

Coming Soon . . .

The **XYZ** Twin/Sub Spindle Turning Centre for large production runs done in one hit.

NEW



XYZ SS 65

TWIN SUB SPINDLE



SIEMENS Touchscreen

The twin / sub spindle turning centre with live tooling and Y axis gives you the ability to machine both ends of a component reducing the frequency of loading and unloading. This reduces idle time and improves productivity, milling and turning can be done in one set up. The 30° one-piece slant bed provides a rigid base. Linear ways ensure faster movement and precision.

The **XYZ** Turning Centre Range includes the entry level LR with Linear Rail Slides followed by the HD Heavy Duty, the two Y axis LTYs, and the large capacity TC 400 all with Hardened Box Way Slides and finally the Twin/Sub Spindle **XYZ SS 65**. All XYZ TCs are built to be the best in thier class and all are available direct from UK stock - **XYZ** we're ready when you are.

Time Proven High Volume Production

The **XYZ SS 65** is a time proven machining platform for the production of complex components, at volume and in 'one hit'.



Computer simulation on the **XYZ SS 65**



All new **XYZ** CNC machine tools come with free initial training, full 12 month warranty, extended warranties available, programming helplines and nationwide service engineers.

XYZ
Machine Tools

To book your demo please call us on 01823 674200
sales@xyzmachinetools.com www.xyzmachinetools.com
SHOWROOMS AT: DEVON NUNEATON SHEFFIELD & LONDON



SINCE 1984

GAME CHANGER



The **SX Series** is the latest innovation from Star, representing years of machine tool research and development to produce the next generation of sliding head technology.

Delivering superior metal cutting performance within a modest footprint, the ergonomic SX-38 Type A is a breakthrough model ideal for complex mill-turn parts.

Find out more about Star's latest machine at www.stargb.com



SCAN
HERE

star

SX-38
type A

6 TONNE WEIGHT **60° SLANT BED** **11KW SPINDLE POWER** **7,000RPM SPINDLE SPEED** **13KVA AVG CONSUMPTION**
42MM CAPACITY **GUIDE BUSH MODE** **NON-GUIDE BUSH MODE** **HIGH PERFORMANCE** **SIMULTANEOUS MACHINING**
12 AXES **PROGRAMMABLE B-AXIS** **INDEPENDENT Z3-AXIS** **VERSATILE** **10 STATION TURRET** **8 STATION SUB SPINDLE**
STAR MOTION CONTROL **SUPER-POSITION MODE** **DOVETAIL GUIDEWAYS** **FLEXIBLE** **LARGE 375 LITRE COOLANT TANK**



☎ 01332 864455

✉ SALES@STARGB.COM

🌐 WWW.STARGB.COM

Visit our website at:
www.engineering subcontractor.com

CONTENTS

NEWS	4
FEATURE - 5-AXIS MACHINING	6
SPECIAL REPORT - WFL	18
METAL CUTTING	20
FEATURE - CUTTING TOOLS	28
FEATURE - WORKHOLDING	38
CADCAM	46
ADVANCED MANUFACTURING	48
FEATURE - SAWING & CUTTING OFF	50

NEXT ISSUE - JULY 2021

- MEDICAL REPORT
- CAD/CAM
- DEEP HOLE DRILLING
- LASER CUTTING
- MACHINING CENTRES & LATHES
- TOOL STORAGE & MANAGEMENT

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

Publisher/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

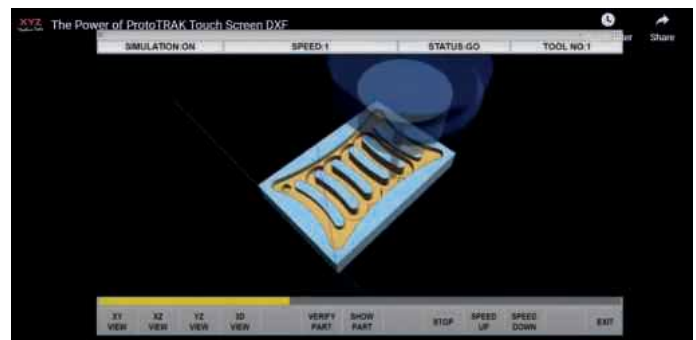
Engineering Subcontractor is mailed to a controlled circulation of readers with a legitimate interest in the content. Roger Barber Publishing stores all business data securely and does not share with third parties.

No part of this publication may be reproduced without express written permission.

ProtoTRAK remains the first choice for low volume production

The XYZ ProtoTRAK control system continues to evolve with the latest touchscreen models for turning and milling retaining their position as the best control to produce one-off and small batch components. The simplicity of the control to use and program is in direct contrast to the power that they bring to toolroom and low-volume production environments.

When it comes to machine tool control, ProtoTRAK from XYZ Machine Tools leads the way for ease-of-use and functionality; benefits that have been retained in the latest versions for mills and lathes. Behind the new 15.6 inch touchscreen are numerous innovations and features adding greater efficiency to one-off and low-volume machining. The Touchscreen puts all these features at the operator's fingertips, where part drawings and tool paths can be zoomed, panned and rotated, and DXF files can be converted to part programs with just a few touches of the screen.



Other features include Enhanced ProtoTRAK Assistance (EPA), for instant access to in-depth user help with programming/operating procedures. EPA addresses the change in skill sets that businesses face. The trend of users with mechanical skills but limited technology knowledge is being reversed and now younger employees have possibly lower levels of engineering knowledge, but higher acceptance of computer technology. ProtoTRAK overcomes this with its core function of being straightforward to use, even for someone with no or limited machining experience.

The ProtoTRAK RMX control for XYZ Bed Mills also includes an Auto Geometry Engine (AGE) and, in-built machining strategies that deliver advanced performance benefits, again with a simple touch of the screen. The AGE function is effectively a CAD capability allowing users to overcome issues when data is lacking from drawings by automatically calculating missing dimensions during programming. Touchscreen capability takes AGE to a new level, with the new Tap to Guess feature; with the part shown on-screen, simply tapping the screen where the intersection or tangent point is unknown, the AGE software calculates the dimension data.

"The latest generation ProtoTRAK RX controls continue to evolve with new and innovative ways of reducing programming and cycle times, yet maintaining the original concept of ProtoTRAK to make things as simple and easy to use as possible. Maintaining its position as the best control for one-off and low-volume production," says Nigel Atherton, managing director of XYZ Machine Tools.

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

Royal award for company at the cutting edge of technology

A Greater Manchester company has won the UK's most prestigious business award after its overseas sales rocketed over three years.

Engineering company Chelburn Precision Ltd has won the Queen's Award for International Trade. The company's overseas sales have increased fivefold in three years, from £360,000 to £1.7m, primarily to the USA and mainland Europe.

It also estimates that 95 percent of domestic sales are ultimately exported as many of the company's UK customers deliver their products overseas. Chelburn's total turnover is now more than £5m.

Chelburn director Katie Travis says the success is due to its investment in the very latest machinery which, combined with a highly skilled workforce, means it has carved out a niche for its specialised production services both in the UK and overseas.

She adds: "Every project we do is unique so it needs great technical and problem-solving skills."

Chelburn Precision, founded in Rochdale in 1982 by Roger Travis and now run by his son Neil, is rapidly building a reputation as a global leader in its field.

It takes engineering to an incredibly high and precise level, manufacturing key components in one-offs or batch quantities for machines needed in industries such as rubber and plastics, paper converting, oil and gas, industrial gear boxes, printing and canning.

Among many landmark achievements, Chelburn made prototype parts for the Joint Strike Fighter programme which developed a new generation of fighter and ground attack aircraft for the United States, NATO and other countries including the UK. Production of this aircraft began in 2006.

With its broad spectrum of customers, Chelburn's products range from complex pumps for the oil and gas industry, weighing as much as eight tonnes, to clutch shafts for paper converting just 60 mm in diameter. The key is that precision and measurement tolerances can go down to 0.01 mm.

Most parts are made out of stainless steel, aluminium and cast iron and Chelburn now has more than 130 suppliers for all the components needed for its projects.

The company is continually moving



improving health and safety over recent years. Keen to attract more young people into engineering.

"We are the kind of traditional industry that forms the backbone of British manufacturing in the north and we are thrilled to receive Queen's Award recognition, particularly now in the wake of the pandemic," Katie Travis explains. "Covid has been an exceptionally challenging time for us. Furlough was not an option because we knew we were critical suppliers to some of our biggest customers and so it was crucial we played our part and maintained the supply chain. As a company,



forward with the latest technology, recently investing £1.6m in three of the very latest computer-controlled machines to make sure every project is done to the highest quality and as efficiently as possible.

Katie Travis says: "The end result is that the service we provide is difficult for others to replicate, certainly foreign providers are behind the curve and UK competition has slackened due to lack of investment, driven in part by risk-averse financing decisions. Our commitment to technology means we can deliver on cost and support customers in managing production schedules, both of which are key success criteria. The service we provide is, quite literally, right at the cutting edge."

She believes the success of the business is ultimately down to the talent and skills of its management team and workforce. The company has worked hard to modernise its staff welfare policies and invested heavily in

we are proud of that achievement. Coronavirus has had a big impact on our staff, with illness, shielding and many juggling working life with the demands of home schooling. To receive the award now is a great recognition of all that effort, commitment and teamwork."

The Queen's Awards are the highest any business in the UK can receive and the winners are traditionally announced on the Queen's birthday, April 21, but were delayed slightly this year due to the sad loss of Prince Philip, the Duke of Edinburgh.

They are given for outstanding achievement in the categories of innovation, international trade, sustainable development and promoting opportunity through social mobility.

Chelburn Precision Ltd
Tel: 01706 350479
www.chelburn.co.uk

Cutwel marks its 25th anniversary with rebrand and charity pledge

Leading supplier of cutting tools to engineers throughout the UK and Ireland, Cutwel is celebrating its 25th anniversary and marking it with a forward-looking rebrand to better reflect the business' market position.

Established in 1996, Cutwel is one of the largest independent engineering tooling suppliers in the UK, with a turnover of £20m, supplying cutting tools and providing high-level technical support for more than 11,000 precision engineering companies nationwide. The business employs over 80 staff at its headquarters in Cleckheaton and eight regionally based application engineers.

CEO Adam Gillard has worked at Cutwel for almost 20 years and led a management buyout in 2018, supported by private equity firm NorthEdge Capital. He says: "The business has changed significantly during its 25 years, from a small family run firm to a multimillion-pound turnover leader in our field. The rebrand reflects who we are today,

reinforcing that we go beyond being simply a tooling supplier, working in partnership with customers to deliver quality products, backed by technical expertise, to help them be as productive as possible. With 25 years' experience of consistently delivering the best performing products at the best prices, we felt the business deserved a more modern aesthetic and messaging.

"We've grown from a £12m turnover company in the last five years and we are on track to achieve £25m in the next financial year, with a continued focus on giving customers peace of mind that they will receive the right tool for the job. Our business model of having a short supply chain, quality products and highly experienced technical team has proven to be successful and allows us to sell products at more competitive prices, be agile and give better value to customers."

The company has also initially pledged a



£1,000 charity donation as part of its anniversary activities. The donation will be equally shared between four charities chosen by employees, including mental health group Andy's Man Club, Kirkwood Hospice, Martin House Hospice and Yorkshire Dog Rescue.

Cutwel Ltd
Tel: 0333 0068275
Email: sales@cutwel.net
www.cutwel.co.uk

SolidCAM UK becomes a technical member of the BTMA

Since SolidCAM UK provides leading Integrated CAM software with powerful support for advanced mill-turn and sliding head technology to the UK market, it was a no brainer for the South Yorkshire based company, to join the British Turned Parts Manufacturers Association (BTMA) as a technical member. As well as employing sliding head technical expert engineers at its technology centre, SolidCAM UK is also proud to announce the recent arrival of its new Star SR-38 Type B sliding head mill-turn centre as an integral asset in delivering unrivalled support to the association's members.

SolidCAM, which runs directly inside SolidWorks and Autodesk Inventor, with seamless integration and full tool-path

associativity, also provides the unmatched, revolutionary and patented "iMachining" technology for the fastest metal removal in the industry and is available for the programming of mill-turn machines. Along with providing full support for all milling and turning functionality, SolidCAM UK delivers a solution for all with the ultimate in programming flexibility and configurability. Customers can then standardise their CAM Systems with one solution for all, making it a vital member of the association.

SolidCAM UK confirms that it can help BTMA members get the most out of their high-end multi-tasking CNC machines, using SolidCAM, as there is no limit to the number of axes it can control and synchronise with mill/turn applications. This provides companies with a cost-effective way to produce small, complex and precision parts in large quantities using multi-spindle and multi-turret operations with full turret synchronisation/multi-channel synchronisation. Programming these machines can be extremely difficult, even impossible, to program by hand, therefore a CAM Solution is crucial to stay ahead.



From its UK technology centre, SolidCAM UK provides full post processor support, training and product support, as well as live total manufacturing solution seminars with live cutting together with leading technical partners for tooling, workholding and automation.

Peter Hobbs, director of the BTMA, says: "SolidCAM UK Ltd will provide support to BTMA Members with turning and advanced turning applications, in this regard we look forward to working with them in the future."

SolidCAM UK Ltd
Tel: 01226 241744
Email: info@solidcamuk.com
www.solidcamuk.com



Subcontractor orders second automated cell for machining prismatic components

Having installed a Japanese-built Brother production cell at the end of 2019, comprising two 5-axis Speedio M140X2 mill-turn centres served by a Feedio vision-based robotic unit for component handling, Worthing subcontractor Roscomac has ordered a second identical cell. Due to be delivered in April 2021 by Brother's sole UK agent Whitehouse Machine Tools, the latest acquisition is symptomatic of a fundamental change in the way Roscomac's owner Joe Martello views automated manufacture:

"About 20 years ago, we installed a large flexible manufacturing system consisting of six 3-axis, 40-taper, half-metre-cube machining centres linked by a three-level storage and retrieval system for 104 machine pallets.

"Having served us well, it is being decommissioned in February 2021. Part of the space it frees up will be used for relocating the first Brother cell and the second will be placed alongside it, all in a relatively small footprint.

"Since 2018 our company has undergone a major shift towards 5-axis machining. We have spent the majority of a £4 million investment in that period on multi-pallet pool systems with large tool magazines.

"They machine parts in fewer operations while achieving a high level of automation, without the complexity of an FMS based on 3-axis capacity. Had we not gone down the 5-axis route we would be dead in the water by now.

"With the two Brother systems, we have gone a step further by installing our first 30-taper 5-axis capacity for automated, ultra-fast machining of aluminium components in fewer setups and hence to superior quality."

He explains that while the FMS was an efficient production facility, the 3-axis CNC technology often required several parts at a time to be clamped multiple times in expensive staged fixtures for completion of several separate machining operations. The system's utilisation dropped because the type of work coming through the door was changing; it was becoming lower volume and more complex. Production was more difficult to control and the increasing



number of setups raised the labour cost content of component production, as operators were frequently at the load/unload stations.

The timing of the arrival of the first Brother cell, a matter of months before the start of the COVID-19 pandemic, could not have been more fortuitous. Nearly a quarter of Roscomac's turnover normally comes from the medical industry but in 2020 that proportion doubled, leading to an increase in annual turnover of £2 million despite the virtual disappearance of aerospace work, which historically has accounted for one-tenth of Roscomac's throughput.

For many years, the subcontractor had been machining four different components for hospital syringe pumps from aluminium castings and extrusion. They used to be machined at a rate of 4,000 per month per part number on 40-taper machines in the FMS, but were ideal candidates for transfer to the first Brother cell. It was therefore supplied with a turnover station so that one Speedio can carry out Op 10 while the other completes Op 20 after the component has been rotated, all fully automatically.

These nimble, 30-taper, 5-axis machines could produce the parts much more cost-effectively in two operations, 24/7, without operator intervention apart from placing raw material onto the input conveyor and

unloading finished parts from the output conveyor. In contrast, unattended and lights-out running was impossible on the FMS due to the constant loading and unloading, so in practice the system was only capable of one-quarter of the output of these components compared with the Brother cell.

Within one month of the start of the pandemic, the customer quadrupled the order quantity to 16,000 per month per part. Joe Martello advised that it would not have been feasible to achieve even half that amount using the other plant in the factory, which would have meant turning away business. As it was, the Brother cell was able to cope. It started paying for itself and making a profit from the first day it was installed, as the operator only needs to load and unload the conveyors and keep an eye on production, so is free to run other machines.

By the middle of 2020, due to the success of the cell, the decision was taken to transfer all the remaining work from the FMS and plan for its removal. As the Brother cell was working flat out, this work was initially put onto 40-taper machining centres, but to add more high-speed capacity, a third Speedio M140X2 was hired from Whitehouse Machine Tools and operated as a manually-loaded machine.

Joe Martello continues: "It really focused the mind, seeing the operator having to attend the machine virtually continuously during the relatively short Op 10 and Op 20 cycles. So we decided to purchase a second fully automated Brother cell, exactly like the first.

"Whitehouse supplies them as turnkey installations with time studies, programs, fixtures and tooling. We have the skills to do this in-house, but we are very busy at the moment with the surging medical work.

"In any case, we find that we learn a lot from Whitehouse each time it prepares and supplies a fully functioning production cell, so we get the benefit of knowledge transfer along with their experience of the best way to produce parts most efficiently."

The Speedio M140X2 has a machining volume of 200 x 440 x 305 mm and incorporates a 2,000 rpm turning table, which is not used for machining the current range of prismatic medical parts. However, together with the +120 to -30 degree swivel of the trunnion carrying the table, the two extra rotary CNC axes are invaluable for automatically positioning components in-cycle for predominantly 3-axis machining, although there is some 4- and 5-axis simultaneous metalcutting within some of the cycles.

The machine's extremely high productivity comes in part from simultaneous movement in the X, Y, Z, A and C axes plus tool change when the machine is not cutting. Tool change time from the 22-position magazine is 0.9 second, giving 1.4 seconds chip-to-chip, and spindle start/stop is completed in 0.2 second.



Cutting feed rate is up to 30 m/min, with 50 m/min rapids.

The Feedio robotic component handling system option exploits this speed to the maximum by delivering parts to the spindle faster than an operator is able to and without interruption. The plug-and-play automation unit, which communicates with the machining centre via a Profibus interface, is supplied with a 6-axis ABB robot and the manufacturer's smart teach pendant incorporating a customised Speedio page.

A camera vision system and built-in PC allows the robot to detect where on the upper input conveyor the raw material has been placed. After machining, components are returned to an output conveyor positioned below the first. Accessibility to the machining area of both Speedios from the front is maintained by positioning the automation unit between the machines.

Joe Martello regards the Brother cell,



based on very fast 30-taper machines, as being the ideal solution for machining aluminium components, in this case for medical applications. The 5-axis capability and turnover station enables the mainly 3+2 machining operations to be carried out in two operations without manual handling. Some fully interpolative 5-axis sequences are also completed. Jobs requiring straightforward 3-axis prismatic cycles without any need for the rotary axes will in future be put onto the cell, if expedient, simply to take advantage of the automation.

Other contracts where the in-cycle turning capability of the M140X2s can be utilised will be obvious choices for the Brother cell. Those within the Speedios' capacity involving tougher material like steel will also be confidently allocated to the cells due to the build quality of the machines. Only if work involves continual machining of superalloys like Inconel would alternative plant be chosen.

Joe Martello concludes: "This was new technology for Roscomac and we leant on Whitehouse quite heavily in the early days. We have received very good support from this supplier throughout, with its engineers even on-site at weekends occasionally, which was especially important in view of the urgency of the COVID-related work."

Whitehouse Machine Tools Ltd
Tel: 01926 852725
Email: timw@wmtcnc.com
www.wmtcnc.com



Mazak adds cutting edge to UK production facility with significant machining investment

Yamazaki Mazak has continued its commitment to high-quality, homegrown machine tool manufacturing by making another substantial investment in production equipment at its UK-based European Manufacturing Plant.

The latest multimillion-pound investment includes the installation of a state-of-the-art twin-pallet VERSATECH V-140N/280 and FJV-60/80 double-column vertical machining centre as Mazak continues to increase its production capacity post-Brexit. The machines will be used to manufacture large component parts for new Mazak machines built at its plant in Worcester, demonstrating Mazak's trust in its own technologies to provide high-quality work.

"When it comes to selecting the best possible tools to manufacture our machining solutions, Mazak stands out as one of the few machine tool manufacturers able to practice what it preaches," says Stuart Astley, production director at Yamazaki Mazak UK. "We don't just present our machine tools as market leaders to customers, we know well their quality. As such, they are always first-choice when we're looking to expand the plant's production capacity."

He continues: "These purchasing decisions are not ones we make lightly, as Mazak has cemented its status as a leading supplier of machining centres due to the high-performing options we offer. This quality must therefore be mirrored within our own production processes and we are fully confident that these new machines can



help maintain the level of machining quality and precision Mazak is renowned for."

The latest in the VERSATECH Series of multiple-surface 5-axis double column machining centres, the V-140N/280 can continuously machine large workpieces up to 3,100 mm in length thanks to a 10,000 rpm 50-taper spindle head with B- and C-axis capability. Alongside the FJV-60/80, it has replaced older on-site machines and will allow Mazak to increase the facility's capacity for producing large components, enabling more work to be completed in-house and further guaranteeing best machining quality.

The installations are the latest in a series of investments made at Mazak's Worcester facility, which is the company's sole machine tool manufacturing site on the continent. Mazak had previously installed two new state-of-the-art manufacturing cells in 2019 to make parts for its extensive range of UK-made machine tools, with each cell equipped with an INTEGREX i-Series machine from its flagship multi-tasking solutions range and RoboJob automation system.

The continued boosting of the plant's advanced machining capabilities is part of Mazak's

ongoing efforts to ensure it has the flexibility, adaptability and productivity required to thrive in the UK's post-Brexit manufacturing landscape, says Stuart Astley.

He concludes: "The best way to demonstrate the capability of state-of-the-art Mazak machine tools is to see them in action in a Mazak factory. The Worcester facility already enjoys iSMART Factory™ status and a prominent position in Mazak's global manufacturing footprint, but the march of progress is forever ongoing and we must adapt accordingly.

"As such, the installation of large-scale machining centres with enhanced connectivity and compatibility with Smooth Scheduler software further strengthens the UK plant's reputation as a blueprint for advanced manufacturing solutions. Not only will the installation of the new VERSATECH V-140N/280 and FJV-60/80 improve overall capacity at the facility, it will also ensure Mazak will remain agile and competitive during this exciting time for UK manufacturing."

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



Starrag Group's Machine Tool Solutions

Starrag has established an excellent reputation around the world as a technology partner with leading manufacturers of demanding workpieces.



Berthiez

Vertical grinding and turning from 800 mm to 5 m diameter

Solutions for
Aerospace and Energy



Bumotec

Turn/mill/grinding machines for single set-up machining of small components

Solutions for
Industrial



Dörries

Vertical turning from 1 m to 10 m diameter

Solutions for
Energy



Droop+Rein

Mill/turn from 2 m to >10 m table size

Solutions for
Aerospace and Transportation



Ecospeed

Extreme high performance milling of billets up to 20 m

Solutions for
Aerospace



Heckert

Mill/turn with table size range 400 mm to 1.8 m

Solutions for
Transportation



SIP

Ultra-precision jig boring machines for diameters up to 1.6 m

Solutions for
Industrial



Starrag

Turn/mill from 20 mm to 3.5 m diameter

Solutions for
Aerospace and Energy

Maximum precision for large components

To meet the criteria of ever-expanding customer demands, CHIRON has now launched its latest machining centre, the new 5-axis CHIRON DZ22W. Based upon the proven platform of the existing 16 Series, the new CHIRON DZ22W that is available in the UK from the Engineering Technology Group (ETG) has been introduced to meet the exact needs of the industry.

The new CHIRON 22 Series boasts precise, dynamic machining, high technical availability and is particularly impressive in the complete machining of large steel and aluminium components, such as electric motor and transmission housings, oil sumps or chassis components in the automotive sector. Of course, as with all CHIRON machines, the DZ22W 5-axis is a production centre with attributes that extend to manufacturers across all industry sectors. This is a credit to intensive dialogue with multiple market segments that have resulted in a fundamentally new machining platform with an impressive mobile gantry design.

Thanks to this proven moving gantry design, a particularly rigid machine bed and active component cooling, the DZ22W 5-axis achieves a high level of precision even for large components. Short cycle times are effortlessly achieved with high axis acceleration, short changeover times and rapid traverse speeds. The integrated workpiece changing device, which enables blanks and finished parts to be loaded and unloaded during machine operation, further increase productivity.

The new DZ22W 5-axis has a twin-spindle configuration that can simultaneously work at speed in the 620 by 650 by 600 mm X, Y and Z-axes work envelope. Within this spacious envelope, customers can load a maximum component size of 599 mm diameter with a maximum height of 340 mm and with a maximum workpiece load of 600 kg.

As with all machines from the CHIRON stable, the new DZ22W 5-axis demonstrates industry-leading productivity levels with a colossal 61 kW spindle motor capable of reaching speeds up to 20,000 rpm. This power and speed are complemented by an axis acceleration rate of 10, 10 and 17m/s² across the X, Y and Z axes and a rapid feed rate of 75 m/min across the three axes. This



astounding speed is built into every aspect of the CHIRON 22 Series with a world-leading tool change system that demonstrates chip-to-chip times of just 3.1 seconds.

The two spindles can be specified with a choice of HSK-A63, HSK-A100 or HSK-T63, with each spindle having an individual tool carousel of 77 tools. The two different main spindles can be specified depending on the task; a high-speed spindle for workpieces made from aluminium or aluminium alloys and a high-torque spindle for large tools and hard-to-machine materials. All additional units, such as cooling, hydraulic and extraction systems are integrated into the machine to take up very little space. As with all CHIRON machines, the DZ22W 5-axis is available in different configurations with customers having the facility to choose between a ball screw drive or a linear direct drive. With robot or gantry loaded automation available as well as a multitude of other optional features, now is the time to contact ETG to take your productivity to the next level.

ETG brings a new way of thinking to the

CNC machine tool supply market. Through its world-class machine tool associates, it provides cost-effective turnkey solutions for CNC milling and turning machines.

It can call upon a huge portfolio of machines from leading CNC machine tool associates including Nakamura Tome, Chiron, Stama, Bridgeport Hardinge, Quaser, Bavius and Pietro Carnaghi.

ETG is a single source machine tool and systems supplier. By providing in-depth support and applying insight, experience and expertise, it aims to get the maximum benefit from advanced manufacturing techniques.

Its commitment is to offer the same exceptional levels of service, in-depth product knowledge and factory trained support teams that customers would rightfully expect from a direct subsidiary of its world-class partners.

Engineering Technology Group
Tel: 01926 818 418
Email: sales@engtechgroup.com
www.engtechgroup.com

THE NEXT GENERATION OF INTEGREGX

AUTOMATION FRIENDLY

Flat front machine design
for automation integration

ENHANCED MACHINING

New lower turret design expands
DONE-IN-ONE capability

Ai ENABLED

Solid Mazatrol
SmoothAi Spindle
Ai Thermal Shield

MAZATROL
SMOOTHAi



ELEVATE PRODUCTIVITY

A smaller footprint with an
increased workpiece envelope

OPTIMIZED EFFICIENCY

Digital Twin technology
creates an identical
office environment

DIGITAL TWIN

INTEGREX i-H SERIES

The new INTEGREX i-H series brings together innovative machine design for ultimate machine performance and a multitude of automation options to transform your manufacturing operations for optimum productivity and profitability.

Join the evolution.

To discover more call +44(0) 1905 755 755
or email info@mazak.co.uk

DISCOVER **MORE** WITH MAZAK™

www.mazakeu.co.uk/integrex-iHseries

Mazak
Your Partner for Innovation

The best kept secret in subcontracting

The productivity rewards and the cost savings being gained by subcontractors of every size and in every industry sector using Starrag machines is probably the best kept secret in UK engineering.

Whatever the component, from 1 gm to 200 tonnes and, whatever the material, Starrag's comprehensive ranges of multi-axis machines ensure it is consistently 'Engineering precisely what you value' to ensure every user gains higher quality components machined in faster cycle times and produced right first time, every time. That includes the most complex, multi-tasking 5-axis tasks being completed in single setups.

"Whether the need is to improve the production processes on existing workpieces or to establish world-class machining routines for new contracts, the Starrag team's level of commitment and expertise is unrivalled," says Lee Scott, Starrag UK's director for sales and applications. "That includes tapping into the expertise of our engineers in Switzerland and Germany, if appropriate, to complement our UK-based applications engineering skills and liaising closely with all interested parties.

"In every case, we consider the workpiece first and foremost to develop best-in-class machining and production routines; selecting and suggesting the right machine with complementary technological solutions to improve customers' bottom lines while, for example, guaranteeing 95 percent



uptimes in the most cost-effective ways. Users can achieve significant business benefits. In one case, Heckert HEC machining centres have reduced processing times by around 40 percent in the machining of screw compressor housings for one supplier."

Starrag machines are for companies of all sizes and all budgets, says Lee Scott. "UK-based OEMs have been realising enormous benefits from their Starrag partnerships for some years, but I would emphasise that every company of every size in a supply chain can also enjoy similar machining rewards."

He continues: "Users can succeed from

machines from all Starrag ranges, whether it is micro-machining on Bumotec machining centres or the Ecospeed milling of 20 m long aerospace components."

Machines:

Berthiez: vertical grinding and turning from 800 mm to 5 m diameter

Bumotec: turn/mill/grinding machines for single set-up machining of small components

Dörries: vertical turning from 1 m to 10 m diameter

Droop+Rein: mill/turn from 2 m to >10 m table size

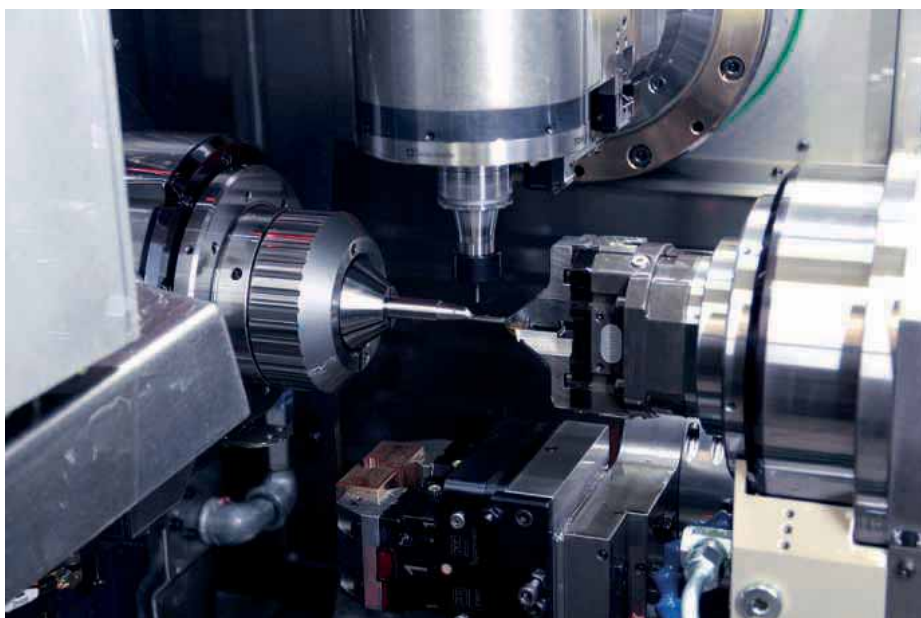
Ecospeed: extreme high-performance milling of aluminium billets up to 20 m

Heckert: mill/turn with table size range of 400 mm to 1.8 m

SIP: ultra-precision jig boring machines for diameters up to 1.6 m

Starrag: mill/turn from 20 mm to 3.5 m diameter.

5-axis machining is available across all these ranges, whether it is twin-workstation machining, with driven tools, of shaft-type components on the Bumotec machining



centres or the use of rotary tables and a wide choice of angle/multi-positional heads on the larger milling-based machining centres.

In one instance on the 5-axis Bumotec s181, for example, a surgical hook was machined complete from 25 mm titanium bar in under 14 minutes compared with 20 minutes by conventional single-station machining.

The multi-axis Ecospeed has been renowned for converting a 4,100 kgs aluminium billet into a 123 kgs complex structural wing part in less than 20 hours when the machine is running at a maximum cutting volume of up to 10,000 cm³/min.

Now, says Starrag, such achievements are further enhanced with the use of a 150 kW HSK A 63/80 spindle, which complements the existing 80 and 120 kW units, plus increased drawbar pressure to offer a metal removal rate of up to 12,000 cm³ at speeds of up to 30,000 revs/min with 18 mm depths of cut.

Lee Scott explains: "Importantly, such savings are not just applicable to aerospace users. All industry sectors including transport and industrial can benefit.

"The flexibility of Starrag's solutions can be illustrated by the fact that our Heckert machining centres, for example, can be supplied as stand-alone units or configured as cells/systems. Such systems can utilise a variety of workpiece transportation options for further productivity improvements, including Heckert's own linear pallet system which is relatively low-cost and therefore adds further cost savings to the equation."

Importantly, too, Starrag UK offers a superlative level of customer service, based on a team of 18 customer-facing service specialists covering the whole the UK and Eire, including 13 very experienced, highly-trained and skilled 'mobile' service engineers who each have an average of 15 to 20 years' experience of the Starrag machine technologies.

The importance of machine reliability and the role of machine suppliers in enabling users to achieve optimum machine operating levels is also emphasised by Alexander

Attenberger, CSO

of Starrag AG: "Building and supplying functional and reliable machine tools is not necessarily the main challenge today. Rather, the quest is for machine suppliers to create true partnerships with customers where every aspect of the production process is closely and continually optimised.

"Starrag has historically been successfully doing this on the global OEM and top tier suppliers platform. It is not a secret, but supply chain companies of every size throughout the UK can also achieve similar rewards."

Starrag UK Ltd

Tel: 0121 359 3637

Email: lee.scott@starrag.com

www.starrag.com



TURN MORE THAN JUST
A QUICK PROFIT ON THE NEW
BROTHER M-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
- 10,000rpm or 16,000rpm Spindle options
 - High pressure CTS
 - 22 Tool ATC

WWW.WMTCNC.COM

Investment in Matsuura secures future growth for Bowmill Group

Supplying predominantly to the aerospace industry, the Bowmill Group is a long-established precision engineering business. Encompassing both volume and complex manufacturing disciplines, assembly and test, grinding and material surface processing, the company employs 180 staff across four UK facilities. Now, three years on from its initial investment in Matsuura automation, the business has gone from strength to strength.

Bowmill's journey with Matsuura started in 2019 after securing a prime contract that required a high-accuracy machine which also offered flexibility. As part of the company's research, it reviewed the MX-330 PC10 from Matsuura. The MX-330 PC10 offers full 5-axis capability and probing, which is critical for the required positional tolerances of 3 – 4 microns. The machine also had the benefit of 10 pallets, meaning Bowmill could run several component variations through the same machine utilising unmanned/lights out operations. This provided a measurable competitive advantage from conventional methods and standard single table machines. Having seen the machine in real-time automotive operation and after rigorous evaluation, Bowmill chose to invest in this machine for its main site in Poole, Dorset.

After six months of running the machine and improving cycle-times while implementing flexible manufacturing sequencing on the new components but also existing components, Bowmill decided



to purchase a second Matsuura MX-330 PC10 for its site in Tewkesbury, Gloucestershire in March 2020.

The MX-330 PC10 is configured with 10 pallets and 90 tools, offering Bowmill assured and reliably unmanned 5-axis production, a route to growth and providing real value to its customers with efficiencies and productivity gained from this investment.

Some months later, the company needed a larger 5-axis machine, 500 mm cube, for its Tewkesbury Facility and due to increasing customer demand once again looked to Matsuura to invest. Following the success of the first two MX-330 PC10, it decided to purchase a Matsuura MX-520. Adding Bowmill's innovative production models to the process allowed further logistical flexibility by moving components from one machine to another using existing programs without incurring downtime.

Nick Epps, managing director of Bowmill Engineering, comments: "Despite the global situation, investing in the MX-330 PC10 and MX-520 has been key to the future success of our business. The machines offer great flexibility, precision

accuracy and reliability you would expect from Matsuura. This allows us to remain globally competitive and responsive to increasing customer demand and expectations.

"We have already seen significant improvement to cycle-times and OEE data on numerous components, this has been equally supported by the service and technical support we

have received from the Matsuura team which has been exceptional. We're extremely pleased with our investments."

Simon Higgs, South West area sales manager at Matsuura Machinery Ltd adds: "It's great to see businesses like Bowmill Group investing in Matsuura automation and future-proofing their business. Matsuura's automation delivers on its promises; running profitably unmanned at night and over the weekend, while reducing operator dependency and the associated labour costs. We believe automation is essential for UK companies to compete and thrive in today's market."

Whether your requirement is for CNC machined components in 3-axis, 4-axis or 5-axis, or CNC turned parts, Matsuura has the product solutions and the all-important UK service, spares and applications support infrastructure to guide your business through to greater profitability. The company provides OEM's, SME's and subcontractors with the best machining solutions, innovative engineers and optimised manufacturing processes. This is backed by leading customer support and fully trained multi-skilled engineers.

Matsuura has been manufacturing in Japan since 1935 and it has pioneered innovative design, development and manufacture of high-quality machining centres.

The company is renowned for its design and manufacture of horizontal & vertical machine tools, configured in 3-, 4- and 5-axis and it has experienced new sector market penetration with its single table, high-quality entry level MX Series of 5-axis vertical CNC milling machines.

Matsuura Machinery Ltd
Tel: 01530 511400
Email: sales@matsuura.co.uk
www.matsuura.co.uk



Orange Vise Delta IV, quick, single clamp setup

Orange Vise Company was founded in 2012 with the ethos of 'perpetual innovation of CNC workholding'. In keeping with this philosophy, Leader has launched Orange Delta IV compact vices and zero-point subplates for use in multi-axis and high-density milling setups.

Focused 4/5-axis vices such as the new Orange Delta IV Compact are useful for applications involving 3+2 and simultaneous 5-axis machining and are highly effective for working with complex free-form shapes and difficult angles. They can help increase accuracy and reduce setup times, making processes more efficient by reducing tooling costs and labour time. These vices are designed to support 5-axis machining by allowing obstruction-free cutting on five sides of the workpiece. They have the benefit of a quick, single clamp setup and allow for continuous, high-speed cutting of pockets and 3-dimensional or sculpted surfaces.

Constructed from steel at 55 HRC, the Patent-pending Orange Delta IV Compact



vices feature a small 150 by 100 mm footprint and an integral zero-point interface. They are cross compatible with the company's proprietary locating systems, as well as 52 mm pull stud interfaces from other brands. Steel Master Jaw sets for large or small parts or machinable aluminium soft jaws can be fitted, offering up to 44.5 kN clamping force.

Unlike self-centring vices common in the industry, the Orange Delta IV uses a unique serrated design that combines the best of self-centring vices and serrated fixtures, along with leading gripping performance. In

addition, the anti-lift jaw design typically achieves <13 micron of vertical deflection. The combination of these features makes the vice equally well suited for both first operations in serrated jaws and secondary applications with machinable soft jaws. The ability to accurately locate parts in soft jaws opens up the applications of the vice to include use on horizontal 4-axis milling applications.

Soft jaws can be profiled to exactly match the form of the workpiece, even if it has complex features such as overhangs or flanged faces. Being cut in situ on the machine table also reduces any accumulated positioning errors to enhance the repeatability of the machining process part-to-part.

Leader Chuck Systems Ltd

Tel: 1827 700000

Email: mjones@leaderchuck.com

www.leaderchuck.com

DUGARD

Now available exclusively at Dugard

The Kitamura Medcenter 5 Axis Machining Centre

Never before has there been a machine that packs so much production, precision and machining flexibility into such a compact footprint.

Standard High Accuracy Package includes:

- ▶ 1 micron positioning accuracy as standard
- ▶ High resolution optical scale feedback on all 5 axes
- ▶ 30,000rpm spindle
- ▶ 60m/min rapid travels
- ▶ 12 station APC option
- ▶ 67 million pulse encoder system
- ▶ Arumatic-Mi ultra high speed processing control



Call us now to discuss your requirements



www.dugard.com



sales@dugard.com



+44 (0)1273 732286

Pumping up the volumes

Innovative hi-fi manufacturing specialist invests in an advanced turnkey automation solution from Mills CNC to increase productivity and output

Mills CNC, the exclusive distributor of Doosan machine tools in the UK and Ireland, has recently supplied high-end audio equipment design and manufacturing specialist, Linn Products Ltd, with an advanced, custom-designed and built 'SYNERGI' automated manufacturing cell.

The state-of-the-art cell, installed at the company's 7,200 sqm facility in Glasgow in November 2020, represents a significant investment for Linn and comprises a new Heidenhain-controlled Doosan DVF 5000, 5-axis, machine and a FANUC industrial 6-axis robot with a 45 kg payload capacity.

It features an integrated racking system that holds up to 24 x standard sized pallets onto which workpieces are clamped and then loaded, via the robot, into the DVF 5000. Machined components are then unloaded from the machine and stored in predetermined positions back on the racking system.

The 2 m high safety caging/fencing encloses the robot and pallet racking system, restricting access to the loading/unloading area and protecting operators and shop floor staff. It also features a two-way access door that allows machined components to be removed entirely from the cell and new workpieces to be introduced into it.

A sophisticated and powerful 17" touchscreen HMI driven by Mills' proprietary SYNERGI software controls the cell and provides a seamless interface between the machine tool and robot. Since being installed some five months ago, the cell has proved its worth and has been running overnight and over the weekends unattended. It has delivered significant productivity gains and process efficiency improvements.

Linn Products was established in 1973 and today employs around 160 people. The company designs and manufactures iconic hi-fi equipment i.e. record players, streaming systems, amps and speakers.

Product brands, like its legendary Sondek LP12 turntable and its state-of-the-art Majik, Selekt, Akurate and Klimax DSM network music players are widely acknowledged, by critics and aficionados alike, to be amongst "the best in the business" for their design



and build and also for their sound reproductive quality and clarity.



The new Klimax DSM, a revolutionary streaming system featuring Linn's first 100 percent in-house produced Digital to Analogue Convertor (DAC), named Organic, has already received a number of positive reviews. It was launched in April 2021 and is described by Linn as the ultimate streaming system available, bar none.

Chris O'Brien, Linn's director of operations, explains: "Our products are built to exacting quality standards and precision using the best materials and components available. A great deal of care and attention is given to every stage of the design, manufacturing and assembly processes. At Linn, the details really do matter."

Committed to continuous improvement and with a strong business focus on Research & Development (R & D), Linn constantly looks at new ways to grow its markets and delight its customers. With customers all over the world including

Japan, the US, Canada and Germany, as well as in the UK, it is evident that company sales and market share, despite the pandemic, are, and have been, on a steep upward trajectory.

Integral to the company's improvement programmes are the regular investments it makes in its people, in its plant and equipment and in its systems and processes. Over recent years, Linn has invested heavily in improving its manufacturing operations and its machining capabilities.

The turnkey solution

Following extensive discussions between Linn and Mills engineers to fully understand and scope out the project, it was agreed that a turnkey solution comprising a new Doosan DVF 5000 5-axis machining centre integrated with a FANUC industrial robot and including a bespoke, 24-pallet workpiece loading and unloading system would be its core elements.

The decision to go for the customised multi-pallet system as opposed to an off-the-shelf automation system was down to capacity requirements and the desire to optimise the autonomy of the cell.

Time was taken, at the project's inception, to ensure that the new machining centre selected would have the capacity and capabilities required to machine all of the company's products.

Chris O'Brien said: "The DVF 5000 machine is a proven performer. It is fast, accurate, flexible and reliable. When in auto mode the machine's side door is used, but we can also use it in manual mode by using the machine's front door. This means we can use the DVF 5000, when required, as a stand-alone machine."

The 24 pallets in Linn's SYNERGi cell reside on a racking system located inside the caged area adjacent to the DVF 5000 and the FANUC robot. The operator, using the HMI, can programme specific pallets with machined/completed parts on them to be removed from the cell area by using the robot and making use of an innovative two-way access door designed into the caging.

Trolleys that lock onto the side of the cage enable the quick and easy movement of these pallets away from the cell area. The trolley system and two-way access door are the method by which new pallets/workpieces are introduced into the cell.

When the DVF 5000 is available and in line with Linn's production schedule, the robot picks a pallet from the racking system and loads it into the machine. Depending on the part, machining cycle times vary from minutes to several hours. After machining



operations have been completed, the machined parts are taken by the robot and put back on the racking system. The load/unload cycle is then repeated.

Linn's automated manufacturing cell was delivered and installed at the beginning of November 2020 and, following on-site training for six operators, was fully-operational by the end of the month.

As a consequence of investing in the cell, Linn has significantly improved its productivity and efficiencies. The company was able to hit its Klimax DSM launch date and build up stock of all its products to satisfy demand.

Chris O'Brien concludes: "We are no stranger to automation and, amongst other things, have a fully-automated warehouse

with AGVs. This investment, however, is our first involving a machine tool. We have a good relationship with Mills CNC and their proactivity, knowledge and expertise all combined to deliver a successful project.

"A great measure of success of a new machine or system is when you wonder how you coped without it and that's the case with our new SYNERGi cell."

Mills CNC

Tel: 01926 736736

Email: sales@millsnc.co.uk

www.millsnc.co.uk

Innovation in medical device manufacture

GF Machining Solutions has signed a cooperation agreement with Kompetenzzentrum für Spanende Fertigung (KSF), part of Hochschule Furtwangen, one of Germany's leading teaching and research universities for medical engineering, to support the latter's development of new manufacturing processes for the medical device industry.

KSF, located in Tuttlingen at the heart of Europe's medical device industry, has a staff comprising PhD and Masters students that work on leading edge research projects sponsored by industry.

As part of the new arrangement, GF Machining Solutions has recently installed a new, innovative AgieCharmilles LASER P 400U Femto Flexipulse machine and a specially adapted Mikron MILL S 400U 5-axis machining centre at KSF's facility.

Professor Dr. Bahman Azarhoushang, director of KSF, says: "We are very excited to start our partnership with GF Machining Solutions and feel that the technology they offer will bring new possibilities for manufacturers from many industries. We

expect to see many interesting projects being developed on this equipment."

LASER P 400U Femto Flexipulse

Equipped with both infrared and green laser sources, the LASER P 400 U provides unrivalled control over laser bursts, including control of power, pulse form and duration. With 5-axis machining capabilities and GF Machining Solutions proprietary software, the LASER P 400 U can help leading manufacturers create unique products and open new possibilities in medical device functionality and application.

Mikron MILL S 400U

The Mikron machining centre is equipped with a supercritical CO₂ cooling system from Fusion Coolant Systems, based in Michigan, USA.

The Fusion Coolant Pure-Cut® system, integrated with the MILL S and delivering CO₂ through the centre of the spindle, eliminates the need for traditional-type cutting fluids and dramatically helps



improve milling performance, specifically speed and efficiency, when machining hard materials like titanium and stainless steels.

The technology provides significant gains in productivity while also reducing inherent costs and risks associated with product washing, a specific issue in medical device manufacturing.

GF Machining Solutions Ltd

Tel: 024 76 538666

Email: info.gfms.uk@georgfischer.com

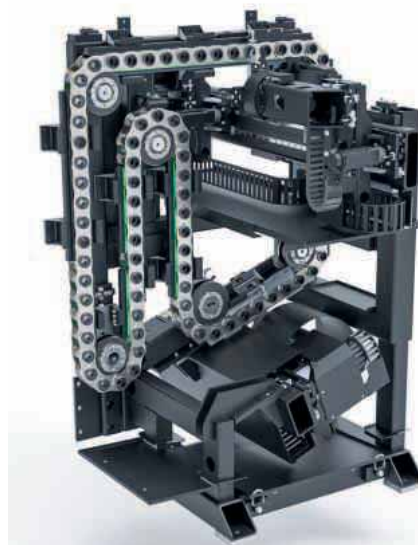
www.gfms.com/uk

Plastic technology par excellence

It's all about plastic. This material, which has many impressive technical properties, can be found in so many areas of our lives and it is a sector where Wittmann Battenfeld excels. The company has a modern, diverse and, above all, modular range of machines for processing plastics and other plasticisable materials and is a true leading player in the market. An M30 Millturn from WFL has recently taken centre stage in the production of high-precision rotating machine components.

The gentle vineyards south of Vienna with their typical 'Heuriger' wine taverns and abundant thermal springs with healing qualities are a real pleasure. Not only is the area famous for its skilful use of the delicious and beneficial liquids provided by nature, it is also known for its use of a completely different kind of liquid or, more accurately, free-flowing plastic. As the primary material is not liquid at all and has completely different properties to the resulting material, sophisticated machines, complex processes and very special expertise are required. The state-of-the-art injection moulding technology from Wittmann Battenfeld is used to create high-tech products for industrial and medical applications as well as everyday items.

The Wittmann Group employs over 450 people at its site in Kottlingbrunn and is one of the world's leading manufacturers of injection moulding machines, robots and peripheral equipment for the plastics processing industry. The company consists of two main divisions: Wittmann Battenfeld and Wittmann. Over 2,200 employees around the world work for the Wittmann Group, which is active in industries such as



automotive, medical technology and packaging.

Wittmann Battenfeld is one of the major players in its field, with a modern and diverse range of servohydraulic or electric machines that can be either horizontal or vertical depending on the customer's needs. Wittmann's product range includes robots and automation systems, material supply systems, dryers, gravimetric and volumetric dosing units, granulators and tempering and cooling equipment. The two divisions therefore complement each other perfectly and customers benefit from a complete solution from a single source. It's no wonder then that this is where all sorts of high-precision, sophisticated components in highly individual designs come into being and it was almost natural that complete machining would become an important

production strategy long ago. As a pioneer in complete machining with a diverse range of machines, WFL supplied the sought-after production equipment early on.

"We introduced the principle of complete machining into the company way back in 1993, beginning with the purchase of a M70 Millturn. In 1995, we added a M50 Millturn. Before this, we had a multi-step production process, i.e. turning and milling on several machines," says Martin Gorzolla, head of production at Wittmann Battenfeld. Even back then, all turning, drilling and milling operations had already been combined in a single machine. The concept of complete machining makes production more efficient, removes wait times and ensures flexibility. In general, the aim is to reduce lead times: "But above all, excellent accuracy was one of the most important requirements for the machine," explains Martin Gorzolla.

An M60, an M65 and an M40 Millturn were added in subsequent years. The two older M70 (1993) and M50 (1995) models were replaced with the new M30 Millturn in 2020. In addition to maintaining the high level of accuracy, the key criteria behind the purchase were value for money and machine reliability, which were ultimately fulfilled by the WFL machine.

"One of the other deciding factors was the proximity of WFL," explains Martin Gorzolla. "The service department is very quick; the WFL team can be here in just two hours. Also, the WFL service team have always been excellent in terms of speed and reliability. That is a huge plus point. We've been very pleased with the machines over the years so we didn't even think about switching to another provider."

The Millturn machines can fully machine the range of parts, from screw tips, the plasticising unit, captive C-washers, hollow shafts to struts, and many other workpieces.

"We use these machines for anything that needs to be ultra-precise. We usually only need one of each component that we produce for our injection moulding machines. Our products are highly customised, so we don't have any big batch sizes. Everything must be ready just-in-time," explains Christian Grafl, head of maintenance. Not only are production and assembly set up to handle this, programming is highly customised too. The programming team are masters at this. They



use the EXAPT Plus programming system to apply the CAD data and create and realistically simulate the program quickly and reliably. Thanks to the perfectly optimised post-processor, the programs are converted fully automatically into machine-readable programs and sent to a PC directly next to the machine in question via the internal network. The machine operator calls the jobs up, loads the program into the machine's NC controller and, if they are not already in the magazine, orders the required tools from the warehouse via the internal tool management system. Workpieces with diameters of 85 mm to lengths of 4,200 mm are currently being produced on the different Millturn machines. "This has allowed us to reduce machining times by around 20 percent. A real advantage when it comes to highly efficient production," says Martin Gorzolla, head of mechanical production.

In 2020, the M30 Millturn was procured as a replacement for the M50 and M70 and is already hard at work producing components. With a milling power of 20 kW, it is able to efficiently machine workpieces up to a maximum diameter of 520 mm and a maximum machining length of up to 2,000 mm. Currently, the extremely different workpieces are mainly being manufactured in batch sizes of one on the Millturn. The machine model impresses with its extreme stability, reliability and precision. It offers top performance for all machining tasks with 4,000 or 9,000 revolutions per minute on the main drive and turning-boring-milling unit. The turning-boring-milling unit with its strong gear spindle with backlash-free B-axis also allows for use of large drills and milling



cutters and therefore high feed rates with a large cutting depth. Stability is essential and this is thanks to the solid slant bed made of grey cast iron and WFL's typical axis arrangement, which directs the main cutting forces vertically into the bed. Particularly wide guide spacing, large guides and minimal distances between the machining point and the guides all help ensure stable behaviour during difficult cuts as well as thermal stability for high-precision machining. Optimum chip flow is ensured by the fixed, completely smooth guide plate on the lower slide.

A 40-position disc magazine provides a sufficient tool stock at the machine. Wittmann Battenfeld opted for a Capto C6 tool system for the M30 Millturn. It features an impressive selection of boring bars with C6 coupling as well as excellent stability and precision. Tools up to 450 mm long can be used in the machine. The magazine capacity and tool length could have been greater, but this was not required. An 80 bar coolant pump is used, especially for a wide range of internal machining operations. The standard

milling spindle design permits not only a high pressure of up to 150 bar, but also an extremely high coolant flow through the spindle. This leads to a noticeable improvement in chip breakage, chip removal and the process reliability for all drilling operations.

Wittmann Battenfeld is aiming to increase its global market share for standard machines. This naturally involves following a very focused and long-term product and sales strategy. "The most important thing is maintaining manufacturing and production expertise for critical parts in house and extending the necessary production know-how to increase efficiency and optimisation," says Marc Zachmann, head of production. We've already connected operational technology (OT) to our ERP system and will continue on this path."

The company offers a proprietary Industry 4.0 solution for the products; complete injection moulding work cells, consisting of an injection moulding machine, automation and peripheral devices. This solution enables production units to be formed through several intelligently connected components operating in a work cell. It allows the individual components to talk to each other via OPC UA, share settings and statuses and even carry out self-optimisation. This unique mix of innovative products and efficient production means Wittmann Battenfeld is well prepared to face the future.

UK Agent:
Kyal Machine Tools Ltd
Tel: 01858 467182
Email: simon@kyalmachinetools.co.uk
www.kyalmachinetools.co.uk



Subcontractor renews its metal cutting plant with an eye to lights-out machining

To upgrade its plant and instigate 24-hour production later this year, High Wycombe-based subcontract machining firm EV Engineering has bought four Japanese-built Okuma mill-turn centres from sole UK agent NCMT and a pair of machining centres from another supplier. Founded in 2001 by David White, the subcontractor specialises in producing complex prismatic components in exotic materials for the oil, gas and energy sector, which accounts for around three-quarters of the firm's turnover.

David White says: "The decline in the industry during the middle of the last decade made it difficult for us to invest in new equipment sooner. However, we have used the current short-term downturn caused by the pandemic to invest and upgrade all aspects of our High Wycombe facility."

It was at the EMO 2005 machine tool exhibition in Hannover, where Okuma launched its first Multus mill-turn machining centre with a B-axis spindle, that the EV Engineering production team became interested in the Okuma range of machinery. The 5-axis Multus features advanced collision avoidance in real-time both in-cycle and in-manual mode, preventing collisions and minimising unscheduled downtime. It was the latest version of this Multus machine, with a sub-spindle and steady rest, that arrived on the shop floor in High Wycombe in 2018.

David White explains: "It is an extremely rigid, slant-bed lathe on which we carry out a lot of machining including deep hole drilling in titanium and Inconel. It is not feasible to leave it to produce such high-value parts unattended, so we do not intend to add automation on this machine."



"The same currently goes for the Okuma Genos L3000 that we bought the same year, as it is a 2-axis lathe with live tooling dedicated to producing smaller parts in lower volumes.

"It is our intention, however, to retrofit a robot to the Multus U3000-2SW multitasking B-axis lathe with automatic tool changer, lower turret and sub-spindle we installed in December 2019 to give us the benefit of lights-out running."

The Okuma Space Turn LB3000-MY lathe with a live Y-axis turret, currently on order and due for delivery in May 2021, is already prepared by NCMT for automation. It will be fitted with a Belgian-manufactured RoboJob Turn-Assist, which features a flexible workpiece stacker and a 6-axis robot for loading and unloading workpieces.

Apart from high build quality and good accessibility to the working area, a key reason for EV Engineering standardising on lathes from Okuma was the availability of the optional One-Touch IGF conversational programming software in addition to the G-code interface in the manufacturer's proprietary OSP control system. In David White's opinion, it is the best shop floor programming system and control on the market.

The plan is to utilise it to allow shop floor programming for fast turnaround

components that do not require the use of CAD, freeing the engineering department to concentrate on producing the more complex cycles offline.

Machining for the oil and gas industry involves processing exotic materials with a high level of accuracy and repeatability. Assisting in achieving this level of precision is the thermal stability of Okuma machines, derived from the manufacturer's Thermo-Friendly Concept applied to both the machine structure and the spindle.

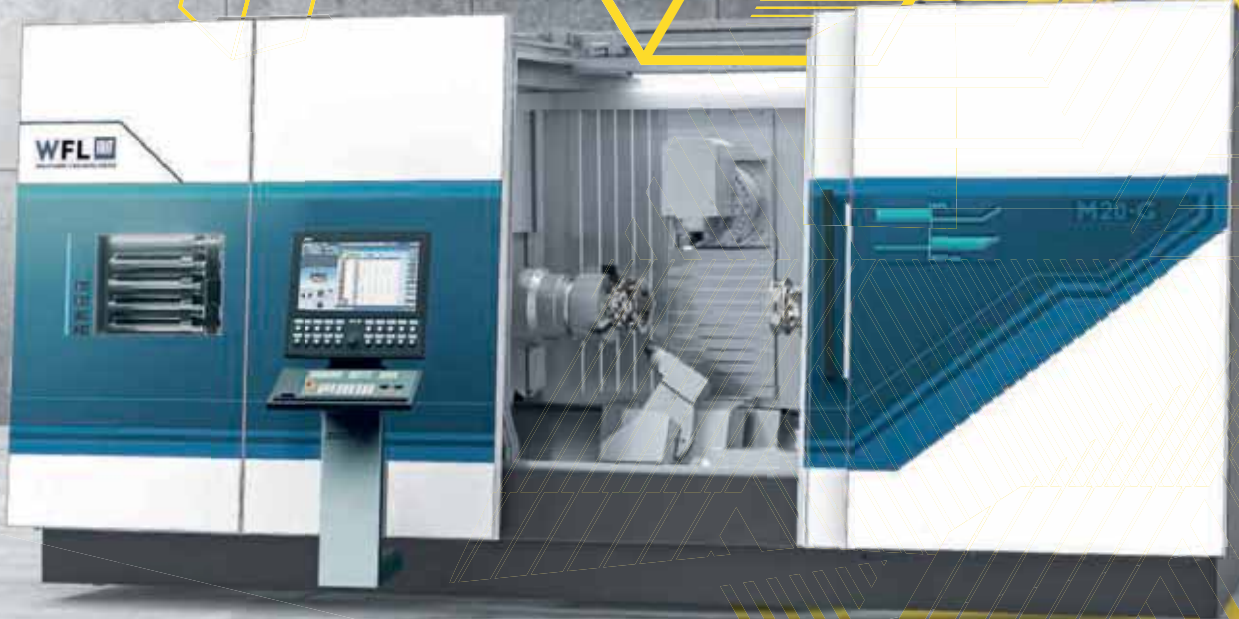
The two independent systems are based on feedback from temperature sensors to the control to deliver high accuracy machining in a normal shop floor environment. Tests show that thermal deviation is less than 10 microns over a 24-hour period, despite a wide variation in the ambient temperature in the workshop.

In addition to automating two of its turning machines, EV Engineering intends to install an automated pallet storage and handling system to feed two 5-axis machining centres, one of which has yet to arrive to replace a smaller 3-axis model. As with the lathes, extended periods of unattended operation will allow one operator to look after multiple machines, driving down manufacturing costs and maximising return on investment.

David White concludes: "Our plan is to be the best in the business, employ the best engineers and provide the best service. That will be underpinned by using the best machines and software on the market."

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

smart
MACHINING



THE NEW **M20** **MILLTURN**

Maximum performance through highest stability.
For ambitious machining tasks.
Completely new and innovative design.
That's Smart Machining by WFL.

UK Kyal Machine Tools Limited | The Settling Rooms | Springfield Street
Market Harborough | Leicestershire | LE16 8BD | Great Britain
simon@kyalmachinetools.co.uk | www.kyalmachinetools.co.uk

AT WFL Millturn Technologies GmbH&Co.KG | 4030 Linz
Währingerstraße 36 | Austria | Tel +43-(0)732 - 69 13 - 0
office@wfl.at | www.wfl.at



**CLAMP ONCE -
MACHINE COMPLETE**



Medical work offsets shortfall in aerospace contract machining

Over the past decade, managing director Nick Street has driven the growth of Trust Precision in Eastwood, near Nottingham, which has become one of the leading providers in the Midlands of sliding head turn-milled components. He states: "With a can-do attitude and living up to our slogan 'where reputation is everything', we have established ourselves as a benchmark for quality and reliability."

Last year the company more than doubled its production area to 8,500 sq ft by moving into an adjacent factory unit. Part of the reason for expansion was to dedicate space for training and developing the skills of the subcontractor's workforce, apprentices and operators from one of its largest aerospace customers that utilises similar machines.

When he started his contract machining business, Nick Street took the view that for one-hit production of turn-milled parts, sliding head lathes were able to hold size better than equivalent fixed head twin-spindle lathes. It is possible to hold five microns total tolerance on most turned and interpolated features.

He already had considerable experience of Citizen Cincom as well as other sliding head lathes at various subcontract firms in the area, so in 2011 he ordered the first Cincom M32-VIII, which was delivered fitted with a pneumatic guide bush that improves the machine's ability to accept bar stock of variable quality and extends the bar capacity from 32 to 35 mm diameter.



Nick Street explains: "With B-axis movement of one of the tool carriers and a total of nine cutters facing the sub spindle, the machine was at the time more advanced than most other lathes on the market, either sliding head or fixed head, so it was a straightforward choice to purchase the Cincom."

It proved ideal and there are now six similarly equipped models operating around the clock at the Eastwood facility, lights-out overnight. All are fitted with 130 bar high-pressure coolant and a 3.6 m bar magazine. The latest M32 addition, plus a 20 mm bar capacity Citizen L20-XII with a programmable B-axis and the manufacturer's Low Frequency Vibration (LFV) chip breaking software, were delivered in January 2020 directly to Trust Precision's factory extension. Alongside them, the subcontractor operates the latest M32 variant that Citizen Machinery UK asked him to beta test.



Until the pandemic took hold in early 2020, up to 60 percent of turnover was derived from aerospace contracts, but the proportion is more like one-third of that now. The current shortfall in commercial aerospace work, due to COVID-19, has been largely offset by winning new business, primarily from the medical industry. The fall-off in work from the aerospace sector has presented the opportunity to focus more on training, which had been identified as the crucial element for the future development of the business. Nick Street commented that COVID-19 has been a benefit in this respect, giving the company the opportunity to focus more on this important element for the development of the business.

Fortuitously, the presence on the shop floor of the L20-XIILFV meant that its superior chip breaking ability could be harnessed for more efficient turning of medical parts from stainless steel bar. The material normally forms stringy swarf that wraps itself around the component and tooling, risking damaging both, but programmable LFV avoids the problem by breaking the swarf into a short, manageable length. The chip-forming functionality in the operating system of the Mitsubishi control is switched on automatically by G-code command for those parts of cycles where it is expedient to use it and then switched off again automatically, resulting in significant improvements in productivity and yield.

In the case of an early medical job whose dimensional tolerances needed to be within $\pm 25 \mu\text{m}$, LFV was switched on for about 25 percent of the cycle. After 1,000 components had been produced, there was no swarf damage to components or tool breakage, even though a 0.8 mm diameter hole was being drilled and reamed in the reverse end of the part.



Nick Street continues: "LFV is a must if you are buying a Citizen lathe that offers the option. It is a major technological advance, the more so because it can be activated by the part program. So, the slightly lower metal removal rate during LFV can be restricted to those elements of the cutting cycle that benefit most from the chip control.

"Although the volume of our aerospace work diminished at the start of last year, just after we acquired the L20, the machine is proving useful for fulfilling medical contracts. The benefits will be felt even more in the future as the aviation sector recovers, as the stainless steels, titanium alloys and plastics we turn-mill for those customers all benefit from the chip breaking technology."



Another feature of the machine that Nick Street appreciates is its ability to operate in guide bushless, fixed-head mode for producing shorter parts economically. It also allows the machine to accommodate free-issue bar of indifferent quality. There is the added advantage of reduced remnant length and hence material savings. Only about 5 percent of throughput is currently machined without the guide bush in place, the remainder being shaft-type work, but for those contracts where it is possible the benefits are considerable.

Citizen Machinery UK Ltd Tel: 01923 691500
Email: sales@citizenmachinery.co.uk www.citizenmachinery.co.uk

MULTUS series

INTELLIGENT TURNING / MILLING CENTRES

NEW STANDARDS IN ACCURACY

- ✓ Flexible complete machining on up to 6 sides
- ✓ Maximum turning and milling performance
- ✓ High, consistent long-term precision
- ✓ Maximizing machining performance
- ✓ Minimum lead times and easy programming
- ✓ For process-intensive machining that goes far beyond conventional complete machining.
- ✓ From single part to mass production
- ✓ Option: Lower turret for minimum cycle times and maximum flexibility
- ✓ Collision Avoidance Standard / TFC-Standard



MULTUS 4000

MULTUS 5000



OPEN POSSIBILITIES

CONTACT: NCMT Limited
www.ncmt.co.uk • Tel.: 02476 516 600 • Mail: info@ncmt.co.uk



Ambitious growth aided by investment in XYZ 750 LR vertical machining centre

Like many businesses, 2020 posed challenges for HiCi, a designer and manufacturer of high quality and innovative hand tools for joiners and carpenters under the Trig Jig brand. The past 12 months saw the Newark, Nottinghamshire-based business's export market contracted due to concerns over Brexit and COVID, in part due to distribution issues. However, strong growth in the UK market compensated and turnover remained stable. With those export markets now opening again, 2021 is targeted as another year of growth for the business.

"At the end of 2019, sales had doubled over the previous year and we fully expected 2020 to be a similar story," says HiCi CEO Dan Soanes-Brown. "COVID put paid to that but what the pandemic allowed us to do was focus on processes and plan for the introduction of additional products. We are also seeing the release of a lot of pent-up spending within the UK construction industry, projects that were postponed are coming back and we are seeing that reflected in demand for our tools." The result is an expectation of strong growth for existing products and will also be driven in part by an ambitious schedule of one new product launch every month in 2021. The first two of these new products, a Carpenter's Square and a T-Square are the first to benefit from production on HiCi's latest investment, an XYZ 750LR vertical machining centre, HiCi's first, but not last, machine from XYZ Machine Tools.

When looking to supplement the existing machining capacity, which consisted of two elderly vertical machining centres, HiCi looked at a number of options; with performance and reliability being the key elements in that search. Equipped with a 12,000 revs/min spindle, Siemens 828D Control and optimised digital servos, the XYZ 750 LR with its linear rail construction met those criteria. Like every capital investment price was also a consideration



and here the XYZ 750 LR also came out favourably. "Price is obviously important and there were three machines that we were looking at; the XYZ machine was the most competitively priced and I couldn't see where the extra £10,000 that the other machines would cost was going," says Dan Soanes-Brown. "Another factor was the ability to actually see the machine in action, with XYZ Machine Tools being the only supplier able to demonstrate a machine of the spec we wanted. For a young company like ours it was important to see what we were spending our money on in the flesh."

With the machine installed HiCi is now reaping the benefits with the XYZ 750 LR doing the work of the two existing machines and, thanks to the higher spindle speed and control, it is achieving much better surface quality and consistency.

Dan Soanes-Brown says: "The reliability and performance are enabling us to plan much better. Once we have the XYZ 750 LR running to 80 percent capacity we will then order a second machine, as we look on it as a long-term brand investment and will look to go with XYZ again with the Siemens control." Part of that decision is driven by the fact that HiCi has taken on an apprentice



and he has quickly got up to speed with the machine and control. While all of the part programs at HiCi are created offline and fed directly to the machine via the RS232 port, the standardisation on one control system will help streamline manufacturing.

With the majority of parts manufactured at HiCi being from aluminium or stainless steel plate, the machining process involves multiple parts located in jigs and fixtures. Here the XYZ 750 LR's 830 mm x 410 mm table size and 750 mm x 440 mm x 500 mm axis travels (XYZ) play an important role to maximise production. Features such as these, along with 20 m/min feed rates, 18 hp spindle and its 3,500 kg solid cast construction have made the machine a popular choice from the four-machine linear rail range of vertical machining centres from XYZ Machine Tools.

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



Hurco's new driven-tool lathe is like 'having two machines in one'

Terry Benfield, owner of TPB Precision Engineering in Abingdon, Oxfordshire, has more than 25 years' experience working in subcontract machining for a broad range of customers including in the medical industry, the scientific sector and motorsport. Once an applications engineer at Hurco, he chose two of their machines, a VM20i 3-axis machining centre and a TM8i lathe, when he started his own company in 2018.

Growth has been steady and additional milling and turning capacity was needed to meet demand from local customers. That requirement coincided with High Wycombe-based Hurco looking for companies to put its new range of driven-tool lathes through its paces.

Terry Benfield's previous experience working for the company made him an ideal candidate.

The TM8Mi turning centre has been fully redesigned compared to the previous model in terms of both machine and control. In addition to mechanical enhancements such as a more compact footprint and larger spindle bore to take 52 mm diameter bar,

the lathe control has been improved to encompass features that are widely appreciated on the company's proprietary WinMax conversational CNC software driving its machining centres. Concurrent programming, error checking and estimated run time have been incorporated, while processing speeds have also been improved and the graphics enhanced.

Terry Benfield comments: "Programming of the milling operations on the lathe are the same as rotary programming for the mill. It's extremely easy to use.

"Due to space being limited within our workshop, we use a bar puller rather than a barfeed. It is perfect for us, as a lot of batches are quite small, often in the order of 50-off or less."

For a business such as TPB, continuous, consistent accuracy of machining to within microns is essential. Even tough materials such as D2 tool steel are processed without difficulty or vibration. Terry Benfield describes the surface finish achieved as "always excellent".

He added that owning the new TM8Mi is



like having two machines. The ability to carry out off-centre drilling and milling operations on a shaft mean that complete components can often be finished in one hit, allowing him to offer more competitive prices by getting parts off in a single handling.

Based on his experience so far, it is probable that Terry Benfield will be working closely with Hurco again in the future.

Hurco Europe Ltd
Tel: 01494 442222
Email: sales@hurco.co.uk
www.hurco.co.uk

There has never been a better time to invest in a New Machine

Take advantage of the New Government Super Deduction Scheme

25% FREE



Storm VMC

CONTACT US ON +44 (0) 1924 415000
 OR INFO@COLCHESTER.CO.UK



Unilathe turns to Dugard

As a supply chain partner to a multitude of blue-chip OEMs that are household names, Unilathe has been providing a complete engineering service to industry since its inception in 1977. Applying the latest generation of machine tools, the Stoke-on-Trent Tier 1 subcontract manufacturer has recently invested in a Kitamura Mycenter HX500iG horizontal machining centre from Dugard Machine Tools to add to its three previously installed Kitamura machines.

As a company that specialises in the oil and gas, rail, construction equipment, IGT and aerospace industries, Unilathe installed its first Kitamura machine more than 11 years ago. Recalling the start of the Kitamura journey, Unilathe's Andrew Sims says: "The first Kitamura machine we bought 11 years ago was a second-hand machine. That dipped our toe in the water with Kitamura with regards to the twin box way slides, the high speed and rigidity. In fairness, the performance and the reliability we got from that machine, really started to pave the way for us to look at what we should be doing with our machine tool purchasing strategy. We started asking whether we should go down a one-brand machine purchasing process, not only with regards to brand but also the specifications and the right technology perspective."

Following the first Kitamura Mycenter, Unilathe has since invested in two horizontal Mycenter 630iG machines from Dugard in



2018 and 2019 respectively, with the latest Kitamura Mycenter HX500iG being commissioned at the start of 2021.

Andrew Sims explains: "We are a Tier 1 supplier to major OEMs throughout the UK, Europe and worldwide. So, generally speaking, we machine a lot of gearbox components and other parts from cast iron, cast steel and other materials where rigidity and performance, coupled with high-speed and advanced technology is really crucial.

"The Kitamura machines from Dugard really fit the bill. When we are looking at new machines, the main consideration for us is reliability, speed, performance and accuracy as we have to machine these components in

the most competitive nature possible whilst maintaining very high quality. At the moment, we are currently running 100 hours a week with a day and afternoon shift with weekend work, but if we need to get up to 24/7, the Kitamura's will certainly do it."

The latest Kitamura to land at Unilathe, the BT50 spindle taper Mycenter HX500iG has a 500 by 500 mm table and axis travel of 870 by 930 by 500 mm in the X, Y and Z axes. The accuracy and repeatability noted by Andrew Sims is demonstrated in the 0.001 degree indexing of the 4th axis, spindle and tool probing, zero backlash, built-in encoders, linear scale feedback and a host of other high-precision features that are guaranteed to perform. This precision and repeatability assurance is provided by a patented twin ball screw system that has ball screw cooling, hand-scraped surfaces, induction hardened boxways and much more.

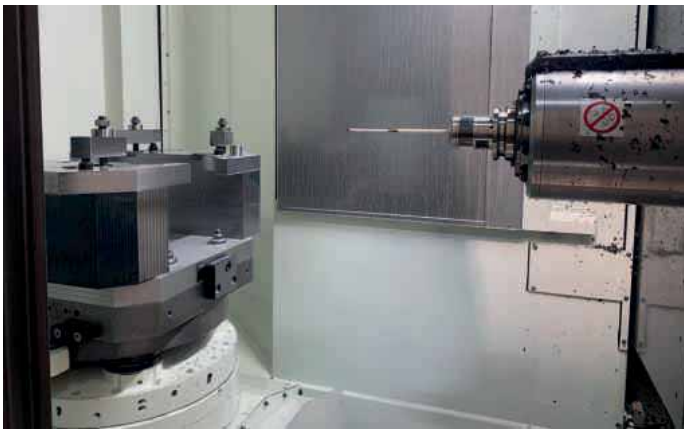
Commenting on the twin pallet Mycenter HX500iG, Unilathe machine operator Louis Purchase says: "There are so many things I like about the Kitamura machines. The speed is incredible, the speed is actually scary. That is the best way to describe it. I have been at Unilathe for over three years and worked on a wide variety of machines, but I have never seen anything like the new Kitamura machines. I have also worked on the older Kitamura machines, but the speed of the rapids on the latest machines is absolutely incredible."

Underpinning this testament to the speed of the Kitamura brand is class-leading



60 m/min rapids and cutting feed rate with a B-axis rapid of 43,200 deg/min with an 8.8-second pallet change and 2.1 second tool change time.

The majority of the work on the new Kitamura machines at present is cast iron components for the agricultural industry. Louis Purchase says: "I work across the latest Kitamura machines we have here and they just tear through cast-iron. That's the best way to describe it. We are machining a range of different parts and there is flexibility and interchangeability between the 630iG and 500iG machines. In addition, the tool carousel moves extremely quickly and when it comes to production jobs, you want accuracy and you want speed and you have both of them with the Kitamura Mycenter machines.



"The turned parts are held to tight tolerances before loading on the Kitamura machines, so if we didn't probe the jobs every single time, we would not be able to guarantee that the job will come off the Kitamura machines the same every time. However, having the probing system means that we know the exact tolerances that the part has been turned to and its positioning on the Kitamura machine before we start machining.

"Additionally, the Kitamura's have a 'tool life calculation system' incorporated into the machines and this is perfect for production jobs. Essentially, it counts how many jobs each tool has done. This is hugely helpful for production when you are using a lot of tools. You calculate a tool life parameter and once the tool has hit this parameter, you are notified to change the tool or inserts, reset the tool and start again. For example, we may calculate the tool life based on 10 production run components. Whilst we know that anything can happen in engineering, the system is always right and it helps with long-running parts. This is another feature that is all about speed and ease-of-use, which is the best way to describe the Kitamura machines."

Louis Purchase concludes: "The work envelope is very easy to access, it's just dead simple. Everything turns very easily and we can access the part without problems, it's just a delightful machine to work on."

C Dugard Ltd
Tel: 01273 732286
Email: sales@dugard.com
www.dugard.com



TAYSIDE MACHINERY LTD

BUYING NEW MACHINES?



**WE WOULD LIKE THE
OPPORTUNITY
TO BUY / PURCHASE
YOUR TRADE IN'S /
SURPLUS MACHINERY**

FULL UK COVERAGE

**ALL CNC & MANUAL
MACHINE TOOLS /
FABRICATION MACHINERY**

Tayside Machinery Limited
Tel: +44 (0) 1382 200 797
Email: sales@taysidemachinery.co.uk
www.taysidemachinery.co.uk

Cutting force tests demonstrate superior performance

The performance of the BIG KAISER BBT spindle interface technology that is available from Industrial Tooling Corporation (ITC) has long been acknowledged as an industry leader with more than 150 machine tool manufacturers worldwide now adopting the robust 'dual contact' technology on their machine tools under license. Widely recognised to deliver better performance than the competition by generating extended tool life, higher material removal rates, improved surface finishes and overall cost savings; the company recently put its equipment to the test against leading industry rivals.

BIG KAISER conducted several cutting force performance tests with Kistler, a leader in measurement, analysis and sensor technology. The tests compared BIG KAISER toolholders with competitor products; measuring cutting forces over a period of time to provide customers robust recorded real-life data regarding the stability of machining operations.

To achieve objective toolholder comparative test results, Kistler used its cutting force measuring chain that comprises a Kistler 9119AA multi-component dynamometer, LabAmp laboratory charge amplifier and DynoWare analysis software. The testing process measured and compared attributes such as imbalance and concentricity of each of the toolholders. Furthermore, the test monitored machining characteristics such as chip quality, noise development and machined surface quality.

BIG KAISER applied its MEGA New Baby Chuck to the test and compared its side milling cutting results with that of three competitor toolholders. The MEGA New Baby Chuck ran with a $\varnothing 12$ mm solid carbide end mill that machined tempered steel (C45E) at a feed of 10 m/min with an axial depth (Ap) of 12 mm. For a meaningful comparison, the measured radial depth of cut (Ae value) started at a fine finishing depth of 0.5 mm, gradually increasing in increments of 0.5 mm at each step of the test.

The test results clearly demonstrated that the MEGA New Baby Chuck allowed for the highest Ae values, while still maintaining



vibration values at an acceptable level. Competitors' toolholders were shown to achieve only 50 to 70 percent of the BIG KAISER toolholder performance, indicating that the tested chuck from BIG KAISER demonstrates higher removal rates and greater throughput with superior cost efficiency and a longer tool lifetime.

Advantage of the cutting force measurement

As a measurement, the cutting force is representative of many tools and material combinations directly related to a tool's lifetime. By evaluating the measured force curves and trends, it is possible to determine the wear mechanisms that are responsible for tool load and to implement appropriate improvements.

Furthermore, tool stability is directly related to cutting force. The impact on stability can be deduced from the dynamics of the forces before any visible effects become evident. This enables additional interesting insights into the process. For example, the cutting force measurement shows whether the cutting point, i.e. the point at which the tool dips into the material, causes high force deflection.

"By using piezo sensors to accurately measure the cutting force, we obtain a comparatively wider data range than is achievable with standard strain gauges and, most importantly, these measurements are independent of tool length. This means they

objectively reveal the actual performance of a toolholder," says David Stucki, divisional marketing manager at Kistler.

"These tests have demonstrated that BIG KAISER chucks can be used at higher Ae values than competitor products while keeping vibration levels to a minimum," says Marco Siragna, product manager at BIG KAISER. "As sensors are increasingly integrated into cutting tools, we see a growing trend towards the interconnection of systems and components through the production environment, which makes reliable real-world performance data essential for our customers."

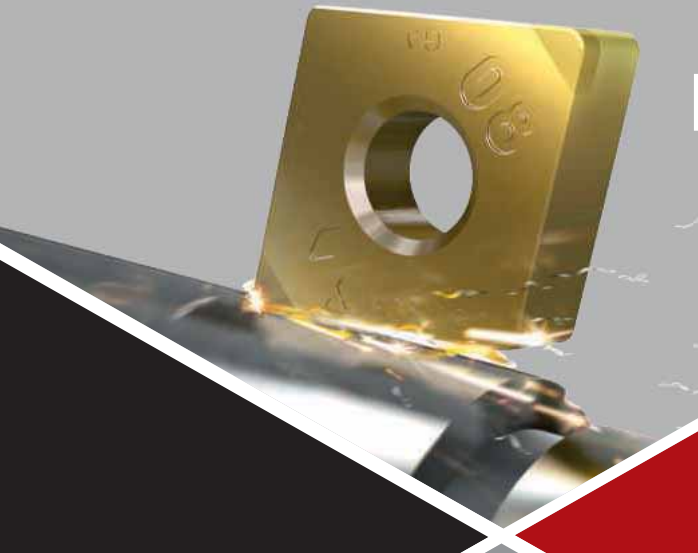
BIG KAISER has also performed Kistler cutting force tests on other products in its toolholder range, including the hydraulic chucks, Standard and Jet-Through, Hi-Power Milling Chuck and MEGA-E Collet Chuck. In every application and test, the results were comparable to those achieved by the MEGA New Baby Chuck. For more information on how the leading BIG KAISER portfolio can improve your machining performance and extend your tool life, please contact your local ITC representative.

Industrial Tooling Corporation Ltd

Tel: 01827 304500

Email: sales@itc-ltd.co.uk

www.itc-ltd.co.uk



NEXT GENERATION TECHNOLOGY

NEW

BC8220

PCBN FOR HARDENED STEELS

Wide Range Available

New all-round VA edge honing type adds to a wide choice of geometries and chipbreakers.

Multiple cutting edges

Cost effective multi edged inserts. Gold colour top coating for easy identification of used edges.

New multi layer PVD coating

Dramatic improvement in wear and chipping resistance.

Versatile

Covering a wider range of applications for a reduction in tooling inventory.

Read more at -

mmc-hardmetal.com/BC8220

Accurate results from high efficiency milling targets the automotive sector

The brand new MaxiMill 275 milling system from CERATIZIT has been optimised for the rough machining of high-alloyed stainless and refractory steels, materials often found in the manufacture of turbocharger housings and exhaust manifolds. The MaxiMill 275 face milling system is ideal for processing flat surfaces on these components and is ultra-robust in its construction and design, with a maximum number of indexable inserts for efficient machining. Inserts are ground all around to ensure a smooth milling action, high-quality milling results, long tool life and particularly high efficiency.

Face milling turbocharger components present huge challenges for milling tools due to the demanding nature of the material, usually refractory cast steel, often containing niobium. In addition to this, the design of turbocharger housings and exhaust manifolds often create unstable machining conditions, creating a requirement for the tool to be very stable and cut effectively to achieve the required quality.

CERATIZIT, a full-range provider in the machining sector, set itself the task of developing a technically optimised, efficient tool system for these kinds of applications, bringing together the expertise of its specialists from Team Cutting Tools. "This collaboration has been a complete success with the MaxiMill 275 face milling system the end result," confirms Detlef Erdei, application manager automotive at CERATIZIT. "Our development team began the process by designing the cutter body to be extremely stable and have low-vibration. We were then able to optimise the number of cutting edges based on the diameter." This resulted in the largest MaxiMill 275 with 125 mm diameter featuring 18 teeth, while the smaller 63, 80 and 100 mm diameter variants have 7, 10 and 14 teeth respectively.

Particular attention was paid to the accuracy of the insert seat, which keeps the indexable insert firmly and precisely in place using a wedge clamp. This avoids any cutting mismatches and, therefore, the need for any subsequent height adjustment. This is a plus in terms of user friendliness, too.

The indexable inserts have also been refined. The basis for this is a special cutting material, which is designed for the highest thermomechanical demands. The inserts have a positive geometry with a 20-degree rake angle enabling them to cut effectively and guarantee a smooth tool cutting action. The fact that they are fully ground around the periphery also generates consistent and high precision results.

The PVD-coated inserts are positioned in the cutter body in such a way that the cutting edge is horizontally aligned with the holder. This way, in contrast to most other face milling systems, which remove chips with the corner chamfer, a significantly smoother surface is produced like with an integrated finishing cutter. The indexable insert can be used on left- and right-hand cutting tools.

The key features of the MaxiMill 275

- Robust design
- Indexable insert fits stably and firmly in the base body
- Defined, stable cutting edge guide
- 16 usable cutting edges per indexable insert for maximum efficiency
- Low power consumption thanks to positive indexable insert topography
- Integrated cutting edge for high surface quality
- Smooth milling action and reduced spindle load
- High productivity, process security and efficiency



The MaxiMill 275 face milling system from CERATIZIT is ideally suited for rough machining of flat surfaces on refractory steel cast components. It stands out thanks to its high productivity, process security and efficiency



Typical application for the MaxiMill 275 from CERATIZIT: rough machining of turbocharger component faces

For over 95 years, CERATIZIT has been a pioneer in developing exceptional hard material solutions for machining and wear protection. The private company, with registered offices in Mamer, Luxembourg, develops and produces highly specialised cutting tools, indexable inserts, rods made from hard materials and wear parts. The CERATIZIT Group is a market leader in various application segments and successfully develops new carbide, cermet and ceramic grades, such as for wood and stone working.

With more than 7,000 employees at more than 25 production facilities and a sales network with over 50 branches, CERATIZIT is a global player in the carbide industry. The company's international network includes subsidiary Stadler Metalle and joint venture CB-CERATIZIT. The technology leader is continually investing in research and development and holds more than 1,000 patents. Innovative hard material solutions from CERATIZIT are used in various sectors, including mechanical engineering and toolmaking, in the automotive and aerospace industries and in the oil, gas and medical industries.

CERATIZIT UK & IRELAND Ltd

Tel: 0800 073 2073

Email: tony.pennington@ceratizit.com

www.ceratizit.com

New generation of five-flute end mills

A new generation of solid carbide five-flute end mills, specifically for dynamic milling in general machining and die and mould applications, has been launched.

The S7 assortment covers a wide range of operations in a variety of steels, cast irons and difficult-to-machine materials, including stainless steels and super-alloys.

These latest additions, S770HB, S771HB, S772HB and S773HB, offer increased feed rates up to 25 percent, compared with four-flute cutters. All feature a positive rake angle for smooth cutting action and to reduce the risk of work-hardening.

An AlCrN coating provides thermal stability, reduced friction, excellent wear resistance and prolonged durability, while a small corner radius and cutting-edge design gives a stable performance and prolonged tool life.

The S771HB and S773HB cutters are suitable for narrow pocketing, trochoidal slotting and profiling applications. These end mills include a chip divider to break swarf into manageable smaller pieces,

helping to reduce spindle load and increase metal removal rates. This provides a 50 percent bigger width of cut compared to tools without a chip divider.

A neck recess helps avoid contact with the wall in shoulder operations, while through coolant improves welding resistance and enables a wide range of processes, especially for difficult-to-machine materials.

The S770HB and S772HB are more suitable for profiling, trochoidal slotting, and semi-finishing applications, offering maximum productivity due to optimal metal removal rate and reduced machining time.

Meanwhile, three multi-application high performance cutters within the S7 range for use on both CNC and conventional machine tools have been added.

The new additions, S722HB, S765HB and S768, support most common operations, such as slotting, plunging, contour milling, ramping and copy milling in various materials, including medium strength steels, stainless steels and super alloys.

These four-flute cutters have a specific

tooth design for improved chip evacuation. The AlCrN and Titanium Silicon Nitride (TiSiN) coatings support longer tool life, higher cutting speeds and increased heat resistance, making them ideal for dry machining.

Finally, a new solid carbide cutter for hardened steel above 49HRC has been added to the range. The S561 is specifically for high performance milling in a variety of applications, including die and mould machining. This four-flute end mill features a specific tooth design for improved chip evacuation.



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

**NEW
HSS INSERT**

High-Speed Steel Insert

T-A Pro™ - The best just got better.

Ø 11.10mm - 47.80mm

Improved chip geometry for excellent chip control in all materials. Long tool life and high-process security for the most challenging applications. Allied's multi-layer AM200® coating combines excellent heat resistance and high lubricity for wide application use.



DRILLING



BORING



REAMING



BURNISHING



THREADING



SPECIALS

Visit alliedmachine.com to find your solution!



**ALLIED MACHINE
& ENGINEERING**

WOHLHAUPTER®

Holemaking Solutions for Today's Manufacturing

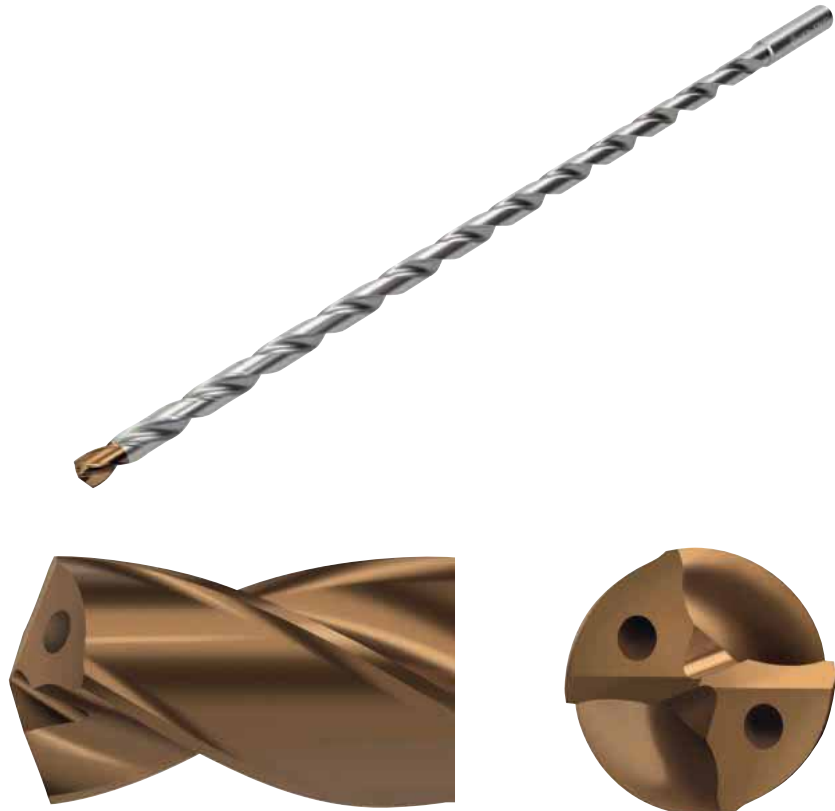
Walter expands deep hole drilling series

With the X-treme Evo solid carbide drills from the DC160 Advance range of drills, Walter has developed the 'next generation of drilling'. Now, it has expanded the scope of this line by introducing lengths from 16 to 30XD, enabling the range to now include deep hole drilling. As the successor to the Alpha 4XD drills, the DC160 Advance, like its predecessor, makes deep-hole drilling possible in a single operation without pecking. This is credit to incorporating all the advantages of Walter's XD Technology.

Complementing the existing 3, 5, 8 and 12XD ranges, the new arrivals include the 16, 20, 25 and 30XD for drilling high-precision holes with unfathomable stability and concentricity. The 16 and 20XD drills are available in diameters from 3 to 16 mm whereas the longer 25 and 30XD variants are offered in diameters from 3 to 12 mm. The through-coolant drills are available with an overall length from 89 to 430 mm depending upon the depth by diameter ratio drill selected.

The coating and geometry have been optimised and just like the existing versions of the DC160 Advance, the deep hole drills also feature the innovative new thinner web with 140° point angle and the fourth land in an advanced position. The new thinner web ensures increased positional accuracy and reduces centre cutting forces while the advanced position fourth land optimises the guidance of the drill. Furthermore, the new drills incorporate a pronounced chip gullet relief that creates a smooth and efficient cutting action upon initial entry. This softer cutting action reduces the required feed force and this subsequently eliminates deflection to add to the credentials of the DC160 to achieve exceptional hole precision and concentricity.

The X-treme Evo is the full package with a perfect combination of winning features that range from Walter's extremely



wear-resistant WJ30ET and WJ30EU grades to the consistency of the very tough K30F micrograin substrate and the TiSiAlCrN/AlTiN multi-layer coating. The layer structure makes the drills both tough and wear-resistant and plays a crucial part in the process reliability and performance of the DC160 Advance drills. This makes it possible to achieve a long tool life and high cutting data. The advanced fourth land is engaged quickly and this consequently optimises drill guidance, particularly for inclined entries and exits.

Furthermore, the polished flutes from 8XD optimise chip evacuation and reduce cutting forces. This combines with a new type of face geometry that creates a large amount of space for chips in the centre and

improves chip removal in soft materials. The steep approach angle reduces the feed force and improves positioning accuracy.

Typical application areas of the drills that are available with or without through coolant include the general mechanical engineering industry as well as the mould and die making, energy, automotive and aerospace industries. Walter offers intermediate sizes and special dimensions via its Xpress service with faster delivery times.

Walter GB Ltd
Tel: 01527 839450
www.walter-tools.com

GUHRING
The Tool Company

GROOVING SYSTEMS
SYSTEM 222

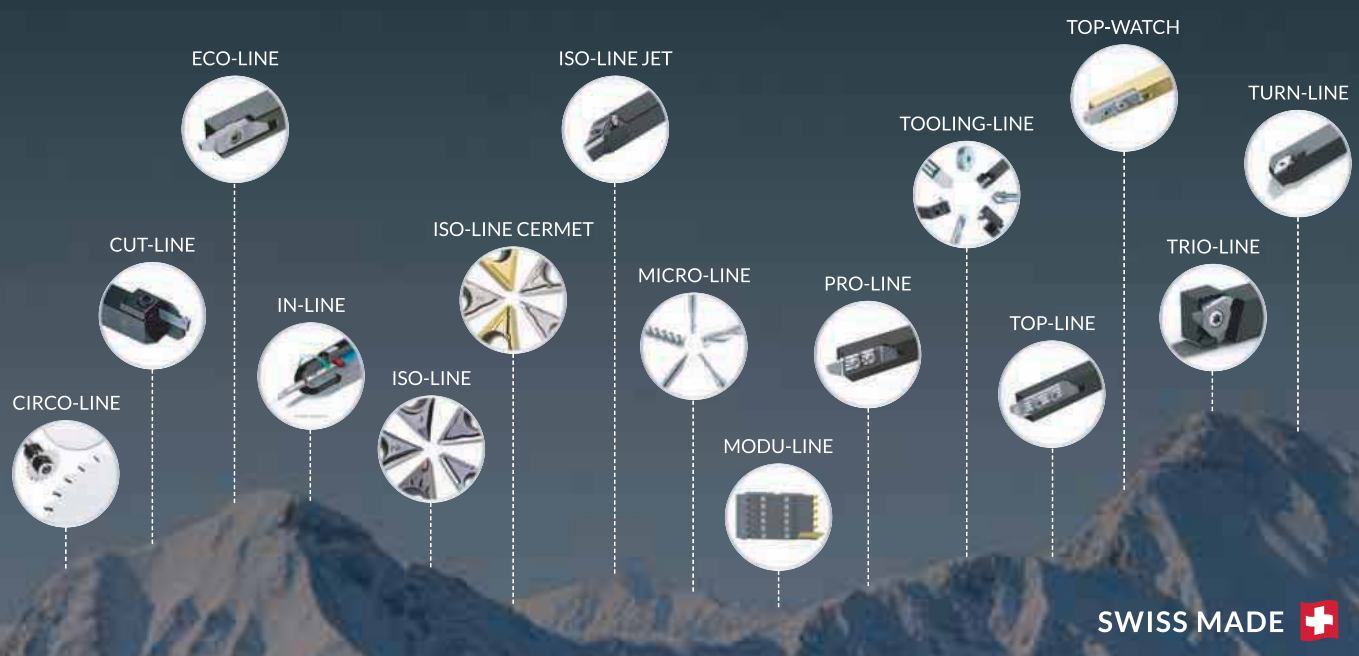
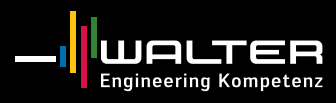
PARTING OFF INSERTS
FOR PARTICULARLY HIGH PROCESS RELIABILITY

T: 0121 749 5544
e: info@guhring.co.uk
www.guhring.co.uk

Shape the future.



Aluminium is conquering a wide range of applications. In automotive and aerospace applications, it saves weight and CO2. In mechanical engineering, it reduces the machining time. Walter offers the perfect tool range for aluminium: Available in standard versions or customised via Walter Xpress. Whether you are roughing with a high metal removal rate or finishing with superior quality, whether you are using "soft" materials or highly-abrasive AISi alloys: Walter tools for milling, turning, drilling and threading shape up aluminium components.



SWISS MADE

SLIDING HEAD INSERT TOOLING, CARBIDE SAWS, DRILLS & END MILLS



THE TOOLING SPECIALIST FOR PRECISION COMPONENT MACHINING
www.floydautomatic.co.uk | 01462 491919 | sales@floydautomatic.co.uk

Four new types of VQ end mills

VQ, the top of the range series of carbide end mills from Mitsubishi Materials has recently been expanded to include four new innovative types. These latest additions have been specifically designed for specialised applications in difficult-to-cut and stainless-steel materials.



Coating and ZERO-μ Surface

A lot of the reliability and high performance of the VQ series can be attributed to the (Al, Cr)N group-based coating which delivers substantially improved wear resistance. The extreme heat and oxidation resistance and lower coefficient of friction of the new coating means this next generation of end mills can maximise performance and help prevent tool wear, even under the harshest of cutting conditions. Additionally, the surface of the coating has been given a smoothing treatment resulting in better machined surfaces, reduced cutting resistance and an increased chip discharge capacity. With conventional coatings the sharpness of the cutting edge can be affected, but with the unique ZERO-μ Surface the cutting edge retains its sharpness whilst still remaining protective during harsh cutting conditions.

VQHVRB

Vibration control corner radius end mills are ideal for increased feed rates and larger depths of cut are achievable, resulting in highly efficient machining. The special gashed land enables good chip disposal for both increased feed rates and larger depths of cut while a variable helix in the flute geometry provides vibration control for smooth, stable cutting.

VQFDRB

Duplex radius end mills provide exceptionally long tool life when machining cobalt chrome alloy. The distinctive geometry provides stable machining with a low radial cutting force and also provides improved notch wear due to the reduced side contact.

VQ2XLB

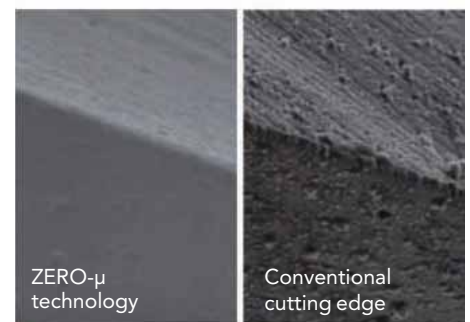
This new long neck ball nose type displays a new cutting edge with a unique, strong S-shaped geometry. It provides improved resistance to chipping that is normally caused during deep milling applications. High accuracy of the ball nose also ensures precise and reliable machining and consistent workpiece dimensions at all times.

VQ4WB

A multi-functional lollipop end mill with a true 280° extended cutting zone and special geometry of the cutting edge & rake face realises multi-functional machining over a wide range of applications. This makes it the optimal choice for machining undercut and complex shapes when using a 5-axis machine. Furthermore, a cleverly designed constant edge and rake geometry reduces chattering and helps prevent burrs.



VQ4WB: True round ball cutting edge over the full 280° allows stable, accurate machining even during undercut operations



Sharp cutting edges and protection against wear. The ideal combination for difficult-to-cut materials

MMC Hardmetal UK Ltd
Tel: 01827 312312
Email: sales@mitsubishicarbide.co.uk
www.mmc-hardmetal.com

DRAGONSKIN

Coating for maximum performance by CERATIZIT

Find out more at:
cutting.tools/en/dragonskin

New threadmills from Guhring

When it comes to holemaking and threading, Guhring is an industry leader with a product range that stretches beyond convention. This product range has now been expanded with the arrival of the MTMH3-Z. An expansion of the Drifter series of thread mills, the new MTMH3-Z Drifter helical drilling thread mill demonstrates impressive performance levels when processing materials up to 66HRc.

Combining core drilling and threading in a single operation, the MTMH3-Z Drifter helical drilling thread mill delivers excellent machining results and process reliability when wet or dry cutting all material types. With two oil grooves on the shaft to provide optimum cooling with cutting fluid or air; the range also has a left-hand cutting geometry that stabilises performance during climb milling. This is complemented by the fine-grain high-performance carbide composition that gives stability and performance that is unrivalled.

The special fine-grained carbide is characterised by its high hardness and is optimally suited for hard machining. Supplementing this is Guhring's special temperature resistant TiSiN coating that prolongs tool life and performance while making wet, as well as dry machining possible. Furthermore, the MTMH3-Z Drifter incorporates a special face geometry with hollow grinding and this generates process-safe core hole drilling and thread milling possible in almost all material types.

With a shank diameter from 3 to 12 mm and a neck relief from 5 to 40 mm, the new thread milling series is suitable for creating threads

from M2 to M16 on a material range that includes all steels and stainless, duplex, cast and graphite iron, aluminium and Ti alloys. Suitable for drilling and threading holes up to 2.5XD in a single operation, the MTMH3-Z Drifter can drastically reduce setups, cycle times, tool inventory and costs for end-users.

To simplify the process further, Guhring has also developed its CNC Guhro Thread Mill software that is free to download for Guhring customers.

This innovative software enables users to specify the thread data by selecting from all current thread standards and then inputting the material to be machined. At this stage, the software provides the optimal parameters. The CNC Guhro Thread Mill software also allows users to record the CNC data according to their required milling strategies and parameters. Receiving their desired CNC programming code and datasheets, the user simply has to import the programming data that is automatically recognised in CNC control units.



Guhring Ltd
Tel: 0121 776 8085
Email: info@guhring.co.uk
www.guhring.co.uk

VariMill™ XTREME™

SLOTING, RAMPING, HELICAL,
INTERPOLATION, SIDE MILLING,
DYNAMIC MILLING, PLUNGING

AGGRESSIVE | PRODUCTIVE | VERSATILE

VariMill XTREME solid carbide end mills will dominate the shop floor through productive output due to their versatile offering and ability to machine a broad range of materials in aggressive machining conditions.

Visit widia.com to view the full product offering.

WIDIA 



HANITA™

itc industrial tooling
corporation ltd

+44 (0)1827 304500 | sales@itc-ltd.co.uk | www.itc-ltd.co.uk

2021 WIDIA Products Group | All rights reserved. | A-21-06337

The right way to diversify

Manufacturers need the right tools and calculations to embrace new revenue streams

There will be a “next normal” for manufacturers in the wake of COVID-19 according to a report published by McKinsey & Company. With losses of revenue in some sectors while others experience unexpected spikes in demand, the crisis is forcing manufacturers to diversify. Here, James Thorpe, product Manager at Sandvik Coromant, a global leader in metal cutting, explains why choosing the right tools and determining the right tool calculations, will be vital to overcome diversification challenges

McKinsey & Company’s COVID-19: Briefing note report predicts manufacturers can expect “lasting shifts in customer markets” and that resilience will be needed if manufacturers are to “navigate an economically and socially viable path.” In other words, they must diversify to survive.

Fortunately, today’s engineers are well-versed in mixed production and most have evolved far beyond the low-tech stereotype of “Fred in his tool shed”. That said, diversifying production is not without its challenges.

Choosing the right tooling solution is essential for facilitating changes in production. This is particularly essential for engineers that work with tough materials like duplex stainless steels, Inconel or heat resistant super alloys (HRSAs) and companies that work with multi-materials.

Operations like this require optimised tools with carefully-calculated cutting data. Drilling tools are a prime example. Drill penetration rates can typically vary from 50 to 1,000 millimetres-per-minute. For

these tools, precise calculations are vital for avoiding poor tool life and, at worst, causing premature tool failures. Put simply, if component material is changing, then drilling cutting data will have to change.

A tool for all materials

What do we mean when we say “the right” tool? With drills, this normally refers to tools that perform for longer and produce better quality holes, particularly in tough materials, like Inconel.

Sandvik Coromant has developed a range of CoroDrill® 860 solid carbide drills with optimised geometries suited for different applications that involve tough, difficult materials as well as malleable, abrasive and soft materials typically found in the ISO-K and ISO-N families. The range includes the CoroDrill 860-GM with enhanced -GM geometry, optimised for multi-materials and applications.

Other tools in the range, like the CD860-PM, are optimised for drilling ISO-P steels. The CD860-SM is optimised for ISO-S materials for aerospace parts manufacturing. The CD860-GM is particularly useful for general engineering with mixed-materials, where productivity is important and engineers seek to diversify their production.

The CD860-GM’s innovative, polished flute design improves the evacuation of chips and yields greater hole quality. It is made from a unique fine-grained carbide substrate that increases hardness while maintaining toughness. In addition, the drill is tip-coated with a multi-layer Physical Vapor Deposition (PVD) thin film coating, which is key to improving the drill’s productivity and tool life.

This was put to the test by an automotive engineering company in South Korea. The company used the CD860-GM to machine a transmission connector in ISO-P material, then compared its performance with a

competitor’s drill on the same component. The cutting data used was a cutting speed (Vc) of 100 m/min, a cutting feed (Fn) of 0.21 mm/rev and a drilling depth of 10 mm. In the end, the customer reported a 1,150 percent increase in tool life with the CD860-GM.



Going online

Productivity advantages, like those demonstrated in South Korea, could be crucial in helping manufacturers to diversify their production while remaining competitive. But, just as important are the cutting data calculations that must be optimised for any given application. However, determining this for a new product may require expert opinion.

With the travel restrictions of COVID-19, it’s unlikely that a tool specialist can come and visit your premises. So, how can today’s engineers not only calculate the best values, but also marry these to the best recommended drill for the job?

The answer lies in online software. To choose the right tool and cutting data for new or existing applications, Sandvik Coromant has developed the CoroPlus® Tool Guide. The Tool Guide not only selects the correct tool, it provides cutting data and anticipated tool life for the specific application

Sandvik Coromant

Tel: 0121 368 0305

Email: uk.coromant@sandvik.com

www.sandvik.coromant.com/uk

Precise and efficient during the machining process

The manufacturing and internal machining of small parts requires precise quality tools such as Kyocera's EZ Bar Series, which has just been expanded with a new item. The EZBF type is able to make a one-shot boring process making a 90-degree step, which makes it a perfect addition to the innovative series. The whole EZ Bar series is ideal for high quality products due to their minimal deviation, longer tool life and advanced machining efficiency compared to conventional tools. Especially with its unique EZ adjust function, high precision indexing is easier than ever before: A wide variety of ID processes is possible, boring, back turning, grooving, facing and even threading, by just changing one tool. The latest addition to the line-up even allows for hole bottom face finishing processes.

For great boring and back turning results chip breaker, neck length and grade can be selected for the individual purpose, even PCD and cBN are available. Also suitable for boring is the EZ Bar Plus, a reversible boring bar that offers a unique solution to minimise tooling costs. This indexable bar can perform boring processes with a minimum cutting diameter of 5 mm.

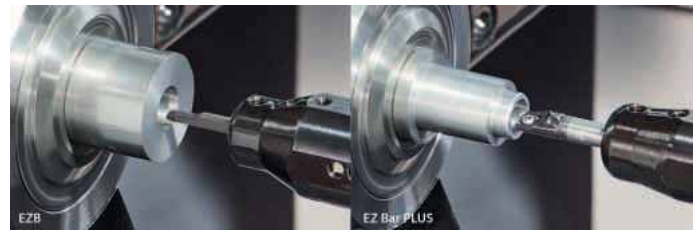
Face grooving and internal grooving processes can be performed by the EZ Bar as well. It supports minimum bore diameters of \varnothing 3-8 mm and cutting widths of 0.5-2.0 mm. With its high rake angle, the EZ Bar is designed for stable machining without vibration and shows good chip evacuation.

For facing applications, the EZ Bar Series has the EZVB type in the lineup. While up facing is not recommended, the EZVB type can be expanded to be able to perform hole bottom face finishing processes.

The EZ Bar Series is also able to perform threading processes. There is a wide range of applicable thread types in small ID processes: Metric, Unified, NPT, Whitworth, Parallel/Tapered pipe. The EZT type for threading has a bore diameter of \varnothing 3 mm and is available for threading M4 metric screw threads.

For an even better high-quality finish, the EZ Bar can be combined with the new PR1725 grade which is a PVD coated carbide grade. This original development of Kyocera named MEGACOAT NANO PLUS tackles several customer challenges at once, producing a better surface finish, providing a cost-effective solution with a long tool life and integrating tools for steel and stainless steels. With its superior wear and adhesion resistance it also results in reduced cracking while machining.

To give customers further and better machining possibilities, the



EZ Bar lineup is constantly expanding. EZ Bar 45° Chamfering and EZ Bar Copying type are in the pipeline and will be released in early summer 2021 for a wider variety of applications.

Kyocera Finecermics Ltd
Tel: 01276 693540
www.kyocera.co.uk

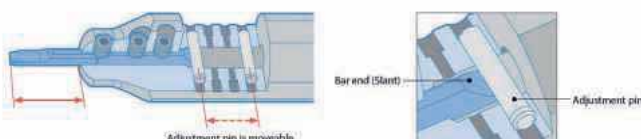
The key to safe storage and transportation of your cutting tools

SystemBoard: Interchangeable inserts available in 3-40mm shank diameters



rose plastic®
 innovations in plastic packaging

rose plastic UK Ltd. Phone +44 1709 7217 94 · info@rose-plastic.co.uk · www.rose-plastic.co.uk



Sensor-based clamping detects defective workpieces and monitors production

Industry 4.0-compatible project develops workholding that doubles as inspection equipment on a 5-axis machining centre

Two German firms, 5-axis vertical machining centre manufacturer Wenzler (Heller group) and workholding equipment specialist Roemheld, have developed a process that allows a casting or other component to be secured ready for machining, while at the same time checking it for accuracy of form and position before machining starts.

It avoids adding value to defective workpieces that will later be scrapped, increasing process reliability, raising productivity and lowering production costs. Details of the project are available to manufacturers in Britain and Ireland through Roemheld UK.

The idea was conceived by Wenzler, which wanted to be able to offer its customers, particularly in the automotive industry, turnkey production centres for reliable machining of aluminium chassis and suspension components, 24/7. The company's technical manager Sebastian Knaus says: "We wondered in early 2019 how workholding technology could contribute to making our customers' production even more stable and efficient."

Already familiar with Roemheld's workholding equipment, which he describes as "sophisticated, reliable, and sturdy", he contacted the Friedrichshütte supplier's key account manager Benjamin Nagel in May 2019.

Development of the innovative clamping technology was based on a cast aluminium rear axle frame secured in a test fixture in Wenzler's technical centre in Spaichingen. The pilot phase ended in spring 2020 and this year it will be used for the first time to assist the series production of aluminium structural components at a German automotive supplier.

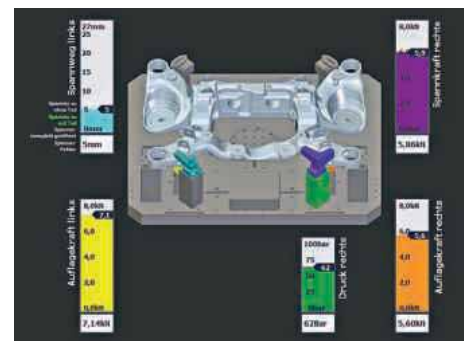


The innovative concept is based on swing clamps from Roemheld with integrated pressure sensors able to detect cost-effectively and easily the accuracy of the workpiece about to be machined. The intelligent clamping technology checks the parts for defects and contour variations, detects fixturing errors and provides information on the position of the component and the applied clamping forces during machining.

The quality of the resulting parts is continuously monitored and seamlessly documented, which is particularly important for lightweight vehicle components that are increasingly of thin-walled design.

In the case of the rear axle frame casting in Wenzler's test centre, the project partners first defined the information that would be needed for detecting the status of a fixtured component. It was found that by monitoring the clamping force at two selected points and through measurement of the stroke of one clamping arm, it is possible to determine whether casting defects or contour variations are outside tolerance. Other information provided includes whether a good workpiece is located properly in the fixture and if the applied clamping force is within specified limits.

Two standard hydraulic swing clamps from Roemheld were equipped with pressure sensors and two contact sensors are used on the fixture to collect the data. Clamping force and the reactive holding force are recorded at the first location while



at the second, another clamp performs a similar function and in addition, integrated stroke measurement determines the position of the clamping arm. An extra pressure sensor positioned close to this swing clamp indirectly measures the holding force.

The power supply to the sensors is inductive and so also is communication of data between the fixture and the machine control. As all elements are encapsulated, they are less susceptible to interference and contamination. Measured data is displayed and compared with the target values and machining starts only if the results are in tolerance.

Sebastian Knaus is delighted with the project. He concludes: "We had a close and productive exchange with Roemheld and quickly achieved a great result; higher efficiency and process reliability, less scrap and better component quality, all at lower cost. Transparency, control and manufacturing documentation are also improved."

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

Knockout performance?

The answer's
YES



Kitagawa

NC rotary tables

From 1st MTA, the UK's leading machining
accessories supplier.

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

Fax: 0800 783 0517 www.1mta.com



Leader offers a flexible first step towards machine tool automation with the Zerobot 100V eco

While many machine shops are enjoying the production benefits of robotic part handling, others are struggling to tackle the first steps of implementation. The capabilities of the Zerobot 100V eco, available in the UK and Eire from Leader Chuck International, can help provide manufacturers with the perfect starting point.

Within the machine shop environs the growing acceptance and popularity for robots is due to their material handling capabilities when loading and unloading parts into and out of machine tools and other manufacturing equipment. However, their effectiveness relies on correct implementation as Leader's managing director, Mark Jones explains: "Once the decision to implement this technology has been made some important questions need to be asked.

"Basically, these include: What are the maximum and minimum weights of the parts that will run? What condition are the parts in as they arrive, raw billet, casting, forging, pre-machined, size, sharp edges/burrs and are they covered in chips/coolant/oil? Will the machining process be single operation or multiple operations requiring back working? How many parts and cycle times are required to define how long the infeed queue needs to be? Will it run lights out or will an operator be available to oversee the process? Is any in-process inspection required? How much floor space is available for the automation? Will the capacity of this machine be taken up with the automation or will it be used without the automation for some of the time?"

At the heart of the loading system is the robot and different robots are designed for different kinds of environments. The Zerobot 100V eco is an industrial grade SCARA arm robot, a design that has become popular for machine loading in the manufacturing sector. It is designed to work in the swarf-covered, coolant-dripping environment encountered in the machine tool world.

Robots are usually specified by reach and payload. The Zerobot 100V eco can be specified with a right- or left-hand mounting of the arm with a radiused reach of 1.2 m



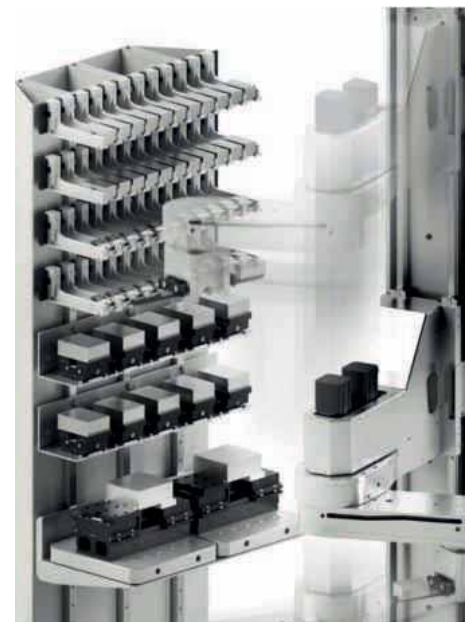
Zerobot 100V eco provides flexible automation

providing enough range to access the whole worktable of most machine tools. While the 100 kg total payload means raw material billets or forgings up to 250 x 160 x 200 mm can be accommodated.

The infeed and storage of raw materials and finished workpieces is another area for consideration. Here, the Zerobot 100V eco offers a manually operated double-sided vertical rack system with the flexibility to be populated to exactly match the requirements of the components being processed. The double-sided rack design means finished parts can be removed and the raw material supply can be refreshed while the machine tool is operating, so downtime is kept to an absolute minimum. It also allows access to the machine's working envelope if an unscheduled part needs to be manually loaded, supporting emergency repairs or rework scenarios.

End-of-Arm Tooling (EOAT), the tooling that is mounted to the end of the robot to assist in performing the necessary tasks, must be given attention. "While various kinds of tooling, such as vacuum cups and magnets, are available for picking parts, the most common style on the shopfloor uses pneumatic grippers. As with the robot itself, quality grippers that are appropriate for the working environment are important. The

standard Zerobot has the ability to automatically change the EOAT to suit the application, this is a quick, simple, manual procedure on the eco version," Mark Jones confirms. "The application will dictate the size and quantity of jaws and grippers that will be needed. Grippers are available in many configurations and may have two, three or four jaws. Two-jaw, parallel-close



Double-sided raw material storage rack

grippers are the go-to grippers for anything square, rectangular, or easily picked up between two fingers. Three-jaw grippers lend themselves to picking up round and hex parts, just as a three-jaw chuck is so prevalent on a lathe.”

The extensive range of Zerobot robotic automation systems means there is a solution available for almost every application. Starting with the Zerobot 100V eco with fixed double-sided rotating rack, no automatic gripper or automatic fixture change. Automatic rack rotation available as an option and, being such a straightforward design, it offers a simple I/O interface.

Next is the Zerobot 100V featuring a double-sided automatically programmable rotating rack, automatic gripper and fixture change options and field bus interface with NC-program selection.

Offering two single racks that can be moved with a pallet truck, the Zerobot 100P has an automatic gripper and automatic fixture change option, with field bus interface for NC-program selection.

The most extensive of the Zerobot range is the 100S that comes with an additional linear axis for longer travel, two or more

single rack systems that can be moved with a pallet truck, automatic gripper and automatic fixture change options and a field bus interface with NC-program selection. When the additional linear axis for longer travel and more than two single rack systems are not required, the 100S can be downgraded to the 100P system.

“The comprehensive range is a key feature for any workshop looking to dip its toes into the world of automation. It means the robot can be specified to support the different machine tools available, matching the needs of the business across the whole of the shopfloor. It allows production managers to gauge the real-world return on any potential investment making the decision to install dedicated automation systems that much clearer,” says Mark Jones. He concludes: “Before the search for any articulating arm automation begins the basic details, we considered at the very start need to be understood. An honest look at these



Material rack layout easily changed to accommodate varying workpieces

considerations will go a long way to defining an automation system that provides efficient and effective part movement. The answers to these questions will be important to both the supplier and the users on the shopfloor.”

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



All the tools you need in one place

Need a router bit for deep pocket cutting or a waterjet nozzle for precision cutting?

Visit cncshop.com today for all your tooling needs



www.cncshop.com / 01952 291600

Lehmann provides 'all-round' machining solution to Rotron

Rotron Power Ltd, a specialist designer and manufacturer of innovative rotary engines, has purchased an advanced pL Lehmann CNC rotary table to support its machining activities.

Established in 2008, Semley, Wiltshire-based Rotron Power has grown rapidly to become a major force in the supply of rotary engines for Unmanned Aerial Vehicles (UAVs) and increasingly for other applications. When compared to traditional rotary power plants, the efficient fuel burn characteristics of Rotron's, high power density, low weight engines, provide impressive endurance lifecycles and increased range capabilities.

The cutting-edge R&D work that has resulted in Rotron's global success within the UAV sector has enabled further aviation applications to be exploited. For example, the company has developed VTOL, an unmanned Quadcopter lift platform designed for transporting a variety of payloads, also SKYQUAD, a flying car that is equally at home in the air or on the ground. Recent non-aviation projects include a high performance, multi-fuel marine outboard rotary engine and a bespoke two stroke engine for a powered surfboard. The latest application for the company's advanced

rotary engine technology is an innovative racing motor-cycle which produces 204 hp and weighs less than 130 Kg.

In addition to developing the company's own proprietary technologies, Rotron acts as an advanced design and analysis engineering consultancy to a wide range of international businesses. Along with other services, the company provides concept development, engineering, prototyping and production management.

As Rotron's consultancy contracts specify that staged payments are made by clients on the completion of specified design and development steps, the time taken to arrive at these 'milestones' is extremely important. Some of these payments are made on the presentation of prototypes and of fully operational products. Therefore, in addition to the efficient manufacture of Rotron's own products, the speed and flexibility of the company's machining activities is vital to the commercial success of the business' consultancy operations.

Rotron's cutting-edge production capabilities are supported by the employment of skilled staff and by the use of a wide range of highly-efficient XYZ CNC machine tools. To enable further machining efficiencies to be gained the purchase of a

CNC rotary table was recently considered. Following a conversation with the staff of XYZ Machine Tools, a decision was made to purchase an advanced pL Lehmann T1-510520 model.

Sam Bellefontaine, production manager at Rotron explains: "As we need to efficiently machine parts with demanding levels of precision, we have invested in a range of cutting-edge XYZ machine tools.

"Our use of XYZ's advanced machine tools has enabled us to develop an extremely efficient manufacturing operation and over several years we have received excellent training and outstanding technical support from the company. Therefore, when the need occurred to purchase a rotary table, we were happy to take advice from XYZ's technical staff and to invest in a pL Lehmann T1-510520 unit.

"The installation and interface help we received from XYZ and from Paul Tolin, pL Lehmann's local service agent, helped to put the T1-510520 into use and enabled us to gain maximum benefit from the CNC rotary table. The machining flexibility and speed that our pL Lehmann rotary table has delivered is now proving invaluable.

"Given the complex nature of many of the parts we manufacture, before using our rotary table we would need to perform two to three different machining operations on them. Now, thanks to the 'all-round' machining capability delivered by our pL Lehmann rotary table we can complete the same machining work in a single hit. In addition, we no longer have problems related to the accurate relocation of workpieces for secondary machining operations. These factors have helped us to maintain our high precision standards and to slash the machining times of many of our components.

"The relatively small footprint of our pL Lehmann's rotary table means that, when it is mounted inside our XYZ machine tool it occupies a minimum area of its bed. As well as leaving room for the fitting of additional workholding on the machine's bed, the compact size of the rotary table means that even when it is not required, we can leave it inside the machine whilst other milling and drilling work is being performed. Also, when



we are not using it, the rotary table's low profile helps to increase the available working volumes of the machine."

Throughout the world, production costs are constantly under pressure, therefore companies are continually searching for rapid, lean manufacturing solutions. Increasingly, the use of advanced CNC rotary tables is being seen as a way of achieving highly-efficient machining. For example, as it is estimated that 90 percent of all machining tasks performed by 5-axis machining centres are basic five-sided procedures, rather than purchase an expensive 5-axis machining tool, the fitting of a rotary table to a company's existing 3-axis VMC represents a cost-effective, technically capable alternative means of achieving highly effective 3+2 axis capabilities.

As a CNC rotary table costs a fraction of the price of a 5-axis machining centre, the use of this flexible machining aid is being embraced by increasing amounts of manufacturers. Following the fitting of a CNC rotary table, users report that their enhanced capabilities, reduced machining times and increased outputs result in rapid

returns on their investments.

pL Lehmann CNC rotary tables are available in four sizes: 507, 510, 520 and 530 mm with centre heights from 110 to 240 mm. Thanks to the company's innovative modular design approach, from these four basic size options it is possible to create over 170 different rotary table variants from basic single-spindle 4th axis units to 4-spindle tilting rotary tables with 4th and 5th axis capabilities. Therefore, rather than purchase a 'nearest-fit' option, pL Lehmann's customer focussed approach ensures that each purchaser receives a high-quality CNC rotary table that exactly matches their specific needs.

In addition to solving today's machining challenges, the company's modular design system means that the purchase of a well-engineered pL Lehmann CNC rotary tables represents a safe, future-proof investment.



pL Lehmann's standardised spindle arrangement allows the use of an extremely wide range of workpiece clamping systems. As a result, in addition to standard workholding being setup for an initial workpiece range, the system can be quickly converted to accommodate other workpieces.

pL Lehmann
Tel: 0121 368 0843
Email: a.gregory@plehmann.com
www.lehmann-rotary-tables.com/en/home





Stamping Technology



Zero Point





Machine Automation





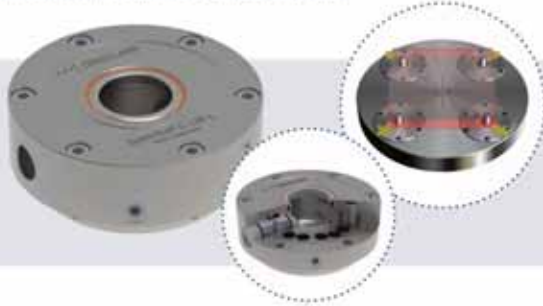
W: www.lang-technik.co.uk
 T: 01296 796576
 E: sales@lang-technik.co.uk





Zero Point Clamping Units C 138L & Z 138L

INTERCHANGEABLE WITH SCHUNK VERO-S AND UNILOCK 138



- Does not require type A, B & C clamping pins to be placed in specific patterns to compensate for thermal growth and misalignments
- Thermal growth is always at the centre point of the axis, important for accurate machining

With ZeroClamp's patented centre cone technology, thermal symmetry for absolute zero is guaranteed. Uses the same principle as a HSK tool taper interface with zero radial play, together with the axial position relative to the axial face.

LEADER CHUCK INTERNATIONAL | 01827 700000 | leaderchuck.com

Lang serves workholding 'on a plate' to Cambridge University

Following the recent installation of a DMU 85 mono BLOCK, 5-axis machine tool at the manufacturing facility of Cambridge University's Whittle Laboratory, a search was made for a flexible, comprehensive workholding system. Given the important work performed by the busy department, the proposed workholding needed to exhibit robust, high-precision characteristics and allow rapid changeovers to be made.

After considering several alternatives the answer to the facility's challenging needs was found in LANG Technik's Quick-Point, a durable, base-plate centred system that acts as an accurate interface between a machine tool's table and workholding devices. To enable all of the facility's diverse workholding applications to be accommodated and mounted on the Quick-Point system, a further range of workholding devices were also purchased from LANG Technik UK, including a stamping unit, Makro-Grip 5-axis vices, Avanti base jaws and soft top jaws.

Opened in 1973 by the inventor of the jet engine, Sir Frank Whittle, The Whittle Laboratory is a research group within the Energy Division of The Department of Engineering at The University of Cambridge. The laboratory's research projects cover virtually all aspects of aeroengines and the



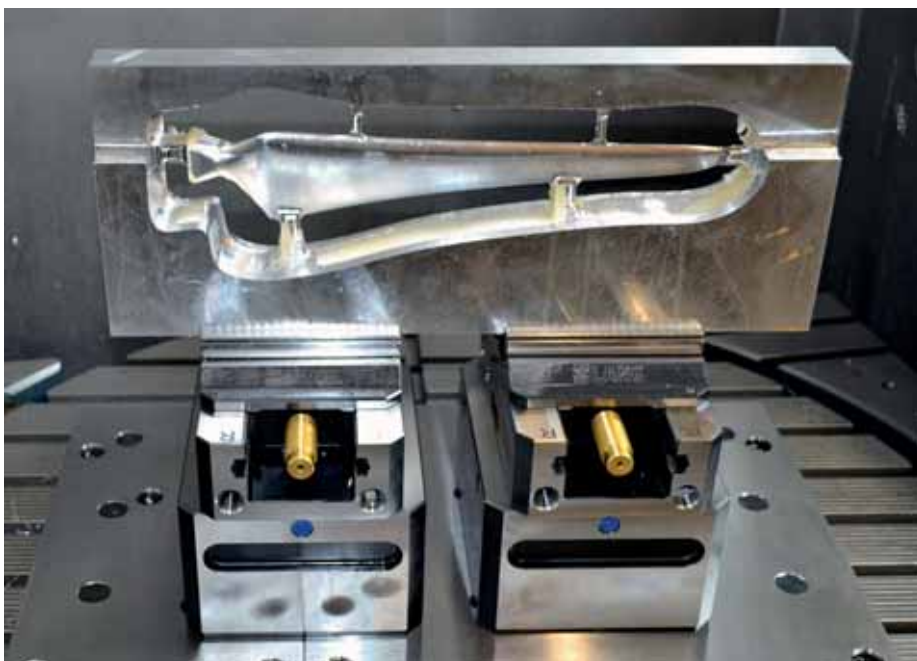
gas turbines. Explaining the laboratory's work and the reasons behind the recent workholding purchase, Dr James Taylor, compressor research fellow at the Whittle Laboratory says: "The Whittle Laboratory's research projects cover a broad range of turbomachinery and power generation technologies and we have an impressive track record of successful collaboration with companies such as Rolls-Royce, Siemens

and Mitsubishi Heavy Industries. Our manufacturing capabilities, including rapid-prototyping and multi-axis computer controlled machining, allow us to design, build and test complex geometries in-house.

"We are currently involved in planning the new Whittle Laboratory. Due to be opened at the end of 2023, the much larger new facility will be the United Kingdom's National Centre for Propulsion and Power and will help to accelerate the transition to zero carbon emissions.

"As part of the company's contribution to the new Whittle Laboratory, one of our collaborators, Siemens, recently provided us with a DMU 85 mono BLOCK, 5-axis machine tool. As the majority of the machining tasks we perform on our new machine consists of one-off or limited quantities of development work and small production runs, we recently investigated the availability of flexible workholding systems that would help us to maximise our available machining time and reduce time lost in our regular setups. After evaluating several alternatives, we decided that the Quick-Point system, along with several related workholding devices from LANG Technik UK, was the ideal flexible solution for our needs.

"In addition to the Quick-Point and



associated clamping devices satisfying our demanding efficiency and precision criteria, as LANG Technik's solution cost less than some other, less technically capable systems, our purchasing decision was a relatively easy one."

Dr James Taylor continues: "Given the generous 1,000 mm diameter of our new machine tool's table, we have now located Quick-Point base-plates across the whole of the available area. Each of the base-plates is fitted with Lang Technik clamping devices. These setups allow us to quickly change between, for instance, vice type machining and larger fixtures that hold the roots of our different blade designs. It helps that, in addition to accommodation our new workholding, the flexible Quick-Point system is also able to securely hold our existing workholding devices.



"The speed and ease-of-use of LANG Technik's Quick-Point and clamping devices means that we have now achieved our aims of significantly reducing time lost between machining jobs and increasing our productive machining times. In addition to the current benefits that the use of our Lang Technik products has provided, these machining efficiencies will prove particularly beneficial following the opening of the new Whittle Laboratory, when there will be another step change in the throughput of 5-axis machining work."

LANG Technik's ingenious Quick-Point system functions as a flexible, accurate and extremely durable interface between a machine tool's table and a user's clamping devices. Quick-Point provides a solution for every machine table and application and is available in a wide range of variants, including rectangular and square plates that are suitable for single or multiple clamping use.

The attachment of a Quick-Point plate to a machine table or faceplate is achieved quickly and easily through prefabricated hole patterns for common T-slot distances, bore patterns and bolt circles, or by customised mounting options. The exchange of clamping devices, fixtures and workpieces can be completed within seconds with repeatability of 0.005 mm. As the future proof system can be reconfigured and added to, it is able to constantly adapt to the changing needs of users' businesses.

LANG Technik UK director, Gareth Barnett states: "In order to fully understand The Whittle Laboratory's workholding requirements we appreciated the opportunity to engage with the workshop's staff. Our suggested, all-embracing, workholding solution is now delivering on all of the promises that we made.

"Sold previously through a sales agent, LANG Technik products have been popular in the UK for many years. To enable the delivery of first-class levels of application support and service to customers both old and new, LANG Technik UK was established in 2019. As was accomplished with the solution we provided to The Whittle Laboratory, our goal is to increase customer efficiency levels by helping them to perfect their manufacturing processes by the application of technically superior, cost-effective solutions."

LANG Technik UK
 c/o Thame Freight Services Ltd
 Tel: 01296 796576
 Email: sales@lang-technik.co.uk
www.lang-technik.co.uk

FLEXIBLE, EASY AND FAST!

The HAINBUCH modular system
for turning operations!



The HAINBUCH modular system gives quick change-over from O.D. to I.D. or 3-jaw clamping.

www.hainbuch.co.uk

UK
HAINBUCH
 WORKHOLDING TECHNOLOGY

Manufacturing innovator improves agility from prototype to mass production with Hexagon

With a wide range of production capabilities, the Erpro Group is able to adapt to the needs of its customers by offering them a range of prototypes, from pre-production to mass production. In this environment, WORKPLAN and WORKNC software play a key role.

Since its creation in 1997, Erpro has pioneered the use of new production methods. It acquired an additive manufacturing machine equipped with Selective Laser Sintering (SLS) technology, an additive manufacturing process that belongs to the powder bed fusion family. In 2001, it was the first company in the world to acquire a high-resolution stereolithography machine. In 2005, Sprint, another subsidiary of Erpro Group, acquired its first metal powder sintering machine to create injection moulds for plastic parts. "Erpro has made additive manufacturing part of its DNA," says Cyrille Vue, the holding company's director.

The Erpro Group comprises six companies:

- Erpro: prototyping
- Sprint: metal additive manufacturing, plastic injection, machining
- 3D Nord Factory: small series plastic moulding
- Dpn: plastic injection
- Silinov: manufacture of silicone parts in 3D and by moulding



• Erpro 3D Factory: start-up specialising in large-scale additive manufacturing

The Group uses the powerful WORKPLAN production planning software from Hexagon's Manufacturing Intelligence division to automate and manage processes such as job costing, quotations, sales order processing, planning, quality, time, purchasing and stock management.

Workshops in a number of companies throughout the Group also use WORKNC,

Hexagon's automatic CNC software for surface and solid models in mould, die and tooling businesses for 2- to 5-axis CNC programming.

From its inception to present day, the Erpro Group, based at Saint-Leu-la-Forêt, in France has not stopped developing. It has a wide range of machines enabling it to offer various services to its customers, such as additive manufacturing, machining, silicone moulding, RIM moulding, plastic injection and paint finishing. The synergy of these processes enables the company to produce prototypes, pre-series and large series, with materials ranging from metal to plastic. A good example of this capacity: 18 million eyelash brushes, manufactured by the start-up Erpro 3D Factory, were delivered to luxury cosmetics brand Chanel in two years.

The essence of 3D printing is digital. An object is designed in 3D then a toolpath is generated and used to manufacture it after its transformation into ISO programs by the post processor corresponding to the machine. In addition to the digital thread for manufacturing, there is also the thread for the management system.

"We abandoned the first Enterprise Resource Planning (ERP) system we had acquired because it was not suited to our needs," recalls Cyrille Vue. "A new contract we were tendering for required simplicity,



speed, agility and flexibility from the future software package. At the end of our comparison of various systems on the market, we chose the WORKPLAN software from Hexagon."

Implementing WORKPLAN was simple and easily adopted by all employees in the departments using it. The speed of WORKPLAN's operation can be measured in a few clicks, such as the conversion of a quotation into an order then into an order form to the relevant department. Its agility is put to the test everyday thanks to its ability to accompany clients right up to the launch of the manufacture of their products. For example, an order for 100 green cups can be changed in a few clicks to an order for 25 magenta, 25 yellow, 25 cyan and 25 black. Flexibility is also important as a delivery can be distributed differently from initially planned, just before it leaves.

Cyrille Vue says: "The flow of information in WORKPLAN must be continuous and precise. This is particularly important when we're looking at the profitability of an operation." In this respect, WORKPLAN has fully supported the growth of Erpro Group, acting as its production planning backbone."

WORKNC included in the manufacturing process

The Erpro Group has also invested in Hexagon's WORKNC CAM software which now plays an important role in the workshops, particularly on the Erpro site: "With WORKNC, we are able to machine a 3D printed part on a 5-axis machining centre, from the same CAD file," says Cyrille



Vue. This is where WORKNC comes into its own, as there are new parts to be manufactured every day, all of which require new programs to be created.

Plastic injection specialist and mould maker

Specialising in thermoplastic injection, from prototypes to small series, Dpn works mainly in the automotive sector. From design through to the manufacture of the finished product, Dpn assists companies in carrying out their projects. As a leading company for more than 20 years, Dpn is regarded by car manufacturers and equipment suppliers as the "go-to" mould maker.

Dpn has now integrated WORKPLAN to optimise and organise its production cycle in order to offer what the company describes as "an excellent level of service."

Pascal Renoud, director of the Dpn plant in Tremblay-en-France, says: "WORKNC also plays a part in programming machining

toolpaths to reduce cycle time, freeing up the machines much quicker, ready for the next job. After being checked and validated, the moulds that come out of the machining process can be used to produce complex thermoplastic parts in all types of plastic, including PEEK, which is widely used in the aeronautics industry, thanks to its mechanical characteristics and resistance to high temperatures."

WORKPLAN serves as a guideline in their production processes and is also a valuable working tool for the sales administration. It manages both the digital and physical flows once the tender has been won.

Pascal Renoud concludes: "WORKPLAN allows us to monitor the progress of the project in real time and to produce a business report to assess its profitability. This database is invaluable for similar projects in the consultation process, allowing us to rectify our estimates if necessary in a very quick, reactive manner."

Hexagon is a global leader in sensor, software and autonomous solutions. It puts data to work to boost efficiency, productivity and quality across industrial, manufacturing, infrastructure, safety and mobility applications.

Its technologies are shaping urban and production ecosystems to become increasingly connected and autonomous, ensuring a scalable, sustainable future.

Hexagon's Manufacturing Intelligence division provides solutions that utilise data from design and engineering, production and metrology to make manufacturing smarter.

Hexagon Manufacturing Intelligence

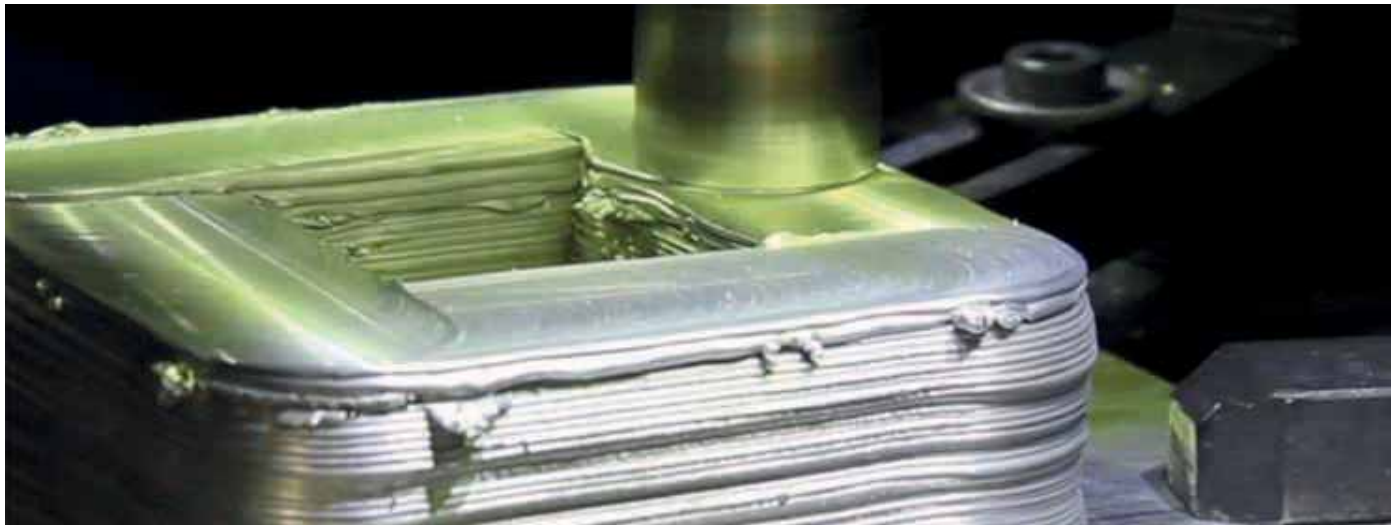
Tel: 0870 4462667

Email: enquiry.uk@hexagon.com

www.hexagonmi.com



3D printing of solid metal parts



Created in 2018, the MELD Manufacturing company has developed a metal 3D printer that looks a bit special. While most current solutions are based on the process of melting metal particles, this machine operates by friction and pressure in order to achieve a deformation of the material. The metal can be deposited layer by layer in the open air, thus removing the constraint of a closed chamber filled with gas. MELD technology also offers the possibility of repairing existing parts, such as the process of depositing material under concentrated energy, adding features to the part or reworking the coating. It is thus compatible with more metals and allows the manufacture of larger parts. RAM Engineering & Tooling met with the company's founder and CEO, Nanci Hardwick, to learn more about this innovative process.

Can you introduce yourself and your link with additive manufacturing?

Hi, my name is Nanci Hardwick and I am an entrepreneur who has been developing MELD technology for over a decade now. I officially launched the company two years ago.



Why did you create MELD Manufacturing?

I believe MELD has the power to redefine how we do things. The company contributes to a circular economy by reducing waste in manufacturing and allowing the reuse of materials and parts that

would be discarded. With MELD, we help to make progress in environmentally friendly manufacturing, as it is energy and waste efficient and works in the open air.

How does your 3D metal printing technology work?

MELD does not resemble any other printing process and belongs to its own category of processes because it does not melt metal. It actually relies on a thermo-mechanical process that produces very high pressure and friction. These allow the plastic deformation of the extruded material and the substrate on which the layers are deposited. Remember that the plastic deformation corresponds to the irreversible transformation of a part that occurs by a rearrangement of the position of its atoms. It is a versatile technology as it can use any metal and it is simple and offers predictable results. It is fast and able to print the largest parts and also unique in its ability to repair existing parts.

What are the challenges of large format 3D printing?

How do you overcome them?

The main obstacle to large-scale 3D printing, that MELD has been able to overcome, is the printing environment. Fusion processes must be conducted in special chambers that protect the molten metal from oxygen during the construction of the part. Beyond costs, this limits feasibility. MELD technology does not use this melting process and can therefore be carried out in the open air, which makes it extremely flexible.

What type of applications is MELD manufacturing suitable for?

MELD machines can manufacture large parts in any metal. Whether users add features to parts such as bosses and ribs, build whole parts or repair them, the same machine meets their needs.

Who is your machine for?

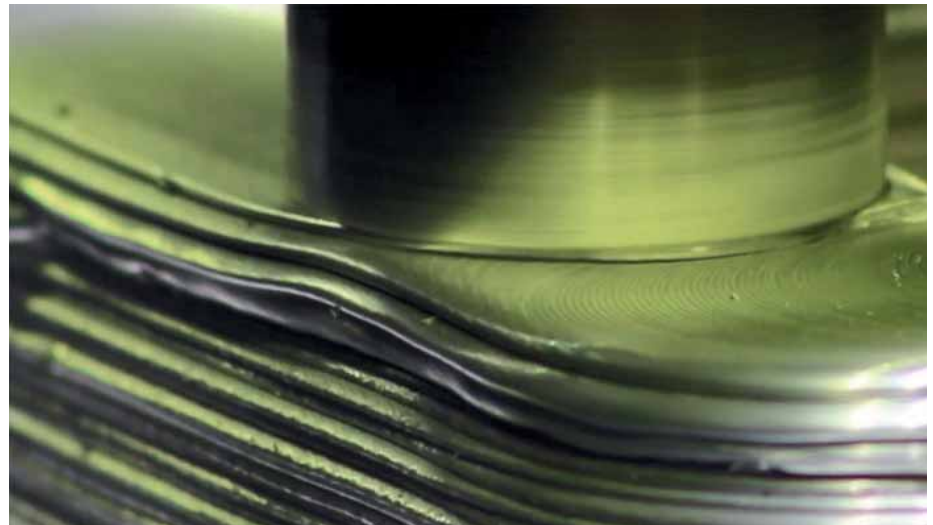
Some of the most important gains come from the use of MELD technology to print lightweight and highly resistant metals. For example, with MELD, you can print titanium parts. This very expensive material is often used in part geometries that see up to 90 percent of the material being machined away and this represents 90 percent waste.

By printing the same part, we use only what we need, so much less material. This reduces the associated costs. The Ti64 printed with MELD technology exceeds the ASTM standard for forged materials. This means that you can now print parts that were previously only possible by forging. Currently, a user can wait two years before receiving some forged parts. It is therefore possible to reduce the manufacturing time from several years to a few hours, with less costs and less waste.



What are the future plans of MELD Manufacturing?

We are working on other projects with high-value materials, as many of these



metals cannot be used in other additive manufacturing processes at all. We look forward to expanding our international distribution network in 2021 and to completing our equipment offer. While we are excited about the size of the parts and the performance of the materials obtained with MELD technology, we still need to emphasise the ability to repair existing parts. Not only is reuse essential for our

environment, but sometimes millimetres of material can save hundreds of thousands of dollars.

RAM Engineering & Tooling
Tel: 0800 999 4140
Email: sales@ramet.co.uk
www.ramet.co.uk

Locking down positioning with norelem's indexing

norelem's range of indexing plungers allows engineers to safely lock movable parts in place thanks to their easy handling and secure fix. This range includes stainless steel plungers with remote actuation and indexing plungers with rotation lock and lead-in chamfer.

A typical indexing plunger features a knob or ring attached to a spring-loaded pin. When the knob is pulled, the pin is retracted, allowing for free movement of the plunger to the desired position. Once released, the spring locks the mechanism in place.

Marcus Schneck, CEO of norelem says: "Requiring no tools to work with, our indexing plungers help to speed up and improve efficiency and safety when locking moving parts in place. These versatile products benefit from high holding forces and are suitable for applications where a predefined stop location is required, such as in industrial equipment, positioning tools, special vehicles and movable furniture."

Stainless steel indexing plungers with remote actuation are suitable where



inaccessible assembly spaces make operation difficult, or where remote operation is required for ergonomic or safety reasons.

A Bowden cable is used to operate the indexing plunger remotely, transferring mechanical movement, pressure forces or tension forces with a combination of a flexible wire and a pressure-resistant sleeve. Available in various lengths from 1,000 mm to 5,000 mm, the Bowden cable can be shortened as required when installing. As an alternative to the actuating element, the supplied screw nipple can be used to integrate an individual actuating element into the system.

norelem's indexing plungers with rotation lock and lead-in chamfer ensure that the position of the pin in relation to the sleeve cannot be changed. Consisting of a threaded body, index pin and thermoplastic mushroom knob, the operator is able to rotate the point angle of the pin in 60° increments by loosening the screw as far as the marking on the plunger.

Depending on the application requirements, norelem's rotation lock indexing plungers are available in either steel or stainless steel as well as with a locknut (Form A) and without (Form B).

Engineers can find the components in norelem's definitive catalogue, THE BIG GREEN BOOK. Datasheets and CAD drawings are available online and can be ordered directly through norelem's web shop.

norelem Ltd
Tel: 0121 222 5322
Email: info@norelem.co.uk
www.norelem.co.uk

Revolution of engineering

The latest technology advancements between band saws and circular saws have made the choice between the two technologies less clear-cut.

It's a common question. Band saw or circular cold saw, which best fits my operation? Make the wrong choice in the short term and your productivity and potential to compete for new business could be compromised in the long run.

Long considered the shop floor's workhorse, band saws have advanced in many areas. Bundle-cutting capabilities, more accurate feed units via servo drives; gear motor speed and horsepower options; programmable workstations for repeat jobs; carbide-tipped saw blades; and the ability to achieve smooth cuts in tough materials represent just some of the features and benefits found in today's band saws.

Circular cold saws offer high-speed cutting and high-quality finishes. The most basic manual units perform simple, low-volume cuts across a wide spectrum of materials, while automated, enclosed machines work well for production runs and repetitive projects.

A few years back the choice between a circular cold saw and band saw was a bit simpler. A high-volume, high-production application likely would require a circular cold saw. If tolerance and finish were not critical, a less expensive band saw probably would have sufficed. But today, because of technical advancements, the answer is less clear-cut.

To be sure, "slugging away" with a circular cold saw will always offer the most efficient and cost-effective approach in certain circumstances, particularly when finish is critical, or when utilizing a high-speed carbide cutting saw. Although more expensive, a carbide cutting saw reduces cut time dramatically.

The performance characteristics between these two technologies have begun to blur. Circular cold saws still deliver high speed and good finish. Band saws generally are less expensive and offer greater flexibility in the long run in terms of saw capacity, layer-cutting, and bundle-cutting. But a high-quality band saw may be able to meet or exceed performance expectations that previously were achievable only with a circular cold saw.



Material type and diameter

What material diameters will you cut on this machine? What material types and grades? Which materials will you cut most often? Will you be cutting solids, tubes, or both? Will future projects change your requirements? Do you envision offering additional cutting capabilities to new markets? Generally, the maximum diameter for circular cold saws is between 5 and 6 inches.

Beyond that, the decision from both a capabilities and cost perspective falls clearly into the band saw camp. Workpiece diameters between one and five inches could go either with band saws or circular cold saws. Which to choose depends on various factors.

In cold sawing, the idea is to get into and out of the material quickly. More common grades of steel lend themselves better to circular saws. They can be cut quickly without generating excessive heat and friction, which can cause premature wear on a circular saw blade and thus affect the finish. Tougher nickel-based materials are slow-cutting.

The continuous blades on band saws run slower and have many more cutting edges, which provide more time for the blade to cool between entering and exiting the material.

Past and future production requirements

How many pieces do you need to cut on an hourly, daily, weekly, or monthly basis? Will these be long, production-type runs, short runs, or individual cuts? Will production requirements shift to larger runs in the future? For any scenario, what are the sizes, grades, and quantities of the materials to be cut?

Band saws today have advanced layer- and bundle-cutting capabilities, allowing for higher production on small-diameter pieces, as well as the ability to hold tighter



tolerances. If you can cut pieces in layers, then a band saw can compete nicely with the volume throughput of a circular cold saw. Perhaps you can cut one 2-in 4140 solid bar every 10 seconds on a standard cold saw, but if you cut a layer of five 2-in pieces on a band saw in 70 seconds, then that may well meet your production requirements. With advancing band saw blade technologies and the ability of dual-column saws to maintain very high band tension via their rigid design, plus the technology to maintain a constant chip load, a band saw's tolerances and consistency have improved dramatically.



By cutting layers or bundles, you reduce the index time as well. If you do plan to bundle material, consider the clamping requirements. Cold saws can indeed bundle-cut, but only small-diameter components and by using special fixtures. For bundling larger-diameter parts, band saws remain the only option. Bundling square or rectangular tubing may require only horizontal clamping, but round parts require both vertical and horizontal clamping, which in some cases can reduce your capacity, because clamping takes up

space in the work area and leaves less room for material. Still, it's always best practice to use both horizontal and vertical clamps on all parts to reduce vibration as excess vibration can reduce blade life significantly.

How fine and how close?

What are the tolerances for the length, squareness and consistency of your final product? Will a secondary finishing operation be performed? Or do the pieces need to meet specific minimum requirements, such as a finish requirement of RMS 125, following the initial cut? Could a secondary operation be eliminated, saving you time and money, if a higher-quality finish was achieved?

Circular cold saws deliver high-quality finishes with true edges. With a good, sharp blade, a fast circular cold saw almost eliminates burrs on the cut edges. However, other big-picture production considerations might come into play when comparing saw technologies. Some band saws now have a servo-drive ball screw that propels the automatic feeding unit. This replaces the traditional hydraulic feed unit and offers both tighter length tolerances and better repeatability. These electric ball screws on

higher-end band saws enhance material positioning by improving accuracy during the cut and eliminating backlash following the cut.

Cut types

Do you need to make angle or mitre cuts? If so, what angles do you need to achieve? What percentage of your work requires angle or miter cutting? Do you want to automate these processes?

If your application requires a lot of angle cutting, then layer- or bundle-cutting in a

band saw is no longer viable. Now you are down to comparing the cold saw and band saw on a piece-by-piece production basis. However, if the amount of angle cutting is limited, then a horizontal mitering band saw for small-diameter materials might be an option.

Kaltenbach Ltd
Tel: 01234 213201
Email: info@kaltenbach.co.uk
www.kaltenbach.co.uk



The BEHRINGER GROUP Stronger than ever together



STRONG and EFFICIENT

Behringer Ltd, part of the Behringer Group of companies, offer a broad range of machines from straight cutting, mitre cutting to circular sawing machines and a comprehensive range of the Vernet Behringer structural steel processing machines.

STRONG and built with solid cast iron parts and highly **EFFICIENT** due to high cutting performance and low maintenance costs.

We are happy to support you with Service, Spare Parts and Machine requirements.



HBE 261A-1060A



HBE 320-523GA



VMS 300



PSU 450 H



LPS60T



HBM540A



HCS 160 Multifluid



VA-L 560 NC2

Sawing solutions from RK International

RK International offers a wide range of industrial saw solutions to cope with most applications in the UK. Bandsaws are the more common industrial type of saw due to their capacity cost ratio and these come in various shapes and sizes.

Manual pull down bandsaws are used for quick cutting on smaller sections such as angle, tube and box. Gravity feed are the most common machine with a hydraulic cylinder to control the saw frame lowering speed while semi-automatic machines are more expensive than the gravity feed due to its ability to hydraulically clamp the workpiece and then raise the saw frame back up after the cut has completed. Automatic/CNC bandsaws are for production environments where batches of cut pieces are required. Tell the saw how many and what length and let it do its job.

Vertical bandsaws

Vertical bandsaws come with a continuous bandsaw blade which makes it an ideal machine for a number of jobs ranging from complex shape sawing through to a simple stock removal operation. Variable speed models offer a more accurate cut with the correct blade speed being selected, reducing tooling costs. Available for metal cutting on steel (ferrous) and non-ferrous applications depending on the blade speed.

RK has a wide range of bandsaws for the education sector as well. These cover woodwork / joinery as well as workshop applications. Europa Bandsaws, DoAll Bandsaws and ACM Bandsaws are all dealt

with. If you require something special including powered tables or modified machines for special applications, RK International can help as it has provided sawing machinery for special purposes in the UK for many years.

Horizontal bandsaws

Manual, semi-automatic and fully automatic horizontal bandsaws allow for unmanned sawing of stock material. Pivot action and larger capacity, dual column machines are available. For structural steel type applications, a mitring head bandsaw allows the head to swivel rather than the material resulting in a reduced machine footprint. The company has a full range of Europa Bandsaws for education, together with new Macc Saws UK products, Carif bandsaws, FMB saws UK and a good selection of used bandsaws in its Kent showroom.

Manual or gravity bandsaws

Manual bandsaws are generally pull-down bandsaws operated by a trigger switch with quick and easy operation that is similar to a chop saw. There are also the more common gravity bandsaws that are manually lifted up but a hydraulic cylinder controls the speed through the job. All these bandsaw types can be available with either single mitre cutting or double mitre ability.

Semi-automatic bandsaws

Semi-automatic bandsaws make your sawing easier. They have hydraulic operation of the saw frame and the

clamping vice. Place your metal in the vice and press the start button, it's that simple. They might cost a bit more than a gravity feed bandsaw, but could save time while reducing bandsaw blade usage.

RK International supplies a wide range of semi-automatic bandsaws from companies such as Carif, DoAll, EUROPA and Macc.

CNC bandsaws

Fully automated and CNC Bandsaws are the right machine when you have lots of repetitive cuts needed from 1 piece of material. Load the material, tell the bandsaw what length and how many, then start the cycle and let the sawing start. The company can offer CNC automatic bandsaws from sawing manufacturers such as TMJ, Carif and Macc, but it also has many more options available.

Circular saws

The pivot action circular saws are the commonly used 'chop saw' like the old Pedrazzoli Brown, or for increased machine robustness, opting for column action circular cut off saws allows for the fast clamping and sawing of smaller stock material in both solid, structural and pipe work. Fully automated circular sawing machines from Macc, EUROPA, Kasto and Gemma Group are also available.

Aluminium saws

All sawing machines for non-ferrous sections and profiles. Manual TCT Saws, semi automated and fully automatic high speed



circular saws for non-ferrous metals.

Non-ferrous saws are specifically designed for high-speed clean cutting and give a superior surface finish. This is achieved using an average blade speed of 3,000 rpm and Tungsten Carbide Tipped (TCT) blades.

RK International's main suppliers of high-speed sawing machines are Macc Saws Italy and ABCD Machinery (Gemma Group). Between both companies, the company can cover single head saws, double headed saws, mitre saws and up to 5-axis machining centres.

Since being established in 1951 RK International Machine Tools Ltd, a privately owned company, spanning three generations, has been involved in the supply of quality machine tools. Clients requiring individual machine tools or major industrial turnkey packages are serviced in exactly the same professional manner.

From initial quotation to final commissioning, all functions including demonstration; time studies; delivery;



offloading and final positioning; training and, if required, after sales services are operated in house and are not dependent on subcontractors. Clients can be confident in dealing with a single source machine tool supplier.

Conveniently located five minutes from the M25 London Orbital Motorway, clients are welcome to visit the 12,000 sq.ft showrooms, housing a stock of machine tools valued in excess of £1.5 million, ready for immediate delivery. Committed to

offering a quality product complete with a quality service, RK International was awarded BS EN ISO 9001 Quality Assurance in 1995. This program continues to be in operation now, further enhancing client confidence.

RK International Machine Tools Ltd
Tel: 01322 447611
Email: sales@rk-int.com
www.rk-int.com

LINSINGER
 THE WORLD'S
NO. 1
 FOR SAWS

RAM
 Engineering & Tooling Ltd

*Fast
 Secure
 Accurate
 Standard or Bespoke
 Standalone or Automated
 Linsinger Thick Chip Technology*

www.ramet.co.uk
 Telephone; 0800 999 4140
 sales@ramet.co.uk

In a class of its own

The new automatic mitre-cutting bandsawing machine HBE320-523GA from Behringer

Opening up new fields of business, extending the performance spectrum or replacing an old machine; these are among the most frequent reasons given by users for investing in an up to date, more efficient mitre sawing machine. With the latest automatic machine from its HBE series, Behringer has come up with the perfect way of combining the benefits of modern high-performance machines for one-off sawing tasks with the solid, tried and tested characteristics of a classical mitre saw.

"We deliberately integrated various features from our Behringer high-end models into this machine, raising the HBE HBE320-523GA into a class of its own", says the company's CEO Christian Behringer with confidence. High cutting outputs, simple handling and precise angular cuts are among the key attributes of the new Behringer mitre-cutting bandsaw HBE320-523GA.

With its extensive application spectrum, it reliably covers the wide-ranging requirements of the steel construction sector and the steel trade. Potential users also include medium-sized operations in which the new automatic HBE is required to run unmanned for part of the time.

Christian Behringer explains: "Process reliability and speed play a decisive role here. The machine must be capable of sawing a wide range of different materials rapidly and neatly." With a cutting range in flat materials of 520 x 320 mm, bilateral mitre cuts of 45° and up to 30° on the left,

this machine is the perfect all-rounder for all kinds of sawing operations.

"For reasons of cost and flexibility, profiles are generally purchased in starting lengths of up to 12 m and then sawn to size," Christian Behringer adds. The new mitre cutting bandsaw is easily able to cope with both structural steels and stainless-steel profiles.

In design terms, the new mitre saw has many features in common with the HBE Dynamic series, which has already proved a resounding success. The guidance system in its torsionally rigid gantry design and the bilateral band wheel bearings ensure quiet running and precise cuts. The band guiding components are made of vibration-damping grey cast iron, which has a highly positive impact on the quality of the cut surface, but also makes for a longer blade life. Electrically powered chip brushes clean the saw blade of adhering chips synchronously with the saw drive system, an added bonus in terms of process reliability.

The inclined position of the band wheels helps prolong the life of bandsaw blades by reducing fatigue due to cyclical bending. A fully automatic height adjustment facility for the saw frame and lowering of the saw when in rapid traverse help cut non-productive time to a minimum.

The inclined position of the bandsaw



blade allows components such as girders, angled steel and U profiles as well as hollow rectangular profiles to be sawn at higher speed and with less burr.

The sawing unit is mounted for easy turning in generously dimensioned axial roller bearings and can be swivelled with a simple manual action. The closed material table simplifies material handling directly at the cutting point. The machine comes with a microspraying system as standard.

The machine can be supplemented as required with infeed and discharge roller conveyors, measuring devices and cross conveying systems, as well as NC angular adjustment. Behringer GmbH supplies these highly process-reliable customised transport solutions from its own in-house steel production facilities.

The Behringer Group is a manufacturer of high-performance bandsawing machines, circular cold saws and structural fabricating equipment. Operating as Behringer Ltd., the UK operation is located in Pitstone, Bedfordshire and is a subsidiary of the parent company Behringer GmbH, in Kirchartd, Germany.

Behringer prides itself on building the highest quality metal sawing and fabricating equipment in the world. Its primary goal is to create value for customers, by continuously striving to achieve the highest combination of speed and accuracy, combined with cost-effectiveness.

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



Rapid sawing of nickel steel billets achieved with new Prosaw Mega bandsaws

Located in the "Steel City" of Sheffield, Special Quality Alloys Ltd is a leading supplier of forged products, bar and machined components in nickel-based alloys, Duplex, super Duplex, stainless steels and carbon and alloy grades principally for the oil and gas, power generation, aerospace and general engineering industry around the world. The Company holds approvals required by the oil and gas industry including ISO 9001, ISO 14001 as well as numerous end user approvals.

Part of the Special Steel Group, Special Quality Alloys were delighted to have been requested to produce a total of 35,000 bars to be cut to size from billets, forming part of a single individual project.

The company had previously purchased a number of saws from Prosaw, but this specialised rapid sawing application was so intensive that two brand new saws were required in order to fulfill the demand.

Firstly, Prosaw supplied a Mega BS330HAS heavy duty automatic bandsaw to the company, which has been fully employed cutting the billets for seven days



in every week since installation. Later, this was supplemented with a second machine, a Mega H-460A heavy duty automatic twin column bandsaw. Both Mega saws are perfectly capable of superfast cutting of the high Rockwell hardness nickel steel billets.

Special Quality Alloys operations director Dean Matthews expressed his satisfaction with the service given to this project by Prosaw as well as with the performance of the bandsaws: "These two saws have proved themselves to be very reliable in what has been intensive service and have



established their capability in efficiently and accurately handling a very challenging material.

"Both of the Mega saws are demonstrably reliable in service, which of course reduces the frequency of any servicing that might be required, which in turn reduces both down time and servicing costs."

Prosaw Ltd
Tel: 01536 410999
Email: sales@prosaw.co.uk
www.prosaw.co.uk

Cutting Blades Saws

From the smallest to the largest, Accurate can cut it. With our 25 tonne lifting capacity, 2000mm diameter or 6000mm x 1000mm in a single pass cutting capacity we have the largest subcontract cutting capability in the UK.

Plate and block cutting, tube and solid bar, structurals, castings and forgings all sawn to size on heavy duty bandsaw machines. Any alloy or condition, shape or size. **If you would like to know more, give us a call.**



Amada bimetal, carbide and powdered tip bandsaw blades made to size for delivery anywhere in the UK.

Precision ground blade tips using latest tip materials give a lasting blade life and good finish.

We also supply Julia circular saw blades in HSS, coated or tipped form ground to your requirements.

Call to discuss your requirements.



Quality saws from Amada and Soitaab band and circular saws.

Manual, mitre, plate and gantry saws and fully automatic sawing systems capable of cutting up to 3000mm diameter. Accurate can supply a saw to suit your requirement.

Call our sales team to discuss



44-45 Crossgate Road
 Park Farm Industrial Estate
 Redditch
 Worcestershire
 B98 7SN

T: 01527 527058

E: sales@accurate-cutting.co.uk

W: www.accurate-cutting.co.uk

Fully automated material flow

Weser Stahl, a steel company based in Stuhr-Brinkum in Lower Saxony in Germany, is relying on comprehensive automation to meet the increasing challenges from international competitors. The key element of its in-house logistics system is a combined storage-sawing-robot system supplied by KASTO. Recently installed, it provides completely unmanned material flow, from storage of the raw material to provision of the sawn sections for shipment. For Weser Stahl this means greater efficiency, higher productivity and more ergonomic working conditions.

Steel is one of the most frequently used materials in industry. Examples are power generation, automotive manufacturing, food production and construction. It is also applied in many different ways and different forms because, as we know, steel is not just steel.

Today more than 2,500 standard grades of steel are in use throughout the world, from simple construction steel to special high-quality alloys. These, in turn, are available in a wide range of dimensions and geometries. All of these factors make the steel trade very challenging. Companies that want to succeed in the increasingly competitive international environment must be able to supply their customers at all times with the materials they need, cut to their requirements.

This situation is all too familiar to Weser Stahl. Based in Stuhr-Brinkum near Bremen, the company has specialised for many years in the sale of hot-rolled and forged steel bars, steel tubes and bright steel. It is part of Westfälische Stahlgesellschaft, an owner-managed group of companies with four locations in Germany. Steel distribution, production of bright steel and material testing are combined here under one roof. Weser Stahl delivers mainly to customers in northern Germany and Scandinavia. The group as a whole sells some 250,000 tonnes of material each year and Weser Stahl accounts for about 30,000 tonnes.

Increasing numbers of orders and declining batch sizes

A large percentage of the company's products are partially finished. More than half of the items shipped from the storage and production facilities in Stuhr have



already been cut to size. The figure is rising, as Dr Markus Krummenerl, managing director of Weser Stahl, points out: "Our customers are outsourcing more and more machining steps in order to save capacity. For this reason we've been continually expanding our portfolio in this area in order to fulfil as many of their wishes as possible." But this has also led to increasing customisation: "Our order numbers have been rising, while batch sizes have been shrinking. This of course poses a big challenge to us in manufacturing and logistics."

Weser Stahl relies on state-of-the-art machinery and equipment to meet this challenge. It has a number of band saws and circular saws for cutting various materials to

size. These have been supplied for many years by KASTO, a group of companies based in the southern German town of Achern and known for its high-quality, high-performance machines.

"We appreciate KASTO's ability to provide solutions even when we have special requirements," says Markus Krummenerl. This is why Weser Stahl also turned to the saw and storage equipment manufacturer when it decided to launch another ambitious project.

Unattended operation reduces the burden on employees

The goal was to automate the provisioning of the saws so that they could run largely unattended, enabling Weser Stahl to handle

the increasing numbers of orders and meet the growing customer demand for partially finished products. "Another important aspect for us was work safety," adds Markus Krummenerl. "We wanted to make our employees' work environment more ergonomic and their daily tasks easier, in this way preventing accidents and injuries." Previously, material had been conveyed to the saws by an indoor crane, a laborious and not entirely hazardfree process involving bars and tubes weighing a tonne or more. "We therefore went to KASTO and asked them to suggest some solutions," Markus Krummenerl explains.

After detailed calculations, KASTO determined that a fully automatic cantilever arm storage system would be best in this case. Weser Stahl therefore opted for a KASTOcenter varioplus 4. Measuring almost eight metres in height, the system provides 1,398 storage spaces for material up to seven metres in length. The compartments have a usable loading height of 50 to 430 mm, and each can take a maximum payload of four tonnes. Bar stock is handled by a storage and retrieval machine (SRM) that moves over the storage block at speeds of up to 60 m per minute. Two KASTOvariospeed circular saws, also fully automatic and one KASTOtec band saw are connected to the storage facility.

Intelligent warehouse management saves time and cuts down travel

Weser Stahl stores about 20 percent of its inventory in the KASTO system. The selection is governed by experience, explains sales manager Stieven Harder: "We know what kinds of pre-cut parts are often requested, and we give preference in storage to these materials." Bar stock is usually delivered by truck in bundles, after which it is unloaded and placed in storage using a transport cart. Selection of a suitable storage compartment is handled by the KASTOlogic warehouse management system, which optimises times and travel for the SRM and thus keeps access times to a minimum. "In addition, as protection against rust we have separate storage areas for bright steel and rolled steel," Stieven Harder continues. "The rules for this are contained in the software." KASTOlogic is also connected via a special interface to Weser Stahl's higher-level ERP system. This ensures greater transparency and simplifies the transmission of order data.

Material removed from storage is conveyed via roller tracks to the saw in question. A handover station in front of the saw serves as an additional buffer to avoid waiting times. The two KASTOvariospeed circular saws each have a cutting range of up to 150 mm; the KASTOtec FC 4 band saw is suitable for larger material up to 430 mm in diameter. "This saw was in use even before the storage system was built," says Stieven Harder. "KASTO simply integrated it into the new system and installed the two circular saws as well." Weser Stahl also relies on automation for the removal of material. The KASTOtec saw is equipped with a plate-turning and stacking system and the two KASTOvariospeed saws each have an industrial robot that automatically removes sawn sections and stacks them on pallets as required for each order. The automated peripheral systems, including robot integration, also come from KASTO. Mechanically, electrically and in terms of software they are perfectly matched to the automatic sawing machines and storage system. "In this way we've created a continuous material flow that can function fully unattended if necessary and around the clock," says Stieven Harder. "The result is an enormous increase in efficiency and performance, as well as more ergonomic working conditions for our employees."



One-of-a-kind SRM

Remnants are returned to storage by the conveyer system and the SRM. The latter is specially modified so that it can carry not just one bar, but several at the same time. "The standard version couldn't do this, but KASTO reconfigured it to meet our requirements," says Stieven Harder. "There's nothing else like it in the world."

Weser Stahl and KASTO have even more plans for automation. Together with the company Jungheinrich they are currently planning to connect the saws to a driverless transport system that removes pallets with stacked cut parts from the working area of the KASTOsort robot and takes them to the dispatch warehouse.

Kasto Ltd Tel: 01908 571590

Email: sales@uk.kasto.com www.kasto.com

01384 264 950

Addison
ADDISONSAWS.CO.UK

SALES@ADDISONSAWS.CO.UK

- STEEL CUTTING SAWS
- CIRCULAR & BAND
- ALUMINIUM & PVC
- MACHINERY
- SAWBLADES &
- LUBRICANTS
- RE-SHARPENING
- SERVICE
- TUBE BENDING
- MACHINERY
- MACHINE SERVICE
- & PARTS

We are a total solution provider - proven to maximise production efficiency and generate year on year cost savings.

TAILORED SOLUTIONS

Set a course for
PROVEN cost savings

Ways to maximise productivity from your steel saws

Structural steel fabricators across the globe are always looking for ways to maximise productivity on the factory floor. Improving productivity can be achieved in several ways, from investing in the latest technology to keeping machine downtime to a minimum. For those operating steel saws, Ficep has put together its top three ways to optimise production processes and accelerate shop floor productivity.

Make sure steel saws are regularly maintained

Machine breakdowns are one of the most common issues for customers but regular maintenance can minimise the frequency and length of downtime significantly. This is particularly relevant to steel saws which can vibrate at high speeds and frequencies, causing blades to snap and damage to the machine.

By scheduling and carrying out regular maintenance, steel processing companies can: Highlight issues and fix at a suitable time, preventing the frequency of machine failures and avoiding downtime at peak production times; More accurately predict how frequently replacement of consumables are required so items are in stock exactly when needed; Extend the lifespan of their steel saws without a reduction in machine performance; Invest in automation technology for operational synergy.

Although new equipment and technologies are introduced into the steel processing industry all the time, one significant change in recent years has been the introduction of automation technologies which help streamline production processes. An investment in automation can help steel facilities to turbo-charge their productivity.

Investment in automation will maximise productivity

Automation technology is perfect for coordinating and integrating steel processing, allowing for entire production optimisation. For example, our latest automatic sawing technology enables software to adjust miter positioning, clamps, blade guides and feed as well as automatically remove trim cuts, without operator intervention.



Automated processes help improve the quality and accuracy of cuts, free up operator time and avoid common operator errors that result in timely reworks. Automation software can identify where bottlenecks within the process are likely to occur and allow operators to modify programmable sequences to increase efficiency at every stage of production.

Carefully select blade types and speeds for quality cuts

Maximum sawing productivity cannot be achieved without the right blade selection. At Ficep, we've tried and tested many blades over the years to understand what type of blades work best for specific requirements. Speed & feed is also a key factor in maximising blade performance and improving productivity. If a saw isn't performing as well as it should be, or the wrong blade has been selected, then fabricators are likely to find themselves with increased frequency of blade failures and rework - slowing down production drastically.

What to consider when selecting steel saw blades

Different materials require different blade and tooth pitches. If the tooth pitch isn't appropriate, an excess of chips can become trapped within the blade leading to a poor quality cut.

The wrong blade can deteriorate quickly.

Blunt blades not only lead to poor quality cuts but also heat build-up which can cause blade/machine failure.

Incorrect speeds and feed for a specific requirement can also impact cutting quality. Slight adjustments to this can really improve performance.

Pick a blade which suits the machine production requirements. Some blades, for example, are designed to be better suited for constant production due to quieter cutting and made of materials which prevent the likelihood of heat and wear damage.

Although these are our top recommendations for improving sawing productivity, we regularly work with customers to provide technical support and advice with their individual situations, as we know all steel processors and fabricators have different needs and budgets. Get in touch with us to find out how we can help you maximise your productivity.

Ficep UK was established in 2000 by MD Mark Jones. Today Ficep is based on Wakefield's Europort Estate in a 1,600 sqm facility. It has a large service department that manages all UK requests for parts, tooling and consumables as well as boasting a large team of engineers located around the UK.

Ficep UK Ltd
Tel: 01924 223530
Email: sales@ficep.co.uk
www.ficep.co.uk

MACH 2022 – BE PART OF IT...

THE UK'S NATIONAL EVENT FOR INSPIRING, INNOVATING AND **CONNECTING** MANUFACTURING



Taking place from **4-8 April 2022**, MACH will be the event to connect the world of manufacturing technologies and be the destination of choice for manufacturing engineers, decision makers, buyers and specifiers looking to discover new technology, adopt and invest in the digital revolution.

TO BOOK YOUR SPACE AT MACH 2022 VISIT
machexhibition.com



The Manufacturing Technologies
Association

Sponsored by



LLOYDS BANK

MACH
4-8 April **2022**
NEC Birmingham UK
machexhibition.com



ANODISED ALUMINIUM
1508191327475

Powerful. Robust. Reliable.

**Minimum
£1,500**

part exchange allowance for any old Laser Marker or Dot Peen machine when purchasing any New TYKMA Electro Laser Marking Machine from Colchester Machine Tool Solutions.

(T&C's apply, UK Only).

Industrial laser marking systems.

In a society where traceability is paramount, our range of permanent laser marking systems provide the perfect solution.

- The range includes desktop systems up to expansive working envelopes
- Perfect-fit solution for any application, material, surface, and composition
- Cost effective, durable and easy to operate
- Bespoke builds and applications available



**CONTACT US ON +44 (0) 1924 415000
OR INFO@COLCHESTER.CO.UK**