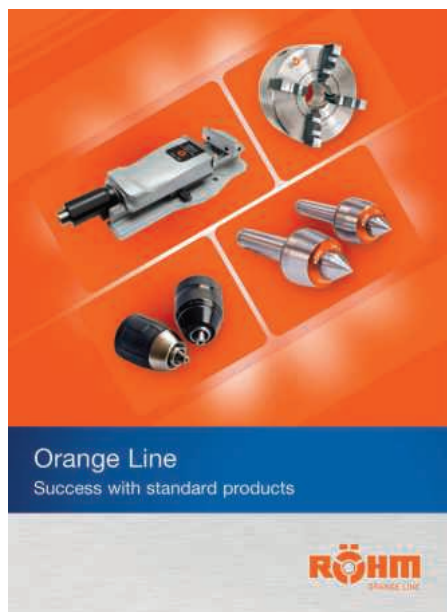
David – "The majority of personnel in Sontheim start with the company as apprentices. The training school is at the forefront of bringing forward the engineers of the future. The company has a very rich history. It was started in 1909 and has always been very focussed on quality, customer service and training."

John – "Finally, what are you looking forward to the most in 2017? What can customers expect from RÖHM going forward?"

David – "Continuing to develop the RÖHM presence in the UK and strengthening the brand. To expose more people to the RÖHM brand which is backed up by our service. Trying to get more people engaged with our product is a personal aim of mine. Making sure that we capture every opportunity that we can."

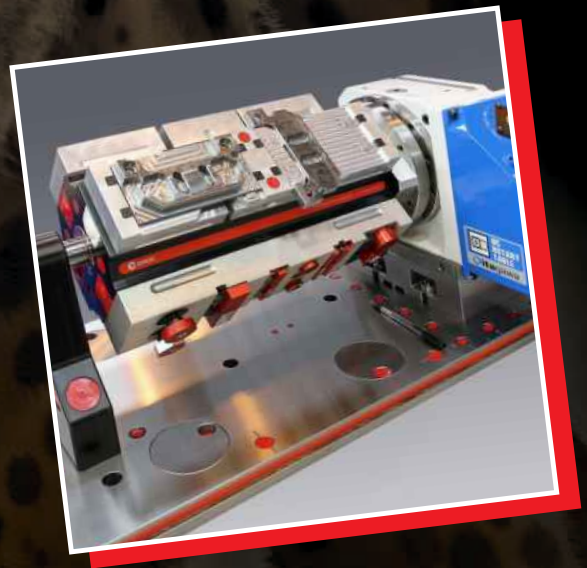
RÖHM is a leading company in the manufacture of drill chucks/workholding equipment and has the technology to produce keyed chucks to micrometre precision, entirely by machine, from raw material to finished product. The production of these chucks is well over 1 million units per annum worldwide. RÖHM is also well known for its keyless and precision keyless drill chucks for pillar drills, lathes and CNC machines.

RÖHM (Great Britain) Ltd
Tel: 020 85496647
Email: roehmgb@roehm.biz
www.uk.roehm.biz



Fast and precise component workholding?

The answer's
YES



Chick from 1st MTA. The UK's leading
machining accessory supplier.

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

Fax: 0800 783 0517 www.1mta.com



Rotary tables for 4/5-axis machining and versatile workholding solutions

Users of 3-axis machining centres visiting Advanced Manufacturing this year will find on the 1st Machine Tool Accessories stand an array of Kitagawa rotary table options for adding fourth and fifth CNC axes. They are capable of raising versatility of production, reducing the number of separate machining operations and increasing the complexity of parts that can be produced.

Included will be the latest TT150 tilting type compound table with 150 mm faceplate. It is designed to be interfaced directly with a machining centre control or operated via a MAC mini controller. Featured also will be the heavy-duty GT series models that deliver extreme rigidity, fast operation and clamping torques up to 2,800 Nm. Dozens of table variants are available, including multi-spindle versions for machining several components at once.

All machining centre users will benefit from seeing the wide range of workholding options available from 1st MTA for prismatic machining, including 5-axis clamping solutions. The range has been significantly expanded following the addition of the Italian-manufactured Tecnomagnete programme of magnetic equipment for securing workpieces.

Together with the established ranges of clamping equipment from Chick, Abbott and Mitee-Bite in the US, Tecnomors in Italy, the German firm Best and Finnish company, OK-Vise, they comprise the most comprehensive and varied workholding equipment portfolio available from one source in the UK. Some of the products, such as Chick's indexer sub-system may be used in conjunction with a rotary table to



present multiple components to a spindle during a single cutting cycle.

Another theme of the stand will be 1st MTA's ability to supply manually and hydraulically actuated clamping arrangements tailored to specific applications, often comprising complex configurations using equipment from several of its principals' catalogues. Such solutions can solve difficult production problems or, in standard applications, reduce setups and idle times, leading to higher levels of efficiency, accuracy and repeatability.

In the area of rotational machining, 1st MTA's solutions include an extensive range of Kitagawa jaw and collet chuck. The latter apply clamping pressure evenly around the circumference of a part, leading to tight concentricity during turning. They also open and close rapidly, boosting productivity for

both long and short runs. Standard jaw chucks including a quick-change range are available to meet a wide variety of applications, including demand for large power chucks in vertical lathes.

Italian bar magazine manufacturer lemca is another of 1st MTA's principals, one of whose latest products is the KID 80 IV short bar magazine. It is suitable for feeding stock between 5 and 80 mm in diameter and from 250 to 1,615 mm long and integrates with fixed or sliding head CNC turning machines.

A notable design improvement avoids the need for the bar pusher to move during component transfer between the main and sub spindles. Productivity is therefore higher during single-hit machining of components requiring two operations, one at each end. A further innovation is the ability to load a new bar while the last part is being machined, reducing changeover time, and it is possible to feed into position without a bar stop.

The other main area of technology on the stand will be drill sharpening, as



US-manufactured Darex equipment is sold exclusively in the UK by 1st MTA. A recent introduction is the automatic, bench-top, 4-axis CNC sharpener, XPS-16+. It can process two-fluted high-speed-steel, cobalt, carbide and coated bits from 3 to 16 mm in diameter and can create any point angle from 90 degrees to 150 degrees as standard. The unit also sharpens split point geometries and complex, 4-facet point drills and can automatically hone carbide drills for high precision cutting.



1st Machine Tool Accessories Ltd
Tel: 01725 512517
Email: enquiries@1mta.com
www.1mta.com

World's smallest hydraulic chuck for HSK-E25 spindles

Industrial Tooling Corporation (ITC) has now launched the world's smallest hydraulic chuck for HSK-E25 machine spindles into the UK marketplace. Manufactured by BIG KAISER, a global leader in premium high-precision tooling systems and solutions, the new line of chucks completes the extensive range of BIG KAISER Super Slim hydraulic chucks.

The Super Slim Hydraulic Chucks (HDC) line are the perfect tool holders for precision finishing processes in confined areas with drills, reamers, ball mills, end mills, diamond reamers and grinding tools. The wide variety of clamping diameters and projections are ideally suited for practically all applications in the automotive, aerospace, medical, and mould & die sectors.

BIG KAISER designed the Super Slim HDC to require only a single wrench for clamping and unclamping. These chucks can clamp ultra-small tools directly. Without needing a reduction sleeve, the chucks can clamp down to a diameter of 3 mm. When clamping diameters of 3 mm, the external diameter of the chuck nose is a mere 14 mm.

At a length of 90 mm the diameter is just 25 mm; this slender design means that interference contours should no longer pose a problem.

"Our HSK-E25 tool holder line-up now includes BIG KAISER's high precision, low runout, hydraulic chucks. These ultra-precise hydraulic chucks with their extremely slim design are perfectly suited for high precision finish milling operations on ultra-high speed spindle machine tools with small work envelopes," says Peter Elmer, CEO of BIG KAISER.

The Super Slim HDCs for the HSK-E25 machine spindles are now available for the HSK-E 32/40/63 and BBT 30/40/50 spindle model lines.

For further details on how ITC can enhance your small component machining processes with the HDC line, contact your local ITC representative now.



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

norelem clamps down on machining precision with new fixture

As engineers face growing pressure to meet shorter lead times and ensure greater quality, one manufacturer of systems and components is helping the industry machine workpieces in a single setup with its new 5-axis clamping fixture.

The latest addition to norelem's range of more than 33,000 individual standard parts, the company's new 5-axis clamping fixture makes it possible for engineers to quickly and easily machine an entire workpiece in one setup. This enables engineers to reduce setup times for each individual job, whilst achieving greater component precision at a time when workpieces are becoming more and more complex.

The product facilitates vibration-free machining with the highest cutting and feed forces, and minimal interfering edges. As a result, engineers can achieve more accurate tolerances and surfaces using shorter tools. When used in conjunction with modern 5-axis milling centres, norelem's clamping fixture can help deliver a particularly impressive surface finish.

The 5-axis clamping fixture has been

carefully designed to provide easy operability and rapid adjustment via the means of a scale, enabling it to be adapted to new workpieces. The workpiece is always centred with the drawing spindle located directly under the component support. This results in a very short distribution of forces during clamping, preventing the jaws from expanding under heavy loads.

Marcus Schneck, CEO of norelem, said the introduction of the 5-axis clamping fixture adds to the company's range of clamping technology, of which it can provide more than 300 parts. All of these components can be sourced through THE BIG GREEN BOOK, norelem's complete reference guide for engineers.

Marcus Schneck says: "Our 5-axis clamping fixture has been carefully designed to offer very high traction and rigidity for greater accuracy, whilst facilitating quick and easy assembly and setup. By delivering the optimal adjustment of the clamping jaws to a workpiece, the fixture provides reliability and secure fixing, enabling engineers to completely machine



workpieces in a single setup. At a time when industry is facing time and cost pressures, small marginal gains such as this will help operatives meet more challenging lead times, and engineer higher quality components."

norelem's 5-axis clamping fixture is available with a jaw width of 90 mm to 125 mm, with clamping widths possible from 20 mm to 320 mm.

To see norelem's full range of clamps and fixtures, download THE BIG GREEN BOOK at **www.norelem.co.uk/gb/en/Service/Order-catalogue.html**

norelem Ltd
Tel: 0121 2225321
Email: info@norelem.co.uk
www.norelem.co.uk

Floyd gets a grip on part turning

Precise and stable clamping of small workpieces in the sub-spindles of sliding head machines has long been an issue for turned part manufacturers. Floyd has pioneered many solutions in this area, but this latest development in association with MASA tools, California, is about to revolutionise its understanding of precision workholding.

To truly understand the revolution that is Microconic, consider that only three things are in physical contact with the workpiece when it is being made: The cutting tool, coolant and cutting fluid, and the workholding. Only the workholding portion has remained virtually unchanged since it was originally invented almost 100 years ago. The limitations of traditional collet systems are so firmly ingrained in the experience of most machinists that they consider them as part of the process rather than an obstacle. Every force applied by every cutting tool must be accurately countered by the workholding. The Microconic system is inherently so much better than traditional systems, that it ultimately allows rethinking of what is possible, often resulting in large gains in productivity.

This remarkable new Microconic workholding system consists of a cartridge and precision collet. The collet fits inside the cartridge and is accurately adjusted before it is fitted directly into the existing collet sleeve. No machine adaptations are required. The collets are available with clamping diameters from 0.2 mm to 10 mm, meaning the most fragile of parts can be clamped safely and with precision. With a concentricity level between 3 to 5 microns, the Masa Microconic System is ideal for

sliding head lathes like Tornos, Citizen, Star etc. Currently available for F20 and F25 style collets with F37 versions in development, a 5C version is also available.

The new Microconic cartridge system from Floyd Automatic incorporates a solid extended nose that is extremely rigid and robust for impeccable precision, repeatability and concentricity. Uniquely, the new device has the facility for micron-adjustment of the collet closure, ensuring that even the most fragile of components can be securely clamped. To confirm precision levels, the hardened and ground cartridges can be used as gauges to verify machine spindle accuracy.

The Microconic system also includes 'over clamping' collets in order to clamp behind a shoulder. The cartridge and collet combination can accommodate openings beyond 4 mm larger than the clamping diameter. This flexibility can give the production engineer the possibility machine the part the other way around which can



turned part and precision component machining industry with specialist tooling to a wide variety of subcontract and OEM component manufacturers. The products offered are from some of Europe's top names providing quality at realistic prices. Whilst the principle ranges of products are for the popular CNC sliding head automatic



often help improve cycle times significantly.

As the most accurate workholding collets for the micro-machining industry, the Masa Microconic collets are available in 0.05 mm increments from 0.22 mm up to 10 mm diameter. Each collet has a nominal clamping range from 0.05 to 0.1 mm depending upon the chosen collet diameter. With regard to the over-grip collets, the nominal clamping diameter starts at 0.5 mm with a maximum clamping diameter of 7.20 mm. Fatigue tested to over 250,000 full-load cycles, the over-grip collets include a part-ejection guide sleeve blank. For more details on this exciting new development for small part clamping, please contact Floyd Automatic Tooling.

Floyd Automatic Tooling provides the

lathes, this has been enhanced to include milling tools, spindle tooling and driven tools for fixed head lathes, VMC's, multi-spindle machines, CNC tool grinding machines and rotary machines. This is supported by the technical expertise based on many years of experience and product development with machine suppliers and tooling manufacturers.

The company is proud of its growth. It has stood by its philosophy of investment in good stock, efficient systems, and most of all people.

Floyd Automatic Tooling Ltd
Tel: 01462 491919
Email: info@floydautomatic.co.uk
www.floydautomatic.co.uk



SCHUNK to show new product lines at Advanced Manufacturing 2017

As a competence leader for gripping systems and clamping technology, SCHUNK will once again be showcasing why its product range is the industry benchmark at the Advanced Manufacturing exhibition. At the Birmingham NEC from the 6th to 8th June on Stand G61, the family owned company will be showing a variety of new and established product lines.

As part of the portfolio of new product launches, SCHUNK will be keen to introduce the new TENDO Slim 4ax hydraulic expansion toolholder. Incorporating the proven qualities of SCHUNK hydraulic expansion technology, it is now possible to combine the complete outside geometry of heat shrinking mountings according to DIN 69882-8 with remarkably slim precision mounting. Primarily designed for axial operations, the new TENDO Slim 4ax is ideal for milling close to interfering contours, countersinking and reaming on 5-axis machining centres.

From the workholding stable, SCHUNK will be aiming to reinforce the benefits of its exceptional new universal SCHUNK ROTA

NCX power chuck. This new power chuck can replace conventional lathe chucks without a quick jaw change system 1:1 without any conversion on the machine and without an adapter. The new system minimises the effort for setup by up to 80 percent, extending machine running times significantly. Within 60 seconds, a new jaw set is retrofitted with a repeat accuracy of 0.02 mm.

The ROTA NCX is suitable for finishing and volume metal cutting. For ensuring maximum operational safety, it is equipped with a jaw locking system and a jaw presence monitoring. The universal SCHUNK ROTA NCX chuck is available in the sizes 165, 215, 260, and 315 with a through-hole diameter of 53 to 106 mm and a clamping force from 55 to 155 kN. It can be used for I.D. and O.D. clamping.

Alongside the ROTA NCX will be firm favorites from the SCHUNK brand such as the TENDO E compact hydraulic expansion toolholder. This toolholding master class is capable of reducing setup times by up to 80



percent whilst generating 2000 Nm of torque. Furthermore, 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.

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

Roemheld launches new 5-axis vice

Roemheld has introduced a new 5-axis vice to the UK. The new MC-P vice from Hilma offers high stability and precision combined with excellent accessibility and comprehensive chip protection. Its compact design enables collision free tool paths and the use of short, standard tools in 5-axis machining.

The MC-P 5-axis vice from Roemheld offers the precision and stability to enable first and second operation, Op10 & Op20, within a single clamping system. It is therefore suitable for clamping long components as well as housings made of cast materials. It offers centring, clamping or balancing functionality and is suitable for a wide range of applications.

Mechanical and hydraulic versions are available and jaw widths range from 40 mm to 125 mm, with maximum clamping forces of 8 kN to 35 kN. The MC-P clamping system is extremely flexible and can be used with a wide range of accessories.

As a manufacturer, the Roemheld Group is constantly striving to improve its own processes through the development of new workholding elements. As such, the MC-P vice is an innovative addition to the current Roemheld 5-axis vice range.

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



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

To find out more about Roemheld's extensive range of workholding and materials handling, contact:

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

O.L.D. Engineering invests in quality with Mitutoyo

Taking its distinctive name from the initials of the company's three founders surnames, O.L.D. Engineering was established in 1971 in a small factory in Sharnford, Leicestershire. The fledgling subcontract business soon earned a reputation for delivering work on time and at the right price, but above all the for the quality of the its output. An ever-increasing order book prompted the emerging business to move to a larger facility just six months after its formation. Such was the continuing success of the business, that in 1980 O.L.D. Engineering, once again, relocated to an even larger factory in Hinckley which, itself, has since undergone further expansion.

Since those early days O.L.D. Engineering has constantly reinvested in state-of-the-art CNC machine tools and equipment to allow ever more complex work to be undertaken. In addition to first class sub-assembly and inspection facilities, the company now boasts an extensive range of advanced machining centres, CNC lathes, and grinding machines.

Given the growing complexity of the components O.L.D. Engineering manufactures and the company's enduring quality philosophy, significant investments in high precision inspection equipment are regularly made.

Tim Bainbridge, senior SQI manager at O.L.D Engineering says: "Over the past five decades O.L.D. Engineering has grown to become a world class, flexible and highly competitive engineering solutions provider. Although we mainly served the automotive industry we now have customers operating in many other demanding sectors, therefore our services are fully backed-up by a rigorous commitment to quality assurance. We also pursue a policy of regularly investing in the best available quality control equipment."

As O.L.D. Engineering's customers expect premium quality products to be delivered on time, at competitive prices, not only do all quality control checks need to be very precise, they need to be completed in a timely fashion. To help ensure the efficiency of its operation, when the need arises, O.L.D. Engineering purchases inspection equipment that delivers, not only the high



levels of accuracy, but also the required speed of operation. An example of O.L.D. Engineering's requirement for both precision and speed is the company's recent acquisition of an advanced form, contour and surface roughness measuring system.

Tim Bainbridge says: "We recently won a contract that involved the manufacture of precision shafts that had extremely demanding dimensional specifications. In particular, the lead angle of the shafts' chamfers that entered mating parts, needed to be held to 30 degrees with an extremely tight tolerance. As we needed more confidence in the results we were achieving with our optical comparator, and because of our growing need for a highly precise means of measuring components' form, contour and surface roughness, we searched for a suitable solution.

"Having looked at a couple of alternative systems, a demonstration of Mitutoyo's Formtracer SV-C3200 instrument, conducted on both our problematic shafts, and on a wide range of other challenging applications, persuaded us that the unit was ideal for our use.

"Now installed and fully operational, our quality personnel have had their initial product training. As the machine's controls and software is relatively intuitive and easy to follow, we are already undertaking a lot fairly involved form, contour and surface roughness inspection and achieving very

accurate results. Given the ever-increasing complexity of the parts we produce, in addition to improving the precision of our form, contour and surface roughness checks, it also helps that our new Mitutoyo instrument completes its routines extremely quickly. The speed of the Formtracer SV-C3200 has removed the potential for inspection department bottle-necks in these vital areas, and has enabled us to forward inspected components to dispatch much quicker."

Mitutoyo offers a wide range of high-quality, flexible measuring instruments that enable high-accuracy measurement of form/contour and surface roughness with just a single unit. The Mitutoyo Formtracer SV-C3200 boasts excellent traverse straightness making it suitable for handling workpieces calling for high accuracy.

The Formtracer SV-C3200's drive unit (X1 axis) and column (Z2 axis) are equipped with precise linear encoders (ABS type on the Z2 axis). This technology improves the reproducibility of continuous automatic measurement of small holes in the vertical direction and repeated measurement of parts which are difficult to position.

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



THE ULTIMATE SHOP FLOOR CMM

TIGO SF

HexagonMI.com



Hexagon Manufacturing Intelligence launches new camera-based portable CMM

AICON MoveInspect XR8 accelerates inspection, tracking and positioning applications in industrial environments

Hexagon Manufacturing Intelligence has released a new camera-based portable Coordinate Measuring Machine (CMM) for highly precise shop floor measurements. The AICON MoveInspect XR8 detects geometric conditions and changes in three dimensions to deliver highly-accurate measurement data.



Based on the renowned AICON MoveInspect Technology, the MoveInspect XR8 is the only measurement system able to simultaneously capture multiple points. This makes the system significantly faster in many applications, and therefore capable of offering clear time and cost-saving benefits.

The CMM consists of a camera beam with two high-resolution eight-megapixel cameras. Its calibrated cameras are equipped with invisible flashes that eliminate dependence on environmental lighting, and the system's ruggedised housing makes it suited to almost any industrial environment. Measurement with total freedom of movement is delivered by use with the AICON MI.Probe handheld probing device, while the MoveInspect software determines the 3D coordinates of object points or the six degrees of freedom (6DoF) data of solid bodies at any time.

Carl-Thomas Schneider, general manager of AICON 3D Systems, says: "We believe the new AICON MoveInspect XR8 is one of the most stable portable camera-based CMM ever to enter the market. With this system, shop-floor recalibrations are

reduced to a minimum, removing unnecessary delays from the measuring process."

Problems typically presented by vibrations, noise, and position changes are solved by the dynamic referencing function. This allows the system to automatically detect and compensate for disturbances immediately, ensuring reliable results in even unstable shop floor environments. The MoveInspect XR8 system also simplifies and accelerates assembly and positioning processes, and can replace costly assembly gauges. The system monitors the process, guiding the operator in positioning the part, while immediate feedback serves as a final inspection of the positioning and assembly process.

AICON MoveInspect XR8 is available to order now. More information is available through local Hexagon commercial operations and dealers.

New Optiv Classic machines have broad measurement range

Hexagon Manufacturing Intelligence is expanding the vision product range with user-friendly and practice-oriented system solutions for the measurement of large or palletised 2D moulded parts.

Series components with geometrically varied and strict-tolerance 2D inspection features require a specialised production measuring solution. The new Optiv Classic 8102 and Optiv Classic 12152 have an XY measurement range of 800 mm x 1,000 mm or 1,200 mm x 1,500 mm and can be combined with the optional PC DMIS Operator Interface (OI) to handle workpiece palletising. This enables a fast and automated inspection process, even for large batches of small serial parts such as clutch discs, fine-blanked parts and sheet metal cut-outs for electric motor construction. Thanks to the extended measurement range accessibility, prepared interchangeable pallets can be supplied

semi-automatically by a palletising robot, reducing standstill times and increasing inspection throughput.

The Optiv Classic 8102 and Optiv Classic 12152 are each fitted with a world-class vision sensor system comprised of a high-resolution digital CMOS colour camera combined with a programmable 6.5x CNC motor zoom to enable repeatable, fast, and automatic measuring-point capture. Both new metrology machines are supplied with PC DMIS Pro as standard with the option to upgrade to PC DMIS CAD software to extract all relevant dimensional, shape and position tolerances from imported CAD data. The addition of the PC DMIS OI further enhances the user experience with its simplified user-interface with pre-defined measurement routines whilst minimising the risk of input and interpretation errors across entire component pallets.

Wolfram Fröhlich, business unit director at Hexagon Manufacturing Intelligence, says: "We have added two new broad measurement CMMs to our comprehensive Optiv Classic range to give manufacturers a



choice of specialised solutions for large part and palletised applications. And to complete these production-ready measuring solutions, we offer the intuitive PC DMIS OI so our customers can achieve the very best results possible."

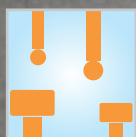
Hexagon Manufacturing Intelligence

Tel: 01952 681300

Email: enquiry.uk@hexagonmetrology.com

www.hexagonmetrology.co.uk

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

Bespoke presetting equipment maximises machining precision at Alcon

One of the world's leading prestigious braking component manufacturers has employed state-of-the-art presetting and measurement technology to deliver the ultimate in part precision for its elite Tier 1 customers.

Employing a team of 125 at its site in Tamworth, Alcon are specialists in the design, manufacture and worldwide distribution of motorsport brakes and clutches.

Established in 1983 by engineer and sports car racer, John Moore, the company has over 30 years of experience in supplying to the top echelons of the motorsport industry, including World Rally Championship teams, Formula teams and NASCAR based in America.

To ensure products of the highest calibre are delivered to its global customers, Alcon has integrated the Zoller »venturion 450« universal tool presetting and measurement system.

Brian Cutler, production engineering manager at Alcon, says: "At Alcon we produce parts that perform to the very highest standards, so we needed a solution that could guarantee our machining methods are the best in class.

"We chose the Zoller venturion 450 tool presetter because we manufacture a multitude of complex products in a wide range of materials, often using tools weighing an average of 15 kilograms each. Zoller offered us the tailor-made solution we needed, and with fully automatic operation."

Zoller engineers worked with Alcon to create a unique adapter to hold Alcon's bespoke tooling ensuring the products are machined to exacting tolerances demanded of their motorsport customers.

Brian Cutler says: "Zoller UK were able to offer us a bespoke adapter which was



modified and fitted to the machine. Alongside intuitive software that is able to interpret the 90 degree turn-through of our right angle headed tools.

"We are now able to programme our vast library of tools, and monitor drill and insert changes, ensuring the operator uses the correct tool for the job. Altogether working to reduce errors often made during the changeover process."

The »venturion 450« has empowered Alcon operators, giving them the capability needed to maintain the highest precision throughout the machining processes. As well as providing each operator with an individual log on so that Alcon has full traceability of who's manned the machine which can be extremely important to its customers.

Brian Cutler says: "Training prior to the delivery of the machine meant that our team had a deep understanding of how to operate the system and software from day one. We were especially impressed by Zoller UK's ability to deliver exactly what we asked for swiftly and within the agreed amount of time.

"From the day the venturion was installed we were astonished at the accuracy, functionality and usability of the machine."

Moving forward, Alcon look to further strengthen its relationship with Zoller UK, with the implementation of Zoller Tool Management Solutions (TMS) which will allow the manufacturing company to have complete control over all tool-based production operations.

Zoller UK represents the full range of Zoller tool presetting and measurement systems here in the UK and Ireland.

From its base in Derbyshire, the company works with the leading names in UK and Irish manufacturing to ensure that their essential equipment is preset and inspected prior to manufacturing. When the quality of the

product is essential, manufacturers turn to Zoller.

Zoller has a wide variety of inspection and measuring equipment for cutting tools including non-contact vision-based systems and fully-automated all-in-one measuring solutions, covering all application areas and functions of cutting tool presetting, inspection and management.

Installations have been made within the manufacturing industry all around the world in the major sectors including automotive, aerospace, medical, tool and mould, tool



grinding and sharpening and the high precision watch industry. Solutions to customers include standard machines and software packages to application specific measurement covering processes as diverse as fully automatic, shop-hardened universal machines with auto-focus vision systems that provide operator-independent quick and precise measurement with documented results. This allows data to be immediately transferred from CAD/CAM and to tool grinding equipment

Zoller UK is a dedicated sales, service and training company. Its rigorous quality systems and highly-trained team ensures that Zoller machine users are supported every step of the way.

Zoller UK

Tel: 01283 499566

Email: chrisf@carfulan.com

www.zoller-uk.com





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



Mitutoyo

Proud to be a Global Industry Partner
of **WorldSkills International**

To find out more visit www.mitutoyo.co.uk/worldskills



worldskills
Abu Dhabi 2017
مسابقة المهارات العالمية أبوظبي 2017

Blum introduces its most advanced tool setting probe yet

As a leading supplier of groundbreaking high-quality measuring and testing technology, Blum-Novotest has now launched its new ZX-Speed tool setting probe. This latest addition now means that Blum Novotest has the most innovative 3D tool setting probe series with three new compact tool measurement systems for length and radius as well as tool breakage detection.

Wolfgang Reiser, technical director at Blum, explains: "The new ZX-Speed is aimed at customers that wish to profit from automatic, quick and economical tool measurement and monitoring. The tool length measurement and breakage detection processes are carried out while the tool is stationary. Only large tools such as face mills that must be measured off-centre are measured under rotation. The measurements are performed, for example, after a new tool has been loaded or for control measurements between machining steps. This is a reliable method of avoiding costly rejects due to undetected tool breakage, wear and poorly adjusted tools."

A particularly noteworthy feature of the new ZX-Speed is the modern, multi-directional measuring mechanism. Unlike standard probes, the new ZX-Speed has a rotationally symmetric design that offers constant and extremely precise measuring characteristics in all measuring directions without a preferred direction. This allows

the measurement of even very small tools starting from a diameter of 1 mm with an ultra-precise repeatability of 0.4 µm.

The trigger signal generation system used by the Blum tool measuring probe is also remarkable because it is based on opto-electronics. This method uses the shading of a miniature light barrier rather than a simple micro-switch. This wear-free system guarantees consistently high precision levels even after millions of switching cycles.

The new tool setting probe is available in three versions. It has a wired option, an infrared system or a radio transmission device. The highly economical wired version is recommended if it is possible to mount the probe at a fixed location in the machine without causing interference. It is supplied as a standard unit with a highly flexible connection cable and a 1.5 m steel spiral protective hose.

If a Blum workpiece touch probe is already fitted to the machine, or if wired installation is not possible, the wireless variants are available. The ZX-Speed IR is the perfect solution for machines with pallet changers. Using the infrared transmission, a trigger signal is forwarded to the IR-receiver IC56. When operated in DUO-Mode, it allows two measuring systems to be applied sequentially using only one IR-receiver.

The ZX-Speed RC with BRC radio technology is generally used if a direct line of sight between the probe and receiver cannot be guaranteed. One advantage of this innovative new transmission technology is that each single bit of the radio signal runs across the entire width of the frequency band, thus making transmission particularly resistant to interference.

The proven BRC radio technology also allows sequential activation of up to six Blum radio measuring systems with one receiver as well as the simultaneous use of two radio measuring systems on a single machine



operating in TWIN mode. Thanks to its robust construction according to protection class IP68, the ZX-Speed is perfect for the tough demands of machine tool applications. It is also worth mentioning that the newest addition to the Blum tool setting probe series is comparatively compact, making it ideal for use in machines offering limited space.

To meet the needs of each customer, Blum offers a comprehensive range of accessories for the probe systems. This includes replaceable measuring surfaces, different mounting brackets as well as blow nozzles for cleaning the tool and measuring surface.

Established in 1968 and based in Ravensburg, Germany, Blum-Novotest GmbH is one of the world's leading manufacturers of high-quality measuring and testing technology for the international machine tool, aerospace and car industry. Today the family-run company employs more than 480 staff at a total of seven sites in Europe and in the USA, China, Japan, Taiwan, Singapore, Korea, India, Brazil, Thailand and Russia. Together with specially trained system integrators and regional sales offices, this sales and service network guarantees comprehensive support for BLUM products in use worldwide.

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



FARO Laser Tracker – The New Standard in Value/Performance and Workflow Productivity



Visit us at
Advanced
Manufacturing Show,
Birmingham,
6 – 8 June

Large-scale, 3D metrology is now faster and easier than ever before

The new FARO Vantage^S and Vantage^E Laser Trackers offer the next generation of portability with battery operation capability & industrial-grad Wi-Fi. Speed up your productivity with continuous operation thanks to a hot-swappable battery pack. With the new RemoteControl™ workflow you can easily control the tracker from anywhere in the measurement area. More about the Laser Tracker series at www.faro.com/lasertracker

FARO



£13,995

ABERLINK 
Innovative Metrology

The largest UK owned manufacturer of CMMs

Xtreme CNC CMM

CMM ACCURACY WHEREVER YOU NEED IT

Precise results in even the most extreme manufacturing environments. No air required - just plug and go.

An evolution in CMM technology
at a price you can't ignore.



Visit Aberlink at:

**Advanced
Manufacturing**

6th-8th June
Stand H55



www.aberlink.com | sales@aberlink.com | 01453 884461

Enhanced control solution for Land Rover BAR's America's Cup race

When Olympic hero Sir Ben Ainslie took the helm of Britain's hope to bring the America's Cup home for the first time in 166 years, he realised that his Land Rover BAR team needed the very best in British manufacturing, design and innovation.

Since 2013, the AC72 and ACC class wing-sail catamarans have changed the conventional view of what a sail boat should look like. Adoption of advanced data-led simulation to aid the design process has allowed the construction, and precise optimisation of complex aero- and hydro-dynamic structures made of high-tech composite materials. Land Rover BAR's boat 'Rita' has been designed and built with the latest technologies to give the greatest advantage possible against the best in the world.

Renishaw, the global engineering company, is part of Land Rover BAR's Technical Innovation Group. The aim of this group is to bring together the best of British engineering to help win the America's Cup and bring it home. This is a huge challenge unlike any other in world sailing.

During Rita's development, Land Rover BAR realised that precision knowledge of their wing settings could be compromised by the tenuous link between the hydraulic actuators and the control surfaces or flaps. These linkages are ropes with a high degree of compliance, so the position of each actuator is often only an approximate measure of the actual flap angle. They called on metrology experts at Renishaw to design a solution.

Technical leader for Renishaw's Encoder Products Division, Dr Finlay Evans and his team rose to the occasion and designed a bespoke magnetic encoder solution, based around LinACE™ technology from Renishaw's associate company RLS. LinACE is an extremely robust absolute linear cylindrical encoder system designed for integration into hydraulic, pneumatic and electromechanical actuators as a feedback element for position or velocity closed-loop applications.

The position encoders were installed on the control surfaces of both the wing (flaps) and the port and starboard rudders. Numerous changes were made to make the



LinACE encoder more rugged and make it durable enough for life at sea. For instance, the encoder read head (sensor) was encapsulated to protect its internal microelectronics and special gimbalised armatures were designed to isolate the encoder from structural vibrations and wing flex. Correct ride height has also been ensured by a magnetic bond between the read head and its stainless steel partial arc scale.

These design features are crucial to the success of the overall encoder system. Any design failures would have meant failure to deliver an encoder in the time scale requested, the biggest challenge that Finlay and his team faced. It was literally a race against the clock. In crossing the finishing line, Renishaw has provided Land Rover BAR with a position encoder control solution truly befitting of their world-class status.

A video created by the Land Rover BAR team also explores how the Renishaw encoders are helping position the wing to reach maximum speed.

Land Rover BAR is also using Renishaw's metal 3D printing technology to manufacture several parts for the boat's hydraulic systems.

UK-based Renishaw is a world-leading engineering technologies company,

supplying products used for applications as diverse as jet engine and wind turbine manufacture, through to dentistry and brain surgery. It has over 4,000 employees located in the 35 countries where it has wholly owned subsidiary operations.

For the year ended June 2016 Renishaw recorded sales of £436.6 million of which 95 percent was due to exports. The company's largest markets are China, the USA, Japan and Germany.

Throughout its history Renishaw has made a significant commitment to research and development, with historically between 14 and 18 percent of annual sales invested in R&D and engineering. The majority of this R&D and manufacturing of the company's products is carried out in the UK.

The company's success has been recognised with numerous international awards, including eighteen Queen's Awards recognising achievements in technology, export and innovation.

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

HEIGHT GAUGE

BORE GAUGING

HARDNESS TESTER

CALIBRATION

NON-CONTACT MEASUREMENT

SURFACE, ROUNDNESS

TURNED PARTS

WHATEVER YOUR MEASUREMENT NEED BOWERS IS YOUR PARTNER IN PRECISION



BOWERS GROUP

Telephone: 08708 50 90 50
www.bowersgroup.co.uk
sales@bowersgroup.co.uk

The Bowers Group offers organisations across the globe a range of quality metrology instruments to assist them in the creation and development of exceptional products designed to meet the exacting needs of today's markets.

The Bowers Group of Companies



MetrologX⁴

- STANDARDISE YOUR 3D INSPECTION SOFTWARE
- UNPARALLELED ANALYSIS AND REPORTING INCLUDING GD&T AND POINT CLOUD SCAN DATA
- EFFICIENT YET POWERFUL PROGRAMMING
- ANY MANUFACTURING PROCESS
- ONE SOFTWARE, ANY DEVICE - CONNECT DIRECTLY TO YOUR EXISTING CMM, LASER TRACKER, PORTABLE MEASURING ARM OR 3D SCANNER



The #1 inspection software in aerospace & automotive

ANY DATA | ANY TECHNOLOGY | ANY APPLICATION



Tracker - Portable Device - Arm - CMM - Robot - Off-line - Virtual Analysis

www.measurement-solutions.co.uk



measurement solutions
 in partnership with: **metrologic group**

Aberlink CMM delivers 'Sterling' levels of precision

Sterling Precision Engineering Services based in Kirkcaldy, Fife, is a supplier of machined components to the Oil & Gas industry and increasingly to the aerospace sector and to other equally demanding industries. Although Oil & Gas work still accounts for the majority of Sterling Precision's output, a policy of diversification into other industrial sectors put into place prior to the Oil & Gas industry's downturn, has insulated the company from the worse effects of the Oil & Gas sector's slump. The foresight shown by Sterling Precision's owner, John Mitchell, has ensured that an increasing amount of extremely demanding aerospace orders, and other equally challenging work, has more than compensated for the falloff in the company's customary Oil & Gas business.

Recently, Sterling Precision's increased output of high-precision, complex aerospace components began to place a strain on the company's inspection department. Although Sterling's quality staff have access to a wide range of precision instruments, the manual nature of the company's gauges meant that an inordinate amount of time was being taken to inspect intricate aerospace parts that feature demanding tolerances. To overcome these difficulties a decision was

made to invest in an advanced CNC Coordinate Measuring Machine (CMM) with high precision capabilities and that was able to automate many of the company's measuring routines.

John Mitchell says: "To ensure that our policy of broadening the industrial sectors that we serve succeeded, we have invested in machine tools that are appropriate to our new, expanded customer base. Not only has this strategy ensured that we have been protected from the moderate downturn we have experienced in Oil & Gas related orders, due to branching out into other areas, we have actually grown our business in the past couple of years. As we are now manufacturing larger volumes of complex, high-precision parts, to help our inspection function keep pace with production we recently investigated the available medium capacity CNC CMMs. After comparing several makes and models, we decided that the CNC version of Aberlink's Axiom Too was perfect for our needs.

"As our production volumes of high tolerances components are increasing, the high precision specification of the Axiom Too, and its ability to rapidly inspect multiple parts in a fully automatic CNC mode, were major factors in our choice.

"Following a short Aberlink training

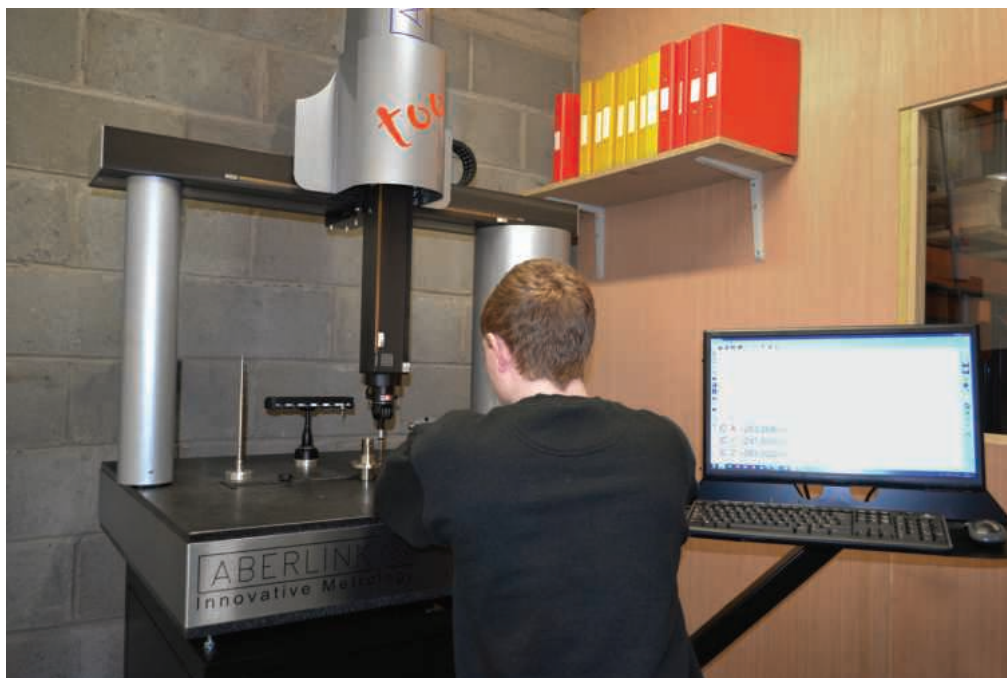
course, due largely to the Axiom Too's ease of use, our operators soon became competent in our new CMMs operation. Now, we are able to quickly measure and to verify the adherence to specification of first-offs before embarking on a production run. Also, when we manufacture repeat batches, we are able to quickly recall the relevant, pre-written program, load a completed batch of multiple parts onto our Aberlink CMM, and with the press of a button activate a rapid, fully automatic inspection routine. On completion, if required, the Axiom Too can then produce a detailed inspection report related to the status of each component in the batch.

"Having ensured that we have the manufacturing capabilities to allow the efficient production of complex aerospace, and other such, components, the purchase of our Aberlink CNC CMM now enables our inspection department to keep pace with our increased levels of production, to measure high-accuracy parts to the required levels of precision, and when needed, to produce in-depth inspection reports and traceable documentation."

The cost-effective Axiom Too is the best-selling CMM from the largest UK owned coordinate measuring machine manufacturer. Aberlink's popular Axiom Too

CMM is available in both manual and CNC variants and is described by Aberlink as the 'complete inspection centre'. The recently upgraded CMM is ideal for use in either controlled environments, or within less than perfect shop-floor conditions, as it boasts an aluminium bridge with a very low thermal mass. Thanks to the Axiom Too's use of advanced materials, the machine's reduced inertia results in class leading speed of operation.

Borrowed from the aerospace industry, the CMM's sturdy component support consists of an advanced granite/aluminium honeycomb construction. This technology provides natural damping and further improves the machine's thermal properties.



Despite the Axiom Too's generous measuring volume 640 x 600 x 500 or 640 x 900 x 500, the machine's compact design occupies a relatively small footprint, with the controller and all peripherals housed within the Axiom Too's workbench.

The Axiom Too utilises Aberlink's renowned 3D software, ensuring greater user productivity and profitability. A welcome bi-product of any Aberlink CMM inspection routine is that a simultaneous picture of the measured component is created on the computer screen. Dimensions between the measured features, mirroring those that appear on the component drawing, can then



be simply picked off as required. In essence this 'smart' software represents an intelligent measuring system that is able to automatically recognise and define the various features being measured. Aberlink 3D is claimed to be the easiest to use and most intuitive CMM software currently available.

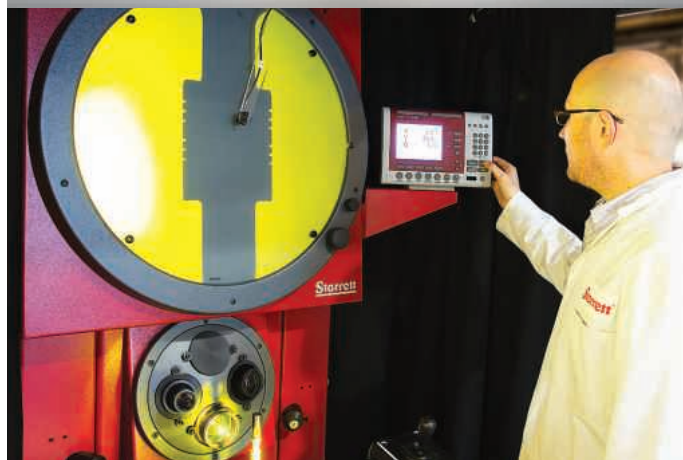
Now the largest UK owned CMM manufacturer, Aberlink's comprehensive range includes 23 standard sizes of both CNC and manual CMM variants. Aberlink CMMs enable the precise measurement of the smallest of components, to parts of over 3 m long and up to six tonnes in weight. Customers are able to select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

Aberlink Tel: 01453 884461

Email: gavin@aberlink.co.uk www.aberlink.com

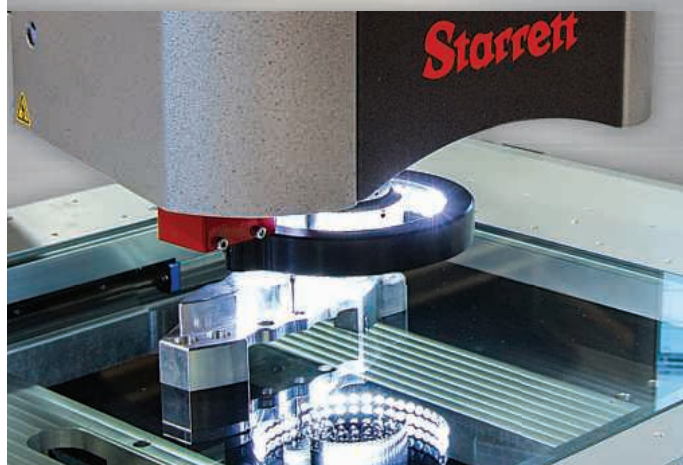
Starrett®

Profile Projectors



- screen sizes from 300mm - 1000mm
- horizontal and vertical projection
- benchtop and floor standing models

Video Measuring



- manual and cnc
- huge range of software
- specify your machine for your application

www.starrett.co.uk

U.K. manufacturing since 1958



Hardness tester for new facility

Bowers Group has supplied leading materials testing company Special Testing Ltd with an Innovatest hardness tester for its new hardness testing facility based in Sheffield. Typically used to test metallic samples of materials involved in the manufacture of components for the oil and gas, nuclear, marine, aerospace and construction industries, the Innovatest Load Cell Closed Loop Brinell Hardness Tester NEXUS, 3200 Series is a high quality, compact, Brinell hardness tester with video measuring system. The unit boasts simultaneous conversion to Rockwell, Vickers, Brinell and Leeb rebound testing, an indent ZOOM function, and fully automatic indent measurement.

As part of its mechanical, metallurgical, corrosion and analytical testing services, Special Testing Ltd has recently invested in a new hardness testing facility. Continued investment in high quality hardness testing equipment means that the company can now carry out Brinell hardness testing, Rockwell hardness testing, Vickers hardness testing, Vickers micro hardness testing and micro hardness analysis under laboratory conditions.

Alex Roe, mechanical testing technician at Special Testing Ltd, says: "The hardness tester from Bowers Group is a really easy to use piece of kit; we use it every day. Unlike the old free standing hardness testers, this one can be mounted on a desk, so it's really handy for the testing environment. Although it's unlikely that we'll move the machine now it's in place, we do have the option as it's quite easy to move.

"Measuring a sample is a quick and simple process; it's easy to see the image on the screen and the useful measuring scope is very user friendly. We like the way that you can save the results and revisions in a table on the screen; that's really handy when we are completing hardness surveys rather than just one off measurements.



"The demand for hardness surveys has increased over the past few years as more people try to meet the very highest levels of accuracy, enabling them to sell material in the confidence that it is certified to a particular grade, and pass these assurances to their customers. The hardness tester takes away all ifs, buts, and maybes from the testing process. It is very accurate and removes all uncertainty for our customers."

Technicians set up the hardness tester every morning to ensure accurate measurement throughout the day, using gridded calibration blocks onto which the hardness tester makes circular indentations with a ball bearing.

Measurements are taken from a variety of samples; from metallic samples with small diameters, to large blocks of steel from which the component will be manufactured, to complete components. Samples

provided from customers include ring segments in order to check variation across the wall thickness of the piece, with indentations made in set locations to ensure the full range of hardness testing across the component. The diameter of the indentations are then measured to accurately determine the hardness of the samples.

Special Testing Ltd adhere to BS EN ISO 6506-1, the standard that specifies the method for the Brinell hardness test for metallic materials in the UK.

Bowers Group

Tel: 01276 469866

Email: sales@bowersgroup.co.uk

www.bowersgroup.co.uk



Rugged, accurate and easy-to-use metrology

Starrett expands its metrology product range

Metrology and measurement specialist Starrett, has introduced a new horizontal digital video projector to its range of metrology equipment. The HDV500 Digital Video Projector is a further evolution of Starrett's existing HDV Vision System product offering. The newest version of this machine combines a large, floor-standing, horizontal optical projector and a vision metrology system.

The HDV500 was first demonstrated at the International Manufacturing Technology Show 2016 and was released for global sale following the event. The machine is configured like a traditional horizontal projector, using a heavy-duty steel design. Much like Starrett's existing HDV300 and HDV400 systems, the HDV500 centres on its uniquely designed, bayonet-style lens mounting system, combined with a high-resolution colour video camera.

Unlike the previous models, the new machine includes CNC controls as standard. In addition, the HDV500 delivers triple the

maximum load capacity of its predecessors, allowing for a maximum load of 150 kg. This impressive capacity is supported by the machine's steel construction and nickel plated stage tooling plate. The machine also provides a more extensive stage travel, of 500 mm x 200 mm.

John Cove, marketing manager at Starrett, explains: "All the HDV systems in Starrett's range include a powerful 64-bit PC to ensure CAD files can be directly imported and digital overlays can be developed from these files. The PC's housed run Metlogix M3 metrology software, which delivers advanced customised measurement and reporting to its operators.

"Integrated video edge detection (VED) can provide operators with real-time interaction of the imported file, combined with the video image of the part that is being inspected. What is more, the newest HDV500 machine is available with zoom optics and a choice of three telecentric lens options. This allows for micron-level



resolution and optical distortion to as little as 0.002 percent, giving operators incredibly accurate field of view (FOV) measurements."

The HDV500 digital video comparator is the newest addition to Starrett's existing range of HDV Vision systems. The complete range of HDV systems and accessories can be browsed online.

The L.S. Starrett Company Ltd

Tel: 01835 863501

Email: jcove@starrett.co.uk

www.starrett.co.uk

IndySoft

www.indysoft.co.uk

Tel: +44 (0)1908 540 638

Gauge & Asset Management Software

Tool Management Software

IndySoft Calibration Management Software

IndySoft has the 'most complete' Gauge Management Software available.

Track Equipment as it moves about your business.

Perform Calibrations using your own reference standards.

Run service/maintenance events.

Distribute automatic Email reminders to your colleagues.

Complies with many Quality Standards.

Windows 10

IndySoft Europe Ltd 500 Avebury Boulevard Milton Keynes Buckinghamshire MK9 2BE United Kingdom sales@indysoft.co.uk

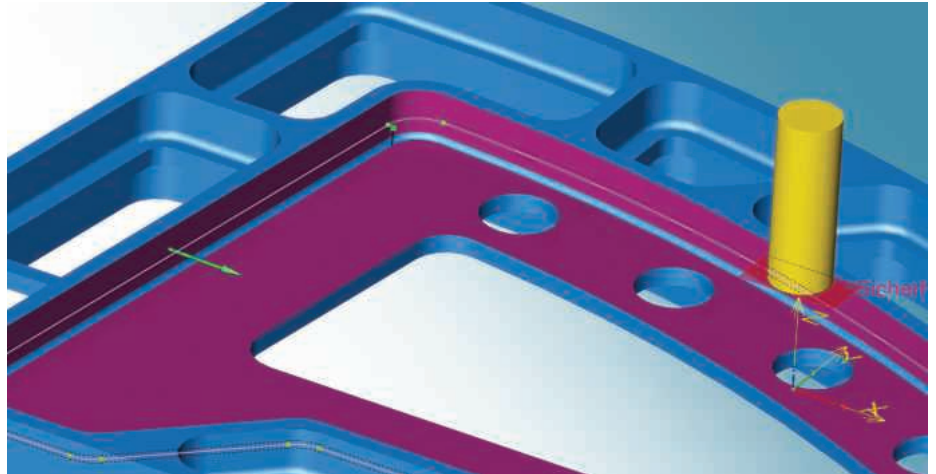
OPEN MIND debuts hyperMILL 2017.1

OPEN MIND Technologies has now released the latest version of its industry leading CAM system, hyperMILL® 2017.1. This new version received its UK exhibition debut at the recent Southern Manufacturing 2017.

Users now benefit from many new functions and optimisation tools that make programming faster while reducing auxiliary processing times when carrying out machining jobs. The software developer has also made crucial additions to hyperCAD®-S, its proprietary CAD for CAM solution.

Manufacturing companies heavily rely on multi-functional mill/turning centres to optimise their machining processes. OPEN MIND supports this trend and has added many new mill/turning functions to hyperMILL 2017.1.

The extended chip break function for turning operations now allows the customer to machine hard and soft materials with more flexibility than ever before. New functions make it possible to remove chips safely for non-falling contours. The machining length can now be defined in combination with a short stop to break swarf. This ensures the workpiece is not damaged by swarf getting wrapped around the spindle. It's also possible to maintain high surface quality with the machining length defined in combination with a short pause. The user can select from two methods to specify the stop, define the dwell time or even the number of spindle rotations. Greater control of the chip break



is now possible where the area to be machined is divided into multiple sections that are then machined in a specified order.

2.5D and 3D machining

The new release offers a number of new functions and expansions for 2.5D and 3D machining. hyperMILL 2017.1 supports cutter radius compensation when using 2D thread milling and 2D helical drilling strategies. If the tool radius changes, hyperMILL automatically adjusts the programmed path. The user has two options for how this adjustment is made: the compensated path option or the compensated centre path option.

The new 3D cutting edge machining strategy is one of the highlights for 3D milling jobs. This strategy enables efficient machining, particularly for cutting blades,

which are frequently used in tool engineering. Roughing and finishing operations can easily be generated via a 3D curve selection. The rest material machining is generated via the 'Reference job' option. Here, the rest material areas of the previous machining operation are also included in each case. Toolpath smoothing ensures a better milling result if the contours are of poor quality.

hyperMILL MAXX Machining

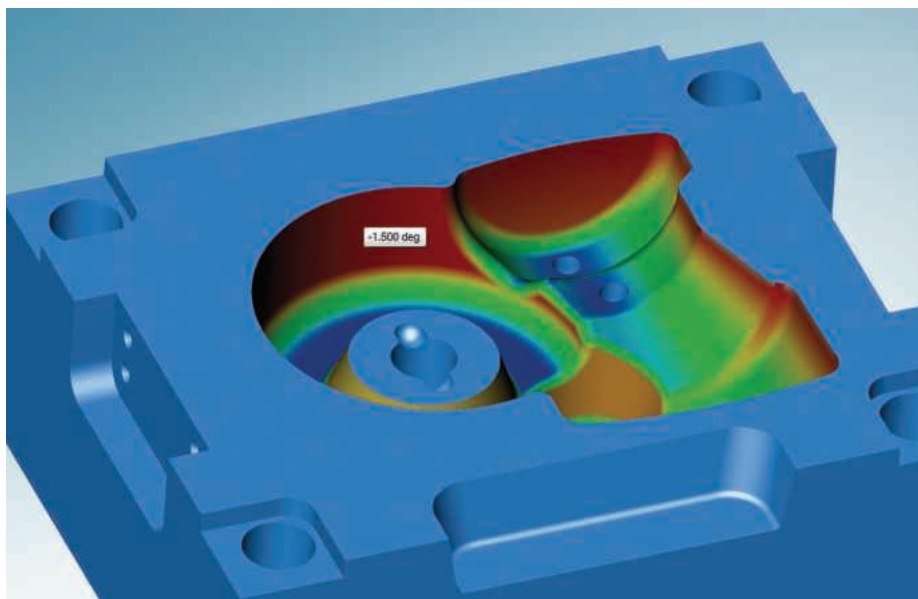
The new version also expands the scope of the hyperMILL MAXX Machining performance package. hyperMILL 2017.1 allows the spindle speed to be adjusted in the plunge macro for roughing. Modifying the spindle speed and specifying a dwell time for the speed change ensure more tool-friendly machining. This option also increases process reliability.

5-axis swarf cutting with a curve

Users can now benefit from two new functions for 5-axis swarf cutting with a curve. The perfect surface and equally perfect curve are created automatically for SWARF cutting based on a simple face selection. This feature automatically fillets interior corners, so the programmer can eliminate the input of additional geometries when pocket and fillet machining.

hyperCAD-S

Three basic improvements make the newest version of the hyperCAD-S CAD solution stand out. This is the draft, curvature and selection function analyses. The new selection functions make selecting CAD elements particularly convenient. The new



draft and curvature analyses help users quickly view and examine milling areas or radii sizes.

OPEN MIND expands UK headquarters

Following exponential sales growth over the last three years, OPEN MIND Technologies UK has now expanded its operation with new staff, an expanded training room and increased office space.

In the last two months, the CAM developer has expanded its training facility to allow over 10 customers to undertake training at any one time. This follows the redevelopment of the company's headquarters in Bicester to expand the seminar theatre, increase its office space and refurbish the facility as well as extending the seminar theatre and adding a meeting room for customer support.

Through 2016, the leading hyperMILL CAM package exceeded all previous sales records and importantly hyperMILL noted an 150 percent increase in enquiry levels from major UK manufacturing exhibitions. The CAM system combines ease-of-use and an intuitive configuration with continually evolving innovative performance package enhancements such as MAXX Machining. In

2017, the innovation is set to continue with the recent launch of Version 2017.1 and the imminent launch of hyperMILL Version 2017.2.

OPEN MIND Technologies UK managing director, Adrian Smith says: "hyperMILL has long been acknowledged as the leading CAM system for quickly and efficiently programming complex 5-axis components with groundbreaking toolpaths and strategies that have led the industry. This has enabled OPEN MIND to be the package of choice for the F1 teams and the motorsport supply chain, a sector renowned for complex parts with fast turnaround times. More recently we have taken this expertise to the aerospace, automotive and medical industries with phenomenal success."

"As well as targeting these sectors, OPEN MIND has evolved recent versions of hyperMILL to provide an intuitive entry level system for businesses that are new to CAM software. Having an entry point for manufacturers with everything from simple



3-axis machining through to complex 5-axis requirements is enabling us to extend our reach in the marketplace. Meeting the needs of the entire manufacturing industry through a modular CAM package is why the company has extended its office space and started a program of growing the team to support our ongoing success."

OPEN MIND Technologies

Tel: 01869 290003

Email: adrian.smith@openmind-tech.com

www.openmind-tech.com



radan

THE WORLD'S #1 SOFTWARE SOLUTION FOR SHEET METAL

Radan is a world leader in CAD/CAM software with a proven track record of reliable product delivery. Radan provides solutions for 2D/3D part design, intelligent nesting, profiling and punching, CNC press brake programming, and multi-axis laser & tube cutting.

www.radan.com



vero
Software

Matsuura partners Edgecam for UK launch of new lights out 5-axis machine

Machine tool manufacturer Matsuura partnered with Edgecam Software at the UK launch of its new competitively-priced 10 pallet, 90 tool 5-axis MX machine, which is targeted at manufacturers wanting to venture into automation and undertake reliable lights out production. Spindle utilisation times on multi-pallet Matsuura machines are typically in the region of 80 to 90 percent, with larger systems achieving even higher.

The MX-330 PC10 was launched on to the UK market at the Southern Manufacturing exhibition and featured machining demonstrations of a dice, programmed with Edgecam. Matsuura's Mark Cumberland says: "This is the smallest machine in the MX range and it includes automation designed specifically to provide cover for unmanned overnight production."

It comes standard with ten pallets, 90 tools, and runs at 15,000 rpm and is the only entry level 5-axis machine with proven OEM integrated automation. Edgecam, from Vero Software, is equally at home programming both its 3+2 configuration and its full 5-axis capability.

"We have a long working relationship with Edgecam, which was already a valued technical partner on the larger MX-520 and MX-850 machine demonstrations in the recent past," he adds.

Vero's EMEA strategic partnership manager, Wes Tonks says that the Southern Manufacturing trade fair was the ideal showcase for demonstrating the capability of both the machine and Edgecam software:

"We wanted to produce a component or product that was a bit different and caught the imagination, so we came up with the

dice. Edgecam provides manufacturers with the equivalent of a double six for improved cycle times and optimisation every time."

Edgecam partnered with a number of other CNC machine suppliers at the show, including Yeovil Machine Tools (YMT), while three other software brands from the Vero stable were on show at the exhibition: VISI, Radan, and Javelin.

Visitors to the Vero stand saw that CAD updates in VISI 2017 R1 are focusing on the user experience and enhancements to allow users to speed up their design process. For VISI's CAM users, an update to geometry management means individual pieces are no longer limited by a specific project. It gives greater freedom in picking the piece, obstacle or stock, allowing any combination. This is also used for picking faces and face lists, all managed in a much more user-friendly interface, and driven inside the operation itself. Everything is now linked to the operation, not the project, and all geometry is managed interactively, picking the specific pieces or faces that the user wants to machine.

The 2017 release of the world's most powerful sheetmetal CAD/CAM software, Radan, was on show. Improved algorithms have led to an important enhancement of Radan's powerful nesting capabilities to achieve a better fit, and therefore, a potentially better material yield. It is also easier now to create nest projects, thanks to a new template function.

The Advanced Scheduling function in Vero's production control system, Javelin, can work to the nearest second, giving an accurate sequence of operations, instead of the daily capacity bucket in earlier releases. The more accurate planning that is now available can save up to half an hour a day on each work centre.

UK-based Vero Software designs, develops, and supplies CAD/CAM/CAE software radically enhancing the efficiency of design and manufacturing processes, providing



its customers with exceptional value through high productivity gains and significantly reducing time to market. The company's world-renowned brands include Alphacam, Cabinet Vision, Edgecam, Machining STRATEGIST, PEPS, Radan, SMIRT, SURFCAM, WorkNC and VISI, along with the production control MRP system Javelin.



Despite the diversity of application, these solutions have one thing in common: they all address the rising challenges of achieving manufacturing efficiencies and bring huge value to the operations in which they are deployed.

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



3D Systems to demonstrate the latest GibbsCAM release

Latest version contains significant improvements that deliver increased efficiency, programming speed, visualisation and accuracy

3D Systems announced today that it will showcase the latest version of its industry leading GibbsCAM CNC programming software at EASTEC from May 16-18 in West Springfield, Massachusetts.

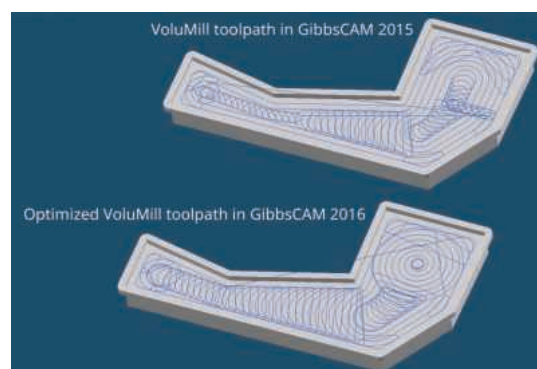
The latest version of GibbsCAM MTM™ (Multi-Task Machining) software combines flexibility and control in a single, shop-friendly interface together with improvements in milling and turning functionality, 5-axis milling and multi-axis turning. GibbsCAM also features a library of over 1,800 post-processors to support the growing variety of standard and Swiss-style MTMs from nearly 100 manufacturers.

The optimised VoluMill™ for GibbsCAM wireframe and solids has a new, integrated Technology Expert that calculates the most efficient speeds and feeds for VoluMill toolpaths, and automatically calculates spiral toolpaths in large pockets. Open face milling calculations reduce cutting time by up to 60 percent while optimised cutting motions in slots and corners further reduce cutting time and tool wear.

The powerful 5-Axis Milling feature has been improved and now includes: Flowline,

a new pattern type that creates U or V aligned toolpaths on a single surface without selecting additional bounding geometry; A new Mirror Toolpath function available for surface, triangle mesh, swarf machining and wireframe strategies; A new Follow Surface Topology functionality allows for stripe milling, which follows the actual curvature of the surfaces in swarf machining when using multiple slices; A new Gouge strategy that avoids collisions by retracting along a plane normal to the tool axis while retaining tool orientation and height.

3D Systems provides comprehensive 3D products and services, including 3D printers, print materials, on demand manufacturing services and digital design tools. Its ecosystem supports advanced applications from the product design shop to the factory floor to the operating room. 3D Systems' precision healthcare capabilities include simulation, Virtual Surgical Planning, and printing of medical and dental devices as well as patient-specific surgical instruments.



As an originator of 3D printing and a shaper of future 3D solutions, 3D Systems has spent its 30-year history enabling professionals and companies to optimise their designs, transform their workflows, bring innovative products to market and drive new business models.

UK Distributor:
Tech CAD/CAM Ltd
Tel: 01284 754781
Email: sales@techcadcam.net
www.techcadcam.net

NT CAD/CAM offers first look and product test drives for SOLIDWORKS CAM



NT CAD/CAM has announced a new webinar and a series of technical activities to promote the benefits of SOLIDWORKS CAM, which was announced at SOLIDWORKS WORLD 2017. NT CAD/CAM's dedicated CAMWorks team presented a webinar at Southern Manufacturing as the first installment of a series of educational talks and exhibitions to be held throughout the UK this year.

SOLIDWORKS CAM, scheduled to be released in SOLIDWORKS 2018 later this year, has been licensed from SOLIDWORKS' long-standing technology partner Geometric Inc., the author of CAMWorks, and is a product NT CAD/CAM has many years of experience selling and supporting exclusively in the UK.

Ian Weston, business development director at NT CAD/CAM says: "NT CAD/CAM has over 15 years' experience with CAMWorks in the UK market and we have provided training, customer installations, support and writing some very complex post processors. With the addition of support for model based definition and machine to the mean last year this new announcement really is great news for the SOLIDWORKS community.

"By taking the best in class manufacturing technologies and making them available to the SOLIDWORKS community, SOLIDWORKS has created a one-stop-shop for designers and manufacturing engineers wanting an end to end solution. No longer will there be a gulf between the two departments."

The release of SOLIDWORKS CAM means users will now be able to enter the market via a 2.5D SOLIDWORKS product and upgrade to all the other CAMWorks products through NT CAD/CAM. Users will

be able to add other award-winning Geometric products like Volumill® and Virtual Machine whenever they need to.

Ian Weston continues: "In a time where everyone is time-poor and the world is focused on what will happen to the UK manufacturing market post-Brexit, we wanted to make it simple for customers to get the answers they need to maintain a seamless production line amidst the changes in licensing. Anyone who has a query relating to their subscription can call our manufacturing team on 01844 2952325, knowing that an experienced team is on hand for this transitional period."

Customers interested in receiving a link to the webinar, which will be scheduled when beta release software is available, should contact:

NT CAD/CAM
Tel: 01844 295325
Email: camworks@ntcadcam.co.uk
www.ntcadcam.co.uk

SICK has a vision for reliable reading of direct part marks

By Neil Sandhu, SICK's UK product manager for imaging, measurement and ranging

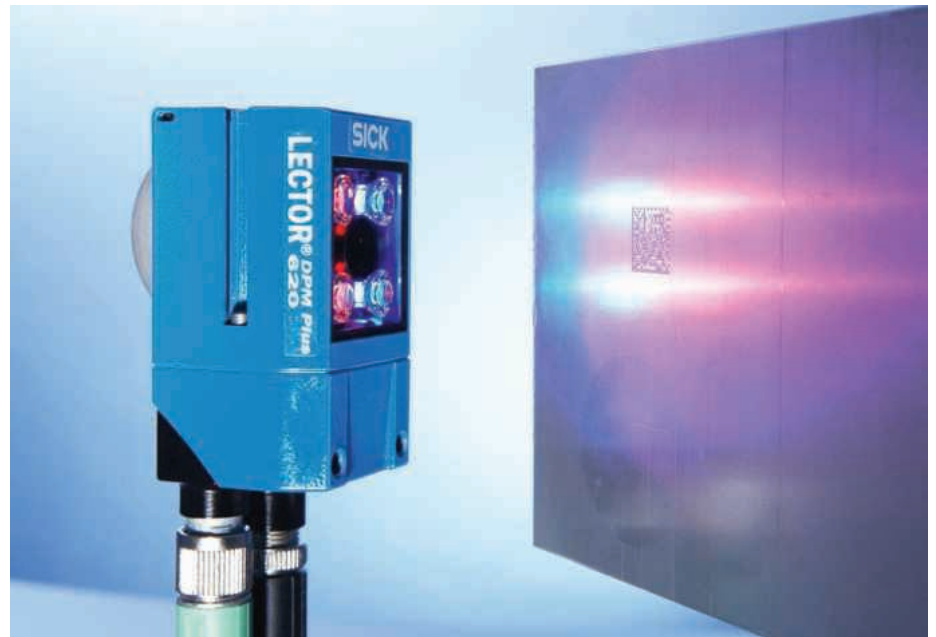
Part marking of components is widely demanded of subcontracting manufacturers to facilitate auto-identification in the customer's downstream assembly processes and to validate parts as genuine from the approved supplier. In addition, auto-identification with the same, or different, part markings can support quality assurance, tracking and tracing components through the suppliers' own processes.

Direct Part Marking (DPM) is often the preferred option where customers require a robust, permanent mark which cannot be separated or degraded during the progress of the component, not only during production and shipping, but throughout the design and service life of the finished product.

The competitive nature of the engineering parts industry means that fulfilling the entire customer's requirements, and more, is the key to success and repeat business for the supplier. It is the subcontractor's responsibility to ensure that the part marks meet the customers' specifications and are verified as correct and readable. Any failures in this regard could lead to quality non-conformance, product liability claims and high scrap returns.

Code reading and checking

In the first place, an effective and reliable marking process is critical to ensure



readability. DPM codes could, for example, be etched by laser or chemicals, stamped, dot-peened or printed. The specified part marks can vary from 1D or 2D barcodes, 2D dot matrix codes to alphanumeric combinations. Codes may carry a multitude of information, including where and when the part was made, what material it was made from, which batch and by whom. Sometimes a combination of codes may be required, as a part may be added into a sub-assembly and then a complete item,

with different marks applicable for different systems in the chain. Additional alphanumeric codes are also sometimes required for easy identification by personnel.

Assessing marking techniques

Reliable reading of DPM codes by auto-identification devices can also be made difficult by poor positioning or orientation e.g. in a stillage or storage tray, or where surfaces are not presented perpendicular to the scanning system with consequent angular distortion. Ambient conditions can present challenges, for example, where there is insufficient contrast due to poor light. Damage, dirt or paint accumulation on the component, curved surfaces and reflective surfaces all have the potential to result in high misreads, and consequent reject rates.

Ensuring readability

To meet DPM reading challenges, camera-based technologies are now an increasingly affordable option, straightforward to use and install. Image-based code readers offer significant advantages to the subcontractor not only in guaranteeing high levels of read reliability, but also in offering added versatility to



adapt to a wider variation of products and data. In addition, it may be required, or at least highly advisable, to use auto-identification systems which mirror those used by the customer.

Reliable DPM code reading

The SICK Lector family of image-based code readers offers users the flexibility to read a variety of code types with a single device, even at high production speeds. In addition to simple 1D bar code identification, the SICK Lector employs a range of image processing algorithms to identify 2D codes and makes light work of switching from bar codes to 2D codes. The SICK Lector ensures high readability by compensating for any missing data in a code.

The SICK Lector 620 series has a number of variants to meet different production priorities. All models have a robust, IP65 or IP67 compact housing that ensures flexible integration even where space is limited. Setup wizards and interfaces make installation, implementation and ongoing operation quick and easy.

The SICK Lector 620 is capable of omnidirectional reading and can detect and correct for angular distortions. It copes

reliably on difficult substrates such as directly-marked codes on metal, plastic, ceramic, glass, reflective or perforated surfaces and can recognise partially-destroyed and low-contrast codes.

It overcomes low contrast with in-built LED lighting. It can reliably read a dot-peened code on a curved surface such as a metal pipe, or the reflective machined surface of an automotive component, for example.

The Lector 620 DPM Plus is specifically developed for challenging DPM code reading applications, particularly in automotive and solar manufacturing. The optical character recognition version makes combined alphanumeric character and barcode reading, quality-checking and matching, faster, simpler and more reliable.

The Lector 630, 640 and 650 models offer enhanced functionality with increased resolution for larger fields of coverage and greater tolerance for movement or position.

Development of advanced algorithms has further improved readability, adding to greater depth of field, so parts can have greater positional tolerance in all axes.

Accepting nearly all manufacturers' code protocols used for DPM, and new codes added such as the DOT code from the tobacco industry, the Lector also allows easy updating of its firmware to meet future coding variations. The integrated microSD card is useful for convenient back up of parameters and recorded images.

SICK Lector image-based code readers are easily integrated with the most common factory control networks including Ethernet, TCP/IP, Ethernet IP, Profibus, Profinet or Can-bus. The SICK 4Dpro interface also enables full connectivity with other SICK auto-identification devices.

SICK (UK) LTD

Tel: 01727 831121

Email: info@sick.co.uk

www.sick.com

Precision Metal Marking Produced By Laser - Made To Last

TLM LASER

YOUR PRODUCTIVITY OUR PRIORITY

+44(0)1527 959 099



High contrast - high quality laser marking for metals

Laser Processing Technologies
Available from TLM:



Laser Welding



Laser Cutting



Laser 3D Printing



Cladding & Hardening



Micro Machining

Agents & Distributors For:



www.tlm-laser.com | sales@tlm-laser.com

Smart engineering in the digital age

The evolution of Industry 4.0 and the Internet of Things has seen an increasing number of manufacturing sectors embracing component traceability and expect the same of subcontractors. Alastair Morris, sales director at Pryor, looks at how developments in technology are simplifying the adoption of this smart way of working so firms at every stage of the supply chain can enjoy the benefits Industry 4.0, big data and the Internet of Things, these are all very much the buzzwords of today in the world of manufacturing, and for good reason as they are having a transformative positive impact on businesses throughout the sector. Similar to the way in which having a smartphone can enable people to be more efficient and organised by having a wealth of information at their fingertips, these concepts along with cutting edge digital technologies mean that data can be captured, managed and shared globally to boost productivity and, ultimately, profitability.

Perhaps the biggest changes that are occurring, thanks to the growth of digital and networking advances, are in traceability capabilities. Once enjoyed exclusively by a small number of sectors, such as medical and military, the ability to track and trace individual components within an assembly throughout the entire manufacturing process is now more accessible than ever to markets across industry, especially in aerospace and automotive, as the practice



becomes simpler and more cost effective to implement.

Furthermore, contractors at every level of the supply chain are increasingly being expected to adopt comparable traceability that will allow manufacturers to be able to drill down into the data that can be made available to find the exact history of each part and material. Firms that are not prepared to look beyond the immediate short term tasks of engineering and delivering components risk being left behind and overtaken by competitors who are taking a proactive approach and evolving in line with the technological developments.

Why is traceability important?

Manufacturers don't want a fragmented supply chain and it is critical for contractors to acknowledge that all components form part of a bigger puzzle that is not complete without every one of its individual elements. Being able to identify the origin of each part in real time is key. Indeed, manufacturing is increasingly becoming a data-driven sector and clients want full traceability of components and process information to be able to better control, analyse and improve the entire life cycle of products.

Traceability also cuts the risks, cost, waste and time associated with recalls when something goes wrong. By tracking individual parts and storing various parameters and big data, firms throughout the supply chain can instantly access information to identify exactly how, when and where the problem occurred. The issue can then be investigated and fixed rapidly

and efficiently to prevent damage to credibility and reputation.

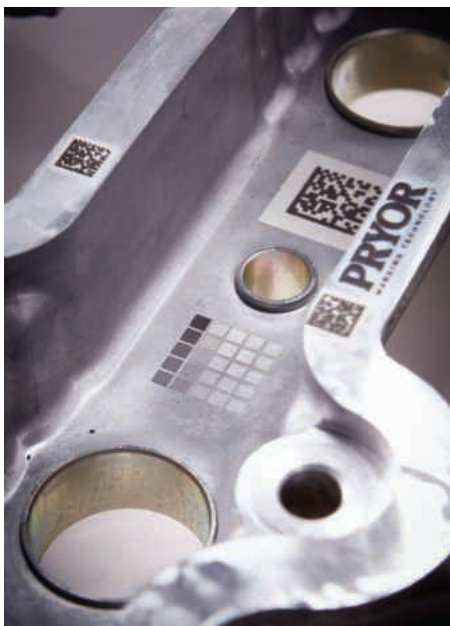
This level of intelligence and the ability to share it globally can also be the difference between having to recall an entire month's production and just the changing of the individual faulty parts. For example, traceability means it is possible to know exactly which individual component is affected, precisely where it is mounted in an assembly and in which aeroplane engine so that it can be replaced quickly and easily.

Equally, traceability and the effective management of big data can also help to identify and monitor trends and bottlenecks in methods. The information gathered can be audited and used to implement efficiency and manufacturing process improvements for greater productivity, business performance and profitability. This proactive way of working helps to identify issues before they become major problems that are far more challenging to tackle.

How traceability works

Coding and data capture are at the heart of effective traceability. The process begins as early as possible with a specially designed marking device giving raw materials a unique identification tag, which can be a barcode, typically 2D or Data Matrix, or readable serial number, that they will keep throughout its service life.

Once the part enters the machining and manufacturing stages the ID is recorded by vision equipment. Data is then added before and after each process to ensure no steps are missed and that they are completed in the right order to build up a history for the



part. When the parts reach assembly they are all scanned and crosschecked to the bill of materials to ensure nothing is missed and that the correct assembly process is followed. Full traceability is now possible as every part in the assembly has a unique ID and quality risks can be instantly located.

Implementing traceability and effective data management

Although sophisticated solutions that enable traceability have historically been viewed as high price items, it is important to note that they are now extremely cost effective to implement. Furthermore, the resulting expense and time savings that come with ensuring traceability of individual

parts throughout the entire manufacturing process and beyond far outweigh the initial outlay.

The most straightforward way to introduce data-driven practices and traceability is by partnering with an established permanent marking, identification and traceability systems specialist that offers a holistic solution. Pryor, for instance, provides a complete package that incorporates everything needed to ensure full traceability, including equipment that applies the ID to parts, readers and data management software.

The technology has been developed to fully integrate easily into existing processes, machines and systems within an operation, including everything from SAP and manufacturing execution systems software to Excel spreadsheet-based setups. Equally, the system allows data to be accessed and shared securely throughout a facility, as well as with other locations and organisations in the supply chain for inventory management and total traceability.

As effective component tracking,



data capture and networking becomes more important and accessible in the digital age it is critical that businesses throughout the supply chain adopt this smart way of working. Implementing systems and technology that enable traceability not only help to achieve maximum process control and optimise performance, but also can be a key factor that customers are looking for when awarding contracts. Track and trace capabilities can help firms to stand out and get an edge in today's increasingly competitive marketplace.

Pryor Marking Technology Ltd

Tel: 0114 276 6044

Email: info@pryormarking.com

www.pryormarking.com



In-Sight laser profiler for highly accurate part dimension verification

Cognex Corporation, a leader in machine vision, has introduced the In-Sight® Laser Profiler, an easy-to-use measurement system that verifies part dimensions. Cognex vision tools, accurate object detection and the EasyBuilder® interface make the new profiler an intuitive and highly reliable tool for obtaining height, gap, position, and angle measurements and detecting defects on the factory floor.

Part profile verifications are used across a wide range of industries, including automotive, electronics, consumer products, and food and beverage, to ensure parts are manufactured within specified tolerances. Slight dimensional variations can adversely affect product quality, consumer safety and brand integrity. The In-Sight Laser Profiler identifies these issues before they reach customers.

Joerg Kuechen, senior vice president for vision products at Cognex, says: "Our customers have been asking for an easy-to-use laser profiler. The In-Sight Laser Profiler combines an easy-to-use interface and the VC200 vision controller, along with



the accuracy and dependability of our 3D laser displacement technology. Anyone who knows how to use a 2D In-Sight system can set up a laser profiler application within minutes."

By allowing users to set up inspection applications in a few easy steps, this new measurement system eliminates the complexity required by other laser profiling solutions. Additionally, the In-Sight Laser Profiler also makes it easier to monitor production line activity from anywhere on the factory floor using a web-enabled laptop, tablet or smartphone.

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

Cognex is a leader in the machine vision industry, having shipped more than 1 million vision-based products, representing over \$4 billion in cumulative revenue, since the company's founding in 1981. Headquartered in Natick, Massachusetts, USA, Cognex has regional offices and distributors located throughout the Americas, Europe, and Asia.

Cognex UK Ltd

Tel: 01908 1683001

Email: contact.eu@cognex.com

www.cognex.com

Lasers enhance product identification and traceability on metal components

By Andy Toms, director of TLM Laser

The ongoing evolution of lasers, together with the lower cost of ownership, has seen the technology become the process of choice for a growing number of marking and engraving applications across many different industry sectors.

The power, precision and flexibility of lasers makes them ideal for direct part marking on a wide range of metals, ranging from the softer precious metals used for jewellery right through to the high-grade alloys commonly found in the aerospace and medical sectors.



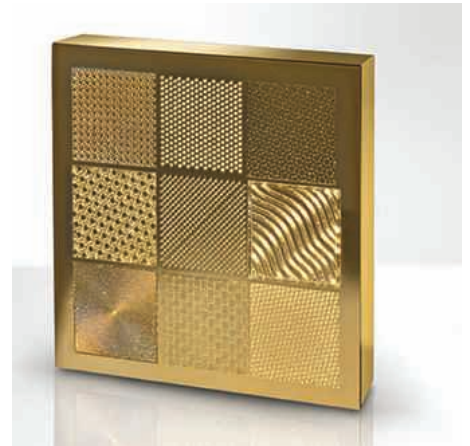
Manufacturers have always had a number of options for marking metal components and in the past dot-peen marking, hand engraving and acid etching were often the most widely used. Whilst these technologies are still current, and remain appropriate for certain applications, the capability of the laser to produce text, 1D & 2D codes, rastered graphics and precision surface textures at the highest levels of quality and consistency mean that lasers are becoming increasingly dominant in these applications.

The techniques used for marking metals using a laser vary depending upon the application and the final result required. Annealing marking is the process where an oxide layer is created on ferrous metals such as iron, steel, high-grade steel, and titanium through localised heating. In most cases, the oxide layer is black, but other annealing colours, such as yellow, red and green can be achieved. The final colour depends on the temperature of the heated layers. The surface of the material remains unchanged during annealing because nothing is

removed from it; the colour change is achieved solely through localised heating. Using this technique, the heat usually penetrates just 20 to 30 µm deep into the metal surface. This makes the marking non-abrasive, and another benefit is that the marking can be removed by re-heating (min 700°C for ferrous metals), something not possible when using traditional technologies.

Deep engraving is the process where marks or engraving is achieved through repeated removal of material layers. This procedure involves layer-by-layer, laser-induced engraving deep into the material. Repeated removal is brought about through melting or vaporisation of the material as a result of the thermal laser energy. The depth of the engraving depends on the parameters that have been set. When using FOBA's online deep engraving, the material removal (actual depth) is measured several times and compared with the target engraving depth during the engraving process. The remaining removal is recalculated, the number of layers still to be engraved is automatically adjusted and the subsequent layers are removed. The engraving depth is precisely controlled and executed down to just a few microns, enabling exact adherence to the specified relief height.

Another technique commonly used is surface structuring, where pre-defined micro-structures and textures are marked on to workpiece surfaces using a laser system. This technique is often used on plastic injection mould tools and tools used for embossing. This can involve either direct material processing of the end product or



the embossing tool or die. The process of surface texturing, which is used to apply structures, is very often used for the purpose of creating visual effects.

The non-contact nature of laser marking and engraving means that there are no tools to wear out or break and the consistency of the process means that the last laser mark produced will be of the same quality as the first, an essential attribute in high compliance industries such as medical device manufacturing. Laser marking is also recognised for its durability, high temperature resistance and even micro sized laser marks applied to different metal types resist extreme operating conditions, meaning they will always be present for identification and traceability purposes.

Whether you are seeking to engrave a romantic message on to a wedding ring or to produce an indelible UDI code on to a medical device or surgical instrument, today the technology used is most likely to be a laser.

Bromsgrove-based TLM Laser is the UK and Ireland distributor for FOBA Laser and offers a comprehensive range of laser marking and engraving machines and systems.

For more information on FOBA, please visit www.fobalaser.com



TLM Laser
Tel: 0845 260 2220
Email: sales@tlm-laser.com
www.tlm-laser.com

Vision is essential for quality laser marking

Cyan Tec Systems, an expert laser marking systems integrator, has extensive experience of integrating laser marking with vision systems to combine automatic code verification and position compensation. This achieves the quality required for industries like automotive and aerospace manufacturing.

A revolution in digital imaging technology has enabled camera sensor resolution and sensitivity in low light to increase dramatically in recent years. Cameras which are smaller and more efficient can be integrated where space is limited and can operate in harsh environments.

In 21st century manufacturing, there is a need to verify correct completion of process to ensure parts match specification at all stages in the process. Laser marking is a commonly used technique to write information in text or machine readable code (bar codes and 2D matrix marks) to identify components providing traceability and quality assurance. Immediately after a mark is completed, a vision system grabs the image of the mark under controlled lighting

conditions and automatically reads the code to ensure that the contrast and integrity of the code matches the one that is stored in the customer's master production database.

Given the resolution of modern cameras, the vision system can also be used for compensation of position or orientation, reducing the need for expensive tooling. A component can be placed within the field of view and the software automatically recognises the object (which might be one of a family of different components) and checks the angular and positional misalignment before compensating by accurately shifting the laser marking file to match the actual component position.

Finally, another use for vision is the dimensional verification of laser processes like drilling, where the whole area can be calculated to ensure that the parameters are within the quality tolerance bands specified. Data can be recorded and logged to allow categorisation and process verification with the option of actively adjusting for errors during the production run or raising an alarm or warning to suspend production



until fault conditions are rectified. Modern laser marking systems are fast, accurate and repeatable with high reliability and minimum maintenance. Cyan Tec Systems has experience of integrating laser marking, engraving, etching or ablation systems using lasers from all the major suppliers and can offer expert advice on the most appropriate solution for laser processing, paint spraying, assembly, test and many other applications.

Cyan Tec Systems Ltd
Tel: 01509 815186
Email: sales@cyan-tec.com
www.cyan-tec.com

UDI-compliant laser marking of medical devices

All UK medical device manufacturers wishing to trade with the US must ensure products carry a bar-coded Unique Device Identifier (UDI) so that they can be tracked through the entire supply chain. To meet this need, TRUMPF has developed a laser and software module for UDI marking, specially designed to create corrosion-resistant marks on highly reflective materials using ultra-short pulsed lasers.

The UDI, often applied in the form of a linear bar code or 2D data matrix code, combines static and dynamic identifiers. The static portion is a unique, dedicated code for the specific medical device, while the dynamic portion changes for each batch of products. There are currently three accredited UDI labelling standards: GS1, HIBC and ISBT 28.

Based on the TRUMPF TruTops Mark marking software, the new turnkey laser system creates standard-compliant UDIs from company and production data in any of the three identification systems the user chooses. The whole process also functions in reverse, with the optional VisionLine Mark



image processing module enabling the TRUMPF software to quickly scan and read UDIs on medical devices.

Thanks to its broad product range TRUMPF can provide, as part of this marking system, the right laser for any type of material, from stainless steel and aluminium to plastics and organic materials. The new TruMicro Mark 2000 is, however, a particularly good choice for the medical device sector.

It offers an ultra-short pulsed laser with extremely short 0.4- to 20-picosecond laser pulses and high pulse energies of up to 20 microjoules. It produces completely

corrosion-resistant marks that maintain a high contrast appearance even after repeated cleaning and sterilisation.

The pulses emitted by the TruMicro Mark 2000 are short enough to enable cold material processing. This means the time taken to absorb the laser energy is shorter than the time required to heat up the surrounding material, so the marking of the material is completed before thermal processes can take effect.

To mark the medical device, the high pulse peak powers of the TruMicro Mark 2000 initially produce a nanostructure on the device's surface. This rough surface creates a light trap that significantly reduces the diffuse scattering of the light, causing the mark to take on a permanent dark black hue.

TRUMPF Ltd
Tel: 01582 725335
Email: sales@uk.trumpf.com
www.uk.trumpf.com

Aluminium cutting with the XL package from Behringer Eisele

Specifically for cutting aluminium, the design of the VA-L 560 NC2 from Behringer Eisele sets new standards. The powerful machine scores with unparalleled high output in both solid material as well as in pipes and profiles with sophisticated cross-sectional geometry. 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 outstanding cutting performance and excellent surface quality.

The frequency-controlled main drive offers facility for adjusting the cutting speed to the sawing process to allow cutting of both solid material made of high-strength AL-SI alloys and also thin-walled pipes and profiles. The servo motor-driven feed system in the optional Performance version provides high performance. Using either constant or dynamic saw feed, significantly higher cutting outputs can now be achieved. Precise positioning of the saw head reduces downtime to a minimum. Used in combination with a pneumatic material clamping system, the servo motor-driven feed system allows machine hydraulics to be completely dispensed with. This radically simplifies the achievement of sustainable environmental management. When machining heavy materials, the VA-L also offers facility for fitting a hydraulic clamping system.

Maximum safety - good accessibility

The unique VA-L machine concept focuses on the twin themes of occupational safety and ergonomic design. The circular saw is completely encased in a full machine enclosure, eliminating any danger of injury. Another positive knock-on effect of full enclosure is reduced noise development

and consequently a more pleasant working environment. Despite the full enclosure, all the important components and parts of the VA-L can be easily accessed. Large swivel doors offer optimum access for easy saw blade changeover, cleaning and machine maintenance. Extruded profiles with complex profile geometries are generally very difficult to machine. To ensure that the material is securely clamped while avoiding unwanted marks produced by pressure points on parts, the use of specially adapted shaped jaws is advisable. Rapid jaw changeover in conjunction with optimum machine accessibility helps reduce tooling times to just a few minutes.

"We have to take into account the high volume of cutting and make sure that during non-operator shifts the high levels of swarf is cleanly and safely transported away," explains Manfred Grüninger, head of sales at Behringer Eisele. "Up to three suction channels positioned at various locations on the system implement swarf removal. These are coupled to a high efficiency suction system that conveys the chips via a cellular wheel lock into the on-site container. Less swarf means less need for cleaning and of course less cause for faults."

Automation is the key word when it comes to economic production processes. Savings with personnel and the use of additional

low-operator shifts are only two options to make inroads into costs. The use of transport and removal systems and the possibility of linking up to magazines and storage systems means that operation becomes independent of day and night shifts with aluminium machining as well. A high level of automation gives employees more time for other activities and helps to save their capacities. Material is no longer positioned manually but is program-controlled. Operators are then mainly busy with process monitoring. Strength-reducing work becomes an exception. Operating automated machines is also the superior alternative in terms of safety as well.

"With the handling of materials you shouldn't only look at aspects of economy but also the safety of operating personnel when handling heavy, unwieldy parts," says Manfred Grüninger. "Particularly where large production batches are being processed, producers should consider link-up to downstream machining steps such as sorting or chamfering to ensure added streamlining effects."

Behringer Ltd

Tel: 01296 668259

Email: simon.smith@behringerltd.co.uk

www.behringerltd.co.uk



KASTO to hold May Open House

Ecology and economy when sawing and storing material will be the themes of an Open House to be held by KASTO at its UK headquarters and showroom from 16th to 18th May 2017.

The firm's latest, cost-effective sawing machines and storage systems will be launched in the UK, having been introduced last year by the German parent company. They include the new KASTOmicut, which offers higher levels of technology and performance at a lower price than the company's previous range of pivot-bow bandsaws.

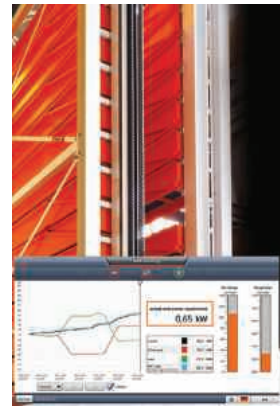


The KASTOwin pro AC 5.6 bandsaw, launched at the AMB 2016 exhibition in Stuttgart last September

Featured also will be a production bandsaw for use with either a bimetal or TCT (tungsten carbide tipped) blade, the innovative KASTOwin pro AC 5.6. It is just as productive but less expensive than the well-established KASTOtec, or even faster with the adaptive KASTOrespond system, and has the added advantages of lower power consumption for the hydraulics as well as energy recovery features that reduce electricity use and hence running costs.

The occasion will also provide a first opportunity for visitors to hear about a new, modular, entry level sheet storage system called KASTOecostore, which is lower priced than its predecessor, the KASTOunitower C.

Finally, visitors will hear about a recently developed energy recovery and storage system for the company's industrial warehouses, which are used globally for automated storage and retrieval of bar, tube, sheet, plate and other materials. The technology, which is optional on all of the company's storage systems and is also retrofittable, provides savings by enabling surplus kinetic energy to be converted into



Energy recovery and storage technology has been developed for all Kasto automated industrial warehouses

electricity and stored temporarily for later use. To achieve even greater efficiency, energy storage capacitors can be integrated.

The address is Unit 5, Garamonde Drive, Wymbush, Milton Keynes, MK8 8DF. People interested in attending should telephone Ernst Wagner on 07747 802991 or email: sales@uk.kasto.com

KASTO Ltd

Tel: 01908 571590

Email: sales@kasto.uk.com

www.kasto.uk.com



KERF DEVELOPMENTS LIMITED
TAILORED PROFILING SOLUTIONS

Best in class
cutting technology

Over the years Kerf customers have come to expect **QUALITY, VALUE AND SERVICE**. Comprehensive turnkey profiling solutions with dedicated support and service.

For solid, reliable down to earth advice, contact Kerf today -

Call us on: +44 (0)1706 757 670

www.kerfdevelopments.com Email: sales@kerfdevelopments.com

Kerf Developments Ltd, Unit 1a Eagle Technology Park, Queensway, Rochdale, OL11 1TQ

✓ **OXY-FUEL**



✓ **PLASMA**



✓ **WATERJET**



Automated plasma power sources for high precision plasma cutting

ESAB has launched the iSeries of power sources for automated plasma cutting as part of its integrated system of components that deliver higher productivity and lower cutting costs.

"The iSeries is the most advanced power supply available today," says Dirk Ott, VP – Global Plasma Automation. "This next generation series not only provides exceptional cost-performance benefits, but also allows you to upgrade the unit as you grow."

Higher productivity and superior cut quality

Featuring HeavyCut® technology to improve cut quality and precision performance, the iSeries superior cut quality enables parts to go directly from the cutting table to welding, painting or assembly without expensive secondary operations. It also provides piercing capacity up to 50 mm at 400A on all materials including stainless steel and aluminum. The iSeries delivers ISO Class 3 or better cuts on any material from gauge to 50 mm thick, noticeably reducing bevel and the need for post-cut finishing.

The Water Mist Secondary (WMSä) process, which incorporates nitrogen as the plasma gas and ordinary tap water for shielding, produces superior cut quality and a lower cost per cut on non-ferrous materials. On stainless steel, the WMS process cuts up to 300 percent faster and lowers cost-per cut by 20 percent or more compared to systems that use Argon-Hydrogen for the plasma gas.

Lowering cost on thicker cuts

The iSeries also lowers the cost per cut by using XTremeLife™ Wear Parts for cutting at 300A and 400A. These consumables use a multiple hafnium insert as opposed to a single insert and feature a two-piece tip that runs cooler. Better cooling extends parts life and cut accuracy across the life of the tip, especially when piercing at higher amperages. These combined features can lower operating cost up to 30 percent on mild steel, which in turn reduces cut cost per metre.



Flexibility

The iSeries is available in 100A to 400A configurations for cutting plate up to 50 mm thick. All models feature a common cabinet and components as well as StepUp™ modular technology, allowing users to increase the output from 100A all the way up to 400A by adding inverter blocks. Its modular design minimizes parts inventory and repair time. An LED error display indicates machine status to accelerate troubleshooting, and should an inverter block malfunction, cutting can continue with the remaining blocks.

"The iSeries automated plasma cutters work the way our customers work, intelligently," says Dirk Ott. "The ability to add inverter blocks means fabricators never have to worry about purchasing a system that does not have enough capacity to meet future needs."

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

For more information, contact:

ESAB

Tel: 0800 3893152

Email: info@esab.co.uk

www.esab.com



iSeries automated plasma cutting systems features StepUp modular technology that enables end-users to quickly and easily increase cutting capacity. Shown here, a technician installs a 100A inverter block to create a 400A system

Addison pulls out all the stops

Invertec Interiors, a leading UK designer and manufacturer of lighting and interior systems for public transport and commercial vehicles, has purchased a new Mecal MC 305 Kosmos 4-axis CNC machining centre and a Mecal CN double mitre saw from Addison Saws.

Invertec has recently secured a major order for the manufacture of train doors, cupboards, vestibules and electrical cabinets for a leading locomotive and carriage builder. The Mecal CNC machining centre will be used to fabricate components from a range of aluminium extrusions after they have been cut to length using the Mecal double mitre saw, an SW 453 Plug model.



Extending manufacturing capability

Andrew Speers, Invertec's operations director, says: "An increase in orders required our business to move to three manufacturing shifts per day. To facilitate this, we naturally required additional machining capability. An initial option was outsourcing, however the business case did not fully support this approach, as it would mean increased reliance on outside suppliers. We, therefore, looked at increasing our own manufacturing capability and contacted a number of CNC machine providers."

Outstanding technical support and guidance

Addison Saws already enjoys a well-established relationship with Invertec, having supplied a Mecal 'Duo' CNC machining centre and a Mecal CN saw to the business several years ago. The Mecal



machines have consistently provided trouble-free operation and Addison Saws has assisted Invertec with technical support, guidance and even advice regarding the best way to fabricate certain components.

Building a strong relationship

Andrew Speers says: "When it came down to it, Addison Saws was able to demonstrate a much greater understanding of our production requirements. We also wanted to continue working with them in order to build an even stronger relationship. For example, they have already helped us to develop offline programming for our new Mecal machining centre.

Supplied ex-stock, Invertec's new Mecal MC 305 Kosmos 4-axis CNC machining centre will be used to mill, drill and tap aluminium extrusions typically measuring 4 m long by 200 mm wide. These will be first cut to length using the Mecal CN SW 453 double mitre saw.

Andrew Speers says: "The installation process and subsequent operator training for both new machines was fantastic. The new Mecal CNC machining centre is also significantly quicker than our existing model. Addison Saws is a very professional company that provides high levels of support. It's for that reason that in addition to purchasing the new Mecal machines from Addison's, we also signed a service contract with them to cover all our Mecal equipment."



The Mecal MC 305 Kosmos machining centre chosen by Invertec is equipped to automatically machine, drill, mill, slot and prep both aluminium and steel extrusion bars. Providing immense flexibility, it is also well suited to new product development, while its high levels of accuracy and repeatability ensure minimal waste.

Leading the way in sawing technology

Established in 1956, Addison Saws brought a new breed of metal cutting solutions to the UK and, in doing so, created a whole new market for bandsaws and circular saws. Today, more than 60 years on, Addison Saws continues to lead the way in metal cutting technologies and offers an extensive range of full CNC machine tools from the world's premier industrial machine manufacturers, all supported by uncompromising levels of customer care.

Addison Saws Ltd Tel: 01384 264 950

Email: news@addisonsaws.co.uk www.addisonsaws.co.uk

Revolutionary contour following provides unmatched part accuracy

Flow International Corporation, the world leading developer and manufacturer of ultrahigh-pressure waterjet machines for cutting applications, has released Compass™, the industry's most precise contour following and collision sensing solution. The patent-pending design behind Compass ensures that Flow customers cut the most accurate part, regardless of environmental elements involved. Compass automatically makes real time cutting head height adjustments to allow precision cutting of non-flat or stress relieving material. The collision sensor Compass includes protects the machine from damage and downtime.

"Compass is a revolutionary new tool that allows our customers to cut the most accurate waterjet part possible, even if the raw material is not flat," says David Crewe, senior vice president of engineering. "We know that often times, flat material is not truly flat, and material, especially stainless steel, can start out fairly flat and warp during cutting as pre-existing stress is relieved. With Compass, the cutting head maintains the correct stand-off height from the material. Our customers can expect a precise cut, every time."

The radical new design of Compass overcomes the challenges of traditional contour following solutions currently available today. When standoff height is not maintained during waterjet cutting, dimensional errors occur on the cut part. The patent-pending gimballed wrist ensures Compass will automatically match the actual material plane and maintain the ideal standoff height through 2D cutting and 3D bevel cutting applications. Compass includes a collision sensor that will stop the

machine upon impact with a clamp or workpiece before damage to the machine or the obstacle. The precision contour following and collision sensing capabilities of Compass provide worry-free operation with more precise cutting.

Key capabilities of Compass include: accurate multi-axes contour following with unique patent pending tool centre point design; collision sensing to avoid damage to machine, clamps, or cut parts; retrofit to any existing Mach 4, Dynamic XD system; toolless, quick release removal.

Flow International Corporation, a Shape Technologies Group company, is a world leader in the development and manufacture of ultrahigh-pressure (UHP) waterjet pumps and systems for industrial cutting and surface preparation.

Waterjet is one of the fastest growing cutting machines in the machine tool industry. There are virtually no limits to what waterjets can cut, which is why companies of all kinds and sizes are realizing growth, greater efficiency, and improved productivity by adopting UHP waterjets. Because there is no heat affected zone (HAZ), waterjets can cut more materials and eliminate grinding off hardened material and slag.

Waterjets can cut virtually any material, from thin shim stock to over 12 inches and allow tight nesting and accurate cutting, improving material utilisation. Waterjets can both replace and complement other machine tool processes such as laser, plasma, EDM, milling, and routers.

Since 1974, Flow has delivered over 12,000 waterjet and abrasive waterjet systems to customers in more than 60 countries. With its corporate headquarters in Kent, Washington, USA, Flow employs approximately 700 employees, with offices in North and South America, Asia and Europe.

Flow's global success can be attributed to its focus on technology leadership, a full continuum of



products that provide complete solutions, application expertise, and a commitment to customer success across the world.

The Mach 2 Series of tables is the classic waterjet combining traditional waterjet capabilities, reliability, and exceptional value. Using the powerful but easy-to-use FlowMaster® software, it provides the best cutting capabilities in its class. It is Flow performance made affordable.

The Mach 3 Series is the world's most popular waterjet available with all pump platforms as well as Dynamic Waterjet® to ensure accurate and fast flat stock cutting. Available with all pumps as well as Dynamic Waterjet XD, it brings the benefits of Dynamic Waterjet to multi-axis 3D and beveling.

Advanced Systems are designed to meet specific requirements with 5 to 11-axis systems such as robotic cells, slitters, composite machining systems and multi-process applications such as inspection, measurement, touch probe/verification, precision routing, and drilling.

Flow also offers surface preparation systems to meet a broad range of requirements in the marine, industrial, automotive and construction environments. Whether stripping off paint and rust or removing tough "non-skid" from aircraft carrier decks, Flow's waterjet cleaning systems offer a variety of choices to meet specific customer needs.

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



Our abrasive waterjet technology accurately cuts any material and shape at significantly faster speeds than traditional CNC machining techniques.



THE POWER TO TRANSFORM.

Just as erosive forces shape the beauty of the Grand Canyon, our advanced OMAX® and MAXIEM® abrasive waterjet systems have the power to productively and profitably shape your part manufacturing processes. **Let us transform your business.**

ADVANCED ABRASIVE WATERJET SYSTEMS | 253.872.2300 | WWW.OMAX.COM



OMAX introduces new essentially-featured waterjet line for international markets

OMAX Corporation has announced the launch of its new GlobalMAX abrasive waterjet line. These are reliable and practical machines capable of cutting virtually any material, available exclusively through international distribution. The GlobalMAX line takes advantage of two and a half decades of waterjet industry research and development to offer a completely integrated system of pump, table, and advanced motion control system that is easy to use.

Stephen Bruner, vice president of marketing at OMAX Corporation, says: "The GlobalMAX product line was created to extend our waterjet engineering and manufacturing technology base to more customers. The product line features our proven direct drive pump technology, easy-to-use software, and innovative drive technology. We build waterjet systems that help our customers make money in the short and long term and this product line is no exception. With GlobalMAX, OMAX aims to redefine value-oriented waterjets."

The GlobalMAX product line, which includes software, pumps, and tables, will be produced in Kent, Washington to ensure quality and component compatibility. International OMAX distributors are certified installers and servicers and are trained at OMAX headquarters.

The GlobalMAX will be available in a 3.0 x 1.5 metre cutting bed size. There are also two direct drive pump sizes available, 20HP and 30HP. Like all OMAX abrasive waterjets, the GlobalMAX can cut almost any material and a wide variety of material thicknesses without any heat-affected zone (HAZ). The

machine does X/Y axis cutting with three degrees of freedom and has a number of compatible accessories, including a terrain follower, a pneumatic drill and a bulk garnet feed hopper.

The new line will debut at the CIMT show this April in Beijing, China and is available in international markets outside of the United States.

OMAX Corporation earns ISO 9001:2015 certification

OMAX Corporation has announced that it has achieved ISO 9001:2015 certification. This latest edition of the ISO 9001 quality management standard covers design, development, production and service and ensures the company has a process for continuous improvement in all four areas.

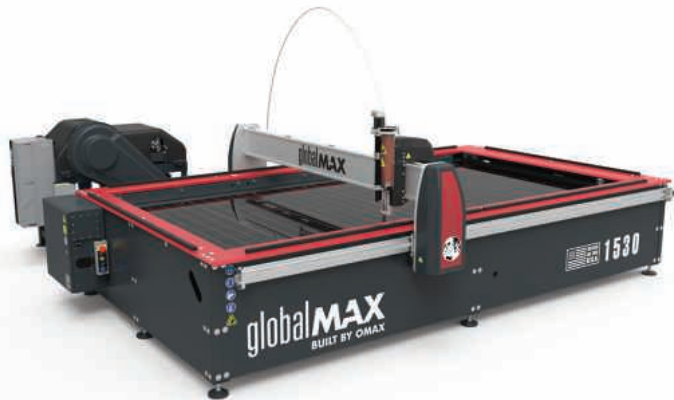
Stephen Bruner says: "Continuously improving on our products and service has always been a part of the OMAX philosophy, so introducing the ISO 9001:2015 standards was a natural fit. There are many criteria that abrasive waterjet buyers must consider in their supplier. We want to give our

prospective and current customers added confidence with our ISO 9001:2015 certification."

The ISO quality system was developed in order to establish an internationally recognised standard of quality. Today, the ISO 9001:2015 standard is recognised in over 150 countries. ISO 9001:2015 requires certification by an independent certification body and annual audits to ensure conformance to the standard. Additionally, companies must carry out regular performance reviews through internal audits and meetings.

In January OMAX Corporation was one of 37 companies to receive the prestigious Tibbetts Award at the White House. The Tibbetts Award is given to small businesses and individuals by the US Small Business Administration (SBA) in recognition for innovative research and development of transferrable technology. OMAX received the award for its outstanding technological innovation in the area of micro abrasive waterjet technology, culminating in the MicroMAX JetMachining Centre.

The MicroMAX is the most precise abrasive waterjet with a positioning accuracy of less than five microns. The machine is capable of cutting extremely small parts in virtually any material. The advanced Tilt-A-Jet cutting head on the machine allows for taper-free edges and rapid cutting speeds



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

ICEE highlights 3D waterjet cutting

Waterjet cutting in two and three dimensions, on one machine, offers designers and production engineers important new opportunities to innovate and save costs.

This was the key message on ICEE Managed Services stand at the Southern Manufacturing exhibition in March, supported by promotion of other high quality manufacturing services the company provides including fibre laser cutting, bending or forming, fabrication and assembly.

ICEE's key account manager, Shane Thomas says: "Until recently it has only been possible to cut two-dimensional profiles in a variety of materials by waterjet, but with the latest investment ICEE has made in new equipment with advanced 5-axis computer numerical control (CNC) technology, we can cut compound 3D forms as well, all on one machine.

"Waterjet cutting in 2D and 3D opens up exciting new possibilities for designers to take a fresh look and be innovative in the use of materials and a process they might

not have considered before, while production engineers may be able to have parts made now that could only be made previously by costly machining or casting."

In some cases, 2D and 3D waterjet cutting, where a high-pressure jet of water mixed with abrasive particles is forced through a nozzle only 0.8 mm in diameter at around 60,000 psi, may be the only practical and affordable way to make parts.

The waterjet process, 2D and 3D, will cut through a variety of different materials and thicknesses including metals, plastics, wood and stone, such as granite over 200 mm thick.

Besides waterjet, fibre laser cutting, parts forming and bending operations, ICEE offers a comprehensive turnkey manufacturing service that includes welding, finishing, fabrication and assembly. With these facilities the company also makes bespoke equipment enclosure products for the telecommunications, broadcasting and data processing industries.



ICEE has grown continually and consistently since 1985 and provides key services in a number of industry sectors and related areas of business. The company operates from two locations, Waterlooville, Hampshire and Warrington, Lancashire. Besides service support for the north of England, Scotland and offshore installations, the latter offers customers extensive warehouse facilities.

ICEE Managed Services Ltd

Tel: 02392 230 604

Email: shane.thomas@icee.co.uk

www.icee.co.uk

CUT BETTER WITH A **FLOW** WATERJET



Any Materials. Any Shape. Superior Edges.



METAL

COMPOSITES

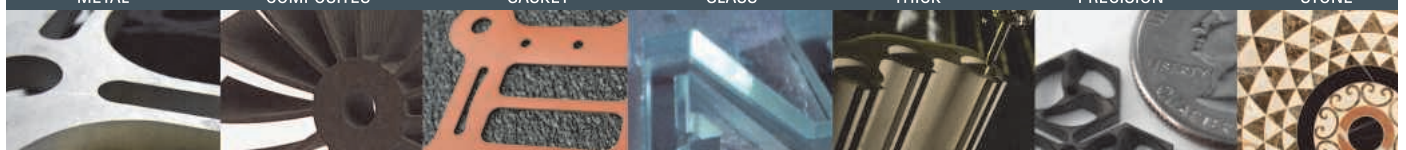
GASKET

GLASS

THICK

PRECISION

STONE



Flow UK Ltd.
Tel. +44 (0) 1455 895 300

info-uk@flowcorp.com
FlowWaterjet.com

Waterjet cutting without angle errors

Higher feed rates and perfect 90° cuts. The angle error compensating cutting head STM TAC/12 convinces in every department

The angle error, the deviation between upper and lower surfaces of the material being cut, is created in waterjet cutting by the waterjet losing power when cutting the material and thereby removing more material from the upper surface. The result: the typical V-shaped taper. For many cutting jobs the angle error is irrelevant and sometimes even helpful. But for high-precision jobs or when cutting material which has to match other jobs along the cut edge, the prevention of cutting angle errors is essential. However, particularly where thin materials are concerned e.g. 2 mm stainless steel, the otherwise insignificant angle error produces an effect of up to 7°.

Increased precision with increased speed

In such cases lowering the cutting speed to reduce the cutting angle error is only good to a limited extent, because every user's objective is to produce the greatest possible precision in the shortest possible time. This aspiration drove the development engineers at STM to develop a new cutting head as an addition to the modular system. The new STM TAC/12 cutting head (Taper angle control) was created based on the innovative 68° cutting head STM3D68. With a swivel range of up to 12° the head compensates the cutting angle error by means of a swivelling movement thus making it possible to work with even greater precision at higher rates of feed. The STM



TAC/12 cutting head automatically compensates the angle error to below ± 0.05 mm.

With the STM TAC/12 cutting head providing perfect 90° cuts, 100 percent round holes and parts which have to fit together, can all be cut easily and rapidly. These advantages are achievable with extremely low capital expenditure and without having to use an additional software module. As a result of its extremely compact design the cutting head can easily be installed on existing STM systems and convinces with its user-friendly maintenance. To ensure unproblematic operation the cutting head has integrated height scanning and collision protection. The encapsulated mechanics requiring no air purge as well as the motors, provide the greatest possible wear protection and long service life.

Upgradable in the STM modular system

STM waterjet cutting systems are adapted technically to exactly match requirements. Customers do not have to purchase any additional applications but nonetheless retain flexibility. This is because even entry-level models can be upgraded as required, thus allowing changing requirements to be adapted to quickly and reliably. Moreover, the user-friendly, low-maintenance design of the systems offers resource-efficient manufacturing and an all-round convincing price-performance ratio. Dependent upon individual requirements, various tuning options are available. These include vacuum monitoring in the abrasive dosing unit as well as the

possibility of operating several cutting heads simultaneously.

Unlike other manufacturers STM concentrates on waterjet cutting systems without bellows. The standard water-protected linear guide is consequently easy to clean, exhibits a superior protective effect, is capable of many years of use and considerably improves the appearance of the equipment. As a result of the robust rack and pinion drive the durability of the machines is extended even further. The low consumption of compressed air for operating the plant is also a factor which keeps operating costs for a waterjet cutting system from STM extremely low. In addition to a completely rust-proof lightweight design in a combination of aluminium and stainless steel the STM system provides a combination of first-class components plus maximum production-related efficiency, environmental friendliness and wear resistance.

STM is a leading supplier of waterjet cutting systems with its head office in Eben, Austria. For more than 25 years, the traditional company has developed future-proof production solutions, mainly for the steel, aluminium, metal, plastic, stone and glass industries, which are most notable for their efficiency, ease of use and resistance to wear.

STM Stein-Moser GmbH
Tel: 0043 6458 200140
Email: office@stm.at
www.stm.at



Jet Edge demonstrates latest 5-axis waterjet cutting system

Jet Edge, Inc. brought its latest precision waterjet cutting technology to FABTECH in November.

The EDGE X-5® 5-axis waterjet cuts precise taper-free parts from virtually any material. The system is capable of cutting sophisticated 3D parts such as impellers and bevels up to 50°. This workhorse waterjet system is designed to provide years of dependable service in harsh industrial environments. Its sturdy design separates the motion system from the catcher tank, eliminating vibration and ensuring maximum part quality. The ball screw-driven system features direct-couple AC brushless digital servo motors, providing the best repeatability in the industry at +/- .001". Critical bearing components are protected with heavy metal covers with brush seals and positive air pressure. Productivity enhancing options include a second cutting head with mirror cutting capabilities, a pneumatic drill for pre-piercing materials that are prone to delamination, automatic submerged or above-water cutting capabilities, and a proprietary laser plate mapping feature that

allows precise nozzle-to-plate standoff. The EDGE X-5 features Jet Edge's Aquavision® Di industrial PC, which gives operators the freedom to fine-tune programs from any CAD/CAM/nesting software, utilising advanced HMI features and/or standard G&M code. The EDGE X-5 waterjet machine is available in many sizes, from 5'x 5' (1,500 mm x 1,500 mm) to 24'x13' (7,300 mm x 3,900 mm).

Permalign V-Series Mini Hopper

Jet Edge's new variable aperture Permalign® V-Series Mini Hopper increases abrasive waterjet cutting productivity and profitability by allowing waterjet operators to easily make adjustments to abrasive flow, minimising abrasive consumption. The Permalign V-Series Mini Hopper's water resistant design helps prevent annoying abrasive clogs that can cause stoppages and scrap out expensive material.

Waterjet Closed Loop Water Filtration System

Jet Edge's Waterjet Closed Loop Filtration



System filters and reuses the waterjet cutting water and pump cooling water, reducing water consumption as much as 90 percent.

In addition to lowering water and sewage cost, the system eliminates the need for a drain and prevents the introduction of hazardous materials into drainage systems. By filtering the water, the system also protects the waterjet pump and maximises orifice life. Closed Loop Filtration Systems are required for ISO-9000 certification.

UK Distributor:

Aquablast Ltd

Tel: 01502 714143

Email: sales@aquablast.co.uk

www.aquablast.co.uk

WORLD'S FASTEST WATERJET



Save time and money with the STREAMLINE PRO-III high pressure pump for Waterjet Cutting at up to 6,200 bar:

- Increased cutting speed and quality
- Decreased abrasive consumption
- Significantly improved service life of the high pressure pump



Waterjet Cutting with www.kmt-waterjet.com

Phone: +44 1384 40 88 92 · info@kmt-waterjet.com

Passion for precision

With over 30 years experience in waterjet cutting our passion for precision, development & quality is unparalleled.

We offer bespoke machine designs & with our market leading service & support are with you every step of the way. Let us help find the right solution for you. Call us on 01937 845 499.

Devoted to performance



WJS UK Ltd, Moat House Square, Thorp Arch, Wetherby. waterjetsweden.co.uk

Strong demand for new machine

After unveiling the new NCT machine at its last Open House event, Water Jet Sweden is now seeing the first of these systems hit UK shores. Since the launch of the new machine, the Ronneby-based firm has seen strong demand for the product after an increase in customer enquiries.

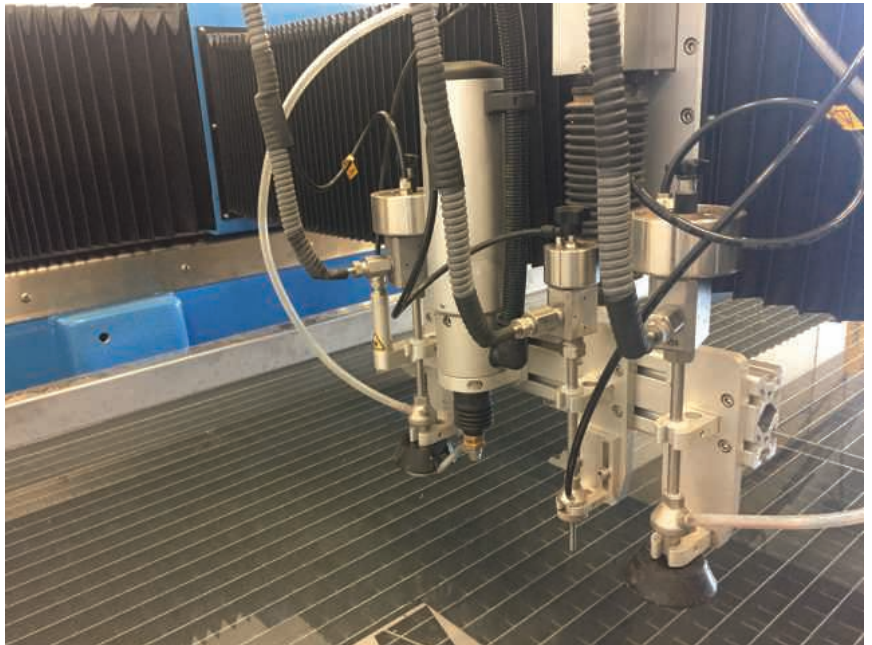
With a 3 m x 2 m cutting table, it provides the perfect turnkey solution for a variety of customer applications and demands. With several options of cutting head configuration available, it's a ready to start package that can easily be used as an additional tool for existing waterjet users or ideal for customers taking their first steps in to waterjet cutting.

Several of the machine features can be tailored to specific requirements and all packages include a Fanuc controller and 3,800 intensifier pump as standard, with both 4,000 bar and 6,000 bar pump pressure upgrades available.

WJS has an impressive reputation for premium machines and has transferred those qualities to the NCT format. The aim of the new product is to meet a more general market demand with a range of standard machine configurations whilst still ensuring the quality and peak performance of a Water Jet Sweden machine, but at a lower price level. Swedish engineering has a reputation for high precision, accuracy and reliability and those values are at the forefront in the flying bridge design for the NCT.

WJS UK has already seen several orders placed for the NCT. Sales director Gavin Bell says: "The NCT gives us another option for customers looking to get in to the world of waterjet cutting. Not all customers run production shops and need a multiple head setup. The NCT gives them the ability to add a waterjet machine to the tool offering at lower cost and is a real benefit.

"With a range of pump options it still gives the customer the ability to get maximum production and reduce their cost per part. We have received orders from customers who are new to waterjet and have a specific application to cut and also existing customers



who see the NCT as an affordable way to add increased capacity, whilst also maintaining familiarity with their existing setup."

WJS UK has installed one at its technical centre in Wetherby and several customers are already eager to visit. Gavin Bell adds: "We've been chomping at the bit to get the system installed after selling our last demo machine after only a week. It's a great resource to show customers what can be achieved."

Explaining why they launched the NCT format, Water Jet Sweden CEO Lennart Svensson, says: "There are a lot of lower priced systems out there with non supportable controllers and crank pumps but they're simply not reliable. That's why we've ensured our NCT comes with both as standard. The machine is specifically designed with everything the Water Jet Sweden name should live up to: precision, accuracy and reliability. The aim was to reach a new market segment with a standardised concept, at an affordable price point without compromising on our principles. We're known for our service and support but by looking after our customers with a longer term approach this has been a big part of our success."

Head of development at Water Jet Sweden, Tony Ryd concludes: "By designing the system to fit in a container for easier transportation, it also makes installation simpler and quicker which benefits the customer. The machine comes with our market leading five year extended mechanical warranty to give customers the comfort to know they are covered."

WaterJet Sweden has consistently transformed ground breaking research and development technology into a comprehensive product range. With over 700 installed water jet machines throughout the world, WJS makes it easy for its customers to tailor the right system to suit its cutting needs.



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

Resato introduces hydrogen booster

With the latest development of a hydrogen booster, Resato International is addressing the challenges of the hydrogen application in the automotive and other industries.

"Our booster is the core of any high pressure system. By making sure that the booster works safely under high pressure, we can build solutions for cycle testing equipment that requires use of hydrogen", states Resato chief technologist Theo Post.

Hydrogen embrittlement and its behaviour under compression make the handling of hydrogen gas challenging. A careful selection of the materials has to take place and needs to be reviewed regularly in order to improve the booster in the future. Moreover, hydrogen differs from other gases as it heats up under rapid decompression. The booster is equipped with liquid cooled chambers and to prevent pollution of hydrogen with oil, the pressure chambers and hydraulic chamber are separated.

In line with Resato's other high pressure solutions, the booster's capacity and pressure range are significant. This range



YOUR HIGH PRESSURE EXPERT.

provides the flexibility to develop customised test and filling equipment that optimise customers' productivity. The booster unit has a maximum capacity of 4 Nm³/min with an inlet pressure of 300 bar/ 4,350 psi and electricity connection of 22.5 kW. The maximum pressure range for the Resato hydrogen booster is 1,050 bar/ 15,000 psi.

At industrie lyon, the Dutch manufacturer will present its smart high pressure solutions for accurate cutting with waterjet technology. With its extensive experience in high pressure technology, the Resato ACM-Series provides steady pressure to improve cost-efficiency and deliver accurate cutting results.

"At industrie lyon, we want to emphasise again we want to develop long-term business relationships and solve our customers' business problems." states Marc Epping, sales director for Resato Waterjet Cutting Solutions.

Resato will emphasise its product offering around unmanned operation in the shape of its Flexcell continuous abrasive management system, as well as the monitoring system for optimal performance. The latest development of the Virtual Online Learning environment, CRAFT, and 3D cutting will be presented. This solution provides personalised training and reduces training expenses.

To learn more about how Resato can improve your business, visit industrie lyon, Hall 4 Stand D171.

Resato B.V.
Tel: 0031 505 016877
Email: info@resato.com
www.resato.com

DEMAND PRECISION REQUIRE PERFORMANCE INSIST ON JET EDGE



**New U.K. Showroom
& Training Facility!**

High-volume precision cutting applications require a waterjet that is built for the task.

Don't settle for imprecision. Demand a Jet Edge.



- 3 Axis & 5 Axis Systems
- Rock Solid Construction
- Motion System Separate from Cutting Tank
- Industry Leading Precision
- Widest Range of Pumps



U.K. Sales & Service:
 AQUABLAST LTD.
 +44 (0) 1502 714143
www.aquablast.co.uk

WATERJET SOLUTIONS



YOUR STM WATERJET SYSTEM

DISCOVER THE POSSIBILITIES.

FLEXIBLE - ECONOMICAL - EFFICIENT



From entry-level solutions to complex 3D systems. STM provides waterjet cutting solutions to make you even more efficient, economical and successful.

WWW.STM.AT
WWW.STM-WATERJET.DE

On-site Weld Purge Monitor with PurgeNet

Welders often face difficulties when working under the conditions experienced on-site. When welding critical joints on-site the challenges might come from exposure to extremes of heat and cold, harmful sand and dust and even hazardous fumes. Therefore using an expensive Weld Purge Monitor® in such conditions may not always be ideal.

To overcome these challenges, Weld Purging Experts and Innovators Huntingdon Fusion Techniques HFT® has designed a virtually non-destructible Weld Purge Monitor for on-site conditions. Designated the PurgEye® Site, this new instrument is a guarded oxygen monitor in a secure, safe, waterproof and dustproof box, IP68 with the lid open and IP65 rated with the lid closed.

Georgia Gascoyne, CEO of Huntingdon Fusion Techniques HFT, says: "The latest addition to the family range of the PurgEye Weld Purge Monitors is the PurgEye Site, measuring oxygen levels from 1,000 ppm, right down to 1 ppm (accurate to 10 ppm). It is portable, robust and has been specifically designed for site conditions."

"The PurgEye Site has a new design long life sensor with a very fast response time, ultra sharp OLED display and is equipped with PurgeNet™ for smart weld purging, automatic welding machine interface and traffic light visual warning accessory."

The large OLED display allows the data to be easily read and is mainly symbol based, rather than text. The display does not need a backlight and can be viewed from greater angles than LED screens.

The on-site oxygen analyser reads oxygen levels in parts per million (ppm) or percentage, depending on user preference. Flow detection ensures accurate reading of gas samples, along with a blocked filter icon

and power on/off with a standby button for sensor warm up.

The small, low volume, almost indestructible case, can be carried anywhere and the PurgEye Site used either with its internal battery, which lasts up to 10 hours or connected to mains electricity from 90 to 250 V, single phase A.C.

By using the PurgEye Site, welders can ensure non-oxidised, zero colour welds are achieved regardless of conditions. Using a Weld Purge Monitor also eliminates guesswork.

The Weld Purge Monitor was invented by HFT in the 1970's and with over 40 years of innovation, design and manufacturing experience, the company now has a family of PurgEye Weld Purge Monitors to measure oxygen levels from atmospheric content, 20.94 percent, down to 1 ppm which is accurate to 10 ppm.

Ron Sewell, chairman for HFT, says: "All of Huntingdon Fusion Techniques HFT's Weld Purge Monitors and Inflatable Tube, Pipe and Pipeline Weld Purging Systems are manufactured in the UK. We do not sacrifice on quality. We guarantee to help you achieve zero colour welds, time and time again. The Company has immense technical collateral gathered and published, that the

welding and engineering fraternity can access, rely on and use to solve many of the difficulties experienced while purging welds"

Huntingdon Fusion Techniques HFT has a worldwide exclusive distributor network, which can be found at: **www.huntingdonfusion.com**

Huntingdon Fusion Techniques HFT are weld purging innovators, designers and manufacturers with offices located globally.

Huntingdon Fusion Techniques HFT invented the 'Weld Purge Monitor' in 1975 and own all international intellectual property rights and registered trademarks. From its early beginnings HFT has maintained its position at the forefront of technology by developing and evolving new products to maintain pace with advancing technology and market demands.

Weld purging is the act of removing, from the vicinity of the joint, oxygen, water vapour and any other gases or vapours that might be harmful to a welding joint. Such gases may combine with the metal to form undesirable compounds that may reduce corrosion resistance or may be instrumental in creating cracks or other structural defects in metals.

Huntingdon Fusion Techniques HFT
Tel: 01554 836836
Email: hft@huntingdonfusion.com
www.huntingdonfusion.com



CMT upgrade for TPS/i Robotics power source

Fronius is expanding the range of functions of its intelligent TPS/i Robotics power source. This system, which is specially designed for the requirements of robotic welding, can now be equipped with the extremely stable Cold Metal Transfer (CMT) welding process using a new additional package. Users benefit from the combination of an extremely high and reproducible weld seam quality, maximum welding speeds and countless areas of application.



With TPS/i CMT Robotics, Fronius combines the advantages of its latest MIG/MAG power source platform with the most stable arc. The intelligent, modular system consists of interconnected and fully synchronised components and is specially designed to meet the demands of robot-assisted welding. The TPS/i power source has a high-performance processor and a high-speed bus, enabling data to be exchanged extremely quickly. This results in control loops that are faster than before. Two perfectly synchronised wirefeeders ensure dynamic and precise wirefeeding and thus a high process stability. What's more, the newly developed Robacta Drive CMT TPS/i push-pull welding torch impresses with its compact dimensions, which enable easy access to the weldments, and low weight for use on robots with high traversing speeds.

TPS/i power sources that already have the Standard and Pulse function packages installed can easily be upgraded for the CMT process. In comparison with other MIG/MAG welding processes, CMT significantly reduces the heat input and enables continuous regulation from cold to hot. This results in an extremely stable arc and much less spatter even at high welding speeds. It can be used for a wide variety of different applications, including welding light and medium-gauge sheets from 0.5-4 mm, root passes, galvanised steel applications and special connections such as copper, zinc, steel-aluminium and titanium. With TPS/i CMT Robotics, robot-assisted welding operations can be performed cost effectively, efficiently and to a high standard.



Traction battery charging specialists Fronius to host Back to the Future of Charging event at technology centre in Milton Keynes.

Fronius UK hosts third Open House

On 26th April, Fronius UK opened its doors for visitors to participate in their very own time travel experience, complete with DeLorean, as they are transported into a new era of technology. During this free event, guests were able to see the latest in forklift battery charging technology from the world leaders in its field. Guests also had the opportunity to find out more about the company's history, as they were taken back through time to see some of its first ever innovations. This was not your average Open House.

Fronius welcomed forklift fleet owners to come and discuss the savings potential when using the intelligent "Ri" charging process unique to Fronius. The company guarantees to save money on the energy costs of running your forklifts by up to a huge 30 percent. Its offerings range from the sale of single battery chargers to total system solutions including multiple charging modules and complete charging rooms. Monitoring of the battery charging process can also optimise charging operations and identify battery defects with Fronius' online visualisation tool, the I-SPoT Viewer.

Fronius UK Ltd Tel: 01908 512300

Email: info-uk@fronius.com www.fronius.co.uk

Redefine industrial welding



X8

MIG WELDER

www.kemppi.com



And you know.

The ultimate choice for demanding welding

At the recent EuroBLECH exhibition in Hanover, Kemppi launched the X8 MIG Welder, a multi-process welding solution for future-proof industrial welding. The solution is enabled by the newest IoT based technologies and connectivity. With new technology, Kemppi is redefining performance, usability, and welding management in demanding industrial MIG/MAG welding.

"The X8 MIG Welder is the ultimate choice for demanding welding," says Dr Petteri Jernström, Kemppi's director, Product Management and Technology Services. "With its focused and intense arc, groundbreaking user experience, upgradeable power source, Digital WPS feature and full integration with the WeldEye welding management software, the X8 MIG Welder lets you perform, control and manage welding production in a way that was not possible before."

Redefining performance

The X8 MIG Welder is a multi-process system for MIG/MAG welding, stick (MMA) welding, MIG brazing, cladding, and heavy-duty gouging. The solution consists of Kemppi's unique high-duty and upgradeable power source with an all-in-one wire feeder, ergonomic welding guns, intelligent software, and a wireless Control Pad for total welding control.

The X8 MIG Welder's extremely powerful and precise welding arc allows for impressive welding efficiency and quality. The X8 MIG Welder's intelligent power source and control technology form the basis for the new Pulse and Wise processes and functions which are optimized for demanding welding applications. In

addition to high speed welding (WiseFusion), the excellent arc characteristics include, for example, narrow gap welding (RGT), pipe root welding (WiseRoot+), and low spatter welding in the globular transfer area (WiseSteel). It has extreme power and accuracy up to 600 A, using the most common electrical network voltages.

Redefining usability

Every aspect of the X8 MIG Welder is designed to meet the best usability practices. It has never been faster or easier to change system and welding settings as well as adjust and control welding values. The wireless Control Pad allows the welder to easily find the relevant WPS, view the content on the large 5.7-inch display and activate it to start welding. The system has well-balanced welding guns with ergonomic handles. A user-friendly, all-in-one wire feeder and a serviceable power source increase usability even further.

Redefining welding management

The X8 MIG Welder is fully compatible with the revolutionary universal WeldEye welding management software. Digital WPS is a smart feature of the system which ensures that the welder always has the relevant and latest version of WPS at hand by providing detailed WPS information on the Control Pad's display. This makes printed WPS information unnecessary and changes WPS management in welding production from both the welder's and the welding coordinator's point of view.



Future-proof to meet the challenges of manufacturers

The X8 MIG Welder is designed to grow with the changing needs of manufacturers. It can be easily upgraded with software to work with new materials, applications, and welding management demands. Even the welding power is upgradeable. The X8 MIG Welders are made in Finland.

Kemppi is a pioneering company within the welding industry. It believes that everything that can be connected will be connected. Welding value is increasingly created in the global, constantly evolving networks at the meeting point of different industries, users, technologies, equipment, software, and services.

Welding knowledge and discovery

With Kemppi you can experience every day what knowledge and discovery, proven technologies, expertise, and fast reaction truly mean. You know your mission, profit, project, and results no matter where you are and you can discover new, more productive and sustainable solutions for your business needs.

For Kemppi, business is between people. People are, have been and will be at the centre of its operation. It is the curiosity of people that drives it to experiment beyond the conventional and it is cooperation across borders that creates success with new values to share.

Kemppi provides solutions on which you can trust your future. In this it does not compromise, but instead continues to challenge the conventional to find something bigger.

Kemppi (UK) Ltd
Tel: 0845 6444201
Email sales.uk@kemppi.com
www.kemppi.com



Laser welding workstations for precision laser spot and seam welding

AMADA MIYACHI EUROPE has announced the availability of its MIYACHI EAPRO NOVA3 Laser Welding Workstations, ideal for precision spot- or seam welding of metal parts, including medical, automotive, electronic, and aerospace components.

The NOVA3 is an excellent choice for seam sealing of medical devices and high frequency aerospace radar components, spot welding of small mechanical parts and battery housings, as well as hermetic seam welding of sensors, batteries and battery packages. The MIYACHI laser welders can join a wide range of stainless steels, nickel alloys, titanium, aluminium, and copper.

The modular, flexible, lean-manufacturing-ready NOVA3 Series Laser Welding Workstations feature CE-approved, Class 1 eye-safe enclosures. The stable and ergonomic platform facilitates continuous production and stress-free, concentrated, and effective operators. An integrated touchscreen enables easy programming.

Comprised of high performance ruggedised industrial laser equipment, the NOVA3 is customisable to specific production requirements. It can be



equipped with pulsed Nd-YAG lasers up to 600 W, continuous wave fibre lasers up to 5,000 W and quasi-continuous wave (pulsed) fibre lasers up to 600 W average power. Manual, pneumatic, and motorised door configurations are available, with horizontal

or vertical opening direction. The NOVA3 offers servo motor driven axis (XYZ) CNC motion.

More information on AMADA MIYACHI EUROPE'S NOVA3 Series Laser Welding Workstations can be found at: www.amadamiyachieurope.com/products/laser-welding/nova3-laser-welding-workstations/ AMADA MIYACHI EUROPE is a leading manufacturer of equipment and systems for laser welding, laser marking, laser cutting, resistance welding, micro arc welding, hermetic sealing and hot bar reflow soldering & bonding. Its products are customised around specific micro-joining applications for all of its customers around the globe. AMADA MIYACHI EUROPE product markets include medical devices, battery, automotive, solar industry, electronic components and aerospace. It is a ISO9001 certified company.

AMADA MIYACHI EUROPE UK
Tel: 01638 510011
Email: infouk@amadamiyachi.eu
www.amadamiyachieurope.com

New ESAB Sentinel A50 welding helmet

ESAB, a world leader in welding and cutting technologies, has introduced the Sentinel™ A50 high-performance automatic welding helmet to its range of welding helmets. The helmet's radical new design incorporates ergonomic headgear and maximum adjustability to increase productivity, functionality and usability. The Sentinel A50's high-tech features include an adjustable 5-point headgear, a 100 x 60 mm viewing area, an externally activated Grind Button, a colour touch screen control panel and a front-loading convex cover lens that comes in different colour options and changes in 10 seconds.

Operators will immediately notice greater comfort from the Sentinel A50's Halo™ adjustable 5-point headgear. The ergonomic, low-profile design delivers improved weight distribution with five contact points, including a central pivot point that allows maximum head clearance while helmet is in the up position. The additional contact points introduce approximately 500,000 different combinations of headgear settings, five

times more than standard helmets typically provide.

In addition to the enhanced headgear, the Sentinel A50 features an advanced high optical class ADF lens with a 100 x 60 mm viewing area for wider visibility and better spatial awareness. With its 1/1/1/2 optical class rating, welders can be assured that the Sentinel A50 offers a sharp, clear and consistent view of the weld puddle. True colour technology enables operators to obtain a better view of the weld puddle and surrounding area, helping the operator keep the weld puddle centred in the joint.

For grinding, a grind application mode is activated externally on the shell's temple, so operators don't have to remove the helmet when shifting from welding to grinding. The grind mode is easily accessed, as well as deactivated, by holding the button for two seconds. With an external grind mode button, operators minimise downtime by quickly switching applications without having to access an internal switch on the control panel.

The Sentinel A50 features a convex



front-loading cover lens that not only prevents the buildup of spatter, but also can be easily removed and replaced. The cover lens, as the chief consumable on a welding helmet, takes the most abuse during welding; constant spatter, sparks and heat create wear and tear on the lens and prevent proper viewing. The spherical quick-release cover lens removes with the push of a single button. Replacement can be achieved in 10 seconds, minimising time spent changing parts.

ESAB Group (UK) Ltd
Tel: 0800 389 3152
Email: info@esab.co.uk
www.esab.com

**For the largest and most advanced range of
DEBURRING • GRAINING
FINISHING • POLISHING**

Machines, Tools, Accessories and Consumables for
Sheet Metal Engineers
• Sheet & Plate Fabricators • Profilers and Steel Centres



click on www.surtech.co.uk or
call 0121 359 4322



Portable abrasive wheel power tools



Abrasive, polishing consumables



Pedestal abrasive machines



Special/large abrasive finishing machines

Surface Technology Products Ltd
Email: sales@surtech.co.uk

**SAWS UK HAS
MOVED & GOT**

**30%
BIGGER!**

- Exclusive range of Alligator sawing machines
- Do-All full range • Klaeger machines • Spares
- Sawing blades • Expert service & advice

**0844 880 4511
www.sawsuk.com**

Come & see our new showroom facilities, you are welcome anytime, the kettle is already on!



VICTOR-TAICHUNG
**CNC Lathes &
Machining Centres**
01706 648485
victorcnc.com

**TECHNO
WASH**

DELIVERING RESULTS

Advanced Component Washing and Degreasing Systems

- Single & Multiple Process Stages
- Batch & Conveyorised Systems
- Fluid Control & Detergent Products
- Full In-House Design & Build Capability for Bespoke Wash Systems
- Spray, Immersion and Ultrasonic Cleaning Processes



We offer the complete solution for all component
washing and degreasing requirements

Standard Way, Northallerton, North Yorkshire, DL6 2XE

Tel: +44 (0) 1609 778 771

Fax: +44 (0) 1609 773 211

enquiries@technowash.com

www.technowash.com

Follow us on [Twitter](#) [Facebook](#) Search Technowash Limited



LaserProcess experts in laser cutting services

Laser Process help manufacturers
to improve performance

- More than 20 years experience
- Advanced, high speed laser systems
- Project management
- Technical advice
- Highest quality standards
- Nationwide delivery



Laser Process Ltd,
Upper Keys, Cannock,
Staffordshire WS12 2GE

Tel: 01543 495000

Fax: 01543 495001

Email: sales@laserprocess.co.uk

www.laserprocess.co.uk

AUTOMATED BLAST FINISHING



Guyson International's advanced robotic blast systems deliver benefits for manufacturers of precision components with demanding surface engineering topography requirements and any subsequent validation issues, typically medical implants and aerospace turbine blades.

- Eliminate the surface quality variations in hand processing with manual blast cabinets
- Improve component quality, cost control and productivity
- Reduce or remove labour costs
- Cut compressed air usage and costs
- Reduce blast media usage

Call Guyson now for a further information

Tel: 01756 799911

Email: info@guyson.co.uk

Web: www.guyson.co.uk



Premium
British engineering
Cranden
Diamond Products Ltd



Automotive & Aerospace
Diamond & CBN
Grinding Wheels
Electro-Plated & Resin bonded
Made by us to your specification.
Call Technical Sales on 01580 241252
e: info@cranden.com

The premier supplier of Workholding Solutions

www.smwautoblok.co.uk
**SMW
AUTOBLOK**
Workholding Ltd.

WORKHOLDING SOLUTIONS

THAT WORK!

Jaw module

with SPANNTOP or TOPlus chuck



Larger clamping range - smaller chuck

- Minimal production costs
- Flexible, fast and repeatable change-over to changing head or mandrel clamping
- Downtime clamping with jaws
- Clamping with part lock effect through the use of clamping bases or mandrels

Sales: sales@hainbuch.co.uk
Phone: 01543 278731

www.hainbuch.com

**UK
HAINBUCH**
WORKHOLDING TECHNOLOGY



**Dust and fume
problems solved
in minutes.**

**AirBench
Downdraught
Bench**



www.airbench.com

sales@airbench.com

01206 791191

ERODEX
THE LEADING EDGE

**EDM Wire
Electrode Manufacturing
Electrode Materials
All EDM Consumables**

T: 01384 892011 F: 01384 897162
sales@erodex.com
www.erodex.com

We keep
you turning



TORNOS

The no-risk approach to MRP/ERP



All the success - none of the risk

If you need to implement or replace an MRP/ERP system why go through the expensive traditional selection approach of paying for a system before you know it'll suit your needs.

With 123insight there's no risk. Attend a free Evaluation Workshop, held around the country each month. If you think the system is a good fit then attend the six days of **No Obligation** training, on the understanding that if you decide not to move forward you walk away with nothing to pay. After that it's a low monthly subscription with no minimum tie-in period.



Suitable for all business types and sizes



**30+ business awards
50+ Customer Case Studies**

Attend local
Evaluation Workshop

31

No cost

Attend
no-obligation training



No risk

Select, implement
and go live

No wasted time

**Advanced
Simplicity®**

123 Insight Limited
01489 860851
info@123insight.com www.123insight.com



The next Evolution in Trochoidal Milling

CircularLine end mills
with integrated Chipbreaker
for shorter machining times
and extended tool life

For machining of



Steel



Non ferrous metals

WNT MASTERTOOL
PERFORMANCE

TOTAL TOOLING = QUALITY x SERVICE²

