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“ This brings true mobile robot automation within the reach of traditional sub-contract engineering businesses. ”

N Atherton
Nigel Atherton
XYZ MANAGING DIRECTOR



XYZ ROBO-TEND on a Turning Centre

The newly updated XYZ 2019 Machine Tool

XYZ ProtoTRAK® Mills, 2-OP CNC and XYZ ProTURN® Lathes

XYZ VMCs and High Speed VMCs

XYZ Mobile Robotic Automation



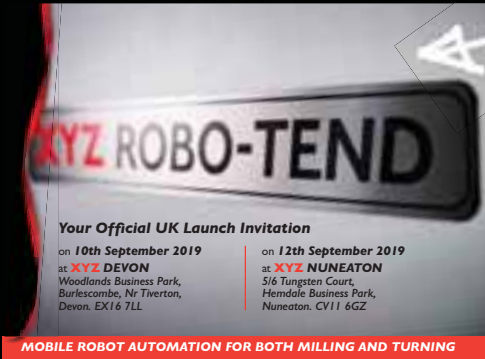
All XYZ CNC machine tools come with free training, full 12 month warranty,

XYZ
Machine Tools

To learn more please call **01823 674200**

MACHINE TOOL DEMOS ARE AVAILABLE AT ANY OF THE XYZ UK

Join us for either of the official UK launches



Call us today to receive your exclusive UK launch invitation on 10th Sept at **XYZ DEVON** and 12th Sept at **XYZ NUNEATON**

Please note places at both venues are limited so apply early to avoid any disappointment.

Morning session

Arrive for coffee & bacon butties at 9.00 am.

9.30 am presentations from the **XYZ ROBO-TEND** development team.



Nigel Atherton -
XYZ Managing Director.

*I believe that once you've understood the hard economics behind the **XYZ ROBO-TEND** you will probably order more than one.*



Paul Stout -
Managing Director Adelphi Automation

*The **XYZ ROBO-TEND** journey, from concept to design and manufacture.*

Demonstration 10.00 am.

Question and answers 10.30 am.

Hands on demonstrations 11.00 am.

Roll up your sleeves and have a go yourself.

Load it, program it and see how easy modern mobile automation can be.



See you there

Range, each one the very best in its class.

XYZ 5 Axis and 4+1 UMCs



XYZ Turning Centres



XYZ Extra Large VMCs and Oil Country Lathes



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The **Vturn-S26** is the latest to join the family.

At 900kg heavier than its predecessor, the S26's 30° one piece slant bed ensures less coolant leakage and the spindle motor's shorter belts mean less vibration, higher cutting accuracy, reduced belt tension and longer service life for bearings.

A BMT-65 milling turret and new 10.4" Fanuc® control come as standard. New, improved guarding completes the specification.

The **Vturn-S26CM** model offers a C-axis turret upgrade with Mitsubishi servo driven turret and Fanuc® aiS22/6000 4000 or 6000rpm motor.

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- SAWING & CUTTING OFF

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Actively shaping the digital future

High technology machines with consistent connectivity, my DMG MORI Customer Portal, customer-oriented automation solutions and additive manufacturing are all featured by DMG MORI at EMO 2019.

Automation and digitisation in Hall 2 will include 27 automated exhibits, among them modular and robotic workpiece handling and pallet handling up to autonomous transport systems. Integrated digitisation will comprise intelligent services and applications with integral connectivity for networked production. Over 30 digital innovations will include new CELOS APPs, extensive DMG MORI Monitoring, efficient production planning and control as well as web-based maintenance optimisation; the my DMG MORI unique customer portal for more transparency, quality, and speed in all service processes; additive manufacturing - open process chain from simulation and build through to service and consulting; DMG MORI Technology Excellence - process solutions including certification through to green field projects.



Creating the digital future actively

DMG MORI will be showcasing automation and digitisation solutions live in Hall 2 at this year's EMO in Hannover. DMG MORI is the global leader in 42 technology sectors and the foremost manufacturer of metal cutting machine tools worldwide. It underscores this position at this year's EMO with ground-breaking developments for the production of the future.

From 16th to 21st September 2019, DMG MORI will use the industry's leading trade fair to present the latest innovations in the fields of automation and integrated digitisation in Hall 2 at the North entrance will be presented with automation. Where digitisation is concerned, DMG MORI will be focusing on the topic of connectivity as the basis for all future-oriented products and technologies. This connectivity includes all machines, all protocols, and works with all platforms and products. The latest CELOS version update and automation solutions, among them modular and robotic workpiece handling as well as pallet handling solutions, round off the exhibits. The new customer portal my DMG MORI will also be presented.

The DMG MORI Technology Excellence Centres for the key aerospace, automotive, die & mould and medical industries complete DMG MORI's trade fair presence.

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EMO 2019: Hall 2, Stand A21/A01

Northern Manufacturing & Electronics returns to Manchester

Northern Manufacturing & Electronics makes a welcome return to EventCity, Manchester from October 2nd to 3rd

Following a similar format to the ever-popular Southern Manufacturing Show, the wide-ranging portfolio of components, production hardware and engineering services being showcased makes it an extremely useful event for designers, procurement professionals and engineers from across the North. The previous show attracted over 3,000 visitors from a wide range of industries.

Over 250 companies are expected to take part in the event, ranging from major global brands to highly-skilled local engineering firms with specialist knowledge in areas such as automotive, aerospace and process engineering. For the first time this year, the event is being supported by the two key regional aerospace and automotive business organisations, the North West Aerospace Alliance (NWAA) and the Northern Automotive Alliance (NAA), plus several other important national organisations, such as Composites UK, the SMMT, the GTMA, the BGA and the CBM. Each brings an abundance of industry knowledge and experience to the event, providing both a highly accessible industry resource and knowledge-sharing opportunities via the show's extensive free technical seminar programme.

Northern Manufacturing & Electronics presents a great opportunity to see the latest machinery being demonstrated live, from 5-axis machining to 3D printing. Major national vendors returning for 2019 include XYZ Machine Tools, Haas Automation, Laser Lines, Tri-tech 3D and HPC Laser. Other top suppliers include Middlesbrough-based Dynamic Machine Tools and EDM specialists Makrep EDM Solutions.

Component vendors exhibiting include advanced manufacturing specialists igus UK, Luso Electronics, Fischer Connectors, LCD display suppliers Crystal Tech Electronics, membrane keyboards from Calman Technology and high-tech sensors and transducers from ESI Technology.

Production hardware on show includes marking, printing and traceability systems from Brady and Dakota Integrated



Solutions, workspace storage from Bott, metrology systems from FARO, Zeiss and Nikon Metrology and manufacturing software from CIM Software, ANSYS Spaceclaim, 123-Insight and Redthorn. Notable first-time exhibitors at Northern Manufacturing 2019 include industrial power transmission specialists Ringspann UK, part of the global Ringspann GmbH group, Eurotherm from Schneider Electric and China's Bodor Laser, with its range of engraving, cutting and marking machines.

FARO UK will have a wide range of cutting-edge technology on display at the exhibition. Amongst other advanced products, its staff will be demonstrating the new FARO 8-axis design ScanArm 2.5C. This is the only integrated remote axis portable 3D visualisation and rendering software that is capable of measuring in full colour for 3D modelling, reverse engineering and CAD-based design applications across the product lifecycle management (PLM) process.

The company will also be demonstrating the FARO Tracer range. These ingenious Laser Projectors are able to accurately project a laser outline onto a surface or object, providing a virtual template which operators and assemblers can use to quickly and accurately position components.

Workplace storage equipment from Bott to be demonstrated at Northern 2019 includes the heavy-duty Cubio range. The strong, durable and reliable Cubio products

can be combined to create tailored and versatile working solutions which can be seamlessly expanded as business needs change.

The Cubio range can be integrated with the company's wide range of CNC and tool storage options, incorporating Lean, 5S and Six Sigma initiatives, promoting efficiency and productivity in the workplace.

Temperature control, process control, measurement and data recording solutions and services, available from Eurotherm by Schneider Electric, will take centre stage at the firm's debut at the exhibition.

All its solutions are designed for easy operation and reduced engineering time. Control algorithms, recording and data management strategies add value to industrial processes, improving quality, reducing waste and ensuring data is kept safe for as long as it is needed.

Entry to Northern Manufacturing & Electronics 2019 is free and there's on-site free parking for 3,000 cars, with easy access from the motorway network. EventCity is also very accessible by public transport from central Manchester. To register online for complimentary tickets and to keep up with the latest news from the show visit

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Driving innovation and digitalisation in manufacturing

Sandvik Coromant will use EMO to present new digital solutions for machining processes and efficient connected manufacturing. True to the company's mantra of 'Shaping the future together', innovations around digital machining and Industry 4.0 are set to be the focus of its stand.

Of course, hardware in the shape of the latest cutting tool and tooling innovations will also be in the spotlight. Chief among the latest products making the transition from development lab to commercial availability will be a revolutionary, easy-to-use solution for efficient and reliable drilling. This breakthrough tool offers unprecedented performance at low cost, while simultaneously delivering consistent hole diameters at lower noise levels than existing generation products. The drill will be officially launched at the booth, where visitors will be the first to discover more.

The new-generation lightweight CoroMill® 390 milling cutter, produced by additive manufacturing, is no less innovative. Combined with Silent Tools™ adaptors the cutter reduces, thanks to its lightweight construction, vibration in long-overhang milling, thus increasing stability and productivity.

Beyond the tooling being showcased at EMO, the company's digital solutions enable the interconnection of design, planning and metal cutting, as well as effective process analysis and advancements. Various CoroPlus® digital machining solutions from Sandvik Coromant offer different ways to integrate manufacturing intelligence into a machine shop, resulting in optimised processes and fact-based improvement decisions. For



example, the market ready Coromant Capto® DTH Plus, a solution that enables the predictive maintenance of Coromant Capto driven toolholders, will be on display.

One of the highlights at the booth will be the upgraded CoroPlus ToolPath software for PrimeTurning™, the recently introduced all-directional turning concept from Sandvik Coromant that is unlike anything seen before. CoroPlus ToolPath software is designed to support manufacturers who use PrimeTurning technology in accelerating their operations and planning processes. In addition, the software now provides the option to import CAD models and create 3D simulations with collision detection.

Following this holistic approach, Sandvik Coromant will also present a new solution that enables sensor-equipped tools, such as the Silent Tools™ Plus solution, to send data directly to the machine. In this way, machining processes can be monitored and controlled in real time.

Another offer from the CoroPlus portfolio is the CoroPlus ToolGuide, which visitors to the Sandvik Coromant booth can test out for themselves. This comprehensive solution provides precise tool recommendations and cutting data based on customer specifics, such as workpiece material and application type. The latest addition includes an update with recommendations for boring tools and cutting data.

The newest addition to the Sandvik Coromant collection of apps is the Tool Wear Analyser app. Whenever a manufacturer is unsure of the cause of an unexpected tool wear, they can simply use a phone to take a picture of the wear and easily compare it with wear types in a

repository of images. The app also allows the user to measure the wear and save it or share it with a colleague. The app works best if you use a microscope attached to the phone.

Visitors to the company's booth at EMO will be able to discuss the many innovations on display with 50 Sandvik Coromant specialists from around the world. In order to find the right expert, visitors will have two touchscreens at their disposal that will guide them accordingly. Those intended to visit can also make appointments with the experts in advance by using a form, which will be available from mid-June, on the Sandvik Coromant website. In addition, the 18-strong international service team will support exhibitors before and during EMO with comprehensive services for all aspects of machine equipment. The team will be available at Pavilion P35 one week before the start of the show.

In order to develop the best possible investment decision support together with its customers, Sandvik Coromant takes an integrated view of the manufacturing process cooperating with various machine manufacturers as a result. EMO visitors will therefore not only find Sandvik Coromant solutions at the company's booth, but on the stands of numerous machine manufacturers around the show.

Sandvik Coromant
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www.sandvik.coromant.com/uk

Hall 5, Stand B06




EMO
Hannover
16-21·9·2019



JOIN US ON
STAND B 52
HALL 27
16-21 SEPTEMBER

DISCOVER MORE AT **EMO**

EMO 2019 will mark a new age of discovery for machine users, with 27 state-of-the-art Mazak machines, including seven world and two European debuts, all in live cutting action.

Productivity will be our key theme, with 15 machines equipped with integrated automation, along with demonstrations of our iSMART factory and IoT solutions.

Begin your journey of discovery with Mazak at EMO 2019.

DISCOVER **MORE** WITH MAZAK™

www.mazakeu.co.uk/EMO2019

Mazak
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The sequel to a successful concept

What does the automotive future hold? This could be one way to briefly summarise the motto of the EMAG Group's 2019 Technology Forum held at its headquarters this past May.

The technology forum is traditionally held in the same year as the EMO trade fair and offers visitors a preview of what EMAG will present at the EMO. This year, it provided a comprehensive outlook on what suppliers and manufacturers have to prepare for in the coming decade. Here, high-calibre research experts reported on how electromobility and digitalisation will change mobility. At the same time, visitors were able to catch up on the latest manufacturing systems and machines at numerous thematic booths. According to the visitor survey, this concept really hit the mark. That is why there will be a sequel to this successful concept at EMO.

Solving problems requires the right tools and the corresponding know-how. One is useless without the other and that is why you will see both at the EMAG stand in Hannover. The latest machine tools and automation solutions will celebrate their world premiere at the show.

In the themed areas, which will be entirely dedicated to the production of specific groups of components, visitors will find answers to their questions and, if they so desire, they can also find the matching manufacturing solution. The offer ranges from single-machine solutions all the way to fully automatic manufacturing lines that are delivered to customers turnkey ready for operation, including the entire development process.

Electromobility: Is everything going to change now?

One of the mega topics at the EMAG Group's technology forum was



electromobility and its implications for manufacturers and suppliers. Visitors gained the following insight: Yes, changes are about to come, but at a much slower pace than expected. So, should we carry on as usual? No, if ever, this is the right time to position yourself. Which components will be required in the future? What manufacturing solutions are available? What investments do I have to expect? EMO visitors will find answers to these questions on the EMAG Group's stand. You will not only come across new components, things such as differentials or brake discs will still be required regardless of the drive technology implemented. For all these components and many more, EMAG will be showing the matching solutions and, beyond that, reveal major insights from the 2019 Technology Forum.



Smart technologies driving tomorrow's production

Networking will be another major topic for the EMAG Group at EMO. The ServicePlus app for smartphones and tablets ensures optimal networking between customers and the EMAG Service department. Simply scan a QR code on the machine using the app and you will be able to directly communicate with the Service department, request a service callback or directly initiate a spare parts inquiry. The benefits are obvious: On the one hand, service technicians immediately know which machine is concerned and its exact configuration. On the other hand, users automatically speak to the right contact. The entire communication of the EMAG ServicePlus app takes place on an EMAG-owned server and thus guarantees the highest security standards.

Ongoing developments of the



EMAG Group's Industry 4.0 applications are intended to manage the networking between EMAG machines. In this context, EMAG will show how data can be visualised. Using a model, visitors will be able to gain their own impression of how the data flows. All you need to do is to visit the booth and experience it for yourself.

An entirely different type of networking, namely between 17 project partners and the German machine tool builders' association VDW, has led to the development of umati (universal machine tool interface), which will be introduced for the first time at EMO. A demonstration of the interface standard will be shown and professional visitors will be able to get first-hand information about the project. You can also experience how its implementation works at EMAG at the Industry 4.0 thematic stand.

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Hall 17, Stand C29

A bonus year

Up to one year. That's how much you can cut payback time on your new machine investment, by approaching it in the right way. To fully maximize return on investment, it is crucial to focus on getting everything right from the start.

At Sandvik Coromant, we know that collaboration is the foundation for successful manufacturing. We help you define your current needs as well as identify new opportunities that your machine investment can bring.

Let's work together to pay off your machine investment faster.



Tools and technologies



Partnership



Digital machining

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SANDVIK
Coromant

Automation and digitisation

DMG MORI will use EMO 2019 to present the latest innovations in the fields of automation, integrated digitisation and additive manufacturing. 27 its 45 exhibits, in Hall 2 at the North entrance, will be presented with automation solutions. Where digitisation is concerned, the company will be focusing on the topic of connectivity as the basis for all future-oriented products and technologies. The connectivity includes all machines, all protocols, and works with all platforms and products. The latest CELOS version update and automation solutions, among them modular and robotic workpiece handling as well as pallet handling solutions, round off the exhibits. The new customer portal my DMG MORI will also be presented. The DMG MORI technology excellence centres for its key industries complete DMG MORI's trade fair presence.

Automated value creation with all DMG MORI machines

The WH CELL and WH FLEX are just two of the 27 automation solutions that DMG MORI will be showcasing at EMO. After the successful start of DMG MORI HEITEC at the end of 2017, several dozen projects are being realised. In future, DMG MORI will offer all the machine tools in its portfolio with automation solutions, in order to meet the massive and steadily increasing demand.

Another highlight, among the numerous automation solutions, is the DMU 65 monoBLOCK with a new Automated Guided Vehicle (AGV), a stand-alone system for pallet automation. This innovative solution offers a flexible automation layout with free access to the machine and an intelligent safety concept for human-machine collaboration.



Intelligent services and applications

For DMG MORI, connectivity constitutes one of the core features on the path to the digital factory, because only open interfaces and standardised communication protocols can ensure future-oriented end-to-end integration and interoperability of machines and processes. That is why, in future, all new machines from DMG MORI will be connectivity compliant in their standard versions at no extra cost. The new IIoT interface supports both the standard MQTT and MTconnect protocols as well as the new universal machine and tool interface (umat) standard based on OPC UA.



DMG MORI will be presenting the new CELOS APPs in line with its focus on integrated connectivity. The new APPLICATION CONNECTOR, for example, enables the operation of all web-based applications directly via CELOS. So direct interaction with MES or ERP systems is possible as is access to specialised customer applications. The new JOB IMPORT feature enables orders to be imported directly from MES or ERP into the CELOS JOB MANAGER.

Maximum customer benefit is also the focus of the new digital customer portal my DMG MORI. DMG MORI brings together its initiatives "Integrated Digitisation", "First Quality" and "Customer First". The result is a unique online portal for interactive cooperation between DMG MORI and its customers.

Additive manufacturing

Four complete process chains for additive manufacturing with powder bed and powder nozzle technology make DMG

MORI a global leader in additive manufacturing. The powder bed machines in the LASERTEC SLM series are designed for productive manufacture of complex workpieces. The precision of selective laser melting enables the realisation of complex geometries that would be impossible to produce with conventional methods. The series includes the successful LASERTEC 30 SLM 2nd Generation with a 300 x 300 x 300 mm build volume and the LASERTEC 12 SLM, which owes its unique accuracy to its focus diameter of just 35 µm. The fast powder change using the rePLUG powder modules takes less than two hours. The

OPTOMET software enables automatic calculation of all process parameters within days instead of months. Layer thicknesses, for example, can be calculated freely, which in turn enables a faster and therefore more productive build.

As a powder nozzle machine developed primarily for larger workpieces of up to ø 500 x 400 mm and weights of 600 kg, the LASERTEC 65 3D hybrid unites the build of workpieces using laser deposition welding and 5-axis simultaneous milling operations in a single setup. This hybrid approach enables the production of highly complex geometries in finished-part quality as well as the use of different materials in one workpiece.

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Hall 2, Stand A21/A01



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EMO
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16-21·9·2019

Stand A92, Hall 13

Team cutting tools from CERATIZIT

A complete provider of machining solutions at EMO

Visitors to EMO will discover that there is a lot going on within the CERATIZIT Group. The recently created Team Cutting Tools will offer even more comprehensive and complete machining solutions that will fulfil every customers' need. That reason alone fully justifies a visit to its stand, but in addition there will be numerous impressive innovations and live product launches.

With the world-leading flagship brands of Cutting Solutions by CERATIZIT, KOMET, WNT and KLENK making up Team Cutting Tools, the machining sector has a genuine complete provider in the shape of the CERATIZIT Group. These famous names, which are known all over the world, focus on what they do best, this being indexable insert tools, hole production, solid carbide and HSS rotating tools, tool/workholding and aerospace applications, respectively. These highly specialised product brands provide access to the best tooling systems available; Team Cutting Tools is able to deliver the perfect solution for every machining requirement. These machining solutions, over 100,000 items, can be found in the new complete catalogue, which was published in July. Users can also visit the new online shop at **cuttingtools.ceratizit.com** to view the full range and access the complete programme.

Expert solutions for sectors

Besides having one of the most comprehensive standard portfolios, Team Cutting Tools also offers sector-specific solutions. Visitors to EMO can experience its sector expertise first-hand. Interactive presentation spaces are the perfect platform for showing off core skills in the automotive, aerospace, energy technology and heavy machining sectors. One of the highlights, making its world première at the fair, is additive manufacturing tools for the machining of E-motors.



The future of turning

An exhibition wouldn't be an exhibition fair without innovations. The High Dynamic Turning and FreeTurn tools from CERATIZIT have already won several international awards and will undoubtedly be among the contenders for the most innovative products



at EMO. The new CERATIZIT turning process has been the talk of the town since its launch. There's scarcely a technical journal that has not published an article about it, scarcely a user who's not discussed it with colleagues. And it's not surprising, since the new turning technology offers huge potential for machining companies. With the help of the milling spindle on a multi-tasking turn/mill centre, the 360° rotation clearance angle allows the tool to be positioned at any angle relative to the workpiece. Among the many advantages are higher feedrates and a longer service life, together with shorter tool changing times and fewer tools. All of which sounds fine in theory, but does it actually work in

practice? Team Cutting Tools will provide the answer with a live demonstration on a turn-mill centre on the CERATIZIT stand. EMO will also see the unveiling of the first standard range of FreeTurn tools.

Experience Industry 4.0 solutions

CERATIZIT sets course for the digital machining future. A central aspect of this is the ToolScope monitoring and assistance system. The system permanently stores the signals that are generated by the machine during the manufacturing process. This information is visualised and used to monitor and supervise the machine controller. Special, patented statistical control processes are then employed to depict the condition of the tool and the machine. This not only enables targeted wear and fracture monitoring to be carried out, it also greatly reduces manufacturing errors. Visitors to the innovation centre on the stand will also discover the potential offered by the sensory "spike" tool holder from pro-micron and how One Identity can be used to clearly identify tools.



Impressive service

In addition to tool systems, digitisation solutions and innovations, CERATIZIT will also be presenting its service offering, which plays a key role within the company. From project design for customers through to technical training and the 24/7 supply of tools, CERATIZIT offers numerous additional services that companies in the metalworking and processing industries can find out about on the stand.

CERATIZIT UK & IRELAND

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Hall 4, Stand D68 - Hall 5, Stand B70

Very BIG and beautifully engineered



Machine shown without additional conveyor

WE GO BIGGER! CHECK OUT THE DCX RANGE

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Spindle/RPM	8/10/12,000	8/10/12,000	6/8/12,000	6/10,000	6/10,000	6/10,000
Taper (CAT or BT)	40 or 50	40 or 50	40 or 50	50	50	50
ATC No.	30/32/40/96	32/40/96	40	40	40	40

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EMO attendance targets European growth for XYZ Machine Tools

XYZ Machine Tools will be displaying a selection of its extensive range of mills, lathes, turning centres and machining centres at the upcoming EMO exhibition. Taking centre stage on its stand will be the latest versions of its leading ProtoTRAK mills and ProTURN lathes, the RMX 3500 and RLX 425. These machines feature the latest



generation of ProtoTRAK control, the RX. This new control retains all the features that make ProtoTRAK popular with 1,000's of customers, but with the addition of a host of new features and benefits. Central to the new control is its 15.6" touchscreen that puts all of the existing advantages, along with more machining information, at the users' fingertips. Combining the



touchscreen with DXF capability removes any requirement for a mouse to interact with editing of programs. The touchscreen also adds the familiar actions of pinch to zoom, twist to rotate making it far more intuitive and allows closer inspection of the part program prior to machining. The new

control will be demonstrated live on the stand to highlight its ease-of-use and time saving benefits.

A third ProtoTRAK controlled machine, the XZ 2-OP, will also be exhibited. This innovative vertical machining centre is designed to be portable, allowing it to be relocated anywhere in the factory. This mobility provides customers with the opportunity to create manufacturing cells and free-up valuable spindle time on more expensive machine tools and maximise spindle up time. The XYZ 2-OP features a footprint of just 775 x 1,380 x 2,520 mm and can be moved using a conventional pallet truck. For such a compact machine, it remains highly capable with axis travels of 355 x 305 x 455 mm (XYZ) and a table size of 457 x 381 mm. An eight station toolchanger is supported by a 3 HP 6000 revs/min BT 30 spindle. Put simply, the XYZ 2-OP increases productivity at a relatively low annual cost and maximises expensive labour by creating multi-tasking cellular production.

From its turning and machining centre ranges, XYZ Machine Tools will show the CT65 Compact Turn lathe and 750 LR machining centre. These machines are controlled by the Siemens 828D control, with the CT 65 having the ShopTurn software activated as standard, ShopMill is an option on the 750 LR. The ease-of-use of the conversational programming system on these controls have made them a firm favourite among subcontract machinists looking for efficient machine operation. The XYZ CT 65 features a 65 mm bar capacity through the spindle and a capability to swing up to 400 mm diameter with a maximum turned diameter of 220 mm and maximum turned length of 260 mm. Tools



are held in a 12-position Sauter 'German' 30 VDI turret and power is provided by a 23 HP/17kW, 4,500 revs/min spindle. Construction is in the form of a solid Meehanite ribbed cast base, combined with hardened and ground box slideways for maximum rigidity and performance.

The final machine on show at EMO is the XYZ 750 LR vertical machining centre. The LR range of machines make use of the latest linear rail technology for axis travels. These machines sit alongside and complement the heavy-duty range of box slideway machines. The use of linear rail technology maximises the improvements in digital motion technology and opens opportunities for companies to take a lower cost route to full machining centre useage. The LR machines feature the same solid cast construction as the heavy-duty machines HD machines, which have all undergone Finite Element Analysis to ensure maximum rigidity. The XYZ 750 LR is the mid-range machine and benefits from axis travels of 750 x 440 x 500 mm with a table measuring 830 x 410 mm. Feedrates up to 20 m/min are possible supported by a BT40 18 HP/13 kW spindle. A 20-position carousel, arm-type option, provides a toolchange time of 2.5 seconds tool-to-tool.

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Hall 27, Stand A10



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FANUC to champion robot integration at EMO with a series of new launches

FANUC will be sharing the knowledge garnered from over 590,000 industrial robot installations at EMO 2019, with a series of on-stand demonstrations profiling the easy integration of robots into a wide range of industrial applications.

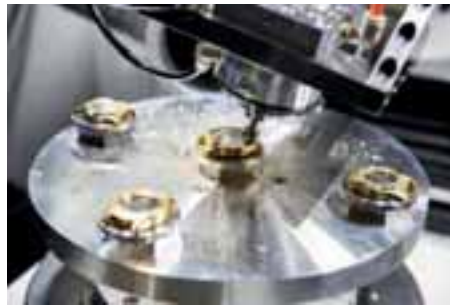
It has never been easier to automate a processing machine with a robot, to ultimately improve productivity and efficiency. To help streamline this process, however, FANUC will be showcasing its new QSSR (Quick and Simple Start-up of Robotisation) package at EMO. The QSSR package helps simplify the connection of a robot to a machine tool, as well as the setup and subsequent operation. FANUC has created a standard interface for QSSR and visitors to the stand will be able to see the package in action across a number of automated cells, including those featuring both FANUC ROBODRILL and ROBOCUT processing machines.

FANUC will also debut a number of new industrial robots at the show, including the M-10iD/12 and M-20iD/25 robots.



The M-10iD will be used on a demo cell for loading and unloading, while the M-20iD will be used to support a deburring cell producing parts which will be used to manufacture future FANUC robots. Both robots benefit from exceptionally high axis speeds, while a rigid construction allows for excellent positioning and highly accurate repeatability. Both displays are supplemented by automated washing robot cells.

To demonstrate its expertise in smaller handling and machine tending tasks in narrow workspaces, FANUC will also be running a small washing cell complete with LR Mate 200iD/7WP robot. While LR Mate 200iD/7WP is rated to IP67 as standard,



the EMO model will feature the optional IP69K rating.

Finally, the FANUC stand will also feature a new education cell which will include a new ER-4iA robot. The education cell is an excellent training tool for users new to industrial robots and reaffirms FANUC's commitment to training, as evidenced by its role as a partner of the World Skills organisation at this year's World Robot Programming Championships.

With a total of seven different applications running across the FANUC stand, its CR series of collaborative robots will be a major attraction for visitors. The line-up will include every model in the CR-series, from the smallest CR-4iA to the CR-35iA. A number of collaborative robots will be operating in conjunction with mobile platforms with a standardised interface.

Another innovative programming function FANUC will be exhibiting via its CR series is the Hand Guidance Function. Here, robots are programmed by manually moving the Tool Centre Point (TCP) control, with the operator entering the required path or target points at the touch of a button. The Hand Guidance Function is suitable for a variety of simple tasks and the easy attachment unit can be simply mounted on the wrist of the robot. For more complex tasks, the operator can program the robot using the handheld iPendant or the iRProgrammer, a programming interface for smart devices.

For MTBs and system integrators, a new software function will allow users to program and control the robot supporting a piece of production machinery via the machine's CNC, without the need to use a robot control pendant. FANUC's EMO stand will also feature a cell controlled via Siemens PLC.



FANUC has also further simplified the simulation of programmed between robot and machine with a new assistance function in its ROBOGUIDE software. This new function enables a synchronised representation of ROBOGUIDE for the robot movement and CNC GUIDE for the program simulation of the machine.

At its state-of-the-art headquarters in Ansty Park, Coventry, FANUC UK brings together world-leading capabilities in industrial robots, machine tools and plastic injection moulding machines to facilitate the complete integration of factory automation systems for UK manufacturers.

FANUC UK works in partnership with FANUC Europe Corporation to provide a range of customer support services, including sales, product support, parts, repairs, and training, as well as development of bespoke engineering systems. FANUC UK is a subsidiary of FANUC Europe Corporation and employs approximately 107 staff.

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Hall 9, Stand A50/F32 - Hall 25, Stand A01

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Sodick brings best-of-breed EDM, milling and injection moulding to EMO

With its largest ever stand at EMO, Sodick is once again bringing best-of-breed technology to the exhibition, with European debuts for the ACL400P super-high accuracy wire EDM, the ALC800G large capacity premium wire machine, the new UH650L high-speed milling machine and the MS100 plastic injection moulding machine.



These newcomers are accompanied on the stand by two of Sodick's most advanced EDM "big beasts", the AG80L die sink and the ALC800G wire machine, while automation options are being demonstrated by the AG60L die sinker with robot and the OPM250L additive manufacturing machine.

ALC-P machines incorporate, as standard, an inverter-type dielectric chiller which monitors and maintains the dielectric temperature to within +/-1 degree, minimising the thermal effect inside the work-area. An additional thermal sensor is installed inside the work-tank for even more accurate temperature control.

The CNC controller incorporates two-dimensional pitch compensating software which automatically compensates pitch error in positioning every square of 10 x 10 mm.

The ALC series is Sodick's premium wire-cut EDM line, offering advanced cutting speed, accuracy and surface finish and the ALC800G is the largest standard machine in the range with a 1,250 x 1,020 mm work-tank and a maximum workpiece weight of 3,000 kg.

Incorporating the latest digital innovations in generator technologies and

the use of advanced electrode materials, the ALC range provides major advances in cutting speed, accuracy and surface finish, made possible through Sodick's in-house development and manufacture of all critical technologies, including linear motors, discharge power supply, NC unit, motion controller and ceramics.

The superb performance of these machines is based on Sodick's "Smart Pulse & Smart Linear" concept in which the Smart Pulse Generator dramatically reduces the number of cuts necessary to achieve the required accuracy and surface finish compared with conventional machines, which translates directly into increased productivity.

With a reputation as the fastest high precision die sink EDM for workpieces up to 2,000 kg, the AG80L can tackle really large tasks rapidly and with ease.

The incorporation of Sodick's in-house developed linear motor drive system provides excellent long-term performance, in fact so confident is Sodick in the accuracy of its machines that it offers a 10-year positioning accuracy guarantee on all these machines.

Energy efficiency is excellent too, compared with conventional EDMs, AG machines can reduce average energy consumption by up to 60 percent.

The AG80L offers Improved ease of operation, with extended X and Y axes, as well as a smaller installation footprint, while its automatic three-sided rise and fall tank makes it easy to integrate automation through the positioning of a robot beside the machine.

The AG60L, one of Sodick's most popular die sink machines for the precision machining of large components, combines high speed with high cutting accuracy; featuring Sodick's linear drive technology and simplified control mechanisms to ensure the fastest possible servo response and optimal spark gaps at all times.

The three-sided automatic rise and fall work-tank makes the machine ideally suited for automation, hence its appearance at EMO with the user-friendly, small footprint Erowa Robot Compact 80, which can transfer loads of up to 80 kg.



Making its European debut at EMO, the UH650L represents Sodick's latest generation of ultra-high-speed vertical machining centres with linear drives in all axes, technology based on the company's years of experience manufacturing over 53,000 linear machines.

Unlike the traditional machining method of separately executing rough and fine milling, Sodick's new technology combines both machining passes in the one operating mode, with a rapidly rotating and traversing small diameter tool cutting to fine depths.

Another European debut at EMO is Sodick's high-accuracy injection moulding



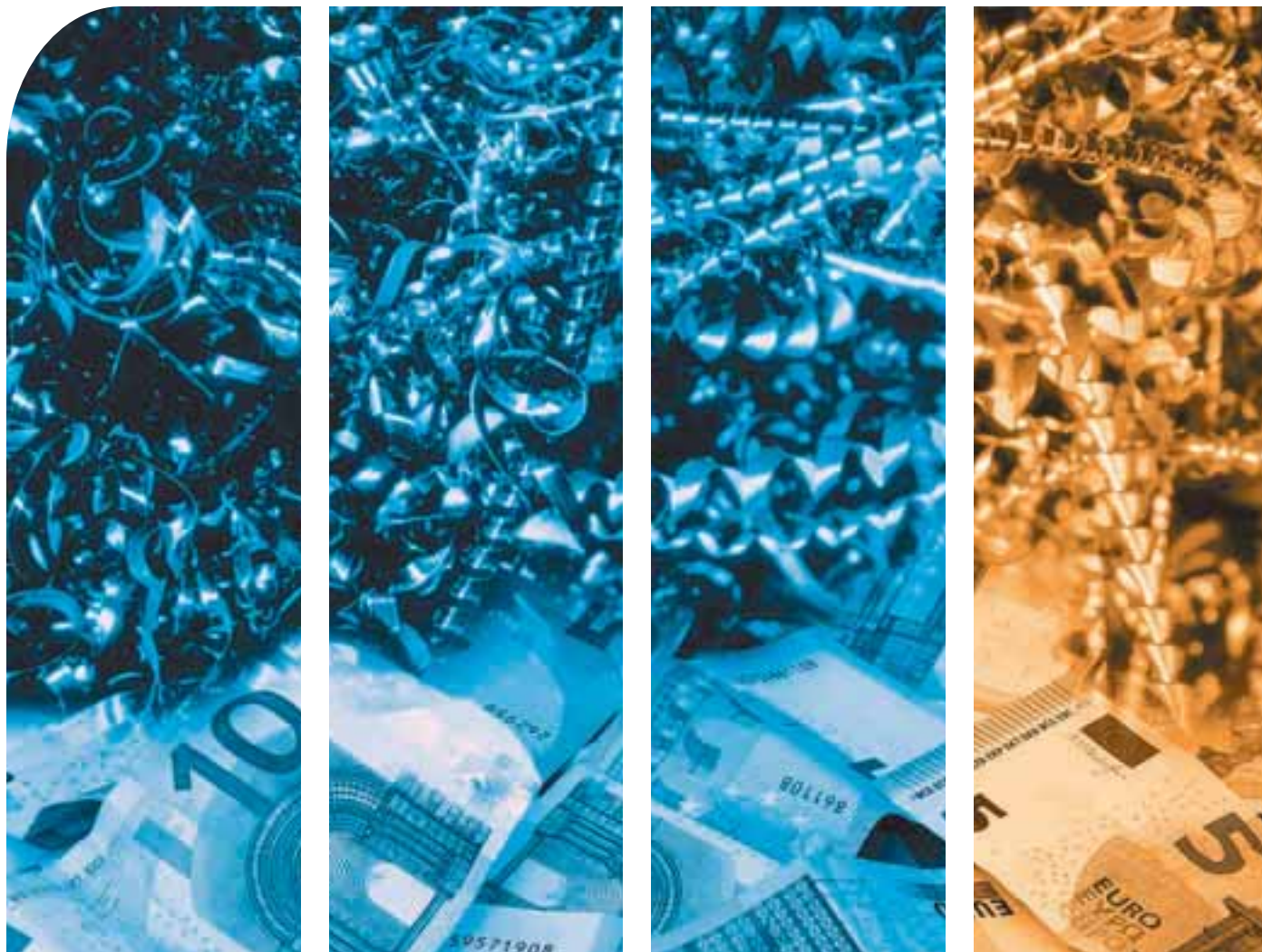
machine, the MS100. The launch of the MS Series here marks Sodick Europe's move into the high-technology plastic injection moulding sector.

The MS range of machines, from the compact MS50 to the larger MS200, all benefit from Sodick's V-LINE servo motor technology, which provides process advances including stability of the resin melt condition, stability of the resin density and stability of filling volume, which together create excellent moulding conditions.

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Hall 13, Stand A92

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Smart technologies are driving tomorrow's production

Visitors to Renishaw's stands in four halls at EMO will be able to discover the technology leader's diverse portfolio of technologies for smart manufacturing and witness the benefits of Industry 4.0 in action, including process automation and innovations in collecting and managing actionable data about devices, processes and parts.

The 'Metrology and Quality Assurance zone', located within Hall 6, will be home to Renishaw's largest stand. Here, visitors will be able to see its award-winning REVO® 5-axis measurement system in action and discover how it delivers high performance multi-dimensional inspection, including surface finish analysis. To showcase the REVO system's latest blade measurement capabilities, there will be a demonstration of an aerospace component being inspected on a Coordinate Measuring Machine (CMM). Visitors will discover how the REVO system automates the part inspection process on a single, multi-sensor platform and will learn how it is being used across industries where the highly accurate, but rapid, measurement of different forms and features are essential requirements.

Visitors will also be able to see Renishaw's modular and custom metrology fixturing, as well as a demonstration of its first automated direct loader transfer system for use with CMMs, which complements the benefits of automation and rapid throughput that the REVO system brings.

Renishaw's new OPTiMUM™ diamond styli range will be showcased, which has been specifically developed for use within metrology applications that require a hard-wearing stylus. The principal advantage of its diamond coated spheres is that they maintain their roundness and do not suffer material 'pick up' or premature wear when scanning abrasive materials or soft alloys. This provides multiple benefits including an increased working life and reduction in recalibration and inspection downtime.

Renishaw's latest SPRINT™ technology will also be showcased, high-accuracy machine tool probing systems for rapid part setup and machining process control. With the unique 3D sensor technology within Renishaw's OSP60 probe, probing systems with SPRINT technology provide exceptional, high-speed, high accuracy scanning for CNC machine tools.

SPRINT technology can be used with



either Renishaw's SupaScan solution or Productivity+™ Scanning Suite. SupaScan is ideal for setting simple parts quickly and easily and it uses macro code to program cycles. The system has the capability to monitor workpiece surface condition and capture basic form measurements. Productivity+ Scanning Suite is perfect for advanced measurement of free-form surfaces, such as turbine blades and mould tools. The Suite comprises a variety of application-specific toolkits that can be programmed using Productivity+™ Active Editor Pro software.

Renishaw will demonstrate its range of high-accuracy machine tool probes with RENGAGE™ technology for workpiece setup, in-process control and post-process inspection. The latest addition to Renishaw's range of machine tool probes with RENGAGE technology is RMP400, a new, ultra-compact and highly repeatable probe that uses radio transmission technology. Each probe in the range is tailored to suit different machine tool sizes and machining applications, combining proven silicon strain gauge technology with ultra-compact electronics to deliver world class 3D performance and sub-micron repeatability. Excelling in the measurement of complex shapes and contours, probes with RENGAGE technology are ideally suited to mould and die and aerospace applications, where the use of 5-axis machines is common. An ultra-low trigger force helps to eliminate surface and form damage on components; ideal for inspecting delicate

workpieces. All the probes in the range can benefit from SupaTouch technology, embedded within the latest versions of Renishaw's Inspection Plus macro software, which intelligently optimises on-machine probing cycles, leading to a cycle time reduction of up to 60 percent on CNC machine tools.

Renishaw will also launch the NC4+ Blue, its latest evolution of the non-contact tool setter, delivering a step-change in tool measurement accuracy. Compared to red laser sources found in conventional non-contact tool setters, blue laser technology, patent pending, has a shorter wavelength, resulting in improved diffraction effects and optimised laser beam geometry. This enables the measurement of very small tools, while minimising tool-to-tool measurement errors, a critical consideration when machining with a wide range of cutting tools.

On its stand in Hall 6, Renishaw will introduce its first ever 'Solutions Bar'. Visitors will be able to ask Renishaw's team of experts about a variety of process control, metrology products or manufacturing queries, whilst enjoying much-needed refreshments.

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Hall 3, Stand E36 - Hall 6, Stand D48
Hall 9, Stand I23 - Hall 25, Stand A01


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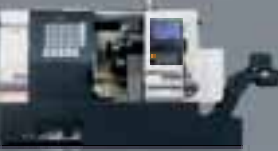
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A portfolio further enriched by many innovative products

The sawing and storage technology specialist KASTO will be presenting a wide range of innovations at EMO. The KASTO booth will feature an efficient energy recovery and storage concept for automated storage systems, plus new sawing machines for every requirement, ranging from the KASTOmicut workshop bandsaw and the versatile series KASTOwin/miwin to the KASTOvariospeed and KASTOtec high-performance production saws. Digital solutions will also be on show live in the booth's Smart Solutions Corner.



On request, KASTO can offer its automated storage systems with energy recovery and integrated energy storage. Surplus kinetic energy, such as that produced when braking the storage and retrieval machine or lowering lifting gear, can be converted into electricity, fed back into the grid and used flexibly. This solution not only reduces energy costs but also improves the quality of the power supply, since energy is continuously drawn from the supply, which in turn avoids load peaks. Operators can also often plan for and use smaller transformer stations, massively reducing investment costs. Existing KASTO storage systems can also be retrofitted with



energy recovery and storage. KASTO will be demonstrating the energy concept at the EMO using a UNITOWER tower storage system.

Another booth highlight will be the "Smart Solutions Corner", where KASTO will be presenting its digitalisation and Industry 4.0 developments. Just one of many products, the KASTOlogic warehouse management system not only enables the continuous administration and control of automated storage systems, it also manages the mobile inventories of manual warehouse areas. The KASTOapp machine status display, the KASTOoptisaw saw plan generation system and the interactive remote maintenance solution, KASTO VisualAssistance, will also be showcased at the trade fair. A video will show visitors how storage, sawing and material handling processes can be completely automated and optimised with KASTO solutions, all from one single source.

The KASTOmiwin is a double mitre bandsaw for cut-to-length and mitre cuts between -45 and +60 degrees. It is available in semi-automated or fully-automated versions and is especially designed for parts cut to size in steel construction, steel trade, plant construction and special machine construction. KASTO also offers the swing-frame bandsaws of the KASTOmicut series in its portfolio. Available in two sizes, these saws are especially designed for use in workshops. Users can choose different cutting ranges and manually-operated, semi-automated or fully-automated versions.

The universal bandsaw series KASTOwin will also be exhibited at EMO. The KASTOwin line is designed for the serial and production sawing of solid materials, pipes and sections. It offers a flexible solution for a wide range of applications. The different machine sizes are all designed using the same construction method and the components used are largely identical and, as a result, KASTO is able to offer the new saws at a significantly more attractive price than comparable products from other manufacturers. For particularly heavy workpieces, the KASTOwin is also available with a movable material support table. KASTO offers further special designs for the processing of pipes and additive manufactured components.



The KASTOvariospeed production circular saw is another all-rounder for steel processing.

This CNC-controlled sawing machine can process different materials flexibly, even those that are difficult to machine and it is ideal for unmanned operation, especially in combination with a KASTOcenter sawing centre. The robust design and high-performance, frequency-controlled drive ensure short cutting times, while the ultra-thin carbide saw blades guarantee outstanding precision and low material wastage. EMO 2019 will also see another new member of the KASTO family make a first-time appearance, the KASTOvariospeed C18 which has a larger cutting range of 180 mm.

KASTO has extensively revised the automated bandsaw KASTOtec. Here the KASTO designers focused on the best possible use of carbide saw blades. The KASTOtec continues to impress with high cutting performance and long band life, even with difficult-to-cut materials such as titanium, hastelloy or inconel. Yet another new feature is the infinitely-adjustable, electro-mechanical saw feed, which provides the best prerequisites for efficient, highly-accurate and tool-friendly work. The saw feed control with its minimal use of sensors enables the cutting parameters to be continuously adjusted.

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Hall 15, Stand E54

Mazak heads to EMO with biggest ever stand and nine new machines

In its centenary year, Yamazaki Mazak is heading to EMO 2019 with plans for its biggest ever stand, hosting the largest number of machines and automation solutions ever exhibited by the company.

The exhibition will see Mazak give seven machines world debuts, along with two further European debuts, with new INTEGREX Multi-Tasking, 5-axis, hybrid and turning machines among those on display.

Exhibiting under its EMO 2019 theme, 'DISCOVER MORE WITH MAZAK', Mazak will showcase 27 different machines in total, two more than for EMO 2017, along with 16 integrated automation solutions.

Richard Smith, European group managing director at Yamazaki Mazak, comments: "Our theme for this year's EMO, 'DISCOVER MORE WITH MAZAK', speaks of our relentless focus on productivity and is a call-to-action for machine users to discover the true potential of their machining operations. Never before have we committed to bringing so many machines and different automation solutions to EMO.

"This is truly a new age of discovery for machine users who must think creatively and embrace new technologies and ways of

working. With Mazak as technology partners, machine users can open up new markets, safeguard their competitive positions and become better, faster and more productive."

The 3,000 sq m Mazak stand will be split into seven separate zones: INTEGREX Multi-Tasking, hybrid machining, 5-axis, laser, vertical machining, turning and horizontals, with all 27 machines in live-cutting action during the show. In addition, the Mazak stand will feature demonstrations of Industry 4.0 solutions, including Mazak iSMART factory and SMOOTH Technology.

Integrated automation will be a major focus for Mazak with a variety of different solutions on display, including PALLETECH and Multi-Pallet Pool (MPP), gantry loaders and the Auto Work Changer (AWC). In addition, Mazak machines will be integrated with a number of third-party automation providers, including machine tending and bar feeder solutions.

Richard Smith concludes: "In this, the



100th year of our history, it is entirely fitting that we are making our greatest ever contribution to EMO. We have come a long way in 100 years, but our commitment to improvement and the development of new technologies is clearly demonstrated by the most advanced machine list we have ever brought to the show."

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Hall 27, Stand B52



EMO Hannover
Hall 5, Stand F47

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New line of Z-PRO taps from Yamawa

Japanese company Yamawa will present its new line of Z-PRO taps, the evolution of high-performance tapping, at EMO. With the introduction of the VUSP and VUPO taps, the company will display the new range of Z-PRO taps, which embodies its experience and threading expertise, gained over the decades, to provide the industry with a state-of-the-art product.

VUSP, spiral fluted taps for blind holes and VUPO, spiral pointed taps for through holes, are designed to deliver top performances both in mass production and small batches applications, without jeopardising performance, reliability and quality.

Alessandro Sorgato, CEO of Yamawa Europe, says: "In the current production scenario, flexibility is the key that helps our clients in dealing with different requests quickly while ensuring the utmost quality. Our new VUSP and VUPO taps of the Z-PRO range are designed to be used in modern multi-function machining centres, allowing our clients to obtain the highest performance on different materials, such as steel, carbon steel, alloy steel, stainless steel and aluminium."

VUSP and VUPO taps are developed to obtain continuous and reliable tapping, as well as to extend significantly the tool life thanks to exceptional chip evacuation. The new taps feature an innovative flute design allowing optimal chip control and lower cutting forces resulting in excellent finishing quality of the internal threads.

The taps are made with premium quality powder high-speed steel. Produced is based on Yamawa's specifications and features a new special coating to maximise wear resistance.

The Z-PRO line enriches a world-class portfolio of taps and threading tools, recognised by industry for quality and depth of the range. Yamawa has a



production capacity of 1,600,000 tools per month in four plants in Japan. Every tap that leaves the factory undergoes a triple quality check.

As a technical innovator, Yamawa aims to develop projects and structures that enable European end-users to get easier and faster access to its expertise. In the past few weeks, the Japanese company has inaugurated the Yamawa Academy in Mestre, Italy.

Alessandro Sorgato explains: "The Academy is a fully-equipped space that allows us to train our clients from both a theoretical and practical point of view. Besides the new high-tech training room, which can accommodate up to 40 people, we have added a new workshop equipped to perform practical exercises and tapping tests. This area will allow our customers to directly verify various aspects, including the impact on threads quality and chip control when varying parameters such as cutting geometry, diameter variation of the bored hole, cutting speed variation and the different behaviour based on the processed materials."

Yamawa will provide a counselling service regarding tapping-related problems and challenges at every trade fair it will be attending. "The company has already implemented this idea at the latest JIMTOF trade fair in Tokyo, where it proved to be a success. In Europe, we started in June at the ITM trade fair in Poznan, and now we are ready for EMO. Throughout the event, one of our technicians will be available at the 'Ask the experts' area within Yamawa's stand in Hannover to help anyone who has problems or questions related to a particular tapping application," continues Alessandro Sorgato.

Yamawa Europe's challenges don't stop here. The company is also developing a

series of projects focusing on those who will be leading the metal cutting industry in the next few years. Alessandro Sorgato concludes: "Thanks to the collaboration with professional schools and top universities, we are starting an exchange of competencies and research between manufacturers and students who want to learn more about tapping technology. This project is still under development, so I can't say much more. What I can say is that it will be a



mutual opportunity for growth, with the students able to rely on our experience and support while we'll benefit from the new energy coming from their freshness and thirst for knowledge."

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Hall 5, Stand B34



Product innovations from Hoffmann Group

The Hoffmann Group will present its product innovations again this year at EMO. On its stand, visitors will be able to see innovations from the fields of machining, clamping, measuring and digital services. Highlights include: the GARANT Xtric centring vice, the GARANT Master Alu milling cutter range and the GARANT Master Tap INOX specialist for thread machining stainless steels.

Under the trade fair motto of "From Concept to Reality", the Hoffmann Group is showing how it can support the entire production process with physical and digital products at EMO. An important trade fair highlight will be the GARANT Xtric centring vice for blank part clamping and finished part clamping. It makes pre-stamping redundant and impresses with its innovative chuck jaw quick-change system, which makes simple and fast conversion without any tools possible using a click mechanism. In addition, the Hoffmann Group is showcasing the GARANT Master Tap INOX,

specialist for thread machining of stainless steels and the new milling cutter range 'GARANT Master Alu' for aluminium machining. The latter comprises of a complete tooling series for any application, from the single-cutter end mill, the finishing cutter and the knuckle form roughing slot drill to the pocket milling cutter and torus cutter.

In addition to these special exhibits, the Hoffmann Group is presenting numerous additions to its existing ranges at EMO, including TPC tools from the 'GARANT Master Titan' milling cutter range, an indexable insert and solid carbide barrel milling cutters for Parabolic Performance Cutting (PPC) as well as the latest version of the GARANT MM1 measuring microscope with an image field that is up to ten times larger.

Visitors therefore have a lot to look forward to. As in previous years, they will once again have the chance to experience



tools close-up at the Hoffmann Group's stand during the live machining demonstration.

Hoffmann UK Quality Tools Ltd

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Hall 3, Stand A06

More power and performance for all part sizes

Schwäbische Werkzeugmaschinen GmbH (SW) is presenting two machining centres at this year's EMO. The new BA W08-12 machining centre with a large working area for structural parts and the BA 322i, which is designed as an independent cell, enable users to significantly boost their productivity. Nearly all automobile manufacturers have begun to manufacture electric vehicles in series production and are using large-format structural parts made of light metals to further reduce weight. The BA W08-12 provides a working area of 1,500 x 900 x 650 mm for 4- and 5-axis machining.

Fully automated manufacturing cell BA 322i for unsupervised shifts

Two-spindle machining centres double the output with less installation area and less energy consumption. In the fully automated, independent BA 322i manufacturing cell, the loading module with integrated 6-axis robot and pallet storage is already mounted on the machine. With a spindle distance of 300 mm, the working area has dimensions of 300 x 450 x 375 mm. Automotive suppliers or users in medical technology and precision mechanics are following this approach to

significantly lower the unit costs of production.

SW algorithms incorporate the experience of millions of operating hours

Reiner Fries, managing director of sales at SW, says: "We have already been networking our customer machines for many years and we have created the SW CloudPlatform with high security standards. I wish that more users would set their fears aside and use the data so they can achieve and preserve maximum productivity for the entire machine lifecycle.

"As one of the six modules of the 'life' services portfolio, we record operating data for the customer with 'life data' as well as status and maintenance information. The encrypted data is also sent only where the customer wants to have it."

Based on several million operating hours, SW has developed algorithms that make it possible to improve processes. Reiner Fries explains: "With condition monitoring functions we enable predictive maintenance, which saves time and money."



In some cases, customers are able to carry out upgrades for these and similar functionalities themselves, or they can be supported by a team from 'life Upgrade'. All SW 'life' services modules are intermeshed with each other to ensure optimum support of SW machines over their entire lifecycle, offering the potential for optimisation again and again.

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Using technology from Concorde to develop high-speed aircraft

This year marks the 50th anniversary of Concorde's first flight. It took off from Toulouse, France for its first test flight on March 2nd 1969. Although no longer in operation, the development of Concorde led to the progression of pioneering technologies that help today's aerospace engineers develop new high-speed aircrafts. Here Jonathan Wilkins, director at automation parts supplier EU Automation, discusses Concorde's legacy

Developing an aircraft capable of supersonic transport presented the engineering team with several challenges to overcome. For example, the aircraft required extremely high power and fuel to counteract the considerable friction incurred at high speeds.

The engineering team designed the aircraft to overcome these challenges, meaning Concorde could reach 1,354 miles per hour and fly from New York to Paris in under three hours. For 27 years, it transported passengers at over twice the speed of sound. However, the expense of its operation, the crash of 2000 and the September 11 terrorist attacks contributed to the decision to retire the aircraft in 2003.

Although no commercial supersonic travel has taken Concorde's place, the technology that allowed it to break the sound barrier should not be forgotten.

Electrification

Concorde was the first aircraft to use fly-by-wire flight control. Instead of operating via cables and pushrods physically connecting the aircraft's wings and surfaces to the pilot's controls, fly-by-wire systems converted the pilot's instructions to electrical signals that controlled actuators.

Fly-by-wire systems are more lightweight than manual systems because they do not require any mechanical components. They also optimise trim setting, which reduces drag, helping aircraft to reach top speeds.

Droop nose

Aircraft are designed with aerodynamics in mind, with the aim to reduce drag. However, the highly streamlined nose originally designed for Concorde actually obstructed the pilot's visibility. To counter this, Marshall Aerospace in Cambridge developed a droop nose section. This configuration can switch between a horizontal streamlined formation for minimising drag and a drooped formation for better landing visibility.



A droop nose system was also used in the Tupolev Tu-144, the only other supersonic aircraft ever to have operated. It is likely to be an important feature in future high-speed aircraft.

Delta wing

An early prototype for Concorde had a short wingspan to reduce drag, but this design also reduced the aircraft's lift. To overcome this, the team incorporated triangle-shaped delta wings to increase the lift by producing strong vortices on their upper surfaces at high angles of attack, lowering the air pressure.

The engineering team also faced a challenge matching the centre of pressure with the aircraft's centre of gravity. Normally, this is achieved by shifting the wing position, but because Concorde's delta wings spanned the entire length of the fuselage, this was not possible. As a result, the only suitable shape was the ogival wing, shaped like an ogee, a kind of sigmoid curve.

Concorde's maiden flight on March 2nd 1969 lasted just 27 minutes before strong winds forced it to land. Nevertheless, the aircraft later broke numerous world records, including the fastest flight from John F. Kennedy Airport to London Heathrow

Airport in just two hours, 52 minutes and 59 seconds.

Although Concorde's retirement came much earlier than was hoped, the discoveries and inventions of those who designed and developed it can be used today to inspire the design and production of new high-speed aircraft. In a rapidly developing industry, aerospace engineers can look to the past, as well as the future, to help them develop innovative, creative designs.

To find out more about technology for the aerospace industry, visit EU Automation's website: www.euautomation.com/uk/aerospace

EU Automation stocks and sells new, used, refurbished and obsolete industrial automation spares. Its global network of preferred partner warehouses and wholly owned distribution centres, enables it to offer a unique service within the automation industry, spanning the entire globe. It provides worldwide express delivery on all products meaning it can supply any part, to any destination, at very short notice.

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by EASYFAIRS

5-axis mill-turn centre installed for titanium aero engine component production

Silcoms, a niche UK supplier to the aerospace industry of nickel alloy, titanium, stainless steel and aluminium aero engine ring components and assemblies including seals, shrouds, segments and casings, was awarded an additional contract last year to supply a complex rotating fan seal for a large civil aircraft engine programme.

Additional capacity was needed at Silcoms' Bolton factory to cope with the increased workload. While researching and installing the new equipment, managing director Jim Hill took the opportunity to develop a new process route to speed production of the rotational titanium parts while maintaining the tight tolerances needed.

The new method of manufacture hinges on the use of a German-built Hermle C 50 UMT 5-axis machining centre fitted with a torque table for carrying out in-cycle turning operations. The machine, supplied by Kingsbury, the sole sales and service agent in the UK, Ireland and Middle East, now performs three operations in two setups that previously required five operations on three different machines. Floor-to-floor time is drastically reduced and fewer setups mean that the risk of accumulative tolerance error is minimal.

Machined from a titanium forging, the 1,015 mm diameter fan seal has to be turned to a final wall thickness of 3 mm. It is crucial to control dimensional accuracy as well as to avoid distortion.

After a number of preparatory machining stages, the Hermle mill-turn centre completes the next five operations in two setups over 20 hours. Semi-finish and finish turning have been compressed into one operation on each side. During the second

clamping on the Hermle, turned and milled features are completed. These prismatic cycles were formerly performed on a different 5-axis machining centre on site. Critical dimensional features are held to ± 20 microns over the full diameter of the part.

Post operations remain the same, namely balance testing and machining to correct any imbalance, surface treatment and final turning to restore the seal surface.

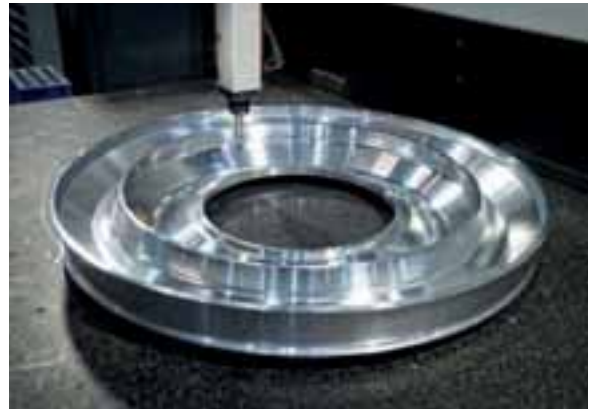
Jim Hill comments: "Consolidating turning and milling on one machine has significant benefits for us. Apart from a reduction in component handling and an improvement in accuracy, it lowers the lead-time for converting a titanium forging into a finished seal and reduces the total number of tools we need.

"Around 90 percent of machining on the Hermle is turning, so we wanted to be sure that the torque table on the C 50 UMT was up to the task, bearing in mind titanium is a tough material to cut.

"A demonstration at Hermle's factory in Gosheim convinced us that the machine was ideal for the task, added to which the manufacturer has an excellent reputation for quality, reliability and service, as does the UK agent, Kingsbury."

He also advises that it is possible to optimise the turning conditions by fully utilising the 5-axis capability of the Hermle. As aerospace parts are being designed with ever more complex features, such capability and versatility is strategically important.

Specification of the Hermle C 50 UMT includes a 12,000 rpm/56 kW/356 Nm spindle, wide trunnion swivel range of $+100/-130$ degree, 500 rpm torque table, 1,000 x 1,100 x 750 mm axis travels, and 6 m/s^2 acceleration in each axis to 60 m/min rapid traverse in X and Y, 55 m/min in Z. Absolute measurement of all axis positions are fed back to the Siemens Sinumerik 840D control.



From its spacious and well-equipped facilities in Gosport, Hampshire, Kingsbury offers a nationwide service, providing manufacturers with innovative machining solutions and comprehensive support, now with an expanded portfolio that also includes grinding machines. It has been privileged to work with many of the country's most prestigious OEMs in all facets of industry, including the big household names. The company also has a loyal and expanding customer base of subcontractors and machine shops that rely on its knowledge and experience to give them the competitive edge they need.

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This year's Inspiration through Innovation event is focused on manufacturing best-practice in the aerospace sector.

So, if you're an aerospace component manufacturer committed to continuous improvement and are looking to increase your productivity and overall competitiveness - this event is for you.

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SECO 

Aerospace subcontractor takes off with ITC

A Preston-based aerospace subcontractor has benefited from the technical expertise of Industrial Tooling Corporation (ITC) and its exceptionally diverse product line-up. Always striving for improvements in a cost and quality-conscious industry sector, the North West subcontract company is home to a host of 3- and 5-axis machine tools from DMG MORI, Mazak and Hurco.

With accreditations from OEM's like Airbus, BAE Systems, Leonardo, Gardner, Magellan and many more, the company relies upon the quality, precision and productivity of its machine tools and cutting tools, as well as the skill set of its staff. This is why the company has invested in cutting tools from Tamworth-based ITC.

The company challenged ITC with the task of improving upon the productivity of an existing tool on a profile machining operation on an aluminium solid billet sub-assembly for the aerospace industry. Working against an existing 50 mm diameter shell mill tool from a prominent tooling manufacturer, ITC technical sales engineer, Gary Murrey introduced the Widia VHSC indexable face milling range with impressive results. The existing 50 mm diameter shell mill tool with four insert pockets was running at 11,000 rpm with machining parameters in the region of 1,700 m/min with a 4,000 mm feed rate and 4.5 mm depth of cut. The new range of

Widia VHSC end mills incorporate a proprietary pocket design that enables this aerospace customer to integrate multiple insert radii one body type if necessary, creating impressive flexibility. Furthermore, the inserts retain their axial positioning regardless of the insert corner nose radius. The high-speed aluminium profiling and pocket milling range permits heavy feeding and ramping while the flute design and internal coolant channels are engineered to evacuate chips with the utmost efficiency.

This best-in-class solution was applied with a 2 mm radius insert, XDET 16M520FRALP WN10HM and it is running at 1,800 m/min with a spindle speed of 11,450 rpm and a feed of 0.2 mm per tooth, which equates to 9 m/min feed rate. The 4.5 mm depth of cut has been retained, however the increased stability of the Widia VHSC is now offering the aerospace customer the opportunity to increase the depth of cut to further advance cycle time reductions.

However, with an initial cycle time reduction in the region of 50 percent over a leading competitor, this prominent aerospace manufacturer is already delighted with the improved cycle time and extended tool life. The cycle time for the aluminium solid billet sub-assembly with the Widia VHSC was 12 minutes and 18 seconds, more than 50 percent less than the



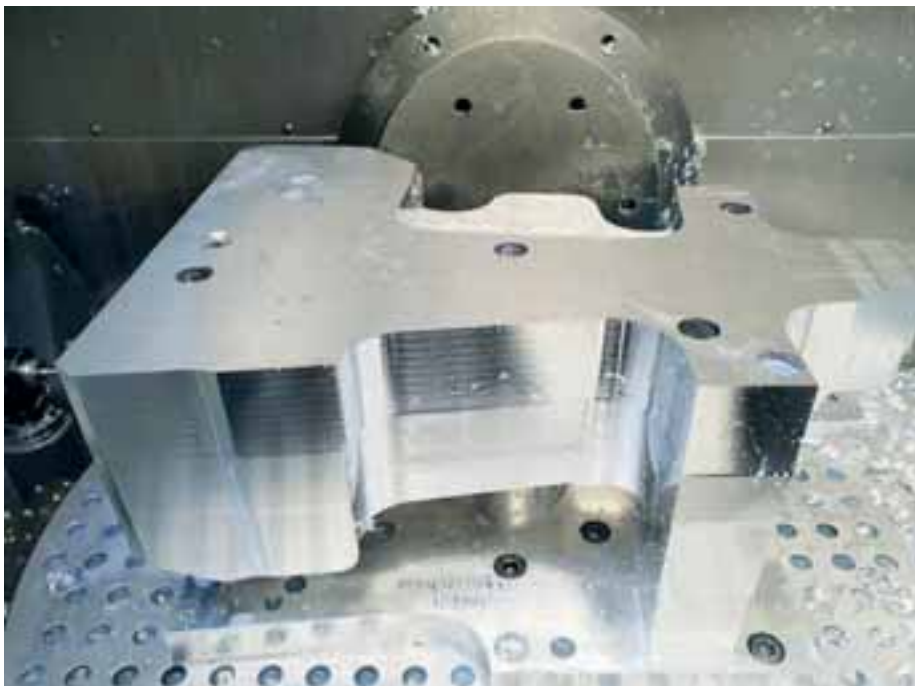
previous cycle time. Not only did the ITC solution improve cycle times for this end user, it also equated to a unit price reduction of 40 percent.

This performance is largely credit to the tool body design and the high-speed cutting XDET-ALP insert geometry. This super positive ALP geometry is manufactured from wear-resistant micro-grain carbide that has a polished rake face to reduce built-up edges. The inserts are offered with two geometries, the FR-ALP with an ultra sharp cutting edge for rough to finish machining on lower powered machine tools that demand low cutting forces. The ER-ALP designated inserts have a honed cutting edge and high-strength geometry for rough machining and the processing of cast components and other challenging aluminium applications.

The multi-purpose insert seats permit the installation of both large and small corner radii inserts, a feature that offers a great impact on costs for the end user. This cost saving is credit to the insert seats that allow customers to load inserts with corner radii from R0.4 to R6.0 mm. Regardless of the chosen insert, the axial gauge length on the cutter will always be the same and the Ap1 max will always remain 16 mm.

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EMO 2019: Hall 5, Stand F47



Joining forces to offer aerospace customers additive manufacturing solutions

Oerlikon AM and MT Aerospace are partnering to accelerate the use of additive parts in the aerospace and defense industries. The partnership aims to bring efficiency and cost savings to the aerospace and defense market by providing end-to-end solutions to their customers.

The two companies are important players in the aerospace market and their combined expertise and sophisticated technical capabilities promise to help address the industry's most difficult and disruptive challenges; improved efficiency and safety at lower cost. Additively manufactured components, also called 3D-printed or digitised components due to the precision with which they are made, are lighter and better designed than components made in traditional manufacturing. Incorporating digitisation in both air and space will enable new advances in the industry.

In addition to MT Aerospace's heritage in designing highly stressed and lightweight metal structures and Oerlikon's materials, design, 3D-printing and post-processing capabilities, the partnership offers aerospace customers a notable advantage

by realising synergies between construction/design, manufacturing and part inspection and qualification.

Chief executive officer, Hans J. Steininger of MT Aerospace AG, a subsidiary of Bremen-based OHB SE aerospace company, says: "With their bundled expertise, the two partner companies cover the entire value chain from component design and manufacturing to testing and qualification. In this way, we can offer customers a 'one-stop shop' solution from product specification to the finished, qualified part."

Additive manufacturing is driving the next industrial revolution. Instead of using traditional techniques, casting, machining, joining and assembly, it allows complete freedom to create complex integrated shapes that are optimised for function, performance and cost.

Professor Dr Michael Süß, chairman of the board of directors of Oerlikon, comments: "Through this partnership, we look forward to continuing to lead innovation and digitisation trends in the aerospace industry by accelerating and



scaling up the process from concept to operational delivery. To advance the application of additive manufacturing, collaboration with key players like MT Aerospace is essential. We are looking forward to bringing more additively manufactured parts to aerospace."

By combining capabilities, Oerlikon AM and MT Aerospace are setting a path for their customers to unleash the full potential of additive manufacturing. The ability to optimally design specific parts or components provides obvious design and manufacturing benefits.

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OPEN POSSIBILITIES



Okuma makes way for digitalisation and automation

Okuma, represented in the UK by NCMT, provides solutions for digital production processes and automation for the metalworking industry. At this year's EMO Hannover, the industry's only single-source provider presents solutions for holistic process planning, connectivity and production analysis. In combination with Okuma machine tools, these Smart Factory solutions offer a substantial added value and represent an important step towards comprehensive automation.

Smart Factory know-how expanded

With a third IoT-based "Dream Site" factory put into service, Okuma further expands its smart factory know-how. The Okuma concept for IoT relies on the latest technological developments and combines big data, artificial intelligence and intelligent production processes. This is true for the controls, Smart Factory technologies and automation solutions. Okuma will present all these new developments at this year's EMO exhibition.

Digitalisation from the start

For Okuma, digitalisation starts long before the actual machining takes place. The Okuma technology 3D Virtual Monitor allows manufacturers to simulate and test the entire machining process in advance. For a highly accurate simulation of the machine, 3D Virtual Monitor relies directly on the construction data. This avoids, programming errors and setup times are significantly shortened. Additional benefits are safe parting-off operations and reliable handovers of the workpiece.



Comprehensive connectivity made easy

The Okuma software Connect Plan offers valuable real-time updates of all machines in the manufacturing process regardless of where they are located. This real-time information can be used to analyse and optimise the utilisation of the entire plant. Even machine tools by third-party providers



can be integrated into this system. For traceability, Connect Plan connects each individual identifier with the manufacturing data and the measuring results of every machine involved. If problems occur, they can easily be identified and solved allowing the production to continue with higher quality and more safety than before. The process data can also be used for predictive maintenance in order to plan and predict maintenance intervals. On its stand at EMO, Okuma will connect all machine tools via Connect Plan, so that visitors can experience first-hand the potentials of data-driven plant optimisation.

Intelligent control enables digitalisation

The cornerstone of digitalisation is Okuma's intelligent control, which the company develops and manufactures itself as the industry's only single-source supplier. The advanced OSP-P300A control is perfectly tailored to the CNC machines and a shared database ensures a boost in efficiency. Data that is input in one area of the control can be shared automatically. This enables users to

avoid unnecessary inputs and setup times are shortened. Thanks to the open Windows architecture of the control, all Okuma machines can be easily integrated into existing manufacturing environments.

The key to fully automated manufacturing

Complex factory automation relies on state-of-the-art robotics. However, automation is gaining importance also for small and medium-sized enterprises. Okuma offers efficient automation solutions for various needs. At this year's EMO Hannover, two new automation technologies will be presented that are superior to conventional robots in many ways. ARMROID is a robotic arm that is integrated into the machine tool. This opens entirely new possibilities for the machining process and makes automation available to small enterprises. Okuma continues this path with STANDROID, offering a robotic arm integrated into its own separate cell. The cell can be connected to a machine tool and retrofitting is possible. With these solutions, Okuma makes automation accessible for businesses of various sizes.



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EMO 2019: Hall 5, Stand G11

Revolutionising aircraft seating

Rockwood Composites and HAECO Cabin Solutions have announced a partnership that will revolutionise aircraft seating for the business market. HAECO has commissioned Rockwood to do the tooling on its new "Eclipse" cabin platform for seat shells and console work.

The business potential for the new seating is huge and there is already a commitment to refit a large fleet for an unnamed Middle-East-based airline.

This bespoke seat will feature compound, moulded surfaces and respective tooling design. Rockwood will also provide what HAECO terms "zero production parts," which are first of a kind and are used to ensure that the design meets its intended function and can be manufactured in the long run.

Eclipse is a new line of premium products which will redefine short haul business class and long-haul premium economy with a patented staggered seating arrangement. This arrangement provides a similarly luxurious experience to that found on long

haul business class flights, while also improving the airline's route economics.

There were many technical and composites engineering challenges to tackle. These included the ability to design a lightweight structure with enough modularity which would allow HAECO to contend with future permutations of the product. Also, the shapes used in this class are not new, but the scale and industrial design are a "first of a kind" for this cabin. These compounded surfaces have never been used in this class of service before.

The challenges were overcome mainly due to the partnership between both companies. Rockwood's innovative combinations of materials and tooling provide a lightweight product which at the same time has a degree of flexibility.

Jose Pevida, HAECO Cabin Solutions senior vice president of engineering and product development, comments: "It comes down to 'how smart' the tools are designed and how much thought has gone into making the right tools. These developments



are key to HAECO because they support our initiatives with a totally new platform of premium products. Nothing like Eclipse has been done before.

"The big value Rockwood brings is their high degree of innovation and capability when it comes to composites. We were looking for a way to optimise these structures for weight, strength, and manufacturability and we were aware of their capabilities based on their past success with projects like this."

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Kaman UK invest £1m in new chemical treatment line

World-leading aerospace innovator Kaman UK has invested over £1m in a new chemical treatment line which will deliver surface treatment techniques to the aerospace industry. In May 2019, the Kaman UK team celebrated this investment with live demonstrations to the industry, highlighting this new capability for its Darwen site.

Kaman UK's managing director Christopher Morris sees the new chemical treatment line as an excellent addition to the existing production processes. He said:

"This is a significant stage in the development of the Darwen site which will bring extensive benefits to our customers. There is a huge demand for treatments capability in the industry and this line will deliver an efficient and cost-effective solution."

The new line is computer controlled with fully automated loading, immersion and transfer capabilities through the 3ft, 5ft and 8ft baths. Kaman is seeking NADCAP accreditation for the line and expects to secure it by the end of the year. The line

already includes NADCAP approved Penetrant Flaw Detection Plant and Spray/Bake Paint and Primer Equipment.

The Kaman team demonstrated the capabilities of the new treatment line with a series of presentations to more than 75 key industry figures.

Kaman's range of special processes is expanded through the new line and includes chromic acid anodise (CAA), chemical conversion coating (Alocrom 1200), acid pickle and clean of titanium, vac blast, zinc spray, welding and paint finishing.

Plans are also in place to introduce Tartaric/Sulphuric Anodising (TSA) to further strengthen Kaman's surface treatments capability. TSA is a replacement technology adopted by the aerospace industry to meet with EU mandates for the reduction of hazardous materials in the working environment (REACH), whilst giving comparable levels of corrosion protection and coating quality.

Kaman UK has a 70-year history of technical breakthroughs and innovation



which global aerospace and automotive clients rely on to deliver high performance component parts into their supply chain.

For more information on the Kaman UK range of services, take a look at the LinkedIn page: **www.linkedin.com/company/19125428**

Alternatively, you can find out more about Kaman's capabilities by contacting:

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Investment in Haas machines proves invaluable

Kieran Doran installed his first manual lathe in 1993, in a small shed at the side of his house. His one employee, Leo McGreevey, began turning while Kieran was still holding down his day job, coming home and working on the new business at night. Eager to follow in his fathers' footsteps and having helped out during school holidays, Kieran's eldest son Christopher joined the company in 2005 as an apprentice and in 2018 his sister, Ciara stepped into the accounts manager role.

Today, Doran Precision Engineering Ltd (DPE) specialise in the manufacture of precision components, offering batch production work, rapid response and rework services. Still a family run business, it employs 22 people, utilising 31 CNC machines.

90 percent of the factory's output serves the aerospace industry, supplying to a worldwide customer base, making interior parts for aircraft giants such as Thompson Aero Seating and Collins Aerospace. It machines a wide range of aerospace grade materials including aluminium, stainless steel and plastics.

All of its product is programmed by state-of-the-art software and is supplied with a full FAI.

Doran was first accredited to ISO:9001 in 2006 and in 2018 was accredited to AS9100 Rev D.

General manager Christopher Doran explains: "It was 2011 when we bought our first Haas. We wanted to offer machining on a larger scale, so looked for a mill with a



more substantial capacity and so we shopped around.

"Having been to the shows and looked at all the options, the one machine that stood out to us was the Haas VF-9. This machine had one metre of travel on the Y axis and for such a large frame mill, the price was exceptional.

"We bought our first Haas shortly after and haven't looked back since."

The VF-9 has used the whole of the 2,134 x 1,016 x 762 mm table to machine everything from base plinths for aircraft seating to hinges for table assemblies, machining each with precision and power and never faulting due to size or weight.

Thus, began a strong partnership between Doran and Haas which has brought its total number of Haas machines to 16 in the last eight years.

"The Haas control is similar to a Fanuc control so it mirrored our older machines. We were up and running straight away" explains engineering manager Kieran Poland.

He continues: "It meant we could use our existing programs which made the transition very easy. We only buy Haas now."

Today, with three units stretching over 10,000 ft² at its premises in Newcastle, Northern Ireland, capacity is rapidly increasing and the machines are in constant use.

Kieran Poland says: "We have 12 Haas Super Speed mills. The Super Speed mills boast a 12,000 rpm spindle and high speed 24 + 1 side mount tool change.

"Their addition has been invaluable. The increased spindle speed and rapids have reduced our cycle times by 50 percent and

the spindle power is unrivalled. They cut aluminium constantly on full revs, as deep a cut as the spindle will allow. I haven't found anything the spindle doesn't have the power to cut."

Christopher Doran adds: "We rarely have an issue but if we do need an engineer, they're on site quickly. We recently added three UMC-750 5-axis Universal Machines to our Haas family, allowing us to produce both small batches and prototype work in a much shorter time frame. Using the latest Mastercam package, with the UMC's 12,000 rpm spindle and 40 + 1 side mount tool change, we quickly found cycle times were reduced by 30 percent.

"These were our first 5-axis machines, but they were easier to use than I'd imagined. They really worked for us. We use them for 5-sided machining; making multi-option parts, we finish them in much shorter lead times with a higher accuracy and precision.

"Following on from the success of our UMC-750s, we have just installed the new Haas UMC-1000. We're excited to see what we can do with the larger working envelope.

"We've also just installed our first Haas 4-axis rotary table and are looking forward to capitalising on the advantages of lights out machining."

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EMO 2019: Hall 27, Stand E60



OPEN HOUSE 2019

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WHAT

A 3-day event hosted by the market leader in sliding head technology, welcoming visitors from across the UK & Ireland.

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Versatile bar auto is highly productive

A new, twin-spindle, 10-axis CNC turn-mill centre, the Miyano BNA-42GTY LfV, has been introduced by Citizen for manufacturing complex components in one hit from bar stock up to 42 mm diameter. The hybrid machine is of fixed-headstock design, but the head is also able to move in and out of the working area for extra versatility, similar to that offered by a sliding-head machine operated in non-guide bush mode.

The 8-station, 3-axis turret including Y-axis movement has a half-indexing mechanism that allows tools to be mounted at up to 16 positions, while multiple toolholders can further expand the number of cutters deployed. There is also Y-axis travel on a gang toolpost, giving extra flexibility when machining at either spindle, especially as the counter spindle moves in the X-axis as well as the Z-axis.

In total, up to 45 tools can be resident in the working area. A superimposition function within the Mitsubishi M730VS control provides the possibility for shortening cycle times even more by enabling up to three tools to be in cut simultaneously at both spindles.

The 3.74-tonne BNA-42GTY enjoys the same rigid, high precision build and thermo-symmetrical design as other lathes in the Miyano range, leading to high accuracy machining. Slideways are hand scraped in all axes and have exceptional damping characteristics, enabling heavy metal removal and helping to prolong tool life. Machine specification includes a

6,000 rpm/11 kW main spindle with 0.001° C-axis, a 5,000 rpm / 5.5 kW C-axis counter spindle and feed rates up to 30 m/min.

Numerous options are available to add to the flexibility of the turning centre, including high-pressure coolant, spindle air blow, chip conveyor, parts catcher, parts conveyor and drill breakage detection. Likewise, the capable control can be augmented with the addition of helical interpolation, corner radiusing, synchronous tapping and multiple canned cycles.

The BNA-42GTY is the first Miyano machine to gain the benefit of Citizen's LfV chipbreaking software, until now exclusively provided on the manufacturer's Cincom Swiss-type lathes. The patented, two-axis chipbreaking functionality is part of the control's operating system and involves the axis servo drives and spindle drives.

The position of the tool tip is oscillated by 20 microns, just sufficient to break the swarf. The number of oscillations per revolution, mode 1, or the number of revolutions per oscillation, mode 2, determines the length of the swarf removed from any type of material. The user can define the exact chip length in the program, giving the ability to choose the optimum size for the swarf conveyor to handle efficiently.

The more exotic and difficult to chip the material, the more effective LfV is. It means that high pressure coolant is not needed to



assist in breaking long stringy swarf, such as that generated when machining such materials as stainless steel, copper and plastic. So it is no longer necessary to stop the cycle to remove accumulated swarf that is hampering the machining process. Shorter chips also take up less room in the swarf bin, so it needs emptying less frequently.

In some applications, particularly when processing exotic materials, productivity can be increased fivefold due to not having to stop the machine repeatedly to clear swarf that has entangled itself around the tool or workpiece, or both.

With LfV there is an element of air cutting, which allows more coolant to access the point of contact between the tool and the material. Enhanced coolant penetration lowers the operating temperature of the tip, so it can last five or even 10 times longer. This is especially the case if, as frequently occurs on other makes of CNC lathe, a chipbreaking macro has been written into the program. These are notorious for causing rubbing of the tool, built-up edge, machining inaccuracy and premature failure of the tip.

An LfV oscillation results in a turned face that is no longer flat by an amount measured in microns. The machine control knows where the oscillation took place and on the second revolution the high spot on the face is turned away.

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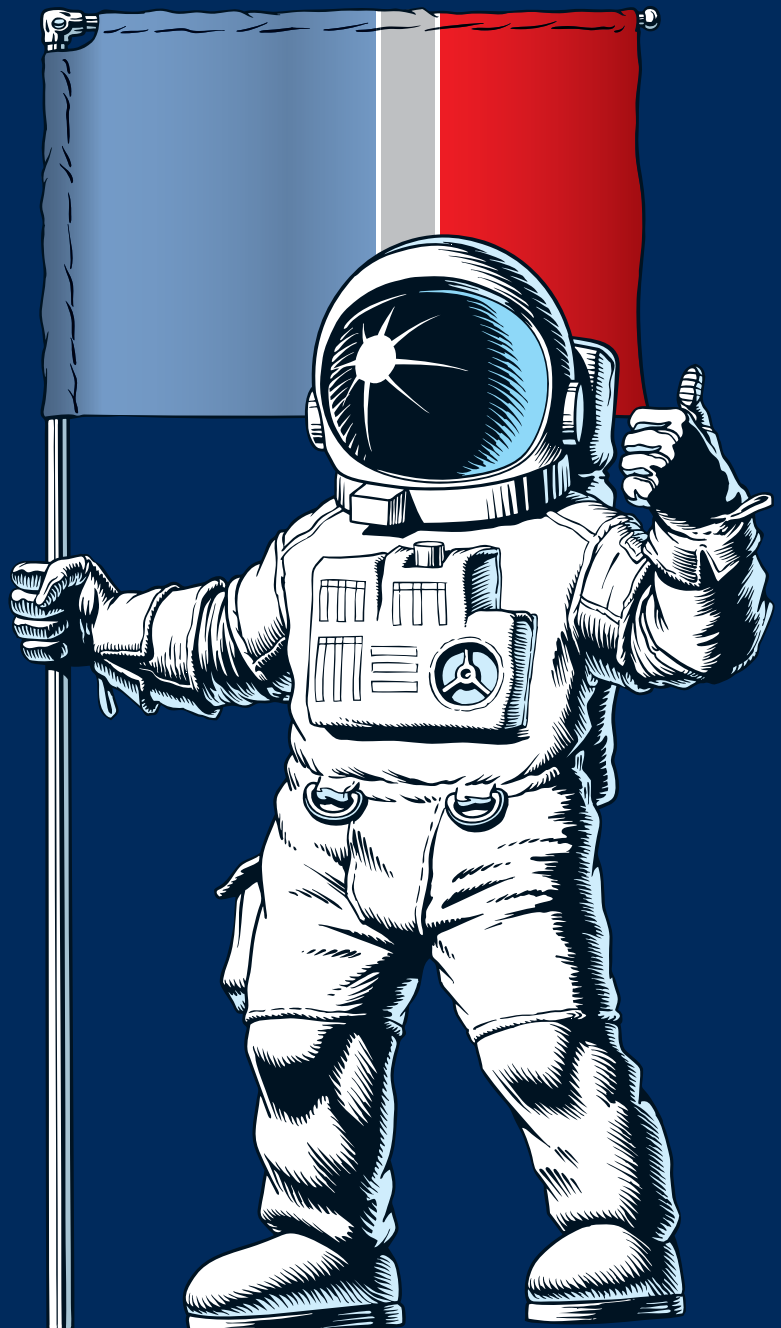
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Mills CNC: Like No-one Else!



Dyer Engineering and the Doosans

Mills CNC, the exclusive distributor of Doosan machine tools in the UK and Ireland, has recently supplied Dyer Engineering, a leading precision manufacturer located in the North East of England, with five new Doosan machine tools.

The machines, three Doosan DNM 4500 vertical machining centres, one Doosan DNM 6700 vertical machining centre and one Lynx 2100LMB lathe equipped with driven tooling and supplied with a bar-feeder, were delivered and installed at Dyer Engineering's extensive 100,000 sq ft split-site manufacturing facility in Stanley, County Durham between April and August 2018.

All five machines were purchased by Dyer Engineering following a visit by company representatives to MACH 2018. It specialises in the machining and fabrication of complex components for a range of sectors and industries.

Four of the new Doosan machines have been installed in the company's BatchLine Division, which manufactures and supplies complex, high-precision fabricated and machined metal components in small to medium batches UK and international automotive, rail, defence, marine and energy customers.

One of the DNM 4500 vertical machining centres has been installed in the company's TechProjects Division, which manufactures and supplies large and often complex fabricated structures and assemblies, with

machined features and details, to customers operating in the oil and gas, energy, rail and renewables sectors.

All five Doosan machines were selected by Dyer Engineering for their reliability, high-productivity, excellent cutting performance, competitive price, ready availability and the service and after-sales support provided by Mills CNC.

The decision to make such a significant investment in new capital equipment followed an internal audit undertaken by Dyer Engineering in early 2018 into its existing CNC machining capabilities and capacity.

It was intended that the audit would identify any weaknesses or potential production 'pinch points' that could affect the company's ability to meet its future growth objectives and ambitions.

Leigh Foulger, batchLine division lead at Dyer Engineering, says: "We are committed to continuous improvement and, as such, continually monitor and benchmark all aspects of our performance.

"The audit results revealed that some of our existing CNC machine tools, whilst still performing adequately were, owing to their age, becoming less reliable and more prone to breakdown.

"We knew that the situation, if not addressed, would only become more acute over time and, in line with our corporate ethos and philosophy, we decided to 'grasp the nettle' and make the significant

investment required to address our weaknesses and improve our machining capabilities in one fell swoop."

Dyer Engineering has invested in a number of CNC machines tools from a range of different machine tool builders. Back in 2013, the company acquired a secondhand Doosan HP 5100 horizontal machining centre and, more recently, purchased two large Doosan vertical machining centres, Doosan DNM 750L II models, through Mills CNC's popular SMART Options, machine tool rental scheme.

Leigh Foulger continues: "These three Doosan machining centres have always performed well and, since acquiring our first Doosan machine six years ago, we have developed and maintained good relationships with Mills CNC.

"As a consequence, when we decided to upgrade our machining capabilities back in early 2018 it was logical and natural that we would approach Mills CNC as a potential supplier of one, some or all of the machines we required."

Although Dyer Engineering does not necessarily push its machines to deliver exacting part accuracies, typically the accuracies required are +/- 0.2 mm, they can be in operation around the clock and, as such, have to be reliable performers in order to meet OTIF arrangements made with customers.

Having met with Mills representatives at MACH and seen a number of the Doosan machines being demonstrated on Mills' stand, the serious business of agreeing deals and placing orders began. The Doosan vertical machining centres purchased by Dyer Engineering comprise of three DNM 4500's and one DNM 6700.

Leigh Foulger concludes: "We placed the total order with Mills because they had the technology, machine tools and ancillary technology, that most closely matched that on our 'hit' list.

"Our previous, positive, experience of working with Doosan machines and with Mills CNC combined with an attractive purchase deal and delivery schedule made it an easy decision to make."

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5-axis machining centre cuts number of operations by two-thirds

Traditionally a 3-axis Vertical Machining Centre (VMC) user, Singer Instruments in Watchet, on the north coast of Somerset, installed its first 5-axis CNC machine at the start of 2019 to streamline the manufacture of aluminium components.

The German-built Spinner U5-630, a 40-taper, nominally half-metre-cube machine, was supplied through sole UK agent Whitehouse Machine Tools, Kenilworth. It is equipped with high pressure coolant through the spindle and a separate clean tank, as well as Blum spindle-mounted workpiece probing and a tool setting probe.

Cycle time savings have been dramatic and there has been a considerable reduction in the number of setups needed across a raft of different parts. It is a result of using the two additional rotary CNC axes provided by the swivelling trunnion and rotary table to reposition components automatically.

In one case, a table for Singer Instruments' world-leading ROTOR automated screening instrument used in the biological sciences sector is produced in three setups, whereas previously it required nine separate prismatic machining operations on a 3-axis VMC.

More typically, components previously needing six operations are now produced in two. In one example, for producing another integral part for the same genomic screening instrument, machining cycles totalling three quarters of an hour have been reduced to eight minutes.

In addition to higher production output, other benefits of fewer setups include less handling, lower fixturing costs and enhanced accuracy through fewer clampings. Furthermore, with average batch size in the range 10- to 20-off, a lot of work in progress is eliminated.

Investment in 5-axis capacity was instigated by Steve Maconnachie, CNC Machinist at Singer Instruments. He previously ran his own subcontract machining business with his brother in the Midlands and had used 5-axis technology for many years. He was familiar with all the leading makes of machine, many of which were reviewed before deciding on the Spinner purchase.

He says: "Some of our components are tightly toleranced to ± 5 microns, so we



maintain the temperature of our production area to within a couple of degrees Celsius.

"It is true that many of the 5-axis machines we considered could hold this tolerance, as does the Spinner, whose price was also competitive. It was little more than half the cost of one of the other production centres we shortlisted."

He singled out for praise the service provided by Whitehouse, which included helping to remove the 54-pocket tool magazine and Z-axis motor so that the machine would pass through the door to the building. On the shop floor, the U5-630 has a compact footprint of a little over 2.7 x 2.4 metres, which is beneficial as space is limited in the factory.

Every component used in Singer Instruments' products is designed in-house using SolidWorks. Based on the models created, programming is carried out in FeatureCAM on a PC and data is transferred to the Spinner's Heidenhain TNC 620

control via the latter's TNCremo software. All the other machining centres on the shop floor also have Heidenhain controls similarly linked to the CAM system. Currently, all 5-axis cycles involve 3+2-axis cutting strategies, as components have historically been designed for production on 3-axis machining centres.

However the Spinner machine is capable of fully interpolative 5-axis machining, so parts being designed for new electronic workstations and laboratory automation equipment, used worldwide for research into genetics, neuroscience, cancer, biofuel engineering and microbiology, will be designed more efficiently with the Spinner machine's enhanced capability in mind.

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Gilkes investment boosts productivity and brings manufacturing back to UK

Kendal-based engineering company Gilbert Gilkes & Gordon Ltd (Gilkes) has made a seven-figure investment with machine tool manufacturer Yamazaki Mazak to significantly increase productivity and bolster its UK manufacturing base.

Gilkes specialises in the design and manufacture of hydro-electric turbines and cooling pumps for high horse-power diesel engines, with parts sourced worldwide. The company has acquired a Mazak INTEGREX e-1250V/8 vertical Multi-Tasking machine, with the intention of increasing capacity at its Kendal facility and also ultimately to re-shore the manufacture of vital components back to the UK.

Specifically, Gilkes currently sources fully-machined turbine runners from an Eastern European supplier. The new Mazak machine will enable the company to bring 40 percent of this machining work back to its facility in Kendal.

The INTEGREX e-1250V/8 is one of the largest machines in the Mazak range, designed for the 5-axis machining of complex large workpieces. The

Multi-Tasking machine is capable of performing a variety of tasks that would normally be completed by multiple machines, including milling, turning, boring and drilling operations. In addition, Mazak will be supplying a complete tool management system to reduce manual input and setup times and a new 5-axis CAD/CAM system.

"Our current machine tools in Kendal are great workhorses, but we have gone about as far as we can go with them," says Rebecca Sandham, head of operations at Gilkes. "With the Mazak we will be able to significantly increase our productivity levels which will enable us to continue to be highly competitive in our global markets."

"The INTEGREX acquisition forms part of a long-term plan to upgrade our manufacturing capabilities, from 3- and 4-axis machining technology to state-of-the-art 5-axis capability which will increase our speed of manufacture, our overall productivity, and the quality of our finished parts. Ultimately, we want this investment to be seen as proof of our



commitment to UK manufacturing operations and our responsibility to provide jobs for the local area."

Alan Mucklow, managing director UK and Ireland sales and Service Division at Yamazaki Mazak, adds: "This investment is another great example of a British manufacturer committing to the UK and bringing back vital work and jobs."

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Spalding engineering firm maintains its haul of orders with the aid of ETG CNC machine technology

The huge growth in fish farming in recent years is proving good news for a small precision engineering company based near Spalding.

A one-off job a decade and a half ago has turned into a major stream of business for Channing Engineering, which employs eight people at its workshop in the village of Pinchbeck.

Run by Colin Channing, the company makes parts that are in high demand for fish farming businesses in Norway, the Faroe Islands and in Canada. As a result, more than half of its work is now exported and, unlike many currently, the firm has no worries about the implications of Brexit with all of its main sales destinations outside the EU.

With business continuing to grow due to its reputation for quality and reliability, Colin Channing and his team have decided to replace one of their Bridgeport machining centres, working with the Engineering

Technology Group (ETG) to purchase a new Hardinge GX710S.

Colin Channing explains: "The previous machine was a highly reliable piece of kit, so it made sense to get another Bridgeport.

"It has been a while since we've had to replace a piece of equipment and it was the first time we have worked with ETG. Everything went very smoothly and, when any issues did crop up, we received a rapid response, which is just what you want with a significant investment."

The Bridgeport Hardinge GX710S is a 3-axis vertical machining centre with 20 tools on an ATC carousel and a single spindle speed of up to 12,000 rpm. Table size is 800 x 400 mm and the X/Y/Z axes offer 710/400 and 430 mm.

It has been equipped with Siemens controls to provide optimum accuracy and allow for fast transfer of data.

Colin Channing adds: "We are very busy

at the moment, with most of our work involving short runs of a few dozen parts off a time, or one-off prototyping.

"While we cover a wide range of different industries, including components for racing cars, fish farming equipment is still the biggest single source of work for us. The first piece of work we got, probably 15 years ago, was for Norway and we found we were quoting £100 a piece less than the other firms they were talking to.

"We now make our own version of some components and, as an industry, it now accounts for around 60 percent of our workload, supplying customers in Norway, the Faroe Islands and Canada. It has just snowballed and there's no sign of a slowdown. Fish farming has been the fastest growing sector of the food industry for the last two decades and global farmed fish production is expected to expand by a third by 2026."

Jon Mannion, regional sales manager at Engineering Technology Group, adds: "This machine comes with Siemens' ShopMill software and has a small footprint, which suited the company. Colin Channing was already aware of the brand's reputation for speed and reliability and he was impressed with the build quality.

"The added attractions of this particular machine were a 12,000 rpm direct drive spindle, rather than the usual speed of 10,000 rpm. Instead of an umbrella tool change it also has a side arm with 20 tools and comes fitted with a chip conveyor.

"It ticked all the boxes for Channing Engineering and we were able to get it delivered very quickly as the firm needed it in operation as soon as possible."

Engineering Technology Group (ETG) delivers highly productive turnkey solutions to customers involved in automotive, aerospace, domestic goods, high value engineering, medical and oil and gas.

Its portfolio of world class brand includes Bavius, Chiron, Nakamura, Quaser and STAMA.



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Modular angle encoder from HEIDENHAIN

A new family of optical scanning angle encoders has been developed by HEIDENHAIN for demanding applications requiring constant speed control or high positional stability. The modular design of the ERP 1000 encoders includes numerous circular scale variants and HEIDENHAIN's HSP 1.0 signal processing Application-Specific Integrated Circuit (ASIC), its first ever use in an angle rather than a linear encoder.

The ERP 1000 redefines angular measurement capability in high-end applications, particularly in how flexibly the unit can be integrated into a machine manufacturer's system as well as in the accuracy and robustness of measured value acquisition.

The flexibility with which the encoder can be adapted to an application is achieved through an extensive variety of modules with different circular scale sizes. These variants are available as full-circle and segment versions in diameters of 57 mm, 75 mm, 109 mm and 151 mm, allowing them to accommodate nearly any requirement.

The compact dimensions and light weight of the scales and scanning heads also contribute to their flexibility. The head is 26 mm long, 12.7 mm high, 6.8 mm wide and weighs just 5 grams, while the scales are 10.2 mm high and the lightest full-circle scale weighs 57 grams. These small dimensions and weights impose almost no limits on how the encoders can be deployed and the low moments of inertia make them ideal for dynamic applications with high shaft speeds up to 2,600 rpm.

The measuring standard of the ERP 1000 family of angle encoders is an OPTODUR graduation on glass. Depending on diameter, different circular scales feature signal periods of 23 000, 30 000, 50 000 or 63 000. In combination with the HEIDENHAIN HSP 1.0 signal processing ASIC, the encoders achieve accuracies of down to ± 0.9 arc second. They have an interpolation error down to ± 0.02 arc second and RMS position noise can be as low as 0.002 arc second. At the same time, noise immunity during scanning ensures reliability.



As a non-paired system, the ERP 1000 offers generous mounting and operating tolerances. For example, it achieves high measurement accuracies even if the mounting surface for the circular scale has not been perfectly machined. However, the better the mounting conditions, the higher the achievable accuracies.

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Strong triangle, strong products

Werkzeugbau Kröger GmbH in Lohne, Lower Saxony, has for many years relied on powRgrip from Rego-Fix for tool clamping. The reasons for this? Process reliability, flexibility, precision, quality, performance. These effects are achieved in a triangle made up of the manufacturer, user and dealer Meyer + Münster, which acts as a solution provider.

Tool manufacturing is one of the industries that has been facing ever increasing demands for some time. With strong customer orientation, the durability and quality of the tools in particular take center stage: "Both narrow tolerances and a long service life for the tools are required in equal measure" emphasises managing director Hans-Jürgen Kröger. "Ultimately, a precise, needs-based tool that works perfectly even after many years and thousands of production cycles forms the basis for an economical production process." These are requirements that Werkzeugbau Kröger must grapple with under pressure day in and day out.

Hand in hand with the customers and their designers, individual high-precision and high-quality injection moulding tools are developed in Lohne. Starting with the development and construction of tools, the expertise of the 28-person team extends to testing services, prototype manufacture and repair and modification work. The program is rounded out by contract manufacturing taken on for companies from the surrounding area.



The toolmaker's client base includes companies from the automotive, construction, and food industries, as well as companies from the electrical, horticultural, or agricultural technology sectors.

Michael Sieve, who is in charge of technical purchasing and order processing at Kröger, says: "For the automotive industry, which accounts for 70 percent of our order volume, we produce, for example, tools for Isofix holders and covers for toothed belts, interior components, or cylinder head covers." These kinds of tools, which are exclusively processed with tool steel, are built up to a size of 1,200 x 900 x

550 mm (X/Y/Z). In machining, four Hermle machines are used for this purpose; two of which are 5-axis and two are 3-axis. In the eroding segment, Kröger works with two vertical and two wire eroding machines. Production quality is assured by a measuring machine, among other things.

With Kröger's market entry 21 years ago, Meyer + Münster became a supplier for the toolmaker. Since then, the dealer of tool and workpiece clamping technology, tools, and machine tools has established a close partnership with the toolmaker. Managing director Hermann Meyer, in particular, knows all about production in Lohne and is aware of which technologies are required. This was also the setup seven years ago when Kröger purchased a new Hermle C40. With this milling machine, meaning a switch from SK 40 to HSK 63, new toolholders were also needed. Should we continue with shrink-fit holders here, which we worked with previously? A few things suggest not: Michael Sieve states: "For shrinking specifically, we often wanted three or four hundredths but didn't get it. At the same time, high retaining forces, high vibration dampening, and the durability of the holders were very important to us."

As if on demand, Hermann Meyer then arrived with the powRgrip and he was equipped with a test device, which he usually provides to potential users for four or five weeks. Intensive system tests then followed during which concentricity,



handling, and quality were meticulously examined. Those at Kröger were initially skeptical regarding compression: will it really hold? "It held. Really well, actually. Even when we went at full tilt" says Michael Sieve. "When comparing the shrink-fit and powRgrip holders, the surface in particular won us over. That was a tremendous difference."

On the basis of such results, the transition from shrink-fit to powRgrip holders was now consistently driven forward: "But you need to be aware that this kind of transition has consequences, such as for programming" emphasizes Michael Sieve. After all, Werkzeugbau Kröger continues to work with shrink-fit holders to a lesser extent. In order to flexibly select a machine on which manufacture should eventually take place, the toolholder can therefore not always be programmed.

Michael Sieve continues: "But we must always respond quickly and flexibly to the wishes of our customers. This is an area of tension that must be faced up to, but we would not have done this had we not been completely satisfied with the powRgrip holders."

Kröger has now long since ensured flexibility for machine use: powRgrip has been deployed on every machine today. Michael Sieve says: "As a result of day-to-day business, this seamlessness in the system is very important to us." In the meantime, almost the entire powRgrip product range is used. This means the PG collets, as well as the PG collets, with which solid carbide tools from 0.6 to 16 mm in diameter are held. The special solution PG secuRgrip is also used, which ensures especially high extraction security for tools with Weldon surface.

Michael Sieve says: "Especially with trochoidal milling, secuRgrip is a fantastic thing. The retaining forces are significantly higher than for other holders, the cutter is not removed and we are quicker." In the last year, the clamping unit has also been exchanged for the latest Rego-Fix model. With the PGU 9500, Kröger can now work from PG6 to PG32, and therefore from 0.2 to 25.4 mm. With the slimmer holders, the toolmaker now gets even closer to its components. In any case, Michael Sieve sees the fact that Rego-Fix does not rest during product development as a great advantage: "The powRgrip's interference contour is always seen as a shortcoming, but the Swiss are constantly working on improvements here."

The fact that Rego-Fix also always has the toolmaker in mind during these kinds of developments is demonstrated with the example of the PG15 holder, for which a 12 mm collet is now offered. "With it, companies that produce small parts can work very close to the contour," says Hermann Meyer. "Rego-Fix thereby takes account of the fact that many parts are becoming ever more complex, thin-walled, and delicate."

At Kröger, the powRgrip system is today a fundamental part of the production chain. There have also been clear advantages as Michael Sieve explains: "So not much can go wrong during clamping provided you observe due cleanliness. With shrinking, things are different. In this case, you should not heat a holder for too long. But you cannot always exclude the fact that this will sometimes happen for 10 or 20 seconds more. Nobody then checks how the structure is subsequently conditioned, how great the concentricity is, or whether a

holder is involved that should be withdrawn from circulation. And an hour later, on the machine, you have three hundredths in the component."

With the powRgrip system, these uncertainties do not exist. Handling is simple and tool centering is always a given. If you observe the manufacturer's recommendations, powRgrip works independently of the operator and, alongside process reliability, it ensures a high degree of flexibility.

While many users of the Rego-Fix holders quantify a significant increase in tool life, this increase can only be expressed qualitatively at Kröger: Michael Sieve says: "This is because we have no series production and always process different parts. But we can say that the service life is definitely longer."

The quality of the parts in particular has improved considerably. Although Kröger usually still erodes after milling, it gains immediate benefits from this: the effort required to achieve the final quality is significantly lower when it comes to shaving and assembly, for example. As Kröger is constantly under deadline pressure, this therefore completes another circle. Not least because powRgrip also relieves some of the pressure in the grinding area. Here in particular, various applications could be replaced by milling to the same quality. Rego-Fix guarantees consistent accuracy for the holder beyond 2,000 clamping cycles.

For more than twenty years, the partnership between Werkzeugbau Kröger and Meyer + Münster has been characterised by trust as Michael Sieve explains: "For us, a big advantage of this cooperation is that we have a sales partner that represents very good brands. In addition to clamping technology, we also get excellent cutters, drills, and threading tools. This takes us forward as a toolmaker."

The triangle of user, manufacturer, and supplier therefore works. Only recently, another component has been added: the exchange of experiences in Switzerland that brings powRgrip users together who want to get to know the system and manufacturer Rego-Fix even better and improve their production efficiency.

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Tecomet gets a hold on productivity with Hainbuch

Founded in 1963, Tecomet is a market leading manufacturer of complex, high-precision products and services for the medical device, aerospace and defence sectors. So, when Tecomet needed a secure and flexible workholding solution for its machine shop, the company turned to Hainbuch and its Manok stationary clamping system.

With 17 global manufacturing facilities in five countries, Tecomet employs over 2,500 people. At the company's Sheffield facility where component precision, quality and surface finishes are critical, Hainbuch provided the most suitable and flexible solution. The company's first investment in Hainbuch equipment was the 65 mm Manok stationary chuck for its DMG DMU 50 machining centre. Tecomet's Stephen Jackson says: "What we used to do here is hold the job in a two-jaw chuck and this gave us a lot of issues with vibration and positional accuracy. So, we opted for the Manok 65 from Hainbuch and it solved a lot of issues for us. The positional accuracy is spot-on and there are no more scratches or issues with surface finish. Furthermore, it has saved a lot of re-working and secondary finishing; it's a very good system.

"The rigidity of the Manok has improved our tool life dramatically and reduced our tooling costs. Furthermore, we have been able to push the tools harder and run the machines faster than before and this has improved our cycle times while reducing tool consumption. On this particular femoral knee job, we are looking to maintain a precision level of +/-10 microns. One key point is that we have numerous 5-axis machine tools on-site and we can interchange the Hainbuch system, easily placing it on another machine if necessary. It's simple, quick and easy to use and the support from Hainbuch has been very good."

The Hainbuch Manok offers the potential for lateral setups on base plates and it is available with a wide variety of adaptable elements that offer complete modularity for end users demanding a flexible approach to their workholding. Since the investment in the Manok system, Tecomet has extended its investment in Hainbuch equipment with a series of systems on virtually every machine throughout the machine shop.

Following the success of the Manok,



Tecomet purchased a pneumatic fixture plate with six Hydrok 42 mm collet chucks from Hainbuch. Stephen Jackson continues: "We are using this system for the production of a medical tibial tray, which is a forging with a small amount of machining. To clamp a forging, we have a standard collet that we have machined relative to the fixture. Essentially, we machined a pocket out of the collets to suit the forging. As it is a 3D shape, this keeps it accurate and we can machine it in-house. This keeps our lead times down and enables us to react to customer demands very quickly. The Hydrok system is clamping six parts in a single setup, pulling the parts down with impressive clamping forces and precision. We opted for the pneumatic system as we are using the configuration on an older machine that couldn't use hydraulics.

"Despite using a pneumatic system, we are not suffering from any lack of clamping force, it's just about ensuring we have the right air pressure in the system. The Hainbuch unit is also interchangeable and we can put other 3-axis jobs on the machine in the Hydrok configuration. The flexibility is impressive as the fixture plate and Hydrok system can be transferred to any of our 3- and 5-axis machines. Before the Hydrok system, we used to clamp jobs in two jaw chucks and jobs used to spin and vibrate and even mark the surfaces. Now, we can hit jobs much harder and faster. Workholding is the most important part of our business, without that you have nothing."



On another machining centre at Tecomet, the hydraulically loaded Hydrok clamping system connects through the base of the machine table to improve clamping setups, reduce lead times and maximise the available work envelope.

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Low-deformation clamping and fast setup

Clamping devices have a significant influence on precision and cost-effectiveness that can be achieved in the manufacture of gearbox components. For maximum flexibility and efficiency of production, ROLLSTAR AG has invested in a large 6-jaw pendulum compensation chuck with a jaw quick-change system and jaw quick adjustment. The convenient solution minimises setup times and delivers perfect results right from the start, faster and more economically than conventional clamping solutions.

The 6-jaw pendulum compensation chuck SCHUNK ROTA NCR 1250, which ROLLSTAR AG in Egliswil in the Swiss canton of Aargau uses to manufacture gears on a Pittler PV 1600 turn machining centre, is a large-dimensioned chuck with clever features. Was it a worthwhile investment? "Definitely," says Christian Märki, purchasing manager and member of the extended management team at ROLLSTAR. "Due to the machine design, including the clamping devices, we were able to reduce setup times by half while decreasing the reject rate by 75 percent.

"Especially for thin-walled components and high-quality materials the investment pays off. The company's aim was to achieve the necessary quality levels, reduce throughput times and lower the overall costs of producing deformation-sensitive parts in two operations while ensuring process reliability," says Christian Märki. Due to the SCHUNK ROTA NCR, parts that were



previously manufactured on another machine in a three-jaw chuck with a two-pressure clamping system are now being produced faster, more precisely, and with greater process reliability.

Christian Märki states: "In the past, when we clamped a ring gear or a ring with a finished diameter of 820 mm in a three-jaw chuck, the circularity or cross-sectional tolerance was higher than 0.1 mm. If we clamp the same component in the ROTA NCR, now we achieve cross-sectional tolerances of 0.02 mm to 0.03 mm. This high precision increases the service life of our gearboxes even further because the rolling bearings are subjected to completely uniform loads."

This means that the gearboxes can be used much longer without any maintenance works, and sudden failures are extremely unlikely. ROLLSTAR gearboxes are valued for their extreme reliability in applications such as in tunnelling and mining, where unplanned downtimes would be very costly.

The clamping concept has been developed in close cooperation between



ROLLSTAR, PITTERL and SCHUNK lathe chuck specialists in Mengen. The necessary range of components, design requirements, and setup times were systematically taken into account. The decisive factor in choosing SCHUNK was the combination of 6-jaw chuck, jaw quick-change system, jaw quick adjustment, and SCHUNK's ability to deliver quickly. Finally, the testimonials of other clients, which ROLLSTAR visited, helped seal the deal.

The 6-jaw pendulum compensation chuck SCHUNK ROTA NCR consists of a central chuck piston carrying three inner pendulums aligned at 120°. Each pendulum is connected to two base jaws. This ensures workpiece centering between six contact points, adjusted in pairs. As the clamping forces are directed towards the chuck centre, optimum centring is achieved without distortion of the workpiece. The chuck perfectly adjusts to the workpiece with its oscillating jaws. With conventional jaw clamping, this configuration allows for maximum roundness of the workpieces and ensures optimum centring at the same time.

Standard jaws can be used to replace elaborate system jaws and special solutions on the ROTA NCR jaw interface. This saves time, cost-intensive special solutions, and reduces setup costs. An integrated jaw quick-change system minimises setup times on the idle machine.

Team leader Daniel Fierz explains: "We use two sets of base jaws and set up the top jaws outside the machine, in other words, while machining is still in progress. The setup process for the second operation then takes only 20 minutes, including cleaning."

To do this, the base jaws are pushed open, then they automatically lock in place, and are secured with a quarter-turn of the torque wrench. Due to the jaw quick



adjustment, the base jaw position can be easily adjusted in just a few simple steps. "The quick adjustment feature allows me to set the clamping range in defined steps," explains machine operator Willy Ummel. "The system works flawlessly and is easy to clean."

In the past, up to two hours of machine downtime had to be calculated for a conventional setup process of such workpiece sizes. Now it takes Willy Ummel less than thirty minutes. Top jaw sets with hard chuck jaws and claw inserts are available for raw part clamping and sets of soft top jaws are already bored in the different diameters for machining the part from the other side.



One of the main goals of the investment was for the machine to run as smoothly as possible with only minimum interruptions, says team leader Daniel Fierz: "The lathe chuck is so precise that we can use jaws again and again without reboring. After exchange of the jaws, we achieve a run-out of 0.02 mm without any additional actions."

"The vertical position of the spindle also plays a role here. Maximum freedom of movement and therefore optimum centring are ensured because the components are put onto surface-ground pillars and not on the chuck jaws, as is the case with horizontal spindles."

"The vertical machine allows for significantly better oscillation than machines with a horizontal spindle, where the friction between the component and the jaws restricts the pendulum effect."

When finish machining or clamping rough turned surfaces, operator Willy Ummel can clamp the ROTA NCR's pendulum in the centre position so that all six jaws are moving concentrically. The use of the lathe chuck has a welcome side effect: the reject rate has fallen by around 75 percent since the solution was implemented. This is due to the dramatically reduced deformation, the high precision of the jaw change process and the improved flat work surface of workpieces. The reduced reject rate results in considerable savings, especially with high-quality materials such as the ferritic casts frequently used by ROLLSTAR.

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EMO 2019: Hall 3, Stands E36, D30, AO1

REGO-FLEX

Leader provides further lean manufacturing support

The Control international trade event for quality assurance, metrology, inspection and testing was held once again at the Stuttgart Exhibition Centre, Germany from 7th to 10th May 2019. It provided suppliers and users with a globally recognised technical event that is focused strictly on relevant issues. It offered a highly practical presentation of current worldwide offerings for useful technologies, processes, products and system solutions in the field of industrial quality assurance.

Among the latest products launched at this key event were two of the latest developments from Maprox. Both the Maprox AIR and ER range of pneumatic collet holders for automation are available in the UK and Eire from exclusive agent, Leader Chuck International. The Swiss company is renowned for providing elegant fixturing solutions for complex components, thin-walled parts, delicate geometries and other challenging products. Typical parts include gears, shafts and bearings for the automotive, watchmaking and medical industries.

Supporting the efficiency driven goals of the global manufacturing community, the new Maprox AIR chuck is also designed for automation. Combining all the advantages of the Maprox manual chucks with pneumatic clamping makes the chuck fully

automation system compatible, controlled via the measuring machine.

A rotary pneumatic feed supports flexible mounting options and adjustable clamping force. With 8 mm of jaw travel the chuck opens pneumatically against spring force. It provides perfect, repeatable inner or outer clamping with changeover times of less than one minute via the unique Maprox system.

At 160 mm diameter and with an ultra-low chuck body height of just 60 mm, the new chuck occupies the minimum space within any automation or robot loading system. It has a flexible clamping range with the Maprox proven top jaw or pin jaw to suit the application. Interface compatibility is supported with shanks, intermediate plates, or adapters depending on the measuring machine. Further sizes will also be available in the near future

"Jaws for this new chuck can be made of steel, coated or plain aluminium, plastic and so on, to match the component being held. It is a great all-round chuck offering the famous Maprox flexibility," states Leader Chuck International's managing director, Mark Jones.

Adding to its extensive product range, the recently launched Maprox pneumatic collet holders ER16 PM and ER20 PM have been developed for automation as company CEO Adrian Zwirner, says: "We are supporting

the growing shift of manufacturers following the path towards Industry 4.0 and the IoT, accessing the efficiency gains and improved productivity on offer."

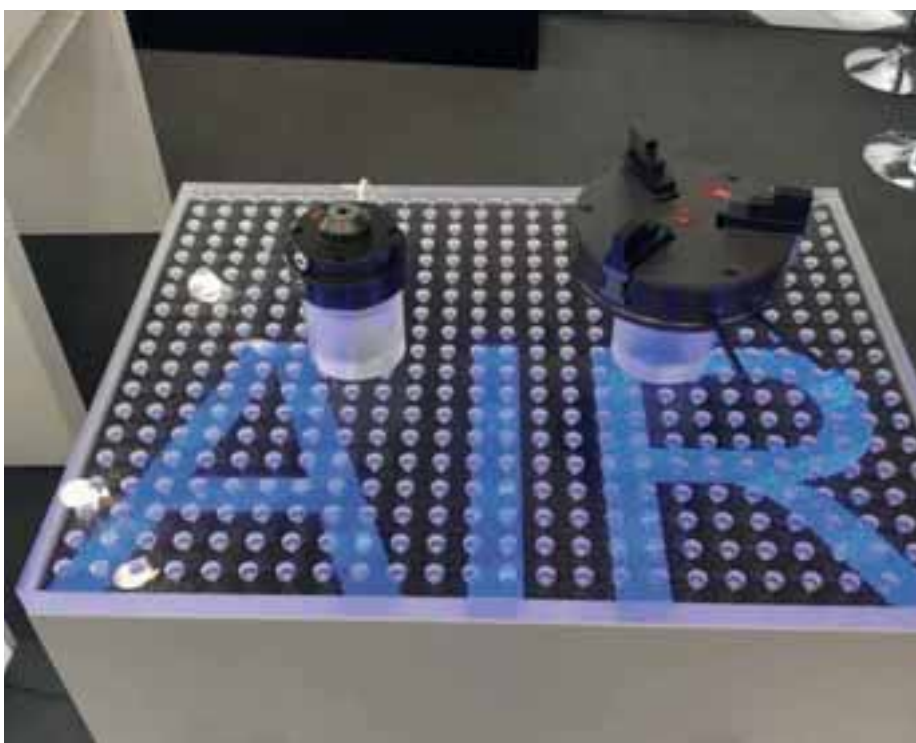
Designed to keep weight to a minimum these collet holders are manufactured from ALTEF coated aluminium and weighs less than 1 kg. In application the user can choose to pneumatically control the ER collet holder laterally or from below. The central rotary feedthrough on the bottom supports full rotation of, for example, turntables or indexing units while being controlled by the measuring machine.

The clamping pressure applied to the low height ER16 or ER20 collets is pneumatically adjustable while the specialised coating provided a hard surface that is abrasion and scratch resistant, as well as being food safe. As Adrian Zwirner explains: "The very hard ALTEF-layer is particularly abrasion resistant, corrosion-resistant, non-sticky and has a low coefficient of friction. The surface of the base material is converted into a ceramic layer into which Teflon is embedded."

Based in Tamworth and Co. Dublin, Leader Chuck Systems has an enviable reputation for the in-house design and production of Leader chucking, stationary clamping, gripping and workholding products. A respected brand name for high quality equipment with more than 65 years' experience, the company also stocks products from the very best suppliers, such as AMCC, AutoGrip, Balance Systems, Bison, Blue Photon, CARVEsmart, Cucchi Giovanni, Exact Machinery, Gamet, Hainbuch, Hewa, Iram, Jato, Lexair, Llambrich, Maprox, MicroCentric, Omil, Orange Vise, Panzeri, PiranhaClamp, Posistop, Rotomors, RotoRi, Walmag Magnetics, ZeroClamp and Zweifel. Able to provide the right chuck or gripping solution for any application, Leader Chuck offers quality, precision, and reliability at competitive prices with reliable expert advice and a commitment to customer service.

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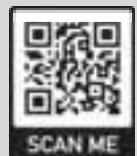
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Roemheld workholding. Driving Innovation through Manufacturing

Workpiece clamping technology powers productivity increase

ASP Automation GmbH uses flexible Gressel workpiece clamping technology to ensure maximised machine utilisation and thus increases production productivity

The word "flexibility" runs like a thread through all areas of ASP Automation GmbH. ASP's own products, the ASP aluminum profile modular system and Vario buffer conveyor belts, are characterised by maximum flexibility in application and use. In addition, the production of parts on customer order as well as for ASP's own products is organised in a highly flexible manner, which of course also includes the efficient multi-machine operation by highly qualified personnel.

Founded in 2000 by the current owner and managing director Werner Schramm, this strictly technology-driven company has developed from small beginnings. The company deals with the development and construction of automation solutions as well as special machines on customer order on the one hand and with the development, construction, and sale of its own products on the other hand. ASP currently has 18 employees, 10 of whom are in the area of mechanical manufacturing alone.

Contrary to the frequently observed trend towards a pure system integrator that primarily relies on components available on the market, Werner Schramm relies on a high degree of in-house production, which is currently around 90 percent.

"As a special machine manufacturer and manufacturer of our own products, we have to react very flexibly to customer wishes and are dependent on both the best quality and a high degree of schedule reliability for problem-free assembly of modules and equipment," explains Werner Schramm. "In order to guarantee this and to be able to act flexibly and quickly, we decided at an early stage to manufacture construction parts ourselves whenever possible and reasonable and to commission efficient partners to supply standardised our standard components."

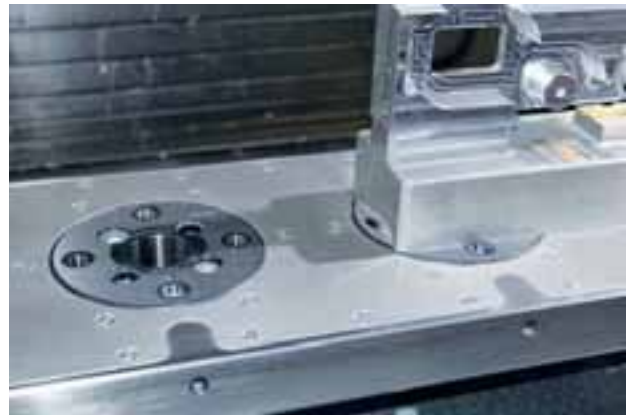
New CNC machining centre versus existing workpiece clamping technology

With increasing business volumes as well as the growing order volume, especially for its

own product Vario buffer conveyor belts, ASP soon encountered capacity problems with the intensive evaluation and subsequent procurement of another new 3-axis CNC machining Standcentre. The planned solution of equipping a 3-axis CNC machining centre with a large working range (X-axis travel = 1,000 mm) with a CNC rotary table and rotoFIX clamping yoke as the 4th axis instead of procuring an expensive 4- or 5-axis machining centre turned out to be absolutely right, based on the range of parts to be machined.

When the CNC was purchased, Werner Schramm already predicted that the performance capability of the CNC machining centre would reach its limits with conventional workpiece clamping devices and therefore contacted Gressel. After a visit by a Gressel sales engineer, a solution was proposed that was convincing in every respect and an order was placed for the supply of various components from the Gressel clamping technology modular system. Specifically, these are several gredoc mechanical zero-point clamping systems in square and round versions, several C2 125 centric clamping systems and several gripos single clamping systems.

With these clamping technology components, Werner Schramm and his colleagues realised a highly flexible universal clamping system. Depending on the design, configuration and equipment, this allows both rational 3-axis machining on a machine table equipped with an adapter plate as well as 4-axis complete machining after the assembly of a CNC rotary or tilting table. However, Werner Schramm and the machine operators came up with even more ideas to minimise the setup/conversion and assembly effort as well as the non-productive idle times caused by machine



downtimes. By creating the machine table adapter plate and placing five gredoc mechanical zero-point clamping systems angularly on it, these five zero-point clamping systems accommodate either the CNC rotary/tilting table mounted on a base plate or, if required, one to five gripos single clamps or up to five C2 125 centric clamps. It is also possible to equip large workpieces with gredoc bolts and clamp them directly onto the adapter plate. However, the use and application are even more flexible, because four gredoc mechanical zero-point clamping systems are angularly embedded in the tilting axis base plate of the CNC rotary/tilting table and, depending on the requirements or machining operations, these also accommodate one or up to four C2 125 centric clamps as well as blank blocks provided with gredoc bolts, so that they can then be machined in 4-axis complete mode.

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**EMO 2019: Hall 9, Stand H20 -
Hall 27, Stand D83**

Holtex gets a grip on precision with Haimer

Founded in the summer of 2014, Holtex Engineering Solutions provides prototype and small quantity production to the highest quality in the shortest lead time. Utilising the latest technology, machinery and supplier management techniques, Holmfirth based Holtex aims to be a one-stop supplier.

Ben Robinson from Holtex Engineering Solutions says: "We've gradually grown since we formed the business and we now have 10 employees. We have an ethos in investing in new technology and this includes some of the latest multi-axis turning machines as well as 3- and 5-axis milling. This technology is supported by high-quality tooling that is complemented by the Haimer Power Clamp Special Edition heat shrink system for the milling section and the Haimer UNO20/40 Microset tool pre-setter for the turning department and for the analysing tools and setting lengths and diameters for accurate cutting.

"The reason we invested in Haimer was because a lot of the jobs we do are relatively high precision and we are using quite delicate tooling on times. Additionally, the

machinery we have is only as good as the tooling we put in it and the more accurate our tooling is, the better off we are from the start."

"Additionally, a lot of our smaller and delicate tooling means we are doing profiles that aren't possible to measure with normal methods, you would require CMM technology. But with the Haimer system, we can accurately set diameters and check the run-out of tooling and this means that we can check the part before it goes to the inspection department. Right first time has gone up considerably.

"Now we are setting tools off the machine and for longer run jobs, we are setting the next tool whilst existing tools are running on the machine and this reduces downtimes. In addition, the tooling is lasting considerably longer as it is running at a much-improved accuracy and run-out. It is very easy to use



and with 10 minutes of training anyone can use the Haimer systems," concludes Ben Robinson.

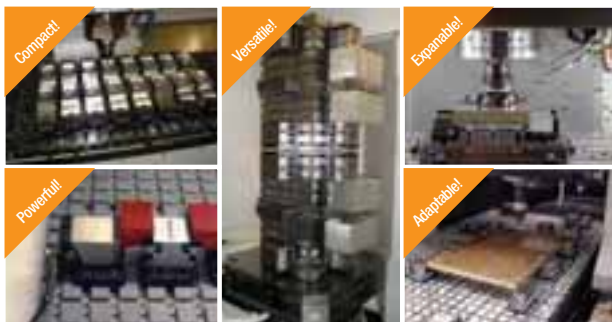
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EMO 2019: Hall 4, Stand E16

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Productivity doubled and scrap virtually eliminated

Subcontract machining of plastic parts constitutes the vast majority of output at the Gloucester factory of Stratos Precision Engineering, where the production of a particular component was causing problems that were exacerbated by the need to produce around 5,000 per year.

It is an acrylic manifold block for a flow control device that previously had to be clamped three times in conventional vices mounted side by side on the table of a Haas VF4 vertical machining centre. This process has been replaced by a more modern clamping system based on a four-sided tombstone and indexing trunnion supplied in October 2018 by 1st Machine Tool Accessories (1st MTA).

Specifically, the solution is a US-manufactured Chick Indexing Sub System. This comprises a Multi-Lok having four faces each carrying a twin-position Qwik-Lok clamp that secures two parts at once against a central jaw each time the handle is wound to closure. The whole arrangement is mounted horizontally on a fourth CNC axis comprising in this case a Haas HRT210 rotary table and a Chick tailstock. The benefits of what appears to be a relatively simple change in workholding practice has been remarkable.

Most notable is that the operator is now able to fixture eight plastic billets at a time,



Jonathan Caple operating the Haas vertical machining centre on which the tombstone and trunnion arrangement from 1st MTA has been fitted

close the machine doors, walk away for an hour to do other jobs, and return to unload eight parts machined on three faces, ready for a second operation to mill away material from the back face. Previously, the three cycles were carried out sequentially in individual vices mounted on the machine table. It meant that the operator had to be in almost permanent attendance to open the doors, reset the components and close the doors to be able to extract one finished part every 15 minutes, i.e. four per hour.

Production output is thus doubled,

despite the cutters being in contact with the material for a similar length of time. The saving comes purely through less handling of the components coupled with the opportunity to program fewer tool changes. One cutter can move around at least two parts rather than one, and potentially eight if the cycle time can be lowered by rotating the trunnion rather than exchanging the tool when machining any given feature.

The other major advantage of the new workholding solution provided by 1st MTA is a reduction in scrap from around one part in 20 to virtually zero, as the risk of tolerance build-up through repeated re-fixturing is eliminated. Previously, if the operator did not blow swarf comprehensively from all of the vice jaws, the resulting misalignment of the component in any one of them meant that features could fall outside drawing tolerance, which is down to ± 0.05 mm.

With parts set up nearer to eye level due to the additional height provided by the trunnion, and the fact that it indexes through 360 degrees during the hour-long cycle so a lot of swarf falls away, management of chips in the jaws is much easier and in practice workpieces always seat correctly in the Qwik-Loks. The only time a component now has to be scrapped is if a tool breaks in-cycle, which is rare when cutting plastic materials.

Jonathan Caple, managing director and joint owner of Stratos Engineering with business partner and operations director Mark Vine comments: "We are delighted with the efficiency of the new Chick workholding system and so is our customer.

"They visited to see the new production process and have been so impressed that the occasional bottlenecks and supply interruptions have been eliminated that it prompted them to award us additional work."

He adds that two other jobs including a round component have already been put on the Chick Multi-Lok using other sets of suitably machined aluminium jaws to hold the parts securely. A similar doubling of production output has resulted in both cases.

From working for a single customer in 2013 to currently having 170 on its books spanning numerous industries from food and drink to oil and gas, Stratos Engineering has made considerable progress in just six



Close-up of the Chick Indexer Subsystem, with a Multi-Lok holding two acrylic manifold blocks on each of four faces in Qwik-Lok clamps

years. A doubling of factory area within six months of starting and a further doubling in 2015 to currently 8,000 sq ft gave an indication that the subcontractor's rise would be rapid.

Specialisation in machining plastics that

many subcontractors avoid is one reason for the company's success. Another is the regular purchase of modern CNC machine tools; the company currently operates five lathes up to 650 mm diameter capacity, five machining centres with up to 1,217 mm



One of the acrylic manifold blocks machined in one hit on three sides. The component sits high in the machined soft jaws, allowing tools access to the top, front and back



Machined manifold blocks being unloaded ready for material to be milled from the back in a second operation

X-axis travel, two routers for material up to 3 m x 2 m and a turret mill. Up-to-date manufacturing practices on those machines, such as the use of Chick workholding, coupled with good service and delivery will undoubtedly see that success continue.

1st MTA Ltd
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Email: enquiries@1mta.com
www.1mta.com/indexer-subsystem

New block cylinder range from Roemheld

Suitable for operating pressures up to 500 bar and temperatures to 200°C (optionally 250°C), a new range of compact hydraulic cylinders with block-type body and high load capacity has been introduced by Roemheld for use in punching and forming applications.

The new Block Cylinder S (strong) is a further development of the manufacturer's proven cylinder range. Hydraulically double-acting, it is ideal for linear movements with demanding force requirements, as it can withstand high loads, including side loads which are absorbed by piston and rod guide rings. These also prevent direct metal contact between piston and cylinder housing, minimising mechanical wear.

Applications are typically to be found in pressworking, notably on punching, trimming, bending and stamping machines, as well as in joining and insertion equipment, and for mould slide actuation and core pulling. Inductive stroke-end controls are optionally provided for position monitoring.

Five piston diameters from 32 to 80 mm and four stroke lengths from 25 to 100 mm are available. If required, the stroke can be shortened by from 5 mm to 29 mm by means of a shrink fit bushing. Piston variants with an internal or external thread can be supplied.

Five sealing systems are available depending on the application conditions. By combining different materials, the sealing can be optimally adapted to the operating pressure, temperature and hydraulic fluid. This ensures that the piston moves consistently and smoothly even at low speeds, without stick-slip.

To meet high mechanical and thermal requirements, the threaded bushing, cylinder housing and internal piston stops have been reinforced. The rod seals minimise leakage to ensure clean operation and a newly designed wiper prevents ingress of coarse dirt or swarf.

The unit can be mounted in a variety of ways and there are numerous options for connecting the hydraulics. Selection of the appropriate model is facilitated by a series of diagrams showing load limits for all



Roemheld's Block Cylinder S is available in five sizes with piston diameters from 32 mm to 80 mm, in four stroke lengths from 25 mm to 100 mm and with five different sealing systems

operating conditions. The admissible side load for the piston stroke, the permitted piston speed in relation to the mass and the appropriate seal combinations for the application are stipulated.

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EMO 2019: Hall 4, Stand E54

Parting 4 productivity with TANG-F-GRIP

ISCAR introduces a revolutionary system for parting and grooving operations

Parting and grooving are essential aspects of the turning process and the metalworking industry faces a constant challenge to integrate methods that will increase efficiency and decrease downtime for these popular operations.

ISCAR fully understands the importance of parting and grooving operations in the turning process and that multiple factors need to be considered for every application, including machine tool selection, the type of material being parted/grooved, required depth of cut and feed and speed rates. ISCAR has responded to these complex needs by developing a comprehensive range of highly effective parting and grooving solutions that include an extensive choice of insert geometries, chip breakers and carbide grades.

With Industry 4.0 demands and standards fueling industry development at extraordinary rates, ISCAR has introduced new parting and grooving technologies capable of integrating seamlessly with the new wave of machining centres that work with incredibly high feeds. TANG-F-GRIP has been designed to answer these needs and to achieve high productivity and lower costs.

A revolutionary parting system designed for increased productivity, TANG-F-GRIP comprises a robust tool block carrying square blades that feature four pockets, with a unique parting concept capable of parting off up to 120 mm bar diameter to optimise performance.

TANG-F-GRIP is simple to mount and operate on all machine types, including multi-task and machining centres on X-axis,



without any need for special adjustment. The system enables the mounting of both TANG-F-GRIP and DO-GRIP blades on the same blocks.

The square blades possess a support system that provides totally vibration-free grooving and parting. TANG-F-GRIP also saves on setup time as, in cases of pocket damage, the block's configuration allows a blade to be rotated to a new pocket without setup.

TANG-F-GRIP is intended for high feed parting. It extends insert life, improves surface finish and part straightness and features high stability, especially when parting large diameters. The new patented blades reduce cutting time and also enable significant material savings, for instance a 120 mm bar can be cut with a 3 mm blade with High Feed (HF) inserts at a feed rate of up to 0.4 mm/rev.

The HF tangential single-ended insert was developed to enable highly efficient parting at very high feed rates, by use of a unique



chipformer technology. The insert features a new insert chipformer to allow unobstructed chip flow, which increases insert and blade tool life and leads to very high productivity gains.

All TANG-GRIP inserts can be integrated

into the TANG-F-GRIP system, which is also compatible with DO-GRIP DGN double-sided twisted geometry parting inserts, to provide an extensive choice of parting widths for all application ranges. ISCAR offers a wide variety of chipformers and advanced grades to ensure unbeatable performance and extended tool life.

The revolutionary secure clamping method uses a tangentially orientated pocket for pocket life that is three times longer than that of any other conventional self-grip system. The robust clamping method enables machining at high feed rates and provides excellent straightness and surface finish characteristics, while the flat top configuration prevents chip obstructions under all possible machining conditions.

The JETCUT system incorporates ingeniously designed through coolant channels to deliver coolant close to the cutting edge, which improves chip formation and slashes flank and cratering rates.

When machining materials such as stainless steel or high temperature alloys, the temperature near the cutting-edge area becomes extremely high. In addition, these material types tend to adhere to the tools cutting edge, causing built-up edge. These problematic phenomena can be moderated by targeting high pressure coolant directly to the cutting zone.

ISCAR maintains its unrelenting progress as a result of the company's continuous development of innovative, high-quality products, based on the talented work of the company's R&D Department and prompted by the evolving needs of global industry. This desire to provide customers with the very latest, most efficient metal cutting technology is reflected in the introduction of TANG-F-GRIP solutions to ISCAR's comprehensive GRIP range of parting and grooving tools.

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EMO 2019: Hall 4, Stand E38

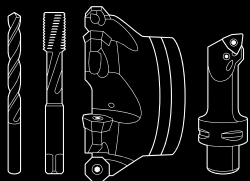
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Drilling systems from ARNO Werkzeuge increase productivity and reduce costs

ARNO Werkzeuge has strengthened its range of drilling tools, in particular with its AKB short-hole drill. This renowned tool manufacturer now offers a wide range of high-performance tools for diverse applications. In addition, exchangeable cutting inserts, self-centring drill bits as well as a variety of insert geometries and coatings all bear witness to more than 20 years of expertise in the field of drilling tools. In 2019, the company has redoubled its efforts to bring its drilling systems more into focus for users.

Simon Storf, marketing manager at ARNO Werkzeuge, says: "Moving forward, we want to impress users with our high-performance drilling systems. After all, they are based on more than 20 years of experience and development expertise."

In fact, the company is better known for its turning and grooving tools as well as its high-positive indexable inserts. It also offers a wide range of high-performance drilling tools for a variety of applications.

Bringing drilling systems out of the shadows

Above all, the company's AKB short-hole drill stands out with 14-55 mm diameter for bores up to $5 \times D$, as well as optimised swarf chambers which extend right up the drill collar, the tool is coated and polished which improves swarf evacuation. The carrier tool is coated and polished, which optimises chip evacuation. An internal coolant channel allows direct cooling of the flute and, with Torx-Plus® screws, the inserts can be changed quickly. Four geometries for inserts for steel and non-ferrous metals ensure a wide range of applications can be covered with different feed rates.

SHARK-Drill is an indexable insert drill for diameters of 9.5 - 114 mm. The nickel-plated carrier tool with integrated coolant supply is available with a straight flute or spiral flute for Weldon or Morse tapered holders. For example, it can be used as a rotating tool, spiral flute, while the workpiece is stationary or as a stationary tool, straight flute, while the workpiece is rotating. The drill series includes twelve variants for maximum drilling depths of $32 \times D$ or 290-939 mm. Three geometries



for cutting inserts, universal, AS with excellent centring properties and flat bottom drilling inserts, cover a wide range of machining applications. With HSS indexable inserts, SHARK-Drill is a universal and cost-effective problem-solver that ensures process reliability.

SHARK-Drill2 for maximum performance
With SHARK-Drill2, ARNO Werkzeuge has also developed a high-performance drilling system that combines the advantages of a solid carbide twist drill with interchangeable cutting inserts for maximum performance. Equipped with a carbide insert which can be replaced whilst the tool remain in the machine, through tool coolant and full-length Weldon clamping flat, this tool can operate at very high feed rates. Drilling depths of $2 \times D$, $3 \times D$, $5 \times D$ and $8 \times D$ are possible with diameters of 14 - 32 mm.

For those who want to combine drilling and milling, SHARK-Cut from ARNO Werkzeuge is a multifunction tool that can do both. Mini, standard and rebore are three variants that make drilling possible from diameters of four, eight and twelve mms respectively. Likewise, internal and external diameters can be machined and flat surfaces created. This combination tool thus reduces the number of tool changes required and speeds up the respective processes.

Emil Arnold set up ARNO Werkzeuge

Karl-Arnold GmbH in 1941 as an innovative tool manufacturer and the company is now in the third generation of owner management. The company has a high manufacturing depth, in-house development competence and a global sales organisation. It produces highly modern, high-performance tools which are used world-wide in production with fixed headstock machining, Swiss type machining, parting, grooving, turning, drilling and milling. One of the company specialities is ground high-positive indexable inserts for complex manufacturing operations. Here, ARNO offers the largest portfolio in the world.

Customised tool solutions, which later become highly coveted standards, are developed in close collaboration with its customers, taking their requirements into consideration. The tradition-based company ensures customer proximity with a work force of over 200 employees at its head offices in Ostfildern and its numerous sales offices all over the world.

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MAPAL develops wave of performance optimising tools

MAPAL has now extended its extensive range of solid carbide milling cutters with the arrival of new models from the OptiMill range that includes the new 'Wave', 'Trochoid' and 'Alu-HPC-Pocket' series.

The trochoidal milling cutters from the MAPAL OptiMill-Trochoid range now have additional specially formed chip breakers. These ensure short chips and their reliable discharge from the process, which maximises process reliability and performance. The solid carbide tools impress with very high cost-effectiveness, which is credit to high cutting rates with cutting depths up to an ap of 5 x D.

Time-consuming ramping processes or pilot bores are frequently the order of the day when milling pockets. In order to eliminate these steps during the machining of aluminium, MAPAL is now offering the OptiMill-Alu-HPC-Pocket solid carbide milling cutter. The impressive OptiMill-Uni-HPC-Pocket can successfully be used for numerous machining operations and it has been specially adapted to the machining of aluminium.

With the OptiMill-Uni-Wave, full slot milling with a groove depth up to 2 x D is possible. The solid carbide milling cutter that can be used for a wide range of materials can be operated with high feeds. Thanks to the innovative knurled roughing geometry, short and tightly rolled chips are generated during machining. This makes swarf evacuation from the work envelope an extremely efficient process. This exciting new line of milling cutters are now available as standard in a variety of new diameters and lengths.

MAPAL has not only expanded its range of high-performance solid carbide milling cutters, but with the new power chuck, the



company is now offering the optimum tool holder for the new milling cutters.

The new power chuck impresses with strong clamping, simple handling and very good radial run-out. The location bore is manufactured in the single digit μm range and a patented spring element in the location bore ensures a defined form closure between tool and chuck. The tool can be reliably clamped in the chuck by hand without the use of a torque wrench, improving the speed of clamping.

Proven automotive expertise

When a prominent West Midlands subcontractor won a new long-term contract for machining con-rods for the yellow goods industry, it called upon MAPAL for its cutting tool expertise to reduce costs and improve productivity.

Machining over 15 con-rods on a daily basis with a contract term at a minimum of a two-year period; efficiency, process reliability and cycle time reductions are three key parameters the Midlands based manufacturer sees as critical factors in the project. The internal engineering consultant at the Birmingham business had a previous relationship, so five months ago the company sought out MAPAL's experience for reaming a 40 mm diameter bore.

Commenting upon the application, MAPAL national sales manager, Eugene Nugent says: "The customer involved us at the very start of the process, based on our reputation for automotive

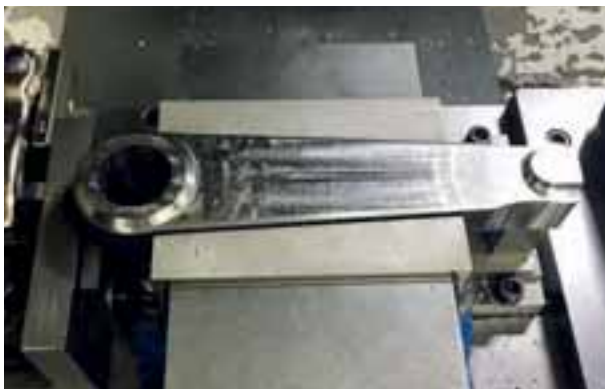
tooling solutions and con-rod machining. The cast steel con-rods are hardened to 62HRC, which makes them a challenging proposition. In addition, the drilling operation leaves between 0.15 to 0.17 mm stock allowance for reaming. We applied a 40 mm diameter guide padded reamer and every bore now has an exceptional surface finish of less than 1.6Ra."

The success of the 40 mm diameter reamer opened that door for an opportunity to trial further tools on the con-rods. The MAPAL engineer identified an opportunity whereby a competitor end-mill was finish profiling hardened con-rods in a cycle time of eight minutes. The 8-flute 16 mm diameter end mill was expensive, had limited tool life and wasn't demonstrating impressive productivity characteristics. Eugene Nugent continues: "The competitor end mill was very expensive and it wasn't yielding the expected results, I ran trials with a 16 mm diameter Optimill Uni end mill and instantly reduced the cost of tooling by 45 percent.

However, this changeover was more than just a cost reduction exercise. The MAPAL Optimill Uni is running at 2,500 rpm with a feed rate of 1,100 mm/min on a very difficult material and the results have delivered a cycle time reduction of three minutes per part.

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Walter keeps users in the groove

Tooling expert Walter GB has announced two new multi-edge tool systems to add to its range of products for grooving and parting off; the Walter Cut MX, with four cutting edges, for parting off small workpieces up to 12 mm diameter and the two-edge Walter Cut GX34 for work up to 65 mm diameter.

These complement the existing Walter Cut GX24 double-edged grooving inserts

considered a particularly difficult process and such applications are generally performed with cutting values that are too low, to avoid tool breakage or other problems. Walter has now also eliminated these weaknesses with the new MX and GX systems.

The MX system offers a new approach to clamping, which Walter says is more user-friendly and more reliable. The

increased by 30 percent thanks to the system's stability, which minimised machining vibration.

All Walter Cut tools feature highly-efficient 10- to 80-bar precision cooling that is integrated into the toolholders and coolant is directed into the cutting zone for optimum cooling and high productivity. On ISO-S materials, cutting speeds can be increased by a factor of two while



for workpieces up to 46 mm diameter. The result is that Walter users can now complete 90 percent of all grooving applications with standard tools from the Walter catalogue.

The standard MX system range features insert widths between 0.8 mm and 3.25 mm for cutting depths up to 6 mm, though Walter can provide special sizes and designs, grooving with chamfer, for example, on request via the Walter Xpress short delivery time service. Walter Cut GX34 has grooving inserts with widths of 3 mm or 4 mm for cutting depths up to 33 mm.

In developing the new tools, Walter's engineers have successfully overcome a range of important 'accepted weakness' with standard grooving tools including poor chip breaking, chip removal, cooling and securing of the indexable inserts, which is often awkward, imprecise and not strong enough. As many materials become more demanding and feature increasingly difficult cutting properties, Walter has overcome these problems.

Parting off or deep grooving is widely

tangentially-clamped insert aligns itself independently and with total accuracy in the machining direction. A dowel pin in the insert seat ensures highly accurate and completely secure fixing and inserts cannot be installed incorrectly and can easily be changed. This method of fixing also contributes to high stability and repeat accuracy. Unused cutting edges are protected in the holder and the same insert type is suitable for both right and left toolholders. The system's potential was demonstrated in a tool life test in large-scale series production on a Swiss-type auto lathe where stainless steel pipes with an outer diameter of 5 mm were parted off with inserts having a cutting edge of 1 mm. The Walter Cut MX system more than tripled tool life compared to the former method.

High stability and process reliability are also characteristics of the new GX34 system and a machining test at a customer that supplies nitrided steel drive shafts with diameters up to 60 mm, saw GX34 extend tool life by 100 percent and machining feeds

maintaining tool life. The grooving tools for small applications operate with a large coolant outlet.

Both the GX24 and the new GX34 tools feature two coolant outlets. Manual alignment of the nozzles is not required since the system cools the rake and flank faces simultaneously, with the second coolant jet being aimed directly at the flank face.

This precision cooling also has a positive effect on chip formation, with chips breaking in a controlled manner so that they are relatively short. Furthermore, with two jets of coolant ensuring a constant film of lubricant, chips can be transported out of the groove with less friction, resulting in high process reliability and surface quality.

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Floyd has groovy new small turning line

As specialists in the turned part and precision machining industry, Floyd Automatic Tooling has now introduced the new EVOCUT-Line parting system from Applitec. The completely new parting and grooving system from Swiss tooling experts Applitec incorporates a compact design, simplified insert changeovers and compatibility with platen type tooling configurations; everything to make the EVOCUT-Line the first-choice tooling system for compact work envelopes such as in sliding head turning centres.

With performance, precision and rigidity a given, the EVOCUT-Line is available with the H Series Monobloc toolholder, the H Jet Series with an integrated through coolant supply and the HK, HK-RS, HUK and HM designation of parting-off blades. The EVOCUT Line meets the complete needs of turned parts manufacturers with the HK Series being a generic parting-off blade whereas the HK-RS incorporates a recess for sub-spindle access. Additionally, the HUK blades have been designed for upside-down parting and the HM is a short length modular blade system. The H-Series and H

Jet Series of toolholders are available with a 10, 12, 16 and 20 mm square shanks to accommodate everything from compact tool platens in sliding head turning centres through to more robust fixed head machine tooling platforms. Each of the toolholder and blade designations has been optimally designed for fast insert changes and inter-changeability in compact work envelopes and machines with platen type tool configurations. This ease of access is certain to reduce non-productive tool changeover times whilst enhancing the flexibility on machines with limited tool stations.

The EVOCUT-Line is offered with four insert widths of 1.5, 2, 2.5 and 3 mm that are capable of machining up to a maximum 44 mm depth of cut. These ET15, ET20, ET30 and ET40 designations are available with Applitec's impressive U, J, T and A style geometries that improve speeds, feeds, material removal flow and surface finishes while catering to the specific characteristics of a complete variety of material types.

Applitec has an unparalleled reputation in the small turned parts industry and the new



EVOCUT-Line is the next generation destined to further enhance productivity, tool life and performance for end-users. The respective insert dimensions and geometries are available with no fewer than six grades that include PVD and CVD coated inserts as well as uncoated grades for non-ferrous materials.

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Guhring expands composite offering

The range of Guhring cutting tools for the machining of composite materials has now been expanded with the new innovations now published in a 'High Performance Tools for Machining Modern Composite Materials' brochure.

Available to download from the Guhring UK website or from your local representative, the 24-page publication includes the latest solid carbide and PCD drills and end mills, taps, slot drills and PCD compression milling cutters. With CFRP, GFRP and multi-layered FRP materials increasingly making an entry into a broad range of industrial applications, Guhring has evolved its product offering to meet the ever evolving needs of the market that ranges from the aerospace, automotive and power generation sectors through to the marine, medical, sport and hobbyist through to the subcontract market.

Its product range has been specially adapted to the respective material structures to ensure optimum chip evacuation as well as uniform hole diameters across all material types.

The new publication introduces new and extended product ranges that includes solid carbide stub drills and Kevlar drills from 2.5 mm to 10 mm, the CR100 and FR100 geometry CFRP/GFRP end mills, ISO metric machine taps and 90 and 120-degree multi re-grindable PCD drills. Additional products include the two, three and four cutting edge PCD slot drills and end mills with through-coolant. The new solutions are available with a wide variety of shank forms and tolerances, surface finishes and coatings, helix and rake angles and cutting edges.

The diamond coating is a critical feature for optimising performance when cutting FRP. The Guhring diamond coating is called



CRISTAL and this is applied in-house to optimise performance, consistency and tool longevity for the end user.

The challenges of developing cutting tools for the composite industry lies in meeting the specific machining conditions that can occur when machining FRP materials. These challenges include quality characteristics that are important for metallic cutting but also the fraying of fibres, delaminating, burr and thermal damage prevention during machining and the splintering of fibres.

Guhring has invested significantly in its R&D efforts to overcome the difficulties of machining composite materials. This not only caters for standard product ranges but also a vast array of special products. For your edition of the new 'High Performance Tools for Machining Fibre Composite Materials' brochure; please download via: www.guhring.co.uk/catalogue-downloads or contact your local Guhring representative.

Guhring Ltd, founded in 1973, was the

first subsidiary of the Guhring Group. Initially starting as a sales, stocking and distribution operation, Guhring Ltd has now grown into an established UK manufacturing company with the capability to produce special tools on short deliveries and regrind/recoating service.

Guhring Ltd employs a team of field technical support engineers and in-house design and application engineers who are focused on offering customers a continuous stream of the very latest in cutting tool technology. The need to support manufacturing is the main goal and this is achieved by ensuring that optimised tools are designed, developed, manufactured and applied.

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In with the new

Sustained business growth over the past five years, brought about by a product range expansion, increased market share and the success in opening up new markets, had placed increasing pressure on M.A. Ford Europe to expand its UK based operation to meet demand and future business development targets.

After 20 years of trading in the UK, much of it located in Pride Park, Derby, the company has now moved its HQ to larger premises at City Gate, less than a mile from its original location, with the official opening taken place on June 25th 2019.

The pressure on the capacity and facilities of its original HQ, were recognised as far back as 2016 when plans began to take shape for a move to larger premises. Managing director, David Ward, explains: "It was inevitable that we would need to move, but we didn't just want to be a bigger version of what we already were. We wanted to evolve and develop as an organisation to enhance the scope and quality of support we provide to our customers, as well as our UK and international distributors."

With an area of more than 8,700 sq ft (808.2 m²), the new building is almost four times the size of its previous one. In addition to the increased office space, meeting rooms and conference facilities, the warehousing and storage capacity has more than tripled in size to 4,000 sq ft (371.6 m²), which enables a wider range of tooling to be held in stock and allow rapid despatch to meet customer orders.

This is particularly important, as the M.A. Ford tooling range has been expanded considerably over the past 12 months under its APG (Advanced Product Group) and FordMAX brands. Alongside the recently introduced TuffCut® Series 380 XT9 end-mill, which is designed for high speed machining of titanium, inconel and super-alloys, other new products under the APG banner include the TuffCut® Series 3 MVS and MVR micro-diameter coated carbide end mills, which range from 0.5 mm to 3.0 mm diameter, and the Twister® Series M coated carbide micro-drills, which covers diameters from 1.00 mm to 2.95 mm.

It's a similar story for FordMAX with the introduction of six new product lines including the UK made Series MV4 solid carbide end mills, Universal HP Taps and four new indexable insert ranges. These include indexable high-feed milling; shoulder milling and spotting and chamfering tools, as well as an indexable turning tools range.

Arguably, the most important feature of the new facility has been the creation of a dedicated technology centre on the ground floor, which is being used for UK and international distributor training, tool prototyping and diagnostics. At the heart of the technology centre is a new Spinner U-630 5-axis universal machining centre, which uses Siemens Sinumerik 840DE SolutionLine Control CNC software, which augments the existing technology centre based at the company's Leeds based custom tool division.



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A guide to machining better castings

How optical metrology can enhance the metalworking industry

Producing castings is an elaborate process in which each stage plays a critical role in the creation of final parts that meet customers' requirements. Thus, the metalworking industry's contribution to the manufacturing process is imperative and essential. It must produce raw castings with enough material for the machining process so that the final parts meet inspection standards and it must achieve this while minimising inspection time and the production costs associated with rejected parts.

How can raw castings with potential issues that might not present enough material for the machining process be identified? How can entire surface profiles, not just discrete points, be checked to ensure that the parts fit within the required tolerances? How can the required information to mark the castings as pass or fail be obtained before investing more time and money in them?

This article aims to illustrate the different challenges that the metalworking industry faces in machining castings, to highlight how optical metrology allows for more castings to be inspected before and after machining, and, finally, to describe how inspection time can be shortened and production costs associated with scraps can be reduced. The objective is, of course, to produce parts of better quality.

Challenges

Producing parts involves machining raw castings. Yet, only the surfaces of the castings with important mechanical functions require machining. To optimise machining and ensure better quality, these surfaces must have enough material; otherwise, mechanical contacts might be defective and tolerances might not be met.

Therefore, the manufacturing industry recognises the benefits of inspecting castings before and after machining. Before machining to measure dimensions and validate if the material quantity is sufficient on specific surfaces. After machining to get an overall view of the entire casting and inspect the complete surface. The objective is, of course, to produce parts that meet the required tolerances.

Nevertheless, some manufacturers go as far as inspecting the mould to produce better raw castings. Is having a nominal



mould, built according to the Computer-Aided Design (CAD) file, not a prerequisite for obtaining a nominal final part? Unfortunately, no.

Multiple unpredictable phenomena, such as shrinkage, come into play when producing castings. Because metal fusion is a complex phenomenon, the manufacturing process does not follow a linear and repeatable path from the mould to the final part.

Clients ask for perfect parts, according to specifications and within tolerances, not for perfect moulds. Therefore, it is always preferable to first inspect the parts, not the moulds and, then, to make changes backward on the die if specifications are not

met. Controlling the quality of all of the stations of the manufacturing process is an ambitious project. Many unforeseeable phenomena that are difficult to control make it impossible to predict the final result before getting the parts in hand.

Machining castings that do not have enough material will result in producing parts that do not meet customers' requirements. Shipping non-compliant parts to clients in large quantities can result in financial and legal issues. To protect themselves, clients demand quality inspection reports on each part. This is where optical metrology can be of great help to the metalworking industry.



Optical metrology

With optical metrology, the metalworking industry gets a portable, easy-to-use, quick, and efficient instrument for measuring, inspecting, and validating castings before and after machining.

Portable because the measuring tool can be taken directly to the casting on the shop floor in the production environment. Because of these characteristics, which are specific to portable 3D scanners, castings no longer have to be brought to the Coordinate Measuring Machine (CMM). Precious time is saved, allowing for more inspections.

Easy-to-use, portable 3D scanners offer a digital Go-No Go feature, which enables operators to quickly evaluate dimensional measurements and easily identify parts that do not meet the required tolerances. This way, castings that do not have enough material before machining can be easily identified, as can those that do not meet the required tolerances after machining. Thus, inspectors have the necessary feedback to mark the parts as pass or fail before investing in them further.

Optical technology can contribute to reducing inspection time. Due to the instant meshing, inspectors can check the surface acquisition by looking at their laptop computer or tablet screen. Therefore, the validation of dimensional variation is much faster than with traditional measuring instruments, which contributes to freeing up precious CMM time, solving bottleneck issues and, eventually, avoiding the purchase of a second CMM.

Efficient because optical technology enables inspectors to control more castings with more information and without surface preparation. Indeed, unlike touch probing, 3D scanning provides an overall view of the inspected part, not just discrete points. In analysing the surface profiles, 3D scanners



can validate if the material is sufficient to proceed with machining.

Parts of better quality

Focusing on the part quality and not on having a nominal mould built according to the CAD file, will accelerate production time. This way, frequent and unpredictable phenomena will be taken into account during the manufacturing process.

Reduced production costs

By inspecting castings before and after machining with a portable 3D scanner, the metalworking industry can quickly identify those that do not have enough material, thus limiting the cost associated with their production. Therefore, these castings can be redirected and reworked before investing in them further.

Shortened inspection time

With an acquisition rate of 1/2 million points per second, 100 percent of the surfaces can be inspected within a few seconds. Additionally, the part no longer has to be moved to the metrology lab for inspection. Therefore, inspections made with portable

3D scanners mean being able to inspect more castings faster and with more data while freeing up CMM time that can be used for more critical and valuable tasks such as final inspections.

Conclusion

The objective of the metalworking industry is to produce parts that meet their customers' specifications and are within the required tolerances. To do so, raw castings are produced and, then, machined and validated. In order to reduce the costs associated with scraps, inspecting the casting dimensions before machining is recommended to ensure that the material is sufficient. Then, after machining, an inspection can confirm that the part dimensions, not the mould, correspond to the CAD file.

Optical metrology instruments, such as portable 3D scanners, provide the metalworking industry with more information and enable inspectors to measure more castings faster. Thus, precious CMM time can be saved and dedicated to final reporting, which is required by customers. Thus, 3D scanning helps to offload traditional CMMs, solve bottleneck issues, and avoid the costly purchase of a second CMM. Optical metrology not only helps to free up CMM time, which is valuable for the metalworking industry, but also guarantees to minimise inspection time and production costs, resulting in parts of better quality.

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Widney 'scans' the market for 3D measurement

Widney Manufacturing Ltd is a prime example of a business that has not only survived, but through its innate ability to continuously evolve and adapt to the demands of ever-changing marketplaces, has prospered and grown. Founded in 1886 as a manufacturer of components for horse drawn carriages, the West Midlands-based company has continually developed new product lines that best serve each era's specific needs.

Today Widney operates from a modern 17,000 m², 4.5 acre site and has grown to become a leader in the design and manufacture of vehicle windows, vehicle sun blinds and telescopic slides. To enable the most efficient levels of production to be achieved, Widney's manufacturing plant currently uses advanced CNC machining, bending and fabrication processes, as well as employing sophisticated welding technology.

Widney is renowned for the company's design capabilities, engineering expertise and the quality of its products. In-fact, the quality of Widney's products has underpinned the company's remarkable success and its impressive longevity over the past 130 years. To help ensure the continuity of the company's reputation, regular investments are made in advanced quality control equipment. For example, to enable Widney's quality assurance function to keep-pace with increased production levels,



a search was recently made for a fast acting, high-precision 3D dimensional measuring technology that had the flexibility to adapt to accommodate the company's many, diverse product ranges.

Having looked at several alternative systems from leading metrology companies, an 8-axis QuantumE ScanArm, which combines a portable QuantumE FaroArm with a FAROBlu™ Laser Line Probe HD / SD, was purchased from FARO UK. Following the ScanArm's installation and a brief operator training session, the advanced metrology system is now being used to efficiently gather accurate 3D dimensional data.

Stuart Stanton, quality engineer at Widney Manufacturing Ltd, explains: "As an ISO 9001 and ISO 14001 approved company, our objectives are to provide world class products which continually satisfy all applicable legal and regulatory requirements and meet the expectations of our customers in all aspects of quality, cost, performance, safety and reliability.

"Given the challenging nature of the areas our products are used in, the quality of our output is important to all at Widney Manufacturing.

"As well as recommending enhancements to our processes and procedures, our in-house quality reviews sometimes result in the purchase of advanced quality control equipment. This was recently the case when

it was decided that, to enable our dimensional inspection checks to keep-up with our increased output, we needed to source a new, accurate and efficient means of measurement. As the proposed new inspection equipment needed to be used both in our quality department and across our vast shop floor, it also needed to be portable, robust, reliable and easy-to-use.

"Following an impressive demonstration performed on some of our most demanding products, we found the ideal answer to our needs in FARO's 8-Axis Quantum ScanArm. In addition, to precisely and rapidly performing standard measuring routines and undertaking part comparisons to CAD, thanks to its advanced non-contact scanning capabilities, our new ScanArm is also



used on our previously difficult to inspect, complex free-form products, such as vehicle windows and assemblies. In addition to increasing our accuracy capabilities, the ease-of-use and speed of our new Quantum System has enabled us to achieve significant inspection time savings."

The FaroArm Portable Coordinate Measuring Machine (PCMM), allows manufacturers to easily verify product quality by performing 3D inspections, tool certifications, CAD comparison, dimensional analysis, reverse engineering and other important quality related tasks. The recently launched, advanced FARO 8-Axis Quantum System is the world's only 8-axis portable metrology solution and has redefined the market expectations for arm technology. The 8-axis Quantum System seamlessly integrates a portable Quantum FaroArm or ScanArm with an eighth axis, enabling the part under inspection to be rotated in real-time relative to the Arm/ScanArm. This ends the difficulties associated with reaching around the object and removes the need to move the Arm/ScanArm into different locations during the process. The result is unmatched measuring speed and up to 40 percent reduction in the time it takes to scan a part or assembly.

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More efficient and user-friendly recording of measurement data

Transducers and the corresponding evaluation units are the most influential components of a measurement chain in quality assurance. Another indispensable component is the professional evaluation and documentation of the measured data. With two new module types, Mahr has now further developed its Millimar range from eleven to thirteen combinable components. This improves the handling of proven technology on the one hand and expands the Millimar's field of application to include air gaging on the other.

Save money with the 4-fold inductive module

The new 4-fold inductive module N 1704 M/ T/ U combines and improves the qualities of the N 1702 module, it combines four slots for inductive probes in one module. This is a variant with four instead of two slots for inductive transducers and saves both space and 22 percent of costs, with another 50 mA current in subsequent operation. The module is available in three versions and is compatible with the probes from Mahr, Tesa and Marposs.

Pneumatic non-contact measurement

The new pneumatic module N 1701 PF/PM offers the possibility to record measured values from pneumatic measuring devices in the Millimar Cockpit software. It is possible to evaluate jet air plug gauges, jet air ring

gauges, jet air caliper gauges as well as pneumatic measuring devices with several measuring planes for the determination of taper, ovality, perpendicularity and various other form characteristics. In conjunction with the probe modules N 1702 M/ N 1704 M/ T/ P for inductive probes, electronic and pneumatic signals can be combined as required, offset against each other and displayed.

The Millimar N 1700 family

The modular BUS system Millimar N 1700 for length and multi-point measurement is a true all-rounder in quality assurance. The modular structure, paired with the wide range of transducers and the touch-operated measuring software Millimar Cockpit, offers maximum individuality and therefore also flexibility. The new modules N 1701 PF / PM and N 1704 M / T / U are the perfect complement.

With the Millimar N 1700 modules and the Millimar Cockpit measuring software, Mahr offers an innovative, comprehensive solution that considerably simplifies and improves everyday working life.

More comfort in surface analysis with MarControl

The innovative measuring stations of the MarSurf CD, GD and VD series are optimised for accelerating measuring processes and simplifying handling. A new manual control panel now makes work even more convenient.

Reducing measurement times means you gain significantly in performance. This is exactly where Mahr comes in with the latest generation of measuring

stations for contour and roughness measurement. The devices of the MarSurf CD, MarSurf GD and MarSurf VD series are optimised to accelerate the measuring processes and to simplify the handling. To achieve this goal, Mahr has increased the axis speed, developed an innovative clamping system and equipped the touch probe system with intelligence.



New manual control panel for more operating convenience

The new manual control panel MarControl now supports measuring technicians in their work with the measuring stations of the series MarSurf CD, MarSurf GD and MarSurf VD. It allows, among other things, the stepless manual control of the axes as well as the stepless limitation of the path speed during the creation and testing of automatic measuring sequences. Measuring programs can be selected and started via the new manual control panel. Furthermore, the MarControl control panel makes contacting the workpiece convenient and safe.

The highest precision, modern technologies and an international presence; this is what Mahr stands for. As a manufacturer of innovative production measurement technology, the company has supported customers in the measurement room and in production for more than 150 years. This experience makes it an expert for quality assurance in the automotive industry, mechanical engineering, aerospace, optics and many other industries. From manual calipers to fully automated measuring stations; all of its products contain the passion and know-how of 1,900 Mahr employees worldwide.

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Mitutoyo CMMs and software are trusted in the critical inspection and production process of fan blades



Mitutoyo are devoted to the untiring pursuit of leading technologies, providing not just measuring tools but also measurement-related technologies and services. It is through this dedication for quality we have become a world-leading company and trusted brand.

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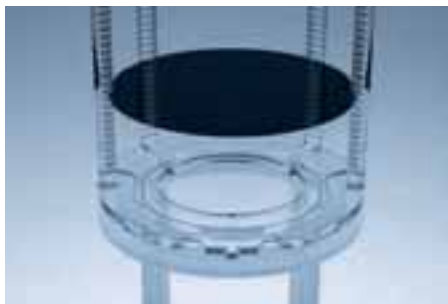
Quartztec CMM decision crystal clear

Based in a purpose build 50,000 sq ft manufacturing facility in East Kilbride, Scotland, Quartztec Europe is the UK's largest fabricator of quartz glass and one of the top five such companies in Europe. Quartztec Europe is a leader in manufactured solutions through fused quartz and ceramic products and produces high-quality products for a range of extremely demanding market sectors, including the defence, aerospace, automotive, semiconductor, solar and fibre optic industries.

Given the nature of Quartztec Europe's customers and the challenging standards it adheres to, the ISO 9001:2015 and 14001:2015 certified company administers a strict, all-embracing quality regime and employs highly skilled staff who have access to a range of advanced inspection equipment.

To help satisfy increasing global demand for the company's products, the directors of Quartztec Europe are currently planning a large expansion, including the purchase of state-of-the-art production equipment. To allow Quartztec Europe's vital inspection function to keep pace with the company's planned rise in output, Quartztec Europe's managing director, Ron Jackman recently explored the available high-precision, fast acting CNC Coordinate Measuring Machines (CMMs).

Whilst at the premises of a supplier, Ron Jackman recently observed a Mitutoyo CMM carrying out complex inspection routines on several of Quartztec Europe's more difficult to measure manufactured components. Prompted by the CMM's performance and, following a glowing Mitutoyo CMM testimonial from the business owner, Ron Jackson contacted Mitutoyo Scotland. After communicating Quartztec Europe's CMM accuracy, speed



and capacity requirements, a quotation was requested. As Mitutoyo's Crysta S9166 CMM was a perfect match for Quartztec Europe's list of CMM criteria and as a cost-effective price was quoted, an order was quickly placed.

Ron Jackman explains: "Customer satisfaction through the provision of quality products and services is at the core of our business philosophy. To help ensure that we consistently deliver on our quality principles we believe in making investments in advanced inspection equipment. As our existing CMM didn't have the speed to keep pace with our planned rise in production, and as it was proving costly to maintain, a decision was made to invest in a new, advanced, high-speed CNC CMM.

"At a time when our existing CMM was being repaired, an urgent need occurred to inspect and deliver several products to an important customer. Having taken the products in question to a supplier who had offered to perform the required inspection routines on one of the company's Mitutoyo CNC CMM's, I was amazed to see how quick and easy the CMM was to program when compared to our own CMM. Also, once programmed, the Mitutoyo CMM completed the required, complex inspection routines in half the time our machine took.

"Impressed by the performance of the CMM and influenced by the user's enthusiastic recommendation, I contacted Mitutoyo Scotland. As the price quoted for Mitutoyo's CRYSTA-Apex S 9166 CNC CMM compared well with other similar CMMs that I had considered, I was happy to place an order. At this time our current CMM was still out of commission, so it was a great help to us that the staff of Mitutoyo Scotland offered to undertake the CMM inspection of our components until our CRYSTA-Apex S 9166 CNC CMM was installed.

"Following the CRYSTA-Apex S 9166's installation and operator training sessions, as it is so easy to program and operate, our quality staff soon became familiar with our new CMM's operation. As the CRYSTA-Apex S 9166 has a generous XYZ capacity of 900 x 1,600 x 600 mm, in addition to it easily accommodating the largest of our components, we are now able to load multiple smaller parts onto the machine's bed, recall the relevant program and start a precise, fully automated, mass CNC inspection routine. When required we then archive the CMMs results, or print-out detailed customer inspection reports."

The CRYSTA-Apex S series represents an advanced CMM range that is able to make very accurate measurements at high speed. Users regard these popular CMMs as future-proof investment, as probe systems and software can easily be updated, or added to the system, whenever required.



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NEW LEVELS OF COLLABORATION WITH DIGITAL 3D

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Find out more about how DRV-Z1's digital 3D will revolutionise your productivity and book your demonstration now at visioneng.com/drv-z1

Flexible machine vision systems improve manufacturing productivity

In metalworking, tensile tests are conducted to test the ductility of a material, often to determine the most suitable metalworking process. While we have tests in place to assess the flexibility of a material, there is no such test for a machine vision solution. Why? Because they simply are not flexible, until now. Here Harel Boren, CEO and co-founder of Inspekto, the founder of Autonomous Machine Vision, explains why flexible visual quality assurance (QA) systems are needed for the industry to progress.

Historically, for a manufacturer to implement a machine vision solution they are tied into an outdated ecosystem. They must arrange for a vision systems integrator to build a custom solution, pay the high associated costs and either pause production or turn to manual QA during the long wait time. At the end of this process, they are lumped with a solution that can operate at only one point on the line, to inspect one product. A solution with no flexibility at all, any minor change to the environment or on the line requires the return of the vision systems integrator to make expensive and time-consuming alterations or, in many cases, declare the original solution obsolete and start again from scratch.

According to Market Insider, "factors that are restraining the growth of the industrial machine vision market include the lack of flexible machine vision solutions." However, the success of the manufacturing industry is hinged on product quality, making visual QA essential. The flexibility conundrum is holding back the industry from realising its potential.

Introducing a flexible option

For visual QA to be flexible, it must be easy-to-use by non-machine vision experts who must be able to independently and quickly alter the function of their system. Autonomous Machine Vision products do just that. The INSPEKTO S70, for example, can be set up in 30 to 45 minutes by the plant's own personnel. During setup,

employees only have to show the system 20 to 30 good samples, no defective samples are even necessary, and the system will learn the surface variations of a gold standard product. The operator uses just a mouse to define a polygon around their object of interest and they are ready to go.

Autonomous Machine Vision systems can be applied to any product, made from any material, using any handling method. Unlike a traditional solution which requires a vision integrator to manually make any changes, using its artificial intelligence engines (AI) it can self-adapt and self-adjust to any environmental changes, such as new lighting

archiving and traceability as the product travels down a production line. This app means that manufacturers can null a void claim about product quality and can also perform root-cause analysis to identify the source of an issue should something go wrong.

Autonomous Machine Vision systems can even inspect product as part of a multi-product range from one single location, unlike traditional solutions that can inspect just one. Inspekto TYPESTM for example, is a powerful application that means any number of models can be inspected at one point. Manufacturers using



conditions. This flexibility extends so far that a system could be moved from one point on the line to another and set up again in minutes by any member of staff.

Applications provide customisation

Manufacturers can add significant layers of value to an Autonomous Machine Vision system, due to the flexibility and customisation options available. For example, Inspekto has launched a suite of applications for the INSPEKTO S70, which means that on top of its standard visual QA capabilities, a myriad of capabilities that manufacturers can choose to make use of. For example, Inspekto TRACKSTM, for

plastic injection moulding machines will be relieved to hear there is now one system able to inspect every product manufactured by the moulding heads of their machines.

Flexibility has held the market back for too long. We are now at the beginning of an Autonomous Machine Vision revolution, which means that, finally, manufacturers can opt for a flexible system that meets more than just their QA needs.

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Fuelling accuracy at Pacson Valves

Originally established in the small Scottish coastal town of Carnoustie, for over 30 years, Pacson Valves has been at the very forefront of design, development and manufacture of high-integrity pressure valves; valves that are now supplied worldwide to some of the biggest names within the oil and gas industry.

With a long-standing history in the precision engineering of valve equipment, the now Dundee-based, Pacson continues to buck the trend in the oft-volatile industry of oil and gas, not only maintaining a solid order book, but continuing to expand and invest in further cutting-edge manufacturing tooling and technology to cope with global customer demand.

The almost entirely in-house process of design, development, manufacturing and assembly, championed by Pacson, has resulted in bespoke R&D work for the likes of BP, Exxon and Shell. This dynamic approach has meant that customers regularly task Pacson with creating valves, capable of exceptional performance in controlling very strictly regulated pressures, for very specific one-off projects.

Using exotic materials such as carbon steel, duplex and super duplex stainless steels, Inconel and titanium, Pacson manufacture a wide range of ball, gate, needle and check valves.

In an industry where every part is integral and safety critical, quality assurance plays a vital role as customers demand that the very latest accreditation is held. Pacson,



through a quality assurance programme committed to continuous improvement and performance, is accredited to ISO9001:2015, pressure equipment directive 2014/68/EU and meets the requirements of API17D, which governs the design and operation of subsea production systems: Subsea Wellhead and Tree Equipment.

Already in use by quality inspectors, were two articulating measurement arms and an Aberlink Axiom too Manual CMM. When the need to speed-up throughput via the use of a CNC CMM was identified, the company didn't need to look too far for an ideal solution.

Quality manager, Frank McGraw and quality assurance engineer, Simon Hamilton explain: "Although we had looked at other CMM suppliers, quality staff were already familiar with the ease of use of Aberlink CMMs and measurement software, having had experience at both Pacson and through use at previous employment at other manufacturing companies."

Ablly assisted by the Aberlink regional sales manager, Tony Smith, the decision was made, and an order placed for Aberlink's accurate and cost-effective Zenith 3 CNC CMM, with its generous, large-volume measurement range ideally suited to the oil and gas industry.

Now installed in a dedicated inspection area, Frank McGraw and Simon Hamilton explain the impact the Zenith 3 CMM has made: "We can already see the difference our new Aberlink CMM is making, especially when measuring smaller batches of 20-25 components. We measure a wide variety of, mostly, singular machined components, ranging from 100 mm² up to 0.5 m² in size

and before, measuring them manually may have taken up to 45 minutes per part, whereas now, it's perhaps 5 to 6 minutes per part and the repeatability is excellent.

"With a limited number of staff in our inspection team, the Zenith 3 CMM with its CNC capabilities has sped up the measurement process and both our day and night shift staff have found that the CMM has completely removed bottlenecks. We're saving a lot of time.

"Our investment was very much prompted by an up-turn in workload and the need to increase inspection throughput. The Zenith 3 CNC CMM will benefit Pacson for years to come and we expect to see a rapid return on our investment."

Installed with Aberlink's industry standard, easy-to-use 3D measurement software, Pacson is also enjoying the depth of functionality offered by the optional Programming from CAD software module.

Quality assurance engineer, Chris Friar explains: "The Aberlink 3D software is really easy to pick-up, especially in comparison to other software packages we've looked at, but the addition of the CAD software makes our inspection work so much quicker."

"Within an hour, we can have a fully fledged program that, once complete, allows us to start batch loading components. We can take a CAD model and upload it straight to the CMM so we can pre-program components before they even hit the shop floor."

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Precision in a new dimension

In the past, precision measurement technology for large areas was usually only possible with stitching and effective process, but one that often led to inaccuracies. A proven white light interferometer in a new design now enables highly precise measurement of continuous and non-continuous, reflective and rough surfaces up to 110 x 110 mm². The increased field of view allows full-surface optical measurement with maximum precision.

ISRA's NetGAGE3D XXL impresses with the accuracy of the interferometric measurement process down to the nanometre range. Evenness, parallelism, step height and other parameters are measured reliably, very large measuring fields are captured with consistently high precision without stitching. The system can be used to inspect smooth or textured sealing surfaces, precision installation surfaces, optical elements, and lapped, milled or polished wafers. Proven in a diverse range of applications, the white light interferometer also enables measurements directly inline and thus quick and easy quality enhancement. The high measurement speed and robust process are ideal for full-surface contactless measurement with pinpoint accuracy.

Thanks to its variability, the updated 3D sensor is also impressive when compared to other processes. Rough surfaces cannot be measured with laser interferometers, triangulation and processes that work with stitching deliver less precise results and grazing incidence interferometers are not suitable for non-continuous surfaces, so the system has a wide range of uses. These include inspection of plates, wafers and metal components with maximum efficiency and, thanks to the short scan time, cycle-controlled measurement technology.

In the NetGAGE3D eco and plus system versions, the sensor is also available as a standalone solution. The operating concept here is optimised for both touchscreens and



conventional key-board input. With intuitive menu navigation, it is very easy-to-use without any prior knowledge. This is particularly important given the vision of Industry 4.0; connected, digital production demands speed and flexibility and NetGAGE3D is perfectly tailored to automated series production.

A new level of perfection

A new system for measuring large, complex and curved components ensures maximum speed and reliability through optical inspection. Where manual processes were previously used to inspect reflective surfaces, intelligent automation now enables constant and comparable quality decisions.

Sophisticated industrial environments, such as automotive production, place tough demands on inspection, while complex components with reflective surfaces from the automotive exterior and interior segments make mechanical inspection difficult. However, the manual inspection processes often used for this result in subjective decisions, a lack of comparability and thus inconsistent quality levels, which in turn leads to increased reject rates. Up to now, there have been no efficient alternatives for large, complex and curved components. SpecGAGE3D XL makes quality objective and traceable for the first time. Top speed combined with reliability provides maximum efficiency.

ISRA presents a system for inspecting reflective components, with simultaneous shape inspection for especially large components. The sensor measures glossy and reflective surfaces down to the nanometre range. The software detects defects such as inclusions, spalling, spots and varnish tears. At the same time, classification enables reliable traceability that enables process errors to be eliminated, overall quality enhanced and rejection rates minimised.



Multiple components can be inspected at the same time with the multi-camera system. Equipped with Wi-Fi as standard, the system can also be used in a connected production environment. Its high level of user-friendliness and the remote desktop function, with which SpecGAGE3D XL can be controlled via a tablet, make the system easy-to-use.

With a large portfolio of production analytics tools, ISRA offers the ideal addition. All the process and production data collected is linked together and analysed. The Enterprise Production Management Intelligence Software (PROMI) uses the production line's entire data set to provide transparency and an overview of manufacturing processes. This knowledge and SpecGAGE 3D XL's state-of-the-art system architecture form the basis for closely connected and Industry 4.0 compatible production.

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Remote monitoring of inspection, even on the move

Aimed at multinational organisations with factories worldwide but equally applicable to medium size companies having several production facilities in one country, a web-based platform has been introduced by Coordinate Measuring Machine (CMM) manufacturer LK Metrology to help production departments monitor and control inspection activities around the clock.

Consistent with the aims of Industry 4.0, the new Metrology Gate portal provides remote access to information on the status and performance of all connected metrology devices. Information available includes measurement results and a summary of errors, a record of program changes, uptime of the CMMs and Overall Equipment Effectiveness (OEE) Historical logs assist troubleshooting and warn when routine maintenance is due, not only of the inspection machines but also of the machine tools or other equipment on which the components are being made.

Delays in data searching are avoided, improving reporting procedures. Comprehensive daily reports include total output per shift and the number of parts measured, sudden changes in process averages and comparisons between different machines producing the components. Graphical CAD reports, statistical process control (SPC) analyses with Cp and Cpk results, and environmental logs, including operating temperature, are generated and communicated, alongside charts to aid interpretation and understanding.

In the case of critical dimensional discrepancies or hardware failure, the software shares the information with users immediately by sending alerts via email, SMS, WeChat or WhatsApp. Metrology jobs can be stopped and reset if performance is inadequate, maximising yield and minimising scrap. A dashboard containing details of the errors may be viewed on a web page.

Normally, data acquired is stored in the cloud but may be held on



servers in different countries if preferred, or even on an individual computer. Either way, it is accessible over the internet instantly and globally in real time, on a PC in an office or using an app on handheld devices when on the move.

However, one of the major benefits of LK's Metrology Gate is that it is not necessary to travel at all to gain access to the information, cutting costs and saving an enormous amount of time. Furthermore, as the quality control data is acquired automatically and therefore objectively, its accuracy is practically guaranteed. The risk of human error is avoided, including during the preparation of reports, which are produced automatically rather than laboriously by hand and are easily tailored to suit what the customer needs to see.

A hierarchical permissions structure can be built into the platform so that personnel have access only to information relevant to their seniority and requirements. The system can be phased in by implementing it in one factory and gradually expanding the network with additional licenses.

Metrology is a function in the supply chain that, even though it generates the largest amount of data, has traditionally been supported by poor infrastructure for real-time access to information. Metrology Gate is a flexible monitoring and analysis portal that addresses this shortcoming, accelerating decision-making and driving efficiency across an entire manufacturing organisation.



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New extended length Sylvac Scan optical measuring centres now available in the UK

As the sole distributor for Sylvac products in the UK, Bowers Group is pleased to announce two new additions to the leading Sylvac Scan range of optical measurement centres. The Sylvac Scan S145 has been developed to measure mid to large size cylindrical parts up to 145 mm diameter and 1,280 mm in length. In addition, a new extended length version S145L is also available, complementing the current Scan range which includes the F60 and Scan 52.

The Sylvac Scan S145 is the ideal solution for full automation; offering fast, accurate and repeatable measurements, as well as being fully equipped with quick release tooling and motorised tailstock. The S145 can be located easily on the shop floor with integrated temperature sensors and on-board calibration master to ensure optimum performance. Integration to robots is quick and easy to create a fully automated inspection solution.

UK sales manager for Bowers Group, Martin Hawkins says: "The Sylvac Scan S145

and S145L offers manufacturers of turned parts more options for the measurement of bigger components, longer lengths and increased weights. Another giant step forward in the field of optical measurement, the new centres include the usual Sylvac advantages of reduced inspection time, reduced scrap and increased productivity. We are delighted to introduce the Sylvac Scan S145 and S145L to the UK market and look forward to the influx of interest this incredible product is bound to attract."

Just as with the rest of the Sylvac F60 range, the S145 and S145L are fully automated, optical, non-contact measurement systems, expertly designed for the precision control of complex turned parts. Easy to operate, this advanced, all-in-one solution carries out measurements at the touch of a button in just a few seconds, allowing for mid to large size cylindrical parts of up to 145 mm in diameter and 1,280 mm in length.

Features include easy-to-use Industry 4.0



ready Reflex Scan software, Bluetooth connectivity to other Sylvac instruments via Sylvac Sylcom software, one-click measure facility and automatic part recognition. The Sylvac S145 and S145L also offer detailed reporting with statistics view and data export, as well as optional CAD import and offline programming.

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Hexagon expands Leica BLK series

Hexagon, a global leader in sensor, software and autonomous solutions, has now introduced two new additions to the Leica BLK series. The Leica BLK2GO is the smallest portable, completely integrated handheld-imaging scanner in the industry and the Leica BLK247 is the first 3D laser-scanning sensor for security surveillance providing continuous, 24/7 situational awareness.

"Extending the BLK series continues Hexagon's 20-year focus on revolutionising reality capture" says Ola Rollén, Hexagon president and CEO. "These sensors are not only ground-breaking for their technical capabilities, but also for their practicality. The Leica BLK2GO can be taken anywhere and the Leica BLK247 never sleeps."

The Leica BLK2GO introduces never-before-seen mobility for scanning complex indoor environments. The handheld-imaging laser scanner combines visualisation, LiDAR, and edge-computing technologies to scan in 3D while in motion, allowing users to be much more agile and efficient in capturing objects and spaces.

The BLK2GO has a wide range of applications from adaptive reuse projects in the architecture and design industries to location scouting, pre-visualisation, and VFX workflows for media and entertainment.

The Leica BLK247 is designed for continuous 3D reality capture, extending capabilities for safety and security applications. The sensor provides real-time situational awareness through edge computing and LiDAR-enabled change-detection technology. Using artificial intelligence, the BLK247 can tell the difference between still and moving objects, such as a person walking who leaves a suitcase behind and identify security threats to provide real-time alerts for both expected and unexpected changes. The BLK247 greatly enhances situational awareness within restricted or high-security spaces, as it eliminates the need for people to constantly monitor walls of security screens or smart building dashboards.

Hexagon is a global leader in sensor, software and autonomous solutions. It is putting 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.

Through a network of local service centres, production facilities and commercial operations across five continents, it is shaping smart change in manufacturing to build a world where quality drives productivity.

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VISI gives flexibility for tiny and large mould components

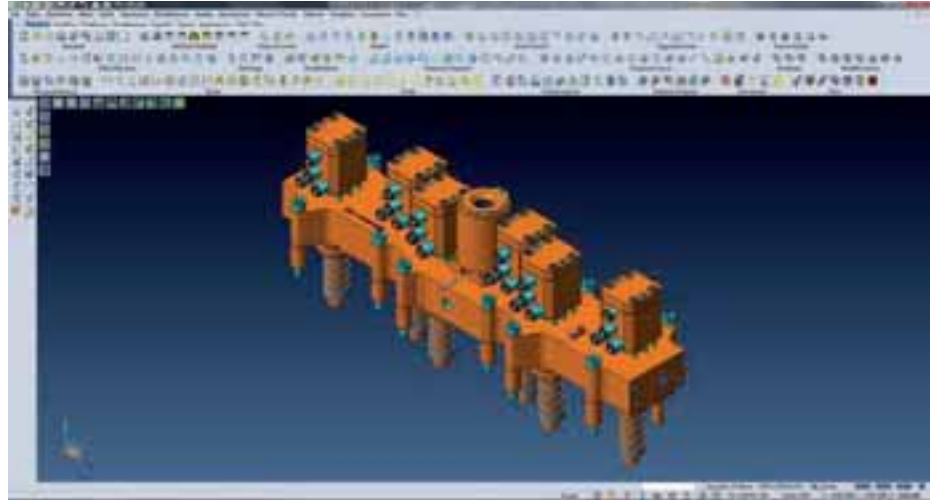
Software optimises workflow for hot runner and injector specialist

A hot runner and injector specialist for the mould and die industry uses a range of VISI CAD/CAM software to optimise its workflow, saying it's the most suitable solution for its working requirements.

"We use it for feasibility studies before the production phase and to formulate quotations for customers," says Sergio Pozzan, founder and owner of Injection Point S.R.L. "Information is better organised and errors minimised when moving from design to the machining phase, thanks to VISI's unique interface."

Being an integral part of its processes, VISI Modelling is used for design, VISI Flow to simulate plastic injection flow inside the mould and VISI Machining to program complex cycles. The company, based in Turin, specialises in the construction of hot runners from 8 mm diameter up to 2,300 mm centre-to-centre distances, 240V and 24V injectors and filtering systems for thermoplastics. As well as injector lines and direct injector groups, it also produces control units and filter nozzles for improving how melted thermoplastic is burned and to purify it from ferrous and non-ferrous materials.

Sergio Pozzan continues: "I founded Injection Point in 2001 after considerable time in the industry as a project manager, production manager and quality manager. I was able to make use of my in-depth experience and apply it to hot runner design and construction, as well as to injectors for moulding thermoplastic materials. Now, using VISI, I can offer a widely tested product to the market which is capable of being used with the most up-to-date plastic materials and is highly technical, ensuring



customers can meet all production quality requirements."

Those customers are largely mould makers across a variety of sectors including medical and automotive. Sergio Pozzan says: "Our hot runners and injectors are used to produce medical products and therefore extremely small printed details, as well as large products such as car bumpers."

This flexibility means they need to have a completely accurate knowledge of a diverse range of customer needs and complete details about the required mould. Sergio Pozzan confirms: "We must know the type of press that will be used, technical specifications of the final printed part, such as material and weight and any constructive constraints, so that we can customise our injection system to the correct size."

All its products are designed and machined using VISI, which he says they opted for because it is the most suitable software for their requirements: "Simple, intuitive and, above all, reliable." Its first VISI solution was a modelling license which it can use during the design phase. The second investment was the VISI Machining CAM module to program complex cycles for its two CNC machining centres: a Mikron VCE1250 with a Haas Fanuc controller, and a Bridgeport VMC 1000 XP2 with Heidenhain control.

Injection Point's technical

department is equipped with dedicated computers for design, and Sergio Pozzan says they can work quickly and easily on both 2D and 3D projects: "Waiting times between a customer asking for an initial study and our answer is almost always within three days."

Operating with seven employees from an 800 sq m plant, the company works with partners to extend its market to a large part of Europe, the United States, Mexico, India and China. Export currently covers around 30 percent of its total revenue.

Sergio Pozzan says: "Despite the downturn that has hit our field globally in recent years, with the help of VISI, our products are always of the highest quality, meaning customers continue to have full confidence in us and we remain competitive with a good market share."

In conclusion, Sergio Pozzan says thanks to VISI its customers can count on them for everything concerning mould construction, from the design phase through to the final mould testing: "We guarantee one of the fastest support services in the market, within 24 hours in Italy and 48 hours throughout the rest of Europe."

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**EMO 2019: Hall 6, Stand B60 -
 Hall 9, Stand E03**



DP Technology launches first wholly owned UK subsidiary

DP Technology Corp., a leading developer and supplier of CAM software, including its flagship product ESPRIT®, has announced that it is enhancing its presence in the UK with the launch of its first wholly owned subsidiary in the country, ESPRIT CAM, Ltd. The new office will offer direct support to existing DP Technology resellers, technology partners and customers in the UK and Ireland.

The local team comprises of Chris Edwards and Fraser Lovatt, both seasoned professionals in the CAD/CAM industry with previous work experience at Delcam, Schlumberger Applicon and Autodesk.



They have been recently joined by Paul Richards an experienced applications and training engineer. The opening of DP Technology's new office directly reflects the increasing demand for the ESPRIT range of multi-axis machining software within the UK.

ESPRIT CAM Ltd., along with two UK ESPRIT resellers, CAM Supplies and CNC Solutions, welcomed current and future customers at the Southern Manufacturing and Electronics show in February. They explained the latest innovations in CAM software and discussed how ESPRIT's solutions can streamline part programming, increase tool life and reduce cycle time.

DP TECHNOLOGY is a leading developer and supplier of CAM software for a full range of machine tool applications. ESPRIT, DP Technology's flagship product, is a powerful, high-performance, full-spectrum programming system for milling, turning, wire EDM, and multi-tasking machine tools. ESPRIT and the personnel who support it embody DP Technology's passion for excellence and vision of technology's potential.

DP Technology reinforces its commitment to technical excellence by dedicating nearly 20 percent of its annual revenue to ongoing research and product development. This long-term focus has produced powerful technological innovations that have placed ESPRIT in a leading position since its market launch in 1985.

DP Technology maintains its worldwide headquarters in Camarillo, California, U.S.A. and product development teams in California and Florence, Italy. Sales and support operations are located in Europe, Asia, and North and South America.

ESPRIT Tel: 07976 527 034

Email esprit.europe@dpotechnology.com. www.espritcam.eu

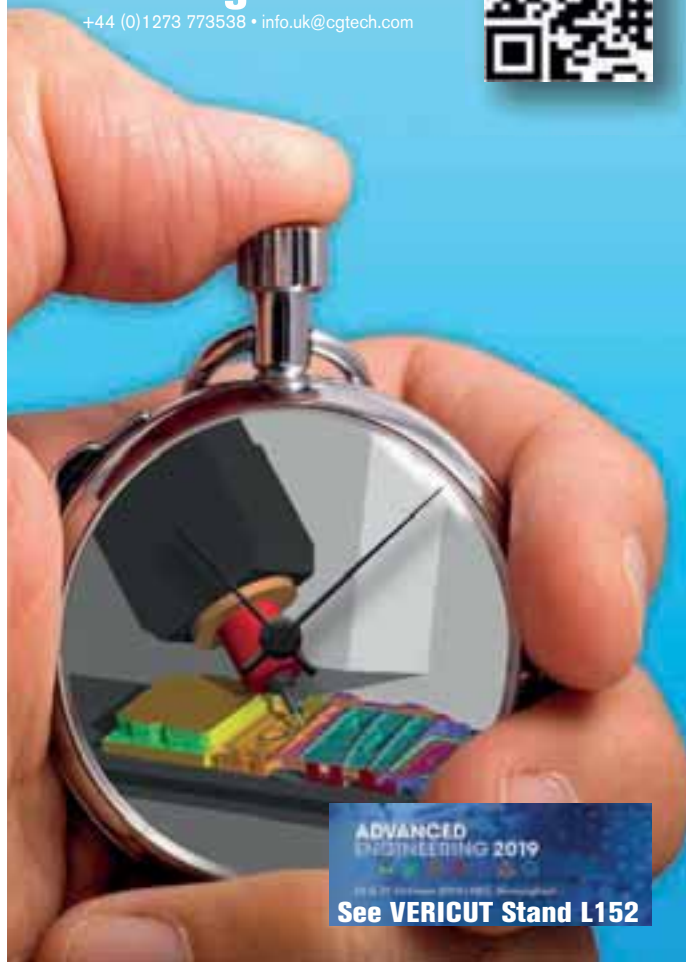
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OPEN MIND presents hyperMILL 2019.2

The latest version of hyperMILL® has a range of new features including high-precision 3D finishing, 5-axis tangent machining, high-performance turning and new CAD-for-CAM technologies. OPEN MIND is integrating more and more functions that previously required extra CAD machining steps directly into CAM strategies to further speed up programming in Version 2019.2 of hyperMILL.

The previous version of hyperMILL already featured high-precision profile finishing; now, hyperMILL 2019.2 offers a comparable function for 3D shape Z-level finishing. The 'high-precision surface mode' option ensures ultra-smooth surfaces with tolerances in the µm range. This saves time on post-machining finishing processes, particularly when applied to mould making. The 'Smooth overlap' function has the same effect for 3D profile finishing. The transition regions for steep and shallow machining have a small overlap including a slightly lifted cutter, resulting in perfect finishing with an imperceptible transition.

CAD functions directly integrated into CAM

In hyperMILL 2019.2, the hyperCAD®-S function 'Global fitting' is directly integrated into the CAM strategy in 5-axis tangent machining. With this function, multiple faces can be joined into one face with defined ISO orientation. The principle of using CAD elements for CAM programming is also applied, for example, for automatic face extension. With the automatic face extension, the bounding surfaces are automatically extended during programming to improve the edges of the machined surfaces. This greatly simplifies programming, since these adjustments are made within the CAM strategy, without switching to the CAD environment.



High-performance turning

In the last version of hyperMILL MAXX Machining, turn-roughing was implemented with trochoidal toolpaths. Optimised connecting paths and fluent machine movements ensure high-performance machining. This means significantly higher machining values can be driven compared to conventional roughing methods. Version 2019.2 guarantees even greater process reliability for high-performance turning and tool life monitoring makes it possible to restrict the use of a tool by the distance covered, the number of toolpaths, or a time limit. If the defined limit is reached, a retract macro is generated automatically and the job ends.

Improved feature and macro technology

OPEN MIND has also further improved the feature and macro technology in the new version to enable more secure and simpler programming for users. One function that is generally useful for everyday work is the definition of macros for recurring geometries. OPEN MIND has now added full-text searching to the macro database. Users can also define machine and material groups as defaults to make it easier to select macros.

Hole feature linking means that model changes made to CAD features are automatically transferred to hyperMILL.

Since design changes in CAD are associatively linked with the CAM system, users can quickly and securely make updates.

Analytical capabilities

An important aspect of automating CNC programming is analysing the existing design in terms of possible machining strategies.

An interesting new function is available for users who work with very large parts with hyperCAD®-S. It enables the workpiece mass and centre of mass to be calculated with a material definition for solid, mesh and stock models. Another highlight of the CAD portion of the suite is the 'Undercut' function, which makes it possible to detect undercut areas on components quickly and reliably. Moreover, the new 'Local curvature' analysis function makes it possible to detect curvature radii on components. The minimum curvature radius, which often plays the biggest role, is output immediately. The user can then determine the best possible lead angles or tool radii for machining curved faces.

Live-Demo: hyperMILL for ultra-smooth surfaces and faster processes

High-precision milling and high-performance turning are two of the topics that OPEN MIND will focus on at the EMO exhibition in Hanover, Germany. OPEN MIND will have live demonstrations in Hall 9 showcasing efficient machining processes resulting in parts with mirror-smooth surface finishes. The special plunge strategies of the cutting tool into the material and the fluent machine movements are the secret to high-performance turning. At EMO, OPEN MIND will demonstrate this in abundance with highlights from the CAD/CAM manufacturer set to include the high-performance hyperMILL MAXX Machining package and the NC code-based hyperMILL VIRTUAL Machining simulation solution.

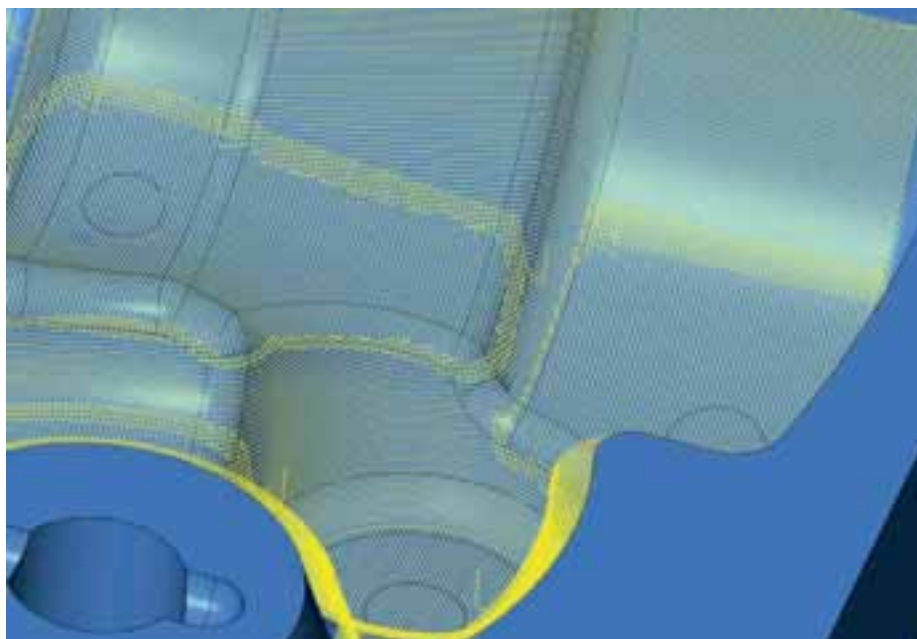
The live demos at the booth will show the practical implementation of intelligent CAM machining strategies and demonstrate process improvements that extend beyond the individual machine. OPEN MIND will present this through CONNECTED Machining, which allows hyperMILL to be networked and synchronised directly with



the machine, enabling the best possible exchange of information between the generation and execution of programs.

hyperMILL CONNECTED Machining is a module from the hyperMILL VIRTUAL Machining package. The unique feature of the real-time simulations enabled by this module is that they are based on the NC code after the postprocessor run. This ensures that the virtual machine movements correspond exactly to the actual machine movements. Another exciting module of the package is the hyperMILL VIRTUAL Machining Optimiser. This feature always finds the best collision-free tool position automatically during the postprocessor run by analysing entire machining sequences.

OPEN MIND will also provide information about further special strategies from its high-performance hyperMILL MAXX Machining package in addition to showcasing high-performance turning with round inserts. Perfect pocketing technology ensures more efficient pocket machining with high-feed cutters. An intelligent algorithm fits the largest possible pocket into the area to be roughed and automatically generates linear toolpaths for high feed milling. Innovative applications for



conical barrel cutters will be a central theme of the show once again. For example, the "5-axis Prismatic Fillet Finishing" strategy has been added this year. Multi-surface 5-axis machining with conical barrel cutters makes it possible to produce entire surface formations in a single job. The toolpaths are generated fully automatically using a surface selection.

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**EMO 2019: Hall 9, Stand C04 -
 Hall 25, Stand A01**

Changing the game with ultra-precision CAM software

Originally developed for machining optical parts such as spherical and aspherical lenses used in, for example, telescopes, ultra-precision machining is revolutionising the way parts and surfaces are machined. More and more milling and turning centres now offer the physical and thermal stability to cope with the accelerated spindle speeds, enabling ultra-precision machining to be used not only for diamond turning, but also for a wide range of new applications on standard micro-milling machines. With the hardware in place, CAM software is now the game-changer, especially in the nanotechnology manufacturing industry, offering OEMs and end-users the dedicated functionalities and high-performance they need to differentiate themselves from the competition.

High-performance software is important. Generating toolpaths capable of machining parts to an accuracy of just a few μm and a roughness in the range of nm requires sophisticated, high-performance algorithms. The ModuleWorks high-performance 64-bit ultra-precision

kernel is specially designed to accelerate the calculation of ultra-precision toolpaths and speed up the programming and production of complex freeform parts and surfaces.

Based on the industry-proven ModuleWorks 5-axis technology, the ModuleWorks ultra-precision kernel uses multi-threading for fast toolpath generation with radial, spiral and parallel patterns for slow and fast tool kinematics. It also brings a full-set of dedicated functionalities to bring all the benefits of cost-effective, fully flexible and high-quality machining to ultra-precision applications.

The latest 2019.04 release further extends the functionality by enabling users to generate toolpaths from a set of imported guide curves. The guide curves are projected onto the machining surface where the resulting trajectory is followed by the cutting tool. This provides greater flexibility and control over the generated toolpath and enables the production of 3D images as well as non-rotational surfaces.

The toolpaths can also be morphed between the set of imported curves. By



manually defining the maximum stepover and cut tolerance, users have full control over the surface quality and accuracy of the machined products.

ModuleWorks also offers 3D machine and material removal simulation with the high-resolution requirements of ultra-precision machining to provide the full range of high-performance SDKs that enable CAM vendors to deliver the latest, innovative technology to end-users in the shortest possible time.

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EMO 2019: Hall 9, Stand E01

Kyocera presents its full scope of ceramic components in UK

Kyocera showcased its advanced materials and solutions in the field of fine ceramics at Ceramics UK, a trade fair for high-performance ceramics and technical glass, held for the first time, in the centre of the British manufacturing industry in Telford this July.

Since its establishment in 1959, Kyocera has supplied components for a wide range of markets including industrial equipment, communications devices, medical devices, and renewable energy equipment. Kyocera also supports the progress of numerous other industries by utilising technology cultivated over many years of research, development, and manufacturing of fine ceramics.

In recent years, Kyocera has been making investments to increase production capacity of fine ceramic components in Japan and the U.S. Since April 2019, the company has also integrated facilities to manufacture fine ceramic components in Europe, to develop and produce powders and components made of various fine ceramics. By utilising the material competence and the manufacturing assets gained in the H.C. Starck Ceramics acquisition, now named Kyocera Fineceramics Precision GmbH, Kyocera aims to be able to respond quickly to clients in the European continent, satisfying growing market demand for fine ceramic components used in a multitude of industries.

The integration of Kyocera Fineceramics Precision GmbH now offers production facilities for the manufacturing of fine ceramics in Europe, modern smart production lineup, in-depth material



knowledge and innovative technologies for high-precision, large-scale fine ceramics parts. This enables Kyocera to further expand its fine ceramic business globally. Its full strength in ceramics, from the powder to the finalised component, was showcased at the British show. During the technical conference at the show, Kyocera gave a talk on ceramic solutions in thermal management, explaining Kyocera's high thermal conductivity materials and customised designs.

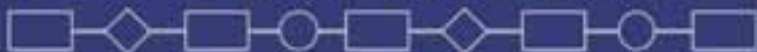
As one of the world's leading suppliers of fine ceramic components, Kyocera presented an overview of its technical ceramic materials and components at Ceramics UK, which are applied in a total of nine industry categories: Bio- and environmental sciences, dental, vacuum

components, semiconductors, electronics, sapphire, information technology, mechanical engineering, and the automotive industry. Kyocera offers approximately 200 different formulations and compositions of ceramics such as aluminium oxide, aluminium nitride, cermet, forsterite, mullite, sapphire, silicon carbides, silicon nitride, aluminium titanate, yttrium oxide, and zirconium oxide.

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EMO 2019: Hall 5, Stand E70

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World class MRO facility installs first RPI turbine rotor assemble systems

RPI UK, a leading specialist in rotary measurement, has installed the first of two integrated rotor measurement and assembly platforms, iMAPs, at a major aero engine maintenance, repair and overhaul facility. The US based facility carry out MRO of major OEM engines in the United States.

Jim Palmer, RPI's sales manager, says: "It's great news that both the OEM and its approved MRO facilities, are choosing to invest in iMAP which has been independently verified to give significant operational improvements over traditional measurement methods.

"With world-class accuracy, our iMAP machine achieves higher levels of quality while helping our customers save money and resources by significantly reducing inspection times and the need for costly rotor teardowns due to inefficient rotor assembly optimisation."

RPI's iMAP is proven to reduce inspection times by 90 percent and improve gauge repeatability and reproducibility by up to 10 times. The technology is used by the MRO facility after the engines are

dismantled, to inspect each individual section of the engine for cracks, wear and distortion. Measurements are taken by AccuScan to check the components geometry meet their original and regional board specifications as part of the stringent MRO process.

Once the components have been approved, repaired or replaced, the iMAP is used for engine assembly to ensure alignment and concentricity is correct and balanced as each section is rebuilt.

iMAP's data acquisition software, AccuScan, enables measurement of up to 4,000 data points on up to eight surfaces simultaneously per revolution, thereby reducing process times to just two minutes; a significant time saving compared with other available methods.

This significantly improved inspection data is then used by the Rotor Stacking software to solve the mathematical problem of how to best assemble a multi-stage rotor to achieve minimum runout or unbalance of the finished rotor. This technology is absolutely fundamental to ensure the



operational quality of the engine entering back into service, for optimal reduction in vibration, greater fuel efficiency and longer service intervals.

Specifically designed to inspect large and heavy components, RPI's iMAP machines are fully compatible with any shop floor environment, while maintaining world class accuracies more commonly seen in the standards laboratory.

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James Watt engine steams back to life with 3D-printed model

A team of University of Glasgow students have used cutting-edge construction technology to build a model of one of James Watt's pioneering steam engines, two centuries after his death.

Members of the School of Engineering's JetX student society spent five months putting together a 3D-printed scale model of a Boulton-Watt steam engine.

The model, which is about a metre in length, uses more than 800 parts. Its design builds upon the earlier adaptation of Oliver Smith's drawing for a model-sized beam engine by John Fall.

The result is the largest additively manufactured working model of this design which features over 150 3D-printed parts, a process which took 845 hours of printing in total, consuming more than 2.2 km of printing filament in the process. While the original model was run on steam, the model uses an additional gear to move itself and demonstrate the engine's range of motion at the touch of a button.

The model has been on display at the University's Library from June as part of a

public exhibition which explores Watt's life, achievements and legacy.

James Watt was working as an instrument-maker at the University of Glasgow when, in 1765, he made improvements to a Newcomen steam engine, adding a separate condenser which made it vastly more efficient. His insight helped kickstart the industrial revolution and create the modern world.

The library exhibition is the latest in a year-long series of events at the University to mark the 200th anniversary of Watt's death.

Chris Triantafyllou, president of JetX, who led on the design and construction of the model says: "The past five months have been very busy but we're really pleased with the final model. The whole building process utilised a lot of design and prototyping practices we've learned throughout the years of developing jet engine models.

"The University of Glasgow is rightly



proud of its association with James Watt and his legacy helps make it an inspiring place to study. We're glad we've had the chance to contribute to the University's 200th anniversary celebrations and we hope that visitors to the exhibition in the library get as much enjoyment out of it as we do."

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CADSPEED invests in the fastest dental 3D printer on the market

Manufacturing dentures using 3D printing methods makes the process fast, flexible and simple and one company that is benefiting from this technology is CADSPEED, a CAD digital milling centre based in Hannover. It uses a TRUMPF TruPrint 1000 to manufacture dentures for dentists, orthodontists and dental laboratories throughout Europe and confirms significantly higher productivity, improvement in product quality and far less material wastage as a result of this investment.

Using traditional methods, a dental technician would normally produce one tooth in 20 minutes. However, in the space of just two to three hours, the TRUMPF TruPrint 1000 can manufacture up to 70 teeth per cycle which equates to less than three minutes per tooth. The process is significantly quicker thanks to the TruPrint's twin laser beams that act on the denture geometries at the same time.

The TruPrint 1000 is the only small-format system to work with multiple lasers. Its two laser beams manufacture dental products ten times faster than conventional dental milling machines. It also comes with another innovative feature: digital connectivity. With its wireless link to milling machines the TRUMPF TruPrint 1000 can print teeth, with ultra-precision, for mounting on implants. An implant-supported denture replaces not only the visible tooth but provides the root to anchor it.

The conventional method of producing

dentures is complicated and very time consuming. Impressions of the patient's teeth are taken and sent to a dental laboratory for a plaster cast to be made as a template for the dentures. The basic shape is then created using die casting or milling before secondary finishing; the whole process can take several weeks.

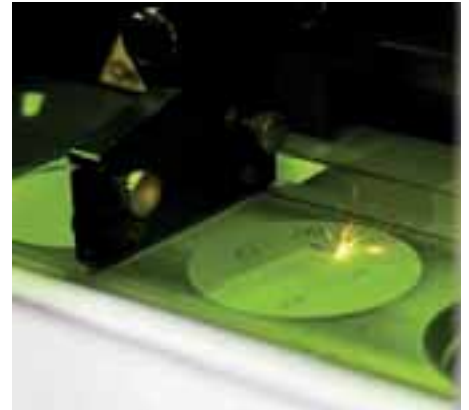
By comparison and, thanks to 3D printing, CADSPEED is even able to manufacture dentures overnight if required. Digitisation makes everything much faster and simpler. For example, instead of relying on impression trays, CADSPEED offers its clients the use of intra-oral dental scanners. These are manual scanners equipped with sensor systems which dentists can use to digitally map the patient's mouth in 3D.

This data can then be processed further directly, negating the need for a plaster cast. As a result, the whole process is faster, affordable and more precise.

The owner of CADSPEED is Hindrik Dehnbostel, a master dental technician who now employs a 38-strong team to manufacture dentures. He tested the TRUMPF TruPrint 1000 for three months before deciding to buy it. But since its installation, the 3D printer has been running in a three-shift mode, five days a week.

He says: "When you're running at full capacity and need to produce a lot, 3D printing really comes into its own. The system has proven to be both reliable and robust."

Another important advantage of 3D



printing for CADSPEED is improved quality. Dental technicians almost always struggle with space constraints. It's exceptionally difficult to profile corners and edges using a milling machine, the tooth is simply too small. In addition, the tools cannot reach all areas and sometimes break.

Such problems are eliminated with 3D printing. Even delicate structures can easily be created as the component is built up layer by layer and the process is software controlled. No tools are involved so breakage is not a problem.

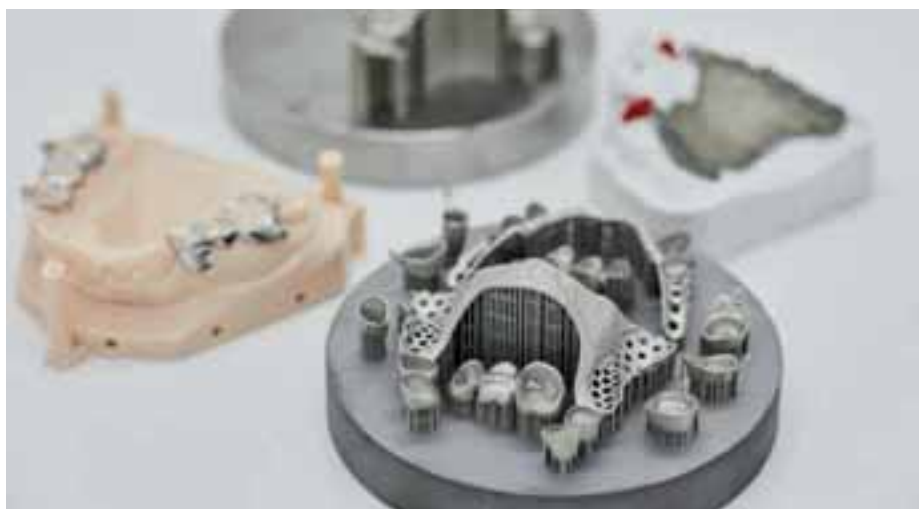
3D printing also uses the material more efficiently. In the conventional method, dental technicians first create the basic shape and then hollow it out. This means that up to 80 percent of the material is wasted. The TRUMPF TruPrint 1000 only needs the exact amount of powder required to create the component which reduces costs and benefits the environment.

The TRUMPF TruPrint 1000 is becoming instrumental in industrialising dental 3D printing.

Hindrik Dehnbostel concludes: "There's no avoiding 3D printing. After all, at some point it will be the patient who decides how their denture is manufactured. Today's generation is increasingly growing up with digitisation in their lives. They know 3D printing produces better quality than milling."

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EMO 2019: Hall 9, Stand K02



Increasing fluid power capabilities with additive manufacturing

Global engineering technologies company, Renishaw, recently collaborated with Domin Fluid Power to help the company maximise productivity when designing and manufacturing direct drive valves. Using metal Additive Manufacturing (AM) techniques, the company can now manufacture smaller, more efficient drives and reduce cycle times from five and a half hours to just one.

Domin collaborated with Renishaw to develop a new, stable, state-of-the-art technology suite for the fluid power sector. The company visited Renishaw's AM Solutions Centre in Stone, Staffordshire, UK, to develop its understanding of AM and understand how the technology could help them to produce highly efficient drives for customers.

"Metal AM allows you to stretch the art of what is possible in the fluid power sector," explains Marcus Pont, general manager of Domin Fluid Power. "After spending years on testing different prototypes and designs we have developed our knowledge in AM that will enable us to produce efficient parts for customers. For example, we have

designed one of our drives that is 25 percent of the original size, 25 percent more powerful and produced at a third of the cost."

"At Renishaw we are always looking for opportunities to be involved with developing emerging technologies that make positive changes in the industrial world," explains Martin McMahon, AM lead technical consultant at Renishaw. "We've worked with Domin throughout the whole process."

"Additive manufacturing is a key technology for Domin. It gives the company the ability to build complex parts, free of tooling and with minimal operations and assembly. Trying to integrate such complex functionality into such a small design would not be possible using conventional manufacturing techniques."

Manufacturers in a wide variety of sectors can use AM technology to improve productivity in high value, small volume production. Renishaw's latest system, the RenAM 500Q, is currently broadening the market appeal of AM into applications that were previously uneconomical due to its



efficiency. The compact system features four 500 W lasers to speed up the printing process by up to four times, improving productivity and lowering cost per part. At its state-of-the-art site in Stone, Renishaw showcases its expertise in additive manufacturing. Partners can visit the Solutions Centre to help unlock the potential of AM and develop an efficient end-to-end process.

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123 Insight expands accounts connectivity options for its MRP software

123 Insight has announced the release of expanded connectivity options from its MRP system to popular accounts systems. In addition to established accounts interfaces to Sage 50 and Pegasus Opera and integration with Access Dimensions, tight integration is now offered between 123insight and Sage 200, with more systems being supported shortly.

123insight's Advanced Accounts Interfaces (AAI), in conjunction with 123insight partner Applied Business Solutions, provide a simple and robust way to link sales and purchase order processing with Sage 50 or Pegasus Opera sales/purchase ledgers. 123 Insight Ltd has, in conjunction with approved partner Solweb, launched Accounts Gateway® for Sage 200 and Access Dimensions, delivering seamless integration and providing valuable accounts data directly within 123insight.

Customer and Supplier name and address details are automatically synchronised between 123insight and your chosen accounting system. Users of 123insight, via Accounts Gateway can see all sales invoices

that are outstanding, as far as payment is concerned and the same applies from the purchasing side of your business with purchase invoices. In both cases, any unallocated payments are clearly displayed for all. Any relevant reference numbers, e.g. sales order number, purchase order number, despatch note number flow freely between the two system, providing you with the visibility and control over your operations.

In addition, there are comprehensive "credit control rules" which will check for a series of "conditions" at order placement and despatch; taking the appropriate action if they are violated.

Guy Amoroso, managing director of 123 Insight Ltd says: "The addition of Accounts Gateway allows 123insight customers to choose the option that best fits their business. Furthermore, it also makes 123insight more attractive to a wider accounting systems audience. We'll be rolling out Accounts Gateway options for Sage 50 and Xero later this year, with other accounting systems to follow."



All options are available for a low monthly subscription, with pricing at **123insight.com**.

Founded in 2000, 123insight provides an award-winning end-to-end solution that is suitable for virtually any manufacturing environment, including Electronic Manufacturing Services (EMS), aerospace, marine, automotive, medical, food, textiles, electronics and oil. It has options for CRM, service and repair, e-commerce and integration/interfaces into all major accounting systems.

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London calling

Founded in 2009, experienced waterjet subcontractor London Waterjet has provided a high-quality waterjet profile cutting service for the last 10 years. It is used to working within tight timeframes, with a fast turnaround for all aspects of waterjet profiling.

London Waterjet is a small team, dedicated to fast turnaround and has a personal approach in helping its customers. It is the 'go to' profile cutter for most of the TV and film industry and works hard to maintain close relationships with its customers. The team is always willing to try and cut anything it is approached with and enjoys the challenge of helping clients looking for more efficient ways of cutting difficult parts.

Due to an increase in demand from both existing and new clients, the team at London Waterjet made the decision at the beginning of 2019 to invest in a second machine to help take the business to the next level. As highest quality cut parts are something that London Waterjet wanted to offer to all of its customers, it made the decision to invest in a premium series machine from manufacturer Techni Waterjet, in the form of a complete Techjet TJ3000 abrasive waterjet cutting system.

The Techjet series machines from Techni Waterjet offers top level accuracy of motion, +/- 0.05 mm and repeatability, +/- 0.025 mm, through use of laser calibrated digital encoders.

Ryan Walker, director at London Waterjet says: "Our new Techni Waterjet has been a fantastic addition to our company. The innovation in accuracy and pump technology was a big driver for us and has



not disappointed. We have been able to take on additional jobs thanks to the increased cutting speed and clever software."

With the latest 4th generation of the Quantum Electric Servo Pump running alongside the new machine, London Waterjet experience extended and reliable high-pressure seal life. When a seal change is required, it takes less than 10 minutes, machine maintenance is fast, simple and efficient. This equates to higher overall workshop productivity levels, increased 'up time' and therefore helps get more orders shipped out to customers as soon as possible. As the Quantum pump is also driven by an electric servo motor, this results in lower running costs, higher efficiencies and a virtually silent operation.

AMC Jets is the official UK distributor for Techni Waterjet products and it has been



supplying high-quality spare parts, consumables and machine servicing packages to the UK market for over 29 years. It made the decision to collaborate alongside Techni Waterjet for waterjet sales and service in early 2017.

Techni Waterjet has been operating for 30 years and has an installation base of almost 1,000 waterjet machines or water cutting systems spread across six continents and some 26 countries. It has dedicated sales and service offices in the USA, Australia, Asia and Europe, with spare parts, sales and service support throughout the world.

For further information on the Techni Waterjet range, contact:

AMC Jets Ltd
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StM opens up new efficiency dimensions in waterjet cutting with intelligent automatic cutting guide

Until now, the euphoria over the performance range of the boom separation process waterjet has been slowed down by a few disadvantages inherent in the technology. This is now changing with the new software function "TVL" from Austrian plant manufacturer StM. This intelligent cutting guide application automatically optimises cutting speed, angle error compensation, overrun and tool correction. The range of applications has been significantly extended, as without these restrictions even components with higher accuracy requirements than before can be cut cost-efficiently, conveniently and with outstanding quality using the waterjet. It is reproducible with identical design at any time and without time-consuming tests. What's more, different material grades can be processed with the same setting to produce the best possible quality. Users simply enter the essential cutting parameters via the SmartCut user interface before the fully integrated cutting software controls the machine directly and executes the cutting job, almost fully automatically.

Waterjet technology has thus reached a new stage of development, which should increase its lead over alternative separation processes even more. This is because the TVL function is initially available for cutting stainless steel, construction steel and aluminium of all kinds, but is to be successively adapted for other materials. The prerequisite for use is an StM system



with StM 3D or StM TAC 12 cutting head, regardless of whether it is new or not. As "TVL" is now included as standard in the SmartCut software, existing systems can be retrofitted via updates. Future software updates will be free of charge for operators of premium StM systems. Interested users can discover the advantages of the new function at the StM test centres in Schweinfurt and Eben, Austria, up close and personal on their own workpieces. As an alternative, the waterjet pioneer will conduct live demonstrations at the Blech Expo 2019 in Stuttgart.

So far, the 3D potential of the cold cutting process could already be used efficiently. This applies, for example, to bevel cuts on plate materials for weld seam preparation as well as to the machining of pipes, volume components and apertures, but also included complex 3D geometries. The "TVL" function of the StM software extends the application possibilities, initially in metal processing, to include tasks such as cutting more precise contours, e.g. in toolmaking.

In principle, waterjet cutting proves its worth above all where non-cutting, metalcutting and thermal production techniques produce inadequate results. It is distinguished especially with its high level of automation, minimum tool costs as well as low material loss. The usually customary post-processing due to thermal deformation or burrs is eliminated completely. Maintenance requirements are also low, most problems can be resolved quickly and inexpensively via remote maintenance. Regarding the cutting performance, the technology additionally convinces through unique precision, low cutting widths and optimal cut-edge quality. Highly complex and delicate cutting sequences can be carried out in a single work step, even without producing tempering effects, material stresses and thermal distortion. The crowning advantage of waterjet cutting technology is the wear-resistance of the machines. Thanks to the fact that StM only



uses series components with long-term availability, the machines have a nearly unlimited service life and can moreover be upgraded to match requirements. In view of these attractive general conditions, it is no wonder that investments in waterjet cutting technology receive state subsidies across the EU.

If and how the "TVL" function can be meaningfully integrated into the individual production process is calculated by StM's application engineers within a few days, on the basis of non-binding demand analyses, cost-benefit calculations or business plans. Interested parties can also test cut sample workpieces at any time at the StM production sites in Schweinfurt and Eben im Pongau, Austria. This also applies to this year's Blech-Expo in Stuttgart, where test cuts will be carried out.

Interested parties can send cutting files to StM at least one week before the trade fair and will then receive a live demonstration of their component at the trade fair.

Passion, know-how and an appetite for innovation have made StM a leading international supplier of waterjet cutting systems. With great enthusiasm, it has been

Waterjet solutions



developing future-oriented solutions for production in particular for the steel, aluminium, metal, plastics, composite materials, stone and glass industries for more than 25 years at its company locations at Eben in the district of Pongau in Austria and Schweinfurt in Germany.

The StM name stands for high-end equipment which has been developed as modular systems for highly efficient individual solutions, for an unusually high customer focus and for a passion for the continual improvement of waterjet cutting technology. Its innovations turn the concept of cutting, using the force of the waterjet, into a unique and reliable precision technology.

All components meet the highest demands with respect to quality and cost effectiveness. The StM customer always acquires cutting edge technology as

collaboration on research and continuous improvement of products are extremely important to the company.

Without exception, it utilises commercially available branded components which guarantees both short lead times and minimum maintenance expenditure. Nevertheless, should a minor fault still occur, its professional and personalised customer service can help to solve the problem in the shortest possible time.

Managing director Jürgen Moser states: "Our objective is to provide the best service in the whole industry."

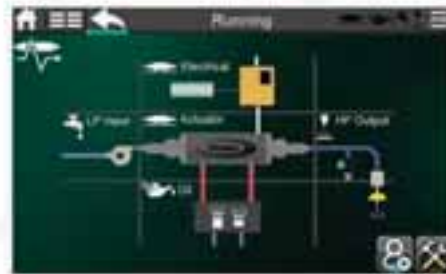
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OMAX brings waterjet cutting versatility and precision to EMO

At EMO 2019 Hannover, OMAX® Corporation will present the powerful OMAX 5555 JetMachining Center® with a 40 HP EnduroMAX® pump and Tilt-A-Jet®, as well as the latest in personal waterjets, the ProtoMAX®. With a variety of products on display, visitors to the OMAX booth will experience versatility, high precision and a compact design, demonstrating a waterjet for every level of manufacturing.

The OMAX 5555 is a perfect fit for shops needing an industrial machine with a smaller footprint capable of cutting 1,397 mm x 1,397 mm. With a completely sealed and protected ball screw drive system, this robust and reliable workhorse is perfect for shops cutting projects needing high precision. The Tilt-A-Jet lets your waterjet achieve virtually zero taper with most materials. The Tilt-A-Jet can position the nozzle at an angle calculated by the software to exactly offset the taper from the jet. Taper doesn't disappear, it just gets moved to the scrap part of the material, leaving your part with exactly square edges.

In addition to its industrial machines, OMAX will demonstrate the new ProtoMAX personal abrasive waterjet system. ProtoMAX is a compact, self-contained cutting system ideally suited for prototyping and low-volume cutting of almost any material, up to approximately 26 mm thick. With all the versatility benefits of large abrasive waterjet cutters in a sleek and economic package, the ProtoMAX is perfect for small job shops, engineering classrooms, makerspaces and personal use. It also makes



a useful addition for large shops and fabricators that need occasional waterjet capabilities to complement their other cutting systems.

Energy-effective direct drive pumps power both large machines. OMAX direct drive pumps use less electricity and water while reducing component fatigue. These pumps also run quietly and cleanly, making them the ideal solution for shops that want to do more with less.

Attendees will also experience OMAX's easy-to-operate IntelliMAX control software. IntelliMAX was engineered specifically for use with abrasive waterjets and requires no special machine code knowledge to use. A person with no CNC machine operation experience can learn to cut parts on an OMAX waterjet in just a few hours. OMAX provides free online machine operation and maintenance training, so

customers can access training information as needed and at their own pace. IntelliMAX software is compatible with more than 90 different file formats, including all major CAD program file types, plus graphics file formats such as JPEG, GIF, and PNG files. This means almost any 2D or 3D part file can be imported directly into an OMAX waterjet controller and turned into a real part.

All OMAX lines of abrasive waterjets can cut almost anything, including aluminum, brass, bronze, carbon fibre composite, ceramic, copper, fibreglass, glass, granite, Kevlar, marble, stainless steel, titanium, tungsten and much more.

Through its distribution network of 30+ partners worldwide, OMAX Corporation has expanded its global reach and increased the availability of its precision-engineered technology. INNOMAX AG, OMAX's exclusive distribution partner for Germany and Austria, will be at EMO to answer questions. To learn more about INNOMAX, please visit: www.innomax-wasserstrahlschneiden.de. OMAX distributor partners from various countries also will be present at the show.

Based in Kent, Washington, OMAX Corporation is a leading manufacturer of advanced abrasive waterjet systems. Owner of the OMAX, MAXIEM, and GlobalMAX brands, the company designs waterjet systems that feature intuitive software, efficient pump technology and a wide range of accessories. The ISO 9001:2015 certified company designs, manufactures, assembles and tests components as a complete system to ensure optimum performance. The company also has the most comprehensive service and support network in the waterjet industry to keep its customers ahead of the manufacturing curve. For more information, visit OMAX.com or connect with the company on Facebook, Twitter, LinkedIn and YouTube.

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H.G. Ridder GmbH is a specialist in waterjet solutions. This ranges from high pressure water jet technology to machine overhaul and special machine construction. As a customer, you receive everything from one source, from the design to commissioning and service, all based on the company's focus on quality manufacturing. This concept has proven itself well over all the years for customers.



The WARICUT® HWE series is a recent development from H.G. Ridder GmbH. The HWE machine type was presented for the first time at Euroblech 2004 in Hannover and the new concept was very well received by existing and prospective customers.

The step to another series in the area of flatbed machines in addition to the WARICUT® HWM was necessary in order to also cope with the active demand from overseas. Because it is only possible with the WARICUT® HWE to dismantle the machine frame into separate components. The benefits of such a design are obvious: short dismantling and assembly times of the machine frame; easy and space-saving possibility of also shipping larger machines in standard overseas containers.

However, it goes without saying that you do not have to dispense with the usual quality and precision of the existing machines. The basic difference, as well as the frame which can be dismantled, for the HWM is the gantry drive. Precision gear racks have been used for both these axes; all other axes continue to be moved using ball screw spindles. Large machine lengths in the flat bed area are also possible due to the use of gear racks as these lengths can only be realised with extremely high complexity using ball screw spindles.

Machine frame and cutting basin are usually separated for all types in order to rule out thermal influences on the machine geometry by heating of the cutting basin.

Every machine is individually designed according to customer requirements as single or multiple head system in 2D or 3D or a combination. There is, of course, also a choice of interesting additional equipment options. Due to the modular design of the systems, every optional function provided by H.G. Ridder GmbH can be retrofitted.

For more information, contact:

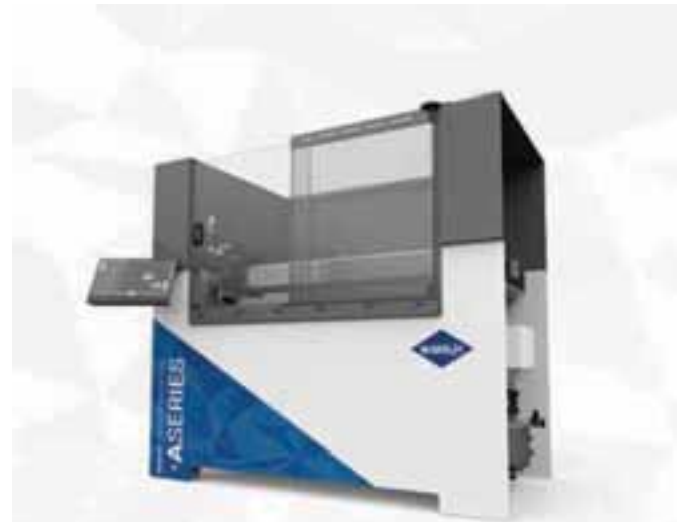
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Aquajet expand with new waterjet technology

Aquajet Profiles Ltd has recently taken delivery of its 4th Water Jet Sweden system as part of its continued expansion program. The system will allow the Coventry based firm to focus on new and expanding markets in the automotive, aerospace, marine and energy sectors.

Aquajet realised the opportunity for future growth in precision waterjet cutting and chose the Swedish system for its reliability and its repeatability to produce precise components. Recognising the competitive edge gained by the ability to produce finished parts, often without secondary machining processes, Aquajet can slash lead times and reduce costs to its clients.

Based in Canley, it knows all about the reliability of the WJS system. The company was an established waterjet contractor using CNC and fixed robot technology before initially taking delivery of its first Water Jet Sweden machine back in 2007. It subsequently purchased a system from another manufacturer, due to its continued growth. Realising the value and benefits of the WJS system, it returned to the proven Sweden brand with two further systems before taking delivery of its 4th Water Jet Sweden system this month.

The company understood the benefit of increased production and material efficiency available from a 4 m x 2 m table with twin independent cutting heads. One key differentiator in the market was Water Jet Sweden's ability to offer a well-developed and proven "lights out" package, allowing unmanned operation with remote monitoring of the key process characteristics.



Martin Willis of Aquajet comments: "The quality of finished components always made our original WJS system our 'go to' machine and allowed us, in many cases, to deliver finished products to our customers that had previously needed further machining operations to finish. With the proven ability to run lights-out and the experience of our own engineers to prepare the production, our lead times and costs are extremely competitive which has been an important factor in our longevity and growth."

WJS sales director Gavin Bell has been involved in many of the Aquajet projects over the years and says: "It's testament to the WJS equipment and its robust construction and design that even their first machine, almost 12 years old, still has the accuracy and ability to produce top quality parts compared to newer machines from



other manufacturers. It really does show that you get what you pay for. We've seen it time again over the years where people try and cut corners to save money buying a cheaper machine but has cost them more when the machine requires costly repairs or replacing. We had one customer where the WJS machine was still as accurate 14 years after install and a machine from another manufacturer that was purchased afterwards ended up being scrapped after less than 10 years."

With variable WJS cutting head solutions available, it has allowed Aquajet to use its existing bank of pump technology to maximise the output from all of its machines to be as efficient and productive as possible.

The intuitive software provided by Water Jet Sweden makes the programming of such an advanced system very simple. Together with the training provided onsite by WJS UK personnel, Aquajet engineers were in full production within a day of receiving this latest machine.

This latest generation equipment will allow Aquajet to increase volumes and capability to their new and expanding customer base.

WJS UK director Chris Baker adds: "The new investment will help this established and exciting business continue to grow."

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Flow Waterjet ups the ante with Joe Gibbs Racing

Flow International Corporation, the world leading developer and manufacturer of ultrahigh-pressure waterjet solutions for cutting applications, announced today a new partnership with Joe Gibbs Racing. A current competitor in the NASCAR Monster Energy Cup Series and The NASCAR Xfinity Series, North Carolina based Joe Gibbs Racing is looking to Flow's elite waterjet technology to support the team's endeavours in the upcoming 2019 season and beyond.

Joe Gibbs Racing has added a Mach 500 4020 with a Dynamic XD® cutting head and HyperJet® Pump to the production operations at its Huntersville facility. With high-precision, multi-axis cutting capabilities, the addition will expand the team's ability to design and manufacture custom performance parts necessary to maintain a competitive edge on the track.

"At this level of competition, precision is everything," says Mark Bringle, technical partner activation manager of Joe Gibbs Racing. "This machine is the perfect combination of reliability, accuracy, and speed we need to produce the parts that keep our cars at peak performance. This is a huge opportunity for us."

As one of Flow's signature workhorse systems, the Mach 500's precision engineering makes it the quickest and most



Mark Bringle, technical partner activation manager, Joe Gibbs Racing

accurate production waterjet on the market. The team's newly acquired unit is configured with a Dynamic XD cutting head capable of complex bevel and compound angle cutting with 5-axis motion for maximum flexibility, as well as Flow's HyperJet pump creating ultrahigh-pressure up to 94,000 psi.

Jim Jenson, president of Flow International, comments: "It's exciting for me to see our products contribute to real world results at the highest competitive level and, as a personal fan, it's an honour to give the team over at Joe Gibbs Racing the tools they need to succeed. Partnerships like this one are why we strive to be the best we can be."

This season, Flow will be represented on the legendary No. 19 car, driven by full-time NASCAR Xfinity Driver Brandon Jones.

Flow International Corporation is a global

technology-based manufacturing company committed to providing a world class customer experience. The company offers technological leadership and exceptional waterjet performance to a wide-ranging customer base, benefiting many cutting and surface preparation applications, delivering profitable waterjet solutions and dynamic business growth opportunities to our customers.

Joe Gibbs Racing (JGR) is one of the premier organizations in NASCAR with four Monster Energy NASCAR Cup Series teams, three NASCAR Xfinity Series teams and a driver development program. Its 2019 driver lineup will consist of Denny Hamlin, Kyle Busch, Erik Jones, and Martin Truex, Jr. in the Monster Energy NASCAR Cup Series. Meanwhile Christopher Bell and Brandon Jones will each run fulltime in the NASCAR

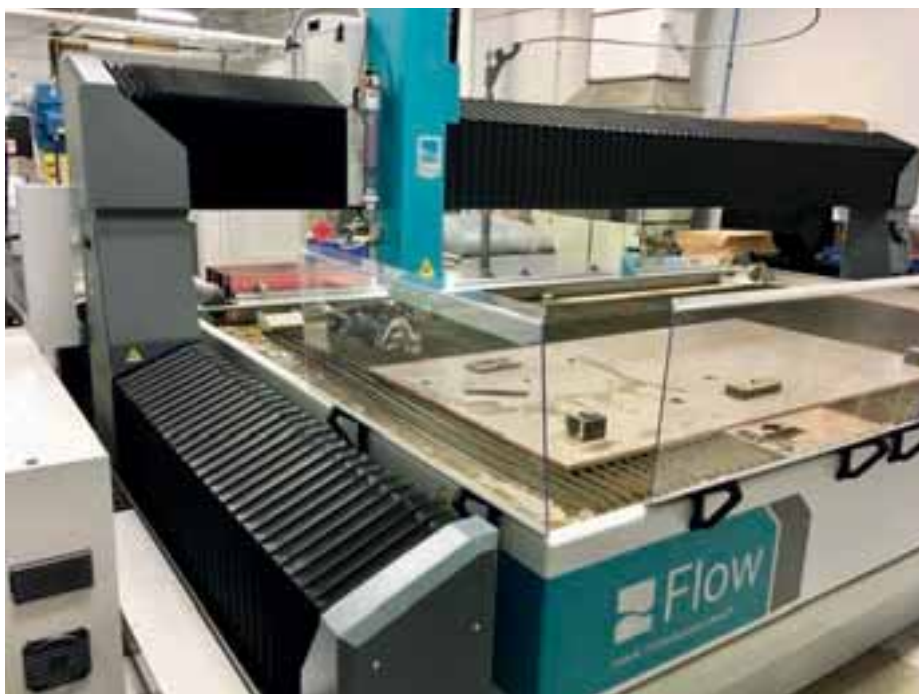


Joe Gibbs Racing in action at a NASCAR event

Xfinity Series in 2019, joining Kyle Busch, Denny Hamlin, Jeffrey Earnhardt, and Riley Herbst, all of whom will run partial schedules. In addition, Herbst and Ty Gibbs will share duties in JGR's ARCA Series entry.

Based in Huntersville, N.C. and owned by Joe Gibbs, a three-time Super Bowl winner as head coach of the Washington Redskins and a member of the Pro Football Hall of Fame, JGR has competed in NASCAR since 1992, winning four Cup Series championships and five Xfinity Series owner's championships along with more than 300 NASCAR races, including four Brickyard 400s and three Daytona 500s. Visit www.joegibbsracing.com for the full story.

Flow UK Ltd
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www.flowwaterjet.com



Joe Gibbs Racing has added a Flow Mach 500 4020 with a Dynamic XD® cutting head and HyperJet® pump to its production operations

The complete waterjet portfolio

The Wightman Stewart name is synonymous with the supply of high quality production machinery to both engineering subcontractors and to different sectors of the UK's manufacturing industry. While waterjet cutting technology has for many years formed a mainstay of the company's range, deburring and polishing machines, press brakes, plate roll and section bending technology and plasma punch presses from world leading manufacturers are also distributed by the company.

Based in Ripponden, West Yorkshire, the company was founded in 1987 and operates in the capable hands of managing director Simon Fitton, who boasts over 30 years' experience in the application of production engineering and profiling technology. Wightman Stewart Waterjet offers its customers outstanding technical and customer support, from initial enquiry right through the lifetime of an installation.

Services include a 24 hour on-site response service using factory trained engineers, computerised tracking of all

reported incidents for breakdowns and a comprehensive range of maintenance contracts tailored to suit individual machine usage patterns and known maintenance costs. Operator, maintenance and programming training can also be provided as well as assistance with cutting/ forming trials and time-cost evaluations.

The company represents the Waterjet Corporation of Italy with its extensive range of cantilever, gantry and specialist abrasive cutting machines. The versatility of the abrasive waterjet cutting process means it can be specified for a wide range of applications, including the cutting of virtually any material cleanly, accurately and efficiently. Prima, Practica, Classica and Suprema ranges are available with optional equipment as well as high-tech add on devices. The ITC (Intelligent Taper Control) system, for example, corrects for taper and achieves wall straightness and the highest possible cutting speeds, by using the CNC to compensate the inclination (up to 2°) and the orientation of the high pressure water



jet allowing increased cutting speeds in a contour. Accuracy and repeatability of +/-0.001" can be achieved.

Evolution X5, 5-axis waterjet 3D cutting technology is designed to appeal particularly to companies in the aerospace, oil, gas and power generation sectors who can all benefit when cutting metals, composites, glass, stone and many other materials. ITC functionality, anti-collision technology, touch probe height sensors, laser pointer non-return valve on the abrasive feed line and vacuum assist sensor can all be included.

Wightman Stewart Waterjet Ltd

Tel: 01422 823801

Email: simon@wightmanstewart.co.uk

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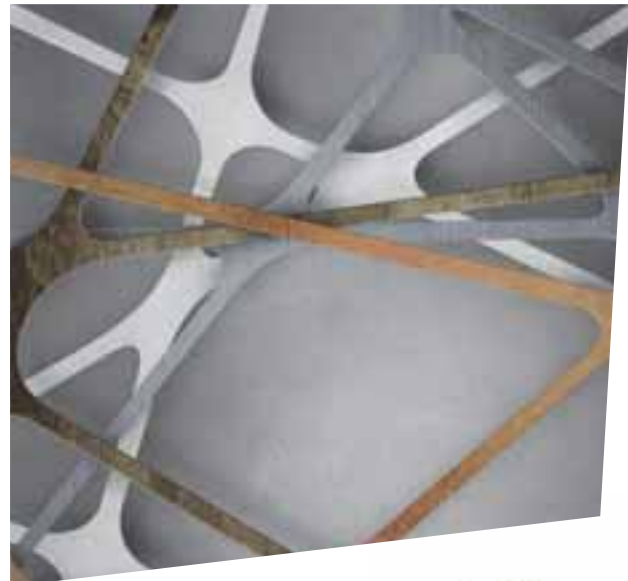
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Waterjet solutions

Smart investment for MTI

West Midlands-based, Midland Tank and Ironplate Ltd (MTI) has recently completed the investment and installation of a new Prima Power BCe Smart 2220 Panel Bender at its factory in Birmingham, adding a significant new dimension to the companies' range of sheet steel processing capabilities.

A member of the well-proven family of Prima Power panel bending machines, with a maximum bending length of 2,250 mm and height up to 204 mm, the BCe Smart 2220 is able to automatically position, bend and manipulate sheet steel parts for a fully automatic bending process, creating the required bends and forms on all edges and producing the finished part to a high degree of accuracy and repeatability thanks to its servo-electric drive system. A wide variety of bend profiles are fully achievable with the machine, including conventional single bends, compound and re-entered bends, flattening and radial forming in materials up to 3 mm in mild steel, 2 mm in stainless steel and 4 mm in aluminium.

Underpinned by a highly robust and stable design consisting of a static machine frame, on which a moving C frame is mounted to hold and control the bending blades, a versatile upper tooling system is utilised for clamping while a manipulator arm automatically rotates and positions the part for every bend over a brush-top loading and unloading table. This provides both optimum support and scratch-free material movement.

The ergonomic and easy-to-use design of the machine is a further, key feature for safe and easy loading by the operator. The



loading and unloading tables include a split, fold-down design, meaning that new parts can be placed on the table for processing and completed pieces can be removed without the operator having to lean excessively into the machine. This is extremely important for both health and safety and for operational efficiency.

The BCe Smart also features an active safety system which further enhances the machines' ease-of-use by using laser scanning technology to start the bending process automatically after loading, as soon as the operator is clear of the safety area and without the need for any buttons to be pressed. After creating a job queue on the integrated Prima Power touch screen control and loading the part, the machine takes over. It centres the piece and executes the required bends on each edge, then

returns the completed part to the table for collection by the operator. There is no limit to the number of bends on each edge and the design of the upper and lower tools provides maximum support of the material during bending, while being of a design profile that avoids interference with existing features or previously produced bends.

The programming of the machine is undertaken via the Prima Power 'Master BendCam' software which is supplied as standard on the machine. Using an intuitive, simple to operate graphical display, this generates the full bending program from the drawing of the part, which can be drafted within the software or originate from a variety of common CAD packages. The system is able to simulate the bending process and undertake collision checking for process verification before committing to production. Also included is a teach programming ability as well as bend angle correction via an integrated database, manual axis control and tooling management, providing the operator with a simple but powerful system with which to program and manage the machine.

The BCe Smart is available with a range of optional elements for increased efficiency, flexibility and to ensure the suitability of the machine for each customers' particular needs. For MTI, the machine was specially configured with 'Narrow Profile' upper clamp tooling, required for the bending of a particular door frame element that had bends in very close proximity to each other.

A normal part of the appraisal process for a Prima Power Panel Bender is to undertake



a review of each customer's component drawings and ensure that there are no complications or special requirements. For MTI, this process identified that one specific part had close proximity bends, which could not be produced with a standard configuration. The solution was to equip the machine with the specially produced, narrow profile tooling, allowing the part to be clamped and bent on the machine without any issues and also permitting the production of future parts with similar designs.

"Our need was to automate and improve the process for our steel door blanks and bars," comments MTI's managing director,



David Cox. "We needed something that would fulfil these needs and allow us to increase our production volumes. The use of a panel bender was something that we had been considering for around 10 years and the BCe Smart is a great solution that additionally gives us the flexibility to undertake other work over a broader range of products."

MTI has been a customer of Prima Power for many years and additionally has two Prima Power Platino 1530 2D Lasers. David Cox explains: "We decided on the Prima Power solution, not only because of what the machine had to offer in terms of its capabilities, design and performance, but also because of our relationship with Prima Power and the excellent service support that we have always received. The project for the BCe Smart has been a great experience and the machine will revolutionise our processes, we are really impressed and very happy with the machine."

With the machine now fully



operational and in production, MTI has been able to fully realise all of its initial project requirements and to produce the full range of parts that were to be processed on the new machine. Additionally, the flexibility and efficiency that the new BCe Smart brings has opened up new opportunities and increased capacity for additional production in the future.

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Maximise stock removal performance with UGIMA-X

The better a material can be machined, the more cost-effective the associated process chains are for manufacturing operations. For this reason, Ugitech constantly develops its stainless and easy-to-machine bar steels further. The latest result is UGIMA®-X; the third generation of the special steel that has now proven itself for 30 years. With UGIMA-X, the company in the SCHMOLZ + BICKENBACH Group offers customers a long-term advantage in the market, providing longer service lives of the tools being used.

30 years after UGIMA and 15 years after UGIMA HM, Ugitech has reached the next milestone of its special steel development. UGIMA-X enables extremely high cutting speeds alongside low tool wear. The new steel grade extends tool service lives by 25 to 50 percent. This is made possible by the introduction of very fine oxide inclusions into the liquid metal in a perfectly controlled composition. The stainless bar steel thereby retains its corrosion resistance and becomes much easier to machine.

The third UGIMA generation thus fulfils

the requirements of the latest CNC machinery with speeds up to and above 10,000 revolutions a minute. Ugitech customers therefore benefit from extended tool life, improved cutting fragmentation and added reliability in production planning.

Ugitech offers UGIMA-X in three versions: 4404, 4305 and 4307. The three materials all have higher machinability than the predecessors, with otherwise identical properties.

With UGIMA-X 4404, users benefit from improved properties in all areas of the machining process. During turning, an increase of 15 percent compared to UGIMA 4404 has been achieved and during drilling it has been possible to increase the machinability by 20 percent.

When it comes to turning, UGIMA-X 4305 is slightly ahead of UGIMA 4305 HM, whereby side effects, such as cold cracks caused by the lower and controlled sulphur content, are further reduced. UGIMA-X



4305 is resistant and compatible with all liquids, lubricants, oils and greases that are used during the machining process.

Compared to UGIMA 4307 it has been possible to increase the average machinability of UGIMA-X 4307 by ten percent, whereby the dispersion of its industrial machinability has been significantly improved.

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Lantek and Danobatgroup develop expert software for the automotive sector

Especially designed for cutting processes in the automotive industry, new software makes it faster, more agile and more profitable to process pre-stamping formats (blanking)

The automotive industry, a highly automated sector in which technologies play a key role, is undergoing a new revolution. With the Industry 4.0 phenomenon and the arrival of smart cars, technological integration is no longer just an option for this sector and the companies supplying it, it is fundamental for survival. To maintain profitable, dynamic and flexible production, it is essential to be committed to innovation and to adopt new digital tools, as developed by Lantek and Danobatgroup.

Starting from the precept that digitalisation is the perfect moment in time for a complete change in the production processes in the automotive sector, Lantek and Danobatgroup, through their sheet metal transformation division, have worked together on developing software for processing pre-blanking formats that is specially designed for cutting processes in the automotive sector.

The objective of this collaboration is twofold: to solve the problems inherent to the sheet metal industry to achieve more efficient, competitive and flexible production whilst maintaining the highest quality levels; so that Lantek and Danobatgroup can reinforce their positioning in the applications environment for specific sectors, such as the automotive industry, while helping customers in their transformation strategy towards becoming modern and intelligent companies.

Based on this collaboration, Danobatgroup customers will have Lantek software on their coil-fed laser blanking lines and all their machines. Its experience in the sheet metal industry will allow end customers to optimise processes and obtain the greatest return on machinery and software investments.

What is blanking and how does it work?

Blanking or metal stamping technology consists of a machining process where the sheet is cut using presses and specific cutting dies to produce certain metal parts.



The Lantek and Danobatgroup's blanking system application will be installed on all DANOBAT coil laser cutting lines. These lines have an unwinder that directs the sheet from the reel to a leveler, passing through feeder rollers to a cutting zone where one or more laser cutting heads make the cuts according to the programmed shape. Once cut, the format automatically goes to a stacker.

These lines normally process a large number of shapes and materials in steel or aluminum and increasingly in series or runs that need to be adapted to several configurations for the same car model. This means that there are a very large number of dies to be managed. The plants must therefore have a lot of space for storing these dies.

This laser blanking system application helps to cut the pieces automatically and continuously, minimising the costs resulting from the investment in the press and dies and from adapting the building (pits, storage areas, special foundations, etc.). Costs are also significantly improved due to the time it takes to change the format of the pieces. It also helps to help reduce energy consumption compared with other alternatives and increases efficiency and flexibility levels while maintaining the highest quality levels.

Its use in the automotive industry

The new technological challenges that the

automotive sector is facing, the need to have business alliances, the demand for shorter, customised and sustainable production cycles, optimisation, manufacturing tracking and the use of materials such as aluminum and new cutting and forming technologies are some of the trends for which solutions are required. Lantek and Danobatgroup have hence aligned their business strategy with an innovative vision to find the technical solutions that best suit the automotive industry, incorporating state-of-the-art technology and specialised software.

In addition to the cost benefits mentioned above, the laser cutting machine fed from the DANOBAT coil now offers multiple advantages derived from the use of the metal coil, especially valuable for a sector as demanding as the automotive sector, with significant savings on raw material due to greater use of sheet metal, constant production rates and a lower cost per piece. This new generation of equipment is a great step forward in parts production and standardising processes, as well as giving the highest degrees of flexibility for producing blanks.

Lantek Systems Ltd

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www.lantek-systems.co.uk

LVD adds new "Pro" model to electric-drive press brake series

LVD Company nv has introduced the Dyna-Press 40/15 Pro to its Dyna-Press Series of high-speed electric-drive press brakes. The 40-tonne press brake, featuring a 1,500 mm working length and a precision 5-axis back gauge, can bend at speeds of up to 25 mm per second to generate more parts per hour at a lower cost-per-part. Dyna-Press 40/15 Pro can be combined with an industrial robot to create a compact, high-speed robotised bending cell (Dyna-Cell) for automated bending operations.

Speed and efficiency

The Dyna-Press electric ram offers a smooth transition from approach to working speed and minimises power consumption using an optimal power to inertia motor ratio. The coupling between the ram and the servomotors is made using two heavy-duty ball screws to distribute force and tonnage evenly across the working length. As a result, the press brake provides fast, energy-efficient operation across a range of bending jobs.

Performance features

The Dyna-Press 40/15 Pro is equipped with a 5-axis back gauge which provides consistent and repeatable accuracy. The press brake uses vertical removal tooling style for simple and quick tooling changeover, even of heavier tools.

LVD ensures a comfortable and safety-conscious environment for the operator. Like other Dyna-Press models, the newest Dyna-Press can be operated in a seated or standing position. The IRIS Lazer Safe guarding system also provides an added measure of security.

Dyna-Press 40/15 Pro is easy to operate with minimal training. The 15-inch Touch-B touch screen control features an intuitive graphical display and offers additional functionality by enabling the operator to create and simulate 3D-designs at the control. The controller is compatible with LVD's CAM software, CADMAN®-B.

Dyna-Press 40/15 Pro features a 400 mm opening and 200 mm stroke. A number of machine options are available: front supports, hydraulic clamping on table and



ram, robot interface and contact fingers. LVD is a leading manufacturer of sheet metal/plate working equipment, including laser cutting systems, punch presses, press brakes, guillotine shears and mid-level automation systems, integrated to and supported by its CADMAN software suite. LVD Industry 4.0-ready products and technology make smart manufacturing possible.

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Brandauer invests £600,000 in Japanese technology

Investment in a new high-speed press is set to help a Birmingham metal stamping specialist capitalise on 20 percent growth over the last twelve months.

Brandauer recently secured a Queen's Award for International Trade and has spent £600,000 on a Yamada Dobby NXT 80XL as part of a three-year plan to boost its capacity and provide additional production flexibility.

The state-of-the-art technology gives it patented repeatability on quality and a 100 percent reduction in press setting time that frees up manufacturing space to take on new contract wins in the plumbing sector, automotive motor laminations and fuel cells.

It is the first machine it has purchased from the Japanese-based press specialist and it tops off a £2 million modernisation of its Birmingham facility that has also included a new GF wire cut EDM machine, two Andmar surface grinders and an OGP Smartscope Vantage 250 to help with quality inspection.

Operations manager at Brandauer, Don Walters comments: "We first came across

the press at Blechexpo and were impressed with what we saw in terms of its speed, the repeatable quality and how user friendly it appeared.

"Our visit to its showroom in Italy gave us the chance to see the Yamada in all of its glory and we worked with its experts to configure the machine so it delivers the accuracy and performance we were looking to achieve."

It took just nine months from the order being placed for the Yamada NXT 80XL press to be installed and commissioned, with the machine now working on components that use material ranging in thickness from 0.2 to 0.8 mm.

The 1.5 m bed is the largest the company currently has available and it can operate at speeds of between 100 and 800 strokes per minute.

Karl Jeavons, Press Shop team leader at Brandauer, adds: "The quality is second to none and we run off thousands and thousands of parts every day, thanks in part to the double link motion mechanism that delivers Yamada's patented repeatability,



while also helping to prolong the life of the tool.

"What has really impressed us is how easy the press is to use, reducing the setup time in some instances from 3.5 hours to six minutes. This is due to the simple user interface, capable of storing up to 1,000 different setups. Once the initial setting work is done, a semi-skilled setter can take over for all future runs of the same product."

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WDS's technical support eases inventor's trials and tribulations

British engineering is world renowned for its inventions and innovations throughout the industrial and modern ages. Despite this heritage, it can still be a long and difficult journey for an engineer trying to navigate an idea from initial concept, through prototyping and into production. Darren Gilligan of engineering components supplier WDS Component Parts Ltd. explains how the company has supported one particular inventor.

WDS is a manufacturer and supplier of engineering components, including standard parts, machine accessories and workholding components. Its ethos is to offer an incredibly wide range of high-quality products so that it can meet the almost infinite variety of requirements across a range of technology-based industries and sectors. Importantly, rapid delivery, usually overnight, is the norm on most products and value for money is a high priority.

Another key element in the WDS offering is its technical support to clients when requested, which can be provided at a number of different levels.

Naturally, many of WDS's customers know exactly what they want so do not require assistance. In these cases, they can quickly identify the appropriate part using the website's search function. For customers who know what they want, but not the exact part number or product size, there is a helpline that can be accessed via telephone or email.

However, there are further levels of help that WDS can offer to customers who don't yet have defined component requirements. If requested, its expert engineers can really get involved in identifying the best products for a particular job, or even designing and manufacturing bespoke parts.

This level of help often kicks in when customers are engaged in



somehow unusual projects, such as adapting existing plant and equipment, refurbishing vintage machinery, developing something new or even inventing an entirely new product.

Design engineers in WDS's bespoke parts design and manufacture department can help by organising the adaptation of an existing part, or work with the customer to develop a completely unique solution designed specifically for the project in hand.

WDS is currently working with Ken Jones, managing director of Advanced Aluminium Design Ltd as he develops a massive advance on the design of motorcycle trailers.

Ken Jones explains the origin of his idea: "Owners of racing bikes, off road machines and evocative old classics have for many years struggled to get their motorcycles in the backs of vans, or have invested in trailers that are equally cumbersome to load and which can be difficult to tow. Our new trailer is designed to take all this hassle away and make motorcycle ownership an even greater pleasure."

Modern motorbikes can weigh as much as half a tonne, so to say getting them safely onto a trailer can be difficult is an understatement. Usually planks are used to form a makeshift loading ramp, but pushing a bike up this ramp starts off difficult and gets progressively harder. It is not uncommon for the bike to slip off the side.

Ken Jones concept was to create an all-aluminium trailer that was perfectly balanced. So, using the see-saw principle and designing a folding tow bar allowed the trailer to pivot on its axle, thus allowing bikes to be loaded at ground level using a rolling cradle held in position using a WDS Cam index bolt. A winch at the front of the trailer is then used to steadily pull the bike into position in a safe and controlled way. However, because bikes vary in weight from 100 to 500 kilos, getting the trailer to tip forward in a controlled manner was proving difficult.

He called WDS to order some parts and to tap into the company's expertise. Discussions covered several ideas based on springs, levers and cranks before the use of an adjustable gas strut was settled upon. There was quite a lot of work to identify the optimum size, bearing in mind the different weights involved, but eventually a size and mounting configuration that worked well over this wide range was identified.

WDS has also supplied Ken Jones with a large locking pin, QRP T-Handle, to hold the folding towing arm level and stable during transit, pull ring plungers to secure the

tailboard and various other parts that contribute to a great overall design. The design of the trailer has now been finalised and is being tested prior to certification for use on the public highways, so should soon become a common sight on roads around the country.

As well as individual motorcycle enthusiasts, Ken expects that many organisations will become corporate customers. For instance, roadside rescue services currently tend to subcontract motorbike recovery rather than do it themselves. This can add hours to the response time and, because of loading difficulties, damage to the bikes is not uncommon.

Ken Jones explains: "With our trailer the recovery people can serve motorcyclists directly. It will also allow lots of small and medium sized garages to extend services because collecting and delivering bikes will become so much more attractive.

"WDS has helped get this project to completion quickly and efficiently and their enthusiasm throughout has made the whole job a pleasure."

WDS has worked on many similar

development projects over the years and can often identify possible solutions very quickly and work up cost-effective realisations based on standard or adapted parts.

While WDS was set up to serve mainstream engineering sectors, it maintains stock profiles, service levels and expertise that can really support creative inventors. Its standard parts are all characterised by high quality and superior performance, while its stock levels mean unrivalled choice and excellent value for money.

Once a client's design has been finalised and put into serial production, they can set up 'standing orders' so that products can be dispatched at future dates. Each time WDS helps solve an engineering design problem, details are logged onto a database to create a library of solutions that can be called up in an instant for use on future jobs.

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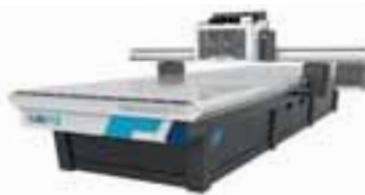
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XYZ introduces redesigned and upgraded panel building solution

Leading supplier of CNC machining solutions, XYZ Automation Group has redesigned and upgraded its well-known three-in-one XYZ PANELBuilder machine. It is used primarily for the processing of aluminium and metal composites, ACM/MCM, but is equally effective when handling fibre cement board, aluminium and other non-ferrous metals, stainless steel, copper, titanium, zinc and High-Pressure Laminates (HPL).

The system incorporates a specially configured triple Z tooling arrangement complete with three five horsepower routing spindles and is supported with dedicated CAD/CAM software. It can be used to simultaneously groove, drill and profile-cut multiple sheets of material and it offers processing areas of 1,524 mm x 3,048 mm up to 2,159 mm x 12,129 mm and longer in increments of 600 mm. This allows one or more standard size sheet to be processed simultaneously to accommodate either special one-off or high-volume requirements.

Key new design features include a highly innovative panel tracking system fitted with



an automated label printer, ALP, to quickly identify, via data matrix codes and a cordless barcode reader, individual panels as they are processed. The specially designed dedicated software is supplied loaded with numerous panel designs to help, in particular, small start-up companies.

Additional design features include a powerful vacuum-based material hold-down facility, an automatic mister/coolant device and pop-up location pins for optimum material alignment. Material waste generated by the machining process is safely removed via a chip extraction system with an integrated automatic vacuum extraction manifold.

Full on-site training and ongoing technical support are available via the team of specialist XYZ Automation Group engineers.

XYZ changed the concept of speed, especially when delivering a customised machine. Back in the 1990s, it took as long as 30 weeks, or longer, to build and deliver a machine. In 2015, with its exceptional manufacturing processes, XYZ offered the shortest manufacturing lead times in the industry, averaging just four to six weeks.

All XYZ CNC router systems are engineered, manufactured and delivered to meet each customer's exacting timelines. How? Right from the beginning, XYZ implements a systematic approach to finding the right solution for each customer. A thorough assessment of organisational needs formulates a customised solution. A clear workflow means that XYZ's state-of-the-art machine building facility, aided by unique manufacturing processes, is able to build the system as quickly and efficiently as possible.

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Perfect duet makes for increased efficiency

TPS/i TWIN Push tandem welding from Fronius

Fronius now offers its tandem welding process on the TPS/i welding platform. The TPS/i TWIN Push high performance welding system is not only more compact, easier to use and network-capable, it also integrates enhancements to the welding process. For users this means higher deposition rates, higher welding speeds and increased efficiency in production due to the reduced need for pre-fabrication and rework.

High performance welding is characterised by a high deposition rate that permits a high weld seam volume or high welding speeds. This is relevant, in particular, when joining high-volume components or long seams for construction machinery, commercial vehicles as well as automotive parts and in shipbuilding. The high processor power of the TPS/i improves the synchronised TWIN Push tandem process. The process is even more stable and reliable and the enhanced gap-bridging ability saves the user time at the component preparation stage. The amount of rework can also be reduced, since precise control of the welding process enables controlled droplet detachment and low heat input into the component, permitting low-spatter results with minimal distortion.

Fronius offers new process and control options with the TPS/i TWIN Push: PMC (Pulse Multi Control) TWIN features a short, focused pulsed arc that enables improved penetration and a higher welding speed. The PulseSync option allows the user to select widely varying travel speeds for the

two wire electrodes. This gives the user greater flexibility to ideally adjust the welding parameters to the component and achieve higher welding speeds. The power source will automatically correct all relevant power source parameters, such as the ignition properties, the point of droplet detachment, and the pulse ratio. New control mechanisms assist the welder in other ways too. The arc length stabiliser and the penetration stabiliser increase process stability and make it easier to configure parameters. Where the position of the interface varies, possibly due to component distortion or imprecise clamping, automatic seam tracking assists. During welding, the welding system transmits a seam tracking signal to the robot so that it can make corrections as required.

The TWIN process is based on tandem welding and features two wire electrodes that are fed into a welding torch with a single gas nozzle but that remain electrically isolated from one another. As a result, the arcs can be controlled independently and, despite differing outputs, can be precisely synchronised and coordinated. In addition to two TPS/i power sources, the TWIN Push system requires a TWIN Controller. The controller synchronises the welding process and acts as an interface that is compatible with all robot makes. The compact wirefeeder, cooling system, hosepack, and TWIN welding torch complete the welding system.

The cooling system for the torch has been



improved, extending the service life of wearing parts. Alongside this, Fronius has developed the Robacta TSS/i TorchServiceStation: This welding torch cleaning system combines a number of cleaning methods, including high pressure cleaning, brush cleaning and magnetic cleaning as well as cleaning by means of a cutter. The professional torch cleaning device lowers the overall system costs by extending the service life of wearing parts.

The efficiency of the welding system can be further increased by using the TX TWIN welding torch change station. The console allows for automatic switching between TWIN and Single torch bodies. This means the same system can be used to weld areas that are particularly difficult to access with the more compact Single torch body. The robot automatically changes the torch body, allowing for unmanned shifts.

Fronius UK Ltd, a subsidiary of Fronius International GmbH, has been operating in the UK since 2009 and currently has 50 employees over two sites. The facility in Milton Keynes extends over 3,800 sq m and houses the tech support teams, a repair centre, demonstration area, warehouse, display area and training rooms. It epitomises the importance of being able to deliver a first-class service to customers.

In 2014, an additional welding facility opened in East Kilbride adding a more localised service to Fronius' Scottish customers, ensuring that customers are supported as quickly as possible at their own premises.

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FICEP UK announces new partnership with Zeman

A long-standing customer/client relationship has been transformed into an exclusive partnership for Wakefield-based structural steel and machinery equipment manufacturer FICEP UK, that has announced an exclusive partnership in the UK with Austrian company Zeman Bauelemente Produktionsgesellschaft GmbH to supply automated welding equipment to steel fabricators.

The deal enables FICEP UK to offer a comprehensive and complete range of steel fabrication machines to customers, making it the leading supplier for steel fabricators wishing to invest, upgrade or expand their operations.

Zeman initially started by offering roll forming machines, developing a fully-automated system to assemble, tack and finish weld structural members for building fabrication, improving productivity and reducing the manual operation requirement - two benefits which feature heavily in FICEP's own range of machinery.

The new partnership includes a deal to supply Zeman's advanced automated plate

component sorting storage system, the SPS. The system automatically picks fittings produced from thermal plate processing machinery and allows each part to be accurately scanned by laser for size. The system automatically recognises the part identity, picks up the part with a robot and transfers to a storage system with up to 40 bins and deposits it in the required bin depending on contract, job, or processing requirements. With the additional ability to allocate bins to the required location or fabrication bench within a factory and completely track the process with RFID technology, it's a system which could transform plate processing operations in steel service centres and steel fabrication companies alike.

Mark Jones, MD of FICEP UK says: "Both our existing and new customers now have access to an unrivalled range of Industry 4.0 ready, steel fabrication machines that will improve their productivity, reduce costs and improve quality, production capability and processes in steel fabrication. The overall plan is to provide fully automated factories



for the future, with our technological expertise and innovation for the steel industry."

FICEP UK's facility located in Wakefield Europort, West Yorkshire, contains its spare part stock, hotline support team and Ficep CNC equipment in its extensive showroom facility for customer training and product demonstration.

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Competent master of TIG welding

Kemppi has announced the launch of a completely renewed MasterTig product family. Designed for professional user groups, MasterTig product range offers a choice of power variants in 230 and 300 A models, which will be complemented in 2020 with 400 and 500 A models. The new MasterTig products carry numerous enhancements that raise the user experience and the power efficiency to a new level.

MasterTig is already a familiar name in Kemppi's product selection, but now the MasterTig products are reborn. They have not only been upgraded, but a completely new welding machine has been created for professional welders doing AC and DC TIG welding and MMA welding.

New MasterTig equipment has been designed from the perspective of the ordinary welder, but the products themselves are far from the ordinary. Thanks to its modular design, you can create your own MasterTig setup that fits your needs perfectly. You can choose from a range of MasterTig power models, alternative user

interface, remote control options, transport carts and torches.

MasterTig comes with three control panel options: two membrane panels with push buttons, and an interactive MTP35X panel featuring a 7-inch TFT colour display and an illustrative graphical interface.

If your MasterTig is equipped with the MTP35X control panel, you do not need to worry about the right parameter settings. Just launch the wizard-like Weld Assist function and follow the simple on-screen steps. Select material, thickness, joint type and welding position, and Weld Assist sets the best parameters for your particular welding task. It also gives recommendations for electrode size, filler wire, gas flow, groove type, pass profile and travel speed. Perfect help for pWPS creation.

MasterTig offers a number of high-technology features for enhancing your TIG welding. For example, MicroTack function is ideal for multiple, repetitive tacking on thin sheet applications, where a consistent and controlled appearance is paramount. Double Pulse function combines



alternative pulse cycles and improves the welding speed by up to 30 percent.

Optima AC is a customised waveform that combines the best of the traditional sine and square waveforms. It improves the welding quality and reduces the noise level in AC TIG welding by 20 percent.

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ESAB helps in jet hydroplane construction

ESAB is helping a British team with a serving military pilot at the helm to build a jet hydroplane with the aim of smashing the long-standing world water speed record.

Project leader David Aldred is, along with his team, constructing 'Longbow', a powerful jet hydroplane, at its workshop on the Fylde Coast in Lancashire.

With the ultimate intention of bettering the Outright World Water Speed Record (WWSR), set in 1978 at 317 mph by Australian Ken Warby MBE, the Longbow jet hydroplane, once the build is finished, will be driven by serving Royal Navy pilot Lt David-John Gibbs.

David Aldred explains: "We wanted a welding system that was single phase, AC/DC and would weld aluminium as well as steel. As well as metalwork on the boat, we needed it for other applications such as engine mounting fabrication, pick-up points for lifting the hull and some of the engine cowling work."

The ESAB equipment is all that David Aldred hoped it would be: "We are only part way on with the build at the moment. We started building the boat in August and I would envisage that we have another year at least in front of us."

The Longbow team needed a reliable, high-quality welding system and filler metals. As the craft will have to withstand exceptionally high speeds, the team building it needs to be sure of having the best possible welds.



As part of its sponsorship package, ESAB installed a Caddy Tig 2200i welder with torch, foot pedal, filler metal and accessories in Jet Hydroplane UK's workshop in July 2018.

The lightweight, compact Caddy Tig 2200i AC/DC mobile welder is designed for both indoor and outdoor worksites and is easy to tuck away when not in use, making it handy both in the workshop and on the move.

Single phase mains connection makes it simple to find an electricity supply for the unit, but it works equally well when powered by a portable generator. Thanks to the built-in PFC circuit the machine can operate with extra-long mains cables, over 100 m, offering the welder a large working radius.

Composite materials in combination with smart design solutions provide a durable and impact resistant machine, adapted to rough conditions. The control panel is recessed, which provides additional protection and durability. Caddy Tig 2200i AC/DC has sturdy and impact resistant cable connectors with OKC 50.

With the TA33 version you only need to set the plate thickness; the machine controls the rest to help the welder achieve consistent, high quality welding results. Hotter or colder welds can easily be obtained by adjusting the knob.

The TA34 version, which enables excellent welding results to be achieved in a wide range of materials and thicknesses, comes with both adjustable slope-up and slope-down. It also comes with 'micro pulse' functionality, making it easy to control the heat input and minimising the heat affected zone.

This is helpful especially on thin sheets and high tense steels. The TA34 version also comes with two memories for pre-sets, enabling quick and accurate return to pre-defined settings.

The Caddy Tig 2200i AC/DC provides true MMA capability with the same capacity and features hot start, arc force setting, Arc Plus II and a polarity switch. The control panel is easy to overview and has a digital display for accurate welding parameter setting, high control and feedback. It is also easy to understand and set, with or without gloves on.

The machine comes with a handy, ergonomic torch with a ball joint that decreases the stress on the welder's wrist and helps the welder access the material in confined spaces. It can also easily be fitted with a water cooler.

It has been 50 years since a jet hydroplane has run at speeds approaching 300 mph within the UK. Once constructed, the craft will be a learning platform for a credible attempt to challenge the Outright World Water Speed Record and you can follow the venture by visiting the project's website www.jet-hydroplane.uk and also by liking its Facebook page under the link from that website.

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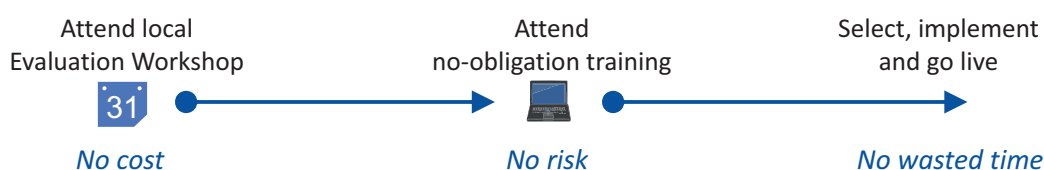
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