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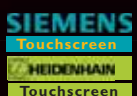


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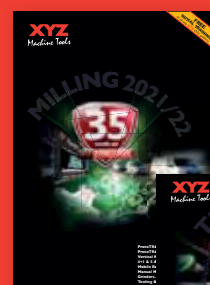


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# 1st MTA extends its automation portfolio

HALTER CNC's robotic machine tool tending systems are now available in the UK through Salisbury-based 1st Machine Tool Accessories, manufactured in Holland. They expand 1st MTA's product range to include equipment for automating chucking lathes and machining centres. 1st MTA is the long-time sole agent in the UK for the sale of Italian-built lemca bar magazines for feeding sliding- and fixed-head lathes, so the recent agency agreement with HALTER neatly rounds off the supplier's automation portfolio.



HALTER cells can be coupled with any make of machine, regardless of age and type of control. The safe, reliable, compact systems can be moved around the shop floor by pallet truck and are especially suitable for subcontractors producing a mix of small- to medium-size batches. Machinists become more competitive and profitable, as they are able to reduce labour costs. Additionally, they can provide a better service by responding more quickly to customers' orders.

Renowned for their reliability, as well as the strength of the technical support and back-up provided from the Dutch factory and now also locally via 1st MTA, HALTER LoadAssistants are available in four series: TurnStacker for automating workpiece handling in fixed-head CNC turning machines; MillStacker for providing similar functionality for machining centres; Universal, capable of feeding parts automatically for either rotational or prismatic machining and workpiece-specific solutions.

Nearly 95 percent of HALTER customers across 25 countries, including two dozen or so in the UK, report a return on investment within 18 months, with some saying it is as short as five months. So there is much to be gained from robotic component handling in terms of extracting greater manufacturing efficiency and profits from new machine tools and existing models on a shop floor.

There is constant pressure in the UK on delivery times and prices and a growing shortage of skilled operators. With batch sizes falling and machine tools becoming increasingly expensive in relation to their output if manually loaded and unloaded, it is clear that there has never been a better time to automate.

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# Moving up with more machinery

A general subcontractor has experienced pronounced growth thanks to an assertive approach to purchasing machining centres and forward planning, with assistance from its long-term machine tool supplier, Yamazaki Mazak

"There's no such thing as the 'right time' for purchasing equipment in general subcontracting," says Steve Hogg, director at Woodbrook Precision. "We get requests for machining work all the time and, when they come in, I want to be able to say we have the capacity and capability to fulfil them, whatever the order might be. Whether that means purchasing new machines to get work, or doing so to meet a customer request, we're not ones to hesitate about taking that important step and moving forward."

Established over 30 years ago, Woodbrook is based in Tameside and remains a family-run business to this day. Since its founding the company has focused on purchasing new technologies and specialised machinery from multiple tooling and fixture companies in order to foster further expansion. As a result of this, it now offers a range of precision engineering services alongside tooling products and solutions to a wide array of industries. This includes machining parts from multiple materials, as well as more specialist gear spinning applications and rack and specialist tool manufacturing.



Key to this ever-growing list of applications and machining capabilities is Woodbrook's long-term partnership with machine tool manufacturer Yamazaki Mazak UK Ltd (Mazak). Although the company started out in manual machining, it soon embraced machine tool technology with the purchase of a Mazak QUICK TURN 10 CNC lathe over three decades ago and has not looked back since.

"We purchased one Mazak a long time ago and it just went from there," says Steve Hogg. "Whenever it's time to



purchase a new machining centre, we've looked at other manufacturers, but we always end up staying with Mazak. This is in no small part due to the excellent service we receive and the fact that when we do purchase a Mazak machining centre, we can be extremely confident in its performance and reliability. Furthermore, their machines are easy to use and program, and offer the level of accuracy and adaptability we require as a general subcontracting firm."

Woodbrook's faith in Mazak machines has translated into the company currently operating seven of the supplier's machines from its new one-acre manufacturing facility in Ashton-under-Lyme, including two QUICK TURN NEXUS 200-II CNC turning centres and two QUICK TURN 10 CNC lathes. The company also invested in two VCN-530C vertical machining centres to allow it to carry out milling applications in-house, improving reliability and reducing Woodbrook's reliance on other subcontractors. These purchases have helped Woodbrook establish an enviable reputation as one of the northwest's most experienced, professional and highly-regarded precision engineering and CNC machining companies.

Most recently, the company decided to invest in an additional Mazak VTC-800/30SR

in 2020 in reaction to growing enquires for larger machined parts they were having to turn down. Equipped with an 18,000 rpm, 35 kW main spindle, the VTC-800/30SR is capable of rapid traverse rates of up to 60 m/min in the X-, Y- and Z-axes. It also features full 5-axis capability, a travelling column design that provides optimum machining flexibility and an automatic tool changer with 30 tools as standard.

This expanded array of applications facilitated by Woodbrook's extensive portfolio of machine tools proved invaluable throughout the coronavirus-induced lockdown period. Due to its wide-ranging machining capabilities, the company continued to enjoy an exceptionally strong order book throughout what could have otherwise been a challenging time.

Steve Hogg explains: "We are only a small team here at Woodbrook, with a total of six employees machining parts for a range of industries. However, we've been busier than ever over the past few months, working overnight and in 10-12 hours shifts to fulfil the orders we have been receiving. This is in no small part due to the purchase of the VTC-800/SR. Once it was installed at our new facility, we were able to branch out into 5-axis work alongside our existing capabilities, meaning we could take on

larger and more complex customer requests.”

As industry activity begins to increase again after the lockdown, the company continues to aim high and expand further into complex 5-axis work, while also looking to further reduce lead times. As such, the company has now invested in Mazak’s newest fully simultaneous 5-axis machining centre, the UK-made CV5-500.

Ideally suited to general subcontractors, the versatile 5-axis machine is unique in its category due to its high-rigidity bridge construction with a fully supported trunnion table that travels in the Y-axis direction under the bridge, ultimately delivering an extremely accurate and compact machining solution required by precision engineering companies such as Woodbrook.

Alongside exploring new machinery options, Woodbrook is also working with AUTODESK and EDGE CAM, specialists in CAD/CAM software for 3D milling, mill turning and multi-axis and 3D machining, to further support its current Mazak VCN-530C milling machines. Specifically, the company is aiming to be the first in the world to transform a Mazak machining centre into a Coordinate-Measuring Machine (CMM) by integrating Renishaw’s Inspection Plus macro software for CNC machine tools into its programming.

The software, which offers a wide range of easy-to-use probing cycles for Renishaw machine tool probes, will enable all Woodbrook’s milling machines to measure the geometrical characteristics of an object to an even more exacting degree and check



status as a UK-based supplier, means they have always been on hand to help us improve our customer offering. Because of their ability to provide solutions with reduced lead and delivery times, we are able to take a dynamic approach to machinery investment. Put simply, we know that any solution we order from Mazak will be installed in time to fulfill our customers’ orders while ensuring a high quality, even in applications not currently possible on-site.”

Alan Mucklow, managing director of the UK & Ireland sales & service division at Yamazaki Mazak, adds: “Woodbrook has worked with Mazak for many years and is a perfect example of how a close customer-supplier relationship can help a business continue its upward trajectory.

“We are extremely pleased that Woodbrook regards the Mazak range as a benchmark for quality and will continue to be steadfast in our support as the company looks for new solutions that will keep it going from strength to strength.”

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machined components conform to intended designs. Consequently, the company can carry out unerringly precise machining, increasing productivity and further guaranteeing processed parts meet the stringent quality standards required by its customers, including those in the marine, aerospace and motorsport sectors. Steve Hogg says: “The company is continuing to grow at a fast rate and, to an extent, I put this down to being a family business. We work long hours, six or seven days a week because we know that if we don’t, the drop in orders will personally affect us. Due to this level of personal investment, we are always looking ahead to how we can improve and Mazak’s support has been crucial in these efforts.

“The quality of their machines and their



# Large, precise and reliable

The second largest WFL machine model, a M150 MILLTURN, was delivered to the Czech Republic in autumn 2021 using oversized transportation. The machine, which is 16.5 m long and weighs 60 tonnes is now located at V-NASS in Ostrava

The oil and gas industry has been in an ongoing crisis for several years, which is pushing prices for suppliers to the limits of economic viability.

Director and chairman of V-NASS Pavel Krpec says: "Maintaining one's market position at a time when production of simple components is increasingly being moved to countries with lower labour costs means focussing on complex production processes which require comprehensive solutions." When the project began, this wasn't the machine they actually had in mind.

Originally, the customer wanted a single vertical turning machine and a single horizontal turning machine. It was also thinking of a 5-axis machine for milling operations for the future. At the time, the WFL machine was available which combined all current and future requirements.

It was not a good time for large investments, so it was not easy for V-NASS to convince its parent company. However, the system's parameters and the combination of functionality and performance proved to be a strong argument. Representatives from V-NASS took the opportunity to see the machine in operation at T-Machinery last year, where WFL had recently installed a medium-sized M80-G Millturn. "Seeing what a machine can do in practice is of course the best option for any engineer. We were able to do this here," says Pavel Krpec of the visit to Ratíškovice which included a practical demonstration of the technology.

### The biggest in the region

It's worth noting that this machine was from stock, was fully retrofitted by manufacturer WFL Millturn Technologies and was equipped with an automatic U-axis at the customer's request. The U-axis enables face plates and D'Andrea heads to be applied for precision drilling and turning operations outside the axis. The company is adding to its machine park with a complex machining centre for turning, milling, drilling, counter boring and, thanks to special support, further special technologies such as 5-axis-milling, shaping and deep hole



The main components such as the boring bar slide and the turning-boring-milling unit have been completely renewed

drilling. Besides these benefits of the machine, also the exchange system for milling and other adapters using the prismatic tool interface is worth emphasising here.

At 16.5 m long, the M150 Millturn machine is the second-largest model from Austrian manufacturer WFL in the CEE region. The machine can process workpieces up to 6.5 m long, 1.5 m in diameter and 15 tonnes in weight. This enables the company from Ostrava to offer bigger product lines and to take on more challenging machining projects.

"Put simply, we can produce bigger and more complex parts with greater added value," adds Pavel Krpec in regard to their plans for the future and explains why the machine enjoys a prominent position in production: "Our machine park didn't allow for production of large parts, but now that's changing. Together with our operators' skills, we are now able to produce technically challenging parts with complicated moulded parts, gear teeth and deep holes on a single machine."

### Focus on precision

During the preliminary acceptance of the machine at the WFL Millturn Technologies manufacturing plant in Linz, a completeness check was carried out by machining a sample part and then carrying out deviation measurements. "The machine fulfilled both the geometric and all other requirements. The performance values are at the level of a new machine," summarises Zbyněk



The machine before and after the retrofit

Ludačka, managing director of Ludačka Machine Tools s.r.o., in regard to the test results, adding some data from the performance log: "When machining the sample part, all exact deviations in size and position were in the range of three to six micrometres for the 36 measurements." The machine thus meets all expectations and underpins the value of retrofitted Millturn models.

There are not many used machines with this level of quality and technology. They rarely come onto the market and the systems are generally 20 to 25 years old. Which is why the manufacturer's strategic decision to now focus more on used machines is very welcome. "This allows us to offer customers in the Czech Republic and Slovakia an attractively priced, reliable machine with the full support of our service team and a manufacturer's guarantee, which sets us apart from dealers with used machines," explains Zbyněk Ludačka.

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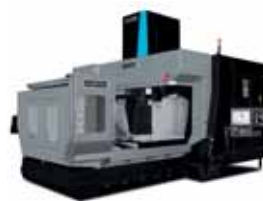
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# Subcontractor increases 5-axis capacity in a small footprint

Steve Holmes, owner of subcontract machining company Pro-Cut Precision Engineering, founded his business in 2010 and bought a second-hand Hurco VMX30 3-axis Vertical Maching Centre (VMC) to carry out prismatic machining operations.

Today, specialising in a mixture of prototyping and small batch work as well as longer production runs, he has on the shop floor seven modern machines from the same supplier. One of the most recent additions was the first full 5-axis model on site, a trunnion-type VMX30Ui for producing more complex components.

It joined an existing VM30i 3-axis machining centre in an adjacent unit that has benefitted from the addition of a Kitagawa rotary-tilt table with Lang workholding. The machine provides further 5-axis capability while retaining the possibility of using the full 1,270 mm X-axis for processing larger components. When carrying out 5-sided metalcutting operations, the machine is often programmed using Hurco's powerful transform-plane software in the Max5 control.

Steve Holmes says that the move towards 5-axis was a natural progression for the company and having two different configurations of machine allows him to produce a greater variety of workpiece sizes and shapes. He is impressed with the reliability and performance of the Hurco machines and says they produce components of high accuracy and surface finish.

On-site also are three smaller VM10i 3-axis VMCs, which he describes as "absolutely brilliant", as they run every day for up to 15 hours making production parts for the agricultural industry. "The machines never, ever stop and they don't go wrong," he adds.

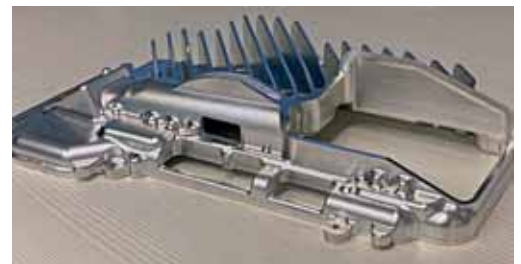
He regards the VM10i models as having a good specification for their size, with 20 tool pockets in the magazine and a 10,000 rpm spindle in addition to such control system features as pocketing cycles, 3D cycles and rigid tapping. Moreover, he was able to squeeze all three VMCs as well as the two 5-axis machines into two adjacent 980 sq ft units.

He recently added a further 1,500 sq ft of factory space to start his next expansion phase and in early October 2021 installed another 3-axis VM30i and a larger VMX42Ui 5-axis machine.

Speaking of his first full 5-axis acquisition, Steve Holmes says: "Compared with other models on the market, the VMX30Ui can handle surprisingly large sized components, considering the relatively small footprint of the VMC.

"We are happy to machine 5-sided components in 3+2 axis mode or undertake fully simultaneous 5-axis work, the more complex parts presently being required mainly for the motorsport sector.

"Flexibility to be able to serve a variety of customers is key to our business success and



the latest, larger capacity 5-axis model will help us further in this respect."

Pro-Cut has recently added two seats of Open Mind hyperMill CAD/CAM for programming complex work, but the Max5 control on the 3-axis machines and the WinMax twin-screen control on the latest 5-axis model are used for creating cycles for simpler work and are regarded as a perfect way of getting into CNC.

With the benefit of having used Hurco machines for more than two decades, including in previous employment, Steve Holmes describes the proprietary control as having become better and faster over the years. Its outstanding conversational programming capabilities and the quality of the graphics are nevertheless undiminished.

He concludes: "To keep the spindles turning during our longer production runs, all machines have either augers or swarf conveyors that easily manage the build-up of swarf.

"We are known for our fast turnaround of high-quality CNC machined components, whatever the batch size and the inherent reliability of the Hurco machines underpins that reputation."

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## HELLER launches new-generation horizontal machining centres

German-owned Heller Machine Tools, whose factory in Redditch produces selected 4-axis and 5-axis Horizontal Machining Centres (HMCs) for world markets, showcased for the first time in the UK on its stand at MACH the second-generation HF 3500 5-axis model. The company also featured the fourth generation of its H-Series 4-axis HMCs at the exhibition.

The HF 3500 Gen2, with its 710 x 750 x 710 mm working volume, as well as the larger HF 5500, are available with a fixed table or an automatic pallet changer. Both are built in Redditch and incorporate a multitude of improvements over the previous generation. Both machines are offered with either an HSK-A63 or HSK-A100 tool interface in three versions, POWER, SPEED and the new option of PRO, the latter intended for long periods of simultaneous 5-axis machining.

Designed to raise cutting performance, innovations in the second generation include an approximate halving of the minimum distance between the spindle nose and the centreline of the 225-degree

swivelling trunnion; the availability of twin motors and ballscrew drives for moving the trunnion/rotary table assembly in the Z-axis, with position feedback via linear scales and the offer of six new spindles produced in an automated facility at Heller's headquarters in Nürtingen.

Other notable improvements include increased stiffness of key components, shorter chips-to-chip times and faster tool change from a chain-type magazine with up to 240 pockets or a rack-type magazine with up to 405 positions. The high-end PRO package additionally offers 10 m/s<sup>2</sup> acceleration in X, Y and Z.

The guideways employ linear roller bearings, enabling high dynamics and rapids up to 90 m/min, while the rotary axes have direct drives and stable YRT bearings. There is also increased feed force in the Z-axis, dynamic motors driving the rotary axes and the option of adding a turning function using a high-speed rotary torque table.

A particular focus at the show was Heller's ability to supply turnkey cells for highly



efficient machining of tough titanium and nickel superalloys, notably in the aerospace industry but also in other sectors including oil and gas. In this connection, the machine manufacturer highlights the considerable range of different spindles that it manufactures in-house to suit different applications.

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# Sliding-head lathes are the perfect choice for start-up turned parts subcontractor

Glenn Poleykett began his career in manufacturing in 2006 at his uncle's firm, making components for darts on Cincom sliding-head and Miyano fixed-head mill-turn centres. They are built by Citizen in Japan and sold in Britain and Ireland through subsidiary company Citizen Machinery UK. He quickly realised that sliding-head lathes with driven tooling were capable of producing virtually any part, provided that it was from 32 mm diameter bar or smaller, whereas fixed-head models were incapable of machining shaft-type components to tight tolerances.

Twelve years on, when he decided to start his own subcontracting business, Stellar Precision Components on the Raynham Road Industrial Estate in Bishops Stortford, he remembered that lesson. He went to the same supplier to purchase two Cincoms, an L32-VIII LFV and an A20-VII. They have since been joined by a third sliding-head lathe, an L20-VIII LFV, which arrived on the shop floor in April 2020.

Glenn Poleykett says: "In the intervening years I worked at a number of subcontractors on various makes of slider, but I always regarded Citizens as the best machines.

"My opinion was reinforced when a few years ago the manufacturer introduced its patented LFV (Low Frequency Vibration)



operating system software in the Mitsubishi control system.

"It is programmable via G-codes to start and stop during any program, breaking what would normally be stringy swarf into smaller chips that cannot wrap around the tool or component and damage them."

He witnessed LFV in action at Citizen's UK headquarters and technical centre in Bushey before he bought the first two lathes and described the functionality as "incredible". When machining short-chipping metals such

as mild steel, 303 stainless and brass, he does not employ the function as it is not needed and the extremely short periods of air cutting slightly lengthen cutting cycles.

However, when turning and drilling 304 or 316 stainless, aluminium, copper and plastics, he always turns on the function for at least part of the cycle. It has the effect of greatly improving production output through not having to stop the lathe to clear swarf and by being able to leave the machine to run unattended with confidence. He would have ordered an LFV version of the A20-VII, but it had not been introduced on that model at the time, which is why the machine is devoted to producing components from free-cutting metals.

LFV oscillation of the tool by tens of microns not only breaks the swarf but also allows coolant to penetrate the cut more efficiently for the brief periods when the tip lifts clear of the component surface, reducing heat and prolonging tool life. Depth of cut may be increased substantially, even when processing tough materials, significantly shortening cycle times.

Swapping between the two modes of LFV is a simple matter, according to Glenn Poleykett. If the second, more vigorous chip-breaking action is required, for example when cutting plastics and the other mode has been inserted in a program by Citizen's Alkart CNC Wizard off-line part



programming software, manual insertion of a single line of code at the start and finish is all that is necessary.

It is noteworthy that, as is the case on more and more Cincoms and on some Miyano lathes, the most recent L20-VIIIIFV delivered to Bishops Stortford has the chip-breaking functionality on both the main and sub spindle, whereas on earlier models it is applied to the main spindle only. The latest machine at Stellar was purchased for manufacturing ventilator parts for the NHS. Funding through Citizen UK Finance and a six-month payment holiday smoothed the acquisition process at a difficult time.



Much of the subcontractor's throughput is destined for the aerospace, medical, electrical connector and pneumatics industries. Batch size ranges from 10 to 40,000 pieces and the factory operates 24/7, with two manned shifts per day and three hours of lights-out operation during the early hours of the morning. The security of operator attendance for a majority of the time is needed, as many of the components that the subcontractor produces are of very high accuracy, from a general tolerance of  $\pm 0.1$  mm right down to  $\pm 5$  microns.

Components up to the maximum bar size can be produced on both L-series lathes either when the guide bush is in place or in guide bush-less mode, the latter being a standard feature of the machines. The L32 was installed with an optional extension kit that allows bar up to 38 mm diameter to be accommodated, higher than the lathe's nominal capacity of 32 mm. This additional capability is regularly used and has allowed new business to be won.

Glenn Poleykett takes full advantage of non-guide bush operation when producing shorter components, as it avoids having to use expensive ground stock. Plastic rod, which is always oversize, can be accommodated as well as unground bar of harder metals on which high spots can catch in the guide bush, alarming out the machine. A further benefit is material savings due to much shorter remnants.

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# Machine shop expansion leads to greater efficiency for DYN-Metal

Starting out from fairly humble beginnings under the railway arches in Camden Town, London in 1937, DYN-Metal has grown into one of the largest suppliers of continuous and centrifugal cast products, specialising standard bronzes and its own DYN processed bronzes. All of which are cast in-house at its north Acton foundry, where it relocated to in 1977.

Following that relocation, the family-owned business recognised that simply providing cast billets for others to machine was not sustainable, so a series of investments were made, which have continued to this day, to develop its own machining capability. This has allowed it to develop a worldwide customer base for its own products such as high resistance, maintenance-free bearings used in industries including: offshore/marine; gearbox refurbishment; oil & gas; automotive; quarrying/mining, aerospace; and ship repair.

While much of the machine tool investment went on finish machining processes, giving the company the capability of machining castings up to 1.8 m diameter and weighing up to 5 tonnes, one area had fallen behind, that being proof machining. This is where the raw castings from the foundry are pre-machined



removing up to 100 mm of material from the outside and inside diameters, depending on product and cast material. This work was being carried out on manual turret machines, one which current managing director Max Limbourg described as being 'World War 2 surplus'. So, it was time to bring things up-to-date.

"We needed to improve productivity in our proof machining department in order to

increase throughput and consistency. Our manual machines have served us well and we will retain some of them, but they are relatively inefficient and require skills that are often hard to find," says Max Limbourg. The search for replacements involved looking at second hand and new machines, but it was a combination of the ProtoTRAK control and a UK supplier for support that saw DYN Metal settle on two ProTURN

lathes from XYZ Machine Tools. The machines are an XYZ ProTURN RLX 555 with a 1.75 m bed length and the largest machine in the ProTURN range an XYZ ProTURN RLX 780 with a 3 m bed length and swing of 780 mm over the bed, which were installed towards the end of 2021.

Both machines feature the latest RX ProtoTRAK control system with its touchscreen interface and innovative conversational programming capabilities. One key feature of the control that was welcomed by DYN Metal was the TRAKing capability of the control, this allows the operator to use the electronic handwheels to prove out the program, winding the wheels will move the tool along the programmed path at whatever speed the operator is comfortable with. Once happy he can revert to full



CNC mode at the push of a button. "Coming from manual machines Peter, our operator on the XYZ machines, had limited programming experience so it was a bit of a learning curve for him. However, with support from XYZ Machine Tools, he is now producing one-off components in a matter of minutes," says Max Limbourg.

While proof machining is relatively straightforward, the two XYZ ProTURN lathes are delivering significant savings both in time and material, the latter being particularly relevant given escalating material prices for the specialist alloys used by DYN Metal. In terms of machining time, to produce a batch of 100 rings on the old manual machines could have taken up to 2-3 days. These are now completed in around one day, due to the speed of setup and machining efficiencies. A further advantage is that, with the addition of the ProtoTRAK control, the operator can now run both machines simultaneously, creating even greater efficiencies, while benefiting from the added health and safety gains of an automated machine with guarding.

"While these are our first machines from XYZ Machine Tools, I'm sure they won't be the last. Overall, we are very happy with the machines and the technical support when we have needed it has been very quick and efficient. When we have needed face-to-face help XYZ has been there for us," concludes Max Limbourg.

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## New 5-axis machining cell features integrated workpiece loading and unloading

Machining centre manufacturer Brother has announced that it is now offering its M200X3 5-axis mill-turn model, as well as two other 30-taper machines in its range, with the factory-fitted option of a robotic workpiece magazine. Sole sales and service agent for the UK and Irish markets is Whitehouse Machine Tools, which has a cell available for demonstration in its Kenilworth showroom.

Although of standard configuration, the BV7 stocker is flexible enough to be adapted to suit a manufacturer's automation needs. It offers a higher degree of functionality for loading and unloading individual parts than a simple cobot yet avoids the complexity of a fully-fledged storage and retrieval system for machine pallets, with its larger space requirement.

As with all Brother equipment, the vertically-oriented robotic workpiece stocker is very compact, occupying a space less than one metre from either the left or right hand side of the machine. For holding billets and machined workpieces, 10 trays

measuring up to 470 x 300 x 135 mm may be easily inserted and extracted manually, each weighing a maximum of 25 kg. The tray that is to be machined next is simply selected by push-buttons on the side of the unit. Any number of components can populate each tray to suit the requirements of the user.

The integral robot effecting load/unload of the individual workpieces has four CNC axes, three rotational and one linear into and out of the machine via an automatic door. It carries twin grippers with the end effectors at right angles to each other. They load and unload parts into and out of a pneumatically- or hydraulically-actuated fixture on the rotary table, which in turn is mounted on a swivelling trunnion.

The automation unit is pre-connected to the machine control, so there is no need for additional wiring. Programming of the robot movements is either by a teach pendant or using PC software running Brother's BASIC programming language.

The M200X3 itself is also compact, occupying a footprint of less than 1.3 x



3.9 m. It nevertheless has a generous working volume of 200 x 440 x 305 mm, coupled with high productivity offered by 50 m/min rapids and a 16,000 rpm BIG Plus spindle that deploys 22 cutters from an integral tool magazine.

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# Commitment to continuous improvement drives latest machine tool investment for DRB Group

Leading provider of innovative and integrated turnkey and process improvement solutions makes a significant investment in three new Doosan machines from Mills CNC to increase and strengthen its in-house machining capacity and capabilities

Mills CNC, the exclusive distributor of Doosan machine tools in the UK and Ireland, has recently supplied DRB Group, a leading supplier of innovative and integrated turnkey and process improvement solutions based in Deeside, with three new, high-productivity machine tools.

The machines comprising two FANUC-controlled multi-tasking lathes with integrated Y-axes and driven tools and a large-capacity, FANUC-controlled 5-axis machining centre were delivered and installed at DRB Group's 100,000 sq. ft machine shop facility in late 2021.

DRB Group is a family-owned business first established in 1976 with a focus on the repair, maintenance and supply of industrial electric motors, generators and mechanical transmission systems.

The company has, over the last 48 years, undergone a metamorphosis and today provides a growing number of UK-based processing and manufacturing customers operating in highly regulated and demanding sectors with a range of integrated and standalone services and solutions.

These can include the supply of high-quality machined components and



assemblies, critical asset condition monitoring, maintenance and repair of customers' existing plant and equipment through to the design, development, manufacture and installation of, what can often be, complex turnkey solutions that can include new plant, equipment and processes.

With a dedicated project management

team working alongside highly experienced design, applications and production engineers and designers, DRB Group is a proven and successful single source solutions provider with particular skills and competencies in mechanical, electrical, hydraulic and pneumatic systems and processes.

As part of its regularly updated strategic company-wide continuous improvement programme, DRB Group makes significant investment, year-on-year, in improving its people, its plant and equipment and its processes and systems.

This commitment to continuous improvement has, over recent years, seen the company increase its headcount, implement an in-house Apprenticeship Training Programme, create dedicated areas for assembly, inspection, testing and develop its in-house manufacturing capabilities.

Matt Bennett, CEO of DRB Group, explains: "The investment in the three new Doosan machines was made to increase our machining capacity and improve our capabilities. Despite the outbreak of the pandemic, demand for our turnkey and





process improvement solutions, many of which require the machining of bespoke components and for our high-quality batch machining services, were on the increase and were putting pressure on our existing in-house machining resources.

“In order to avoid production bottlenecks occurring in the future and to ensure that lead times were not compromised, we made the decision to invest in multi-tasking machine tools.”

The three new Doosan machines acquired by DRB Group are all multi-axis, multi-tasking machines. These machines deliver significant productivity, operational efficiency and quality benefits to manufacturers. These include: reduced part setup and cycle times and reduced fixturing costs; increased part accuracies and repeatability; the elimination of production bottlenecks and the ability to meet tight lead times and customer delivery schedules.

Matt Bennett says: “We made the strategic decision not just to increase our machining capacity but to increase our capabilities too. That’s why we now have lathes with Y-axes, C-axes, driven tools and tailstocks and why we have a large-capacity, ultra-versatile simultaneous 5-axis machining centre.”

DRB Group, having audited its current machining resources and analysed where existing and future ‘pinch points’ were and were likely to be occurring, approached the market to discuss its plans and requirements with a handpicked number of machine tool suppliers. Mills CNC was one of these suppliers. “We did our homework and knew that Doosan machine tools and Mills CNC had good reputations in the market,” says Matt Bennett. After talking over plans with Mills’ sales and applications engineers it was agreed that a three new machine tool package comprising two



multi-tasking lathes and a large-capacity 5-axis machine would meet DRB Group’s immediate and future machining needs and requirements.

Matt Bennett concludes: “The Doosan/Mills CNC package had a number of advantages. As well as the machines ticking all the right boxes with regard to their technical specifications, they were also in-stock and could be delivered and installed quickly.”

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## Starrag’s new Bumotec 191neo mill-turn centre

The new Bumotec 191neo 7-axis mill-turn centre now available from Starrag UK offers potential customers in the medical device, luxury goods and micromechanics sectors, for example, irresistible money and time-saving benefits for unrivalled low-cost machining of complex, higher-value parts.

Evolved from Starrag’s Bumotec flagship 191 machining centre, renowned for its reliability and high performance, the 191neo takes the possible production benefits available from one-hit machining to new heights thanks to: lower than ever machine cost, courtesy lean manufacturing techniques, 15 percent reduction in tool change time, 12 percent faster back-working movement, a higher torque (175 Nm) milling spindle.

The result is a machine that can be offered at a significantly cost-competitive price to enable users to achieve lower than ever piece part costs.

With ergonomic design that includes large window areas so operators can clearly see all working zones, as well as perfectly-positioned doors for excellent access, the machine can accommodate bar

of 42 mm, 50 mm and 65 mm, and has 50 m/min traverse rates for its X, Y and Z axes travels of 410 mm, 200 mm and 400 mm respectively.

Main spindle options extend up to 22 kW with a torque rating of 175 Nm, while the 15 kW/36 Nm sub-spindle operates at 6,000 revs/min. Importantly, in addition to milling and turning routines, the 191neo can also be used for grinding, polishing, skiving, gear hobbing and diamond cutting with no setup or fixture changes.

Available in four options: P model with vice, PRM with multi-purpose pick-up vice, R with back-working spindle and RP version with combined vice and back-working spindle, the 191neo is effectively available in 12 versions.

Like its predecessor, the machine is also extremely stable during production and with a 90-position tool magazine that operates in parallel with integrated tool breakage probing, plus a pallet system and being configured for a robotic, modular or custom-made automated cell, users have access to 24/7 production regimes. Other options include temperature-controlled,



high pressure chip conveyor and bar loading.

Focused on ‘digital transformation’ to ensure compatibility with the latest production technologies and remote access management, the 191neo has a touch display with user-friendly and intuitive interface that can easily and quickly be used to swipe between screens.

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# Subcontractor invests in Mitsubishi

Since its inception in 1994, Carlow Toolmaking Services Ltd has specialised in manufacturing components, jigs and fixtures for the medical device, oral health care, pharmaceutical and automotive industries. To support its growth trajectory, the company has continually invested in Mitsubishi EDM technology from the Engineering Technology Group (ETG).

Design engineer at Carlow Toolmaking Services, John Whelan says: "We make jigs and fixtures for the medical industry and we have a contract toolroom, so we do a little bit of everything. At present, we have parts here from an old steam engine that we are producing right through to high-end medical device equipment. 22 years ago we bought a Mitsubishi FX10 wire EDM machine and it is still running every day."

With the Carlow-based company enjoying continued growth it added a second Mitsubishi EDM machine, an MV1200S five years ago. This has since been followed by a Mitsubishi MV2400R that was installed before the Covid pandemic. However, the global hiatus on much of the manufacturing industry hasn't halted progress at Carlow Toolmaking. At the start of 2021, it added a second Mitsubishi MV1200S wire EDM.

John Whelan says: "Obviously, the longevity has been proven with our first machine plus the fact that we use the same software. The training curve was a lot easier by sticking with a Mitsubishi machine rather than switching to another machine."

Director Pat Amond adds: "What it has helped us change at Carlow Toolmaking Services over the last couple of years is the efficiency on the machines. We are dealing with ETG and Mitsubishi and this has enabled us to be more efficient and helped us to produce jobs easier and quicker, which is a major benefit."

"With an awful lot of the higher quantity parts we are making at the moment, we are using the Mitsubishi wire eroder rather than our milling machines. Over the years we have discovered that we can stack parts and prepare them on the EDM and it is more efficient. Additionally, the machines can run overnight unmanned and this has given us an edge over our competitors and our customers have benefited from that."

John Whelan says: "The interface has changed and it is a lot slicker and the speed has improved. The stainless steel tank on the newer machines are much easier to clean and they do the same job as they always did."

The two MV1200S wire EDM machines and the MV2400R incorporate Mitsubishi's Tubular Shaft Motor technology that delivers extra-smooth axis movements with drives positioned right in the centre of the moving weight. Highlighting this smooth axis movement and ultimate level of



precision, the machines have glass linear scales right next to the workspace to assure users of maximum precision right from the start. In fact, Mitsubishi provides a 12-year positional warranty on all drives. Regarding the upgrade to the control interface, the new 19 inch touch screen control interface provides onboard CAD/CAM programming with complete import function for 2D, IGES and DXF files to streamline workflow. This is complemented by onboard maintenance tracking that monitors the use of all consumables such as rollers, bearings and even multiple wire bobbin tracking that enables the operator to qualify how much wire remains on multiple bobbins.

John Whelan continues: "We tend to run overnight when we have the right type of work to go on the machines. We also cut a wide range of materials here and anything conductive can be wire eroded. So, we can cut anything from graphite right through to PCD. At the moment, we are cutting a bronze component that conventionally may have been milled, but it is much better to do this job on the wire EDM. We tend to do jobs slightly differently. We think around

wire eroding rather than milling. As we design many jobs in-house, we design to suit our abilities. So, we very often design around wire erosion as it is more efficient."

Pat Amond adds: "Over the last number of years, John and Conor in our design department have the Mitsubishi wire eroder in mind from the very beginning when they are doing the initial design of components. This allows us the benefit of working overnight unmanned and our customers get the benefit because, from the very outset, there are no modifications. We provide a concept from the very beginning and then we supply a finished product that is ready to go."

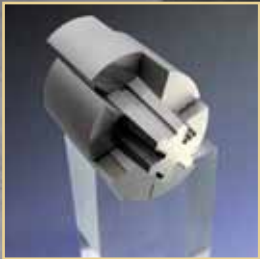
ETG's resident EDM expert, Scott Elsmere says: "Carlow Toolmaking has intelligently adapted its strategy whereby the profiling of multiple components can be undertaken on an EDM machine as opposed to a machining centre. By using an EDM machine to profile parts rather than rough milling, manufacturers like Carlow Toolmaking can reduce labour and costs by profiling parts overnight unmanned. This adds capacity to milling departments while reducing cutting tool costs, power consumption and even eradicating excessive swarf from the process."

John Whelan concludes: "With the Mitsubishi FX10 machine, we had a capacity of 350 by 250 by 220 mm in the X, Y and Z axes. When we purchased the first MV1200S, we effectively had the same capacity but it was a much more efficient machine with the modern interface. Eventually, we needed extra Z-axis capacity so we moved up to the MV2400R. This machine has 600 by 400 by 305 in the X, Y and Z axes. That capacity opened up a lot of doors for us with extra capacity in the Z-axis that we couldn't cut on the other machines. Customers were asking for us to machine larger parts and we had to turn work away because we didn't have the capacity. The extra height in the Z-axis has opened up a lot of new doors for us."

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# Up to 20 percent faster processing

GF Machining Solutions, the milling, EDM, laser and Additive Manufacturing (AM) machine tool manufacturer and automation and tooling systems specialist, has recently supplied a new, state-of-the-art wire EDM machine to Bedestone Ltd, a leading wire erosion and jig grinding specialist based in Birmingham.

The machine, an AgieCharmilles CUT P 550 Pro, was delivered and installed in Bedestone's 6,500 sq ft temperature controlled machine shop facility in June 2021 and has taken its place alongside two, previously acquired, large capacity wire EDM machines and two EDM hole drillers, to create a flexible, responsive and high-precision wire EDM resource for its growing customer base.

The new CUT P 550 Pro has significantly increased Bedestone's wire EDM capacity and capabilities and was acquired as part of the company's five-year 'rolling' Capex plan.

Co-owner and director Richard Stanley says: "The new machine has replaced an older Charmilles 330F wire eroder which, whilst still able to meet our accuracy and surface finish requirements, was relatively slow, by today's standards and was experiencing some reliability issues that, if left unchecked, would likely impact on our ability to meet customer lead times in the future."

The company had originally intended to replace the Charmilles 330F in late 2019/early 2020 but the outbreak of the pandemic meant that Bedestone's investment plans, over the short term at least, were put on hold.

Richard Stanley continues: "We, like many companies, were in limbo when COVID-19 struck and when the first national lockdown, in March 2020, came into force. Being a prudent company, we decided to postpone the planned wire EDM investment

and wait to see how things transpired."

The company didn't have to wait long, because a number of existing customers operating in essential industry sectors, most notably nuclear and defence, significantly ramped up their requirements for high precision jigs, fixtures, tooling and components at the beginning and throughout the lockdown periods.

"We didn't need to furlough any staff during the pandemic," recalls Richard Stanley. "In fact, demand for our wire EDM and grinding services reached an all-time high. So much so that employees were actually working overtime."

With business booming, the previously postponed wire EDM machine investment plan was resurrected.

Richard Stanley explains: "We spent time identifying the key features and characteristics of the new machine we needed and approached a number of EDM machine tool manufacturers with our plans.

"We had also devised a challenging test cut, machining a precision spline, that we asked the participating machine tool manufacturers to undertake as part of the new machine procurement process."

The key performance indicators of the test cut were part accuracy and part cycle time. On both measures, as it transpired, the CUT P 550 Pro wire EDM machine from GF Machining Solutions came out on top.

Richard Stanley says: "The CUT P 550 Pro was the best performing machine in the test cut, but our decision wasn't just based on the results of the test. We also liked and responded positively to the business approach adopted by GF Machining Solutions. From the outset they were interested in what we were doing and where we wanted to get to. It felt more collaborative rather than merely a supplier providing a new machine to a customer."

Since being installed, the CUT P 550 Pro has been in continuous action machining prototypes, one-offs and small batch series of precision parts for Bedestone's defence, motorsport, nuclear customers, to name but a few. The last eight months have provided ample opportunity for Bedestone to



become familiar with its new machine, to understand its key strengths and recognise the contribution it makes to the company's future growth and success.

Richard Stanley confirms: "The CUT P 550 Pro is a compact machine. This was an important consideration for us because space is at a premium in the machine shop."

The machine, despite its compact size, has a good-sized working envelope, 550 mm x 350 mm x 400 mm. It also has a stable and rigid design and, amongst its many strengths, features integrated thermal compensation systems, water cooling and air conditioning. This helps maintain temperature consistency within  $\pm 0.2^\circ$  and enables high accuracies and repeatabilities to be maintained even during long periods of operation.

"Our customers expect and demand exacting precision," explains Richard Stanley. "The CUT P 550 Pro is equipped with a range of innovations and technologies that enable us to meet and surpass customer requirements."

Central to the CUT P 550 Pro's speed, versatility and accuracy is its Intelligent Power Generator (IPG) technology and a number of embedded 'EXPERT' and SMART systems.

Richard Stanley concludes: "The IPG digital generator delivers fast processing speeds, improved accuracies and repeatability and enables us to achieve superior surface finishes, down to Ra 0.08  $\mu\text{m}$ , in fewer passes. The EXPERT and SMART systems are equally impressive. They help make us more efficient and increase our flexibility."

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# Styles Precision brings wire EDM in-house with new Sodick ALC600G

To eliminate the cost and lead times associated with outsourcing its wire eroding requirements, Worcestershire-based Styles Precision Ltd has invested in a new Sodick ALC600G from Sodi-Tech EDM. This bold investment move is also helping to attract more work from both existing and new customers as the company looks to continue its growth over the next five years.

Styles Precision has been growing year-on-year since its inception in 2002. From day one, the company has strived for perfection and, as a result, has built a solid reputation. Today, boasting turnover in excess of £2 million, the 20-employee, ISO9001 accredited company occupies two modern units near Kidderminster that total 13,000 ft<sup>2</sup> in size. With a focus on high-quality subcontract manufacturing, Styles Precision specialises in precision CNC turning and milling, including 5-axis machining.

"We tend to buy high-end machine tools, an ethos that we've transferred to our first wire EDM, a Sodick ALC600G, which we bought with the help of a successful grant application via the RDPE Growth Programme," explains the company's managing director Tony Styles. "Investing in top-end machines helps us to attract high-value work, often in energy and power-related sectors such as steam turbine, renewables and oil and gas."

Styles Precision previously subcontracted its wire EDM requirements, maybe not enough to consider buying a machine, but the company knew there would be additional opportunities if it could offer wire EDM in-house. Therefore, the company concluded that investing in the Sodick ALC600G would be a logical and exciting step forward.

The ALC600G leverages the latest digital innovations in generator technologies and advanced electrode materials. Demonstrating considerable advances in cutting speed, accuracy and surface finish, this compact and fully enclosed Sodick machine offers the latest HMI with 19-inch touchscreen colour display. Travel in the X-, Y- and Z-axis is 600 by 400 by 300 mm respectively.

Installed in March 2021, the machine is



proving a great addition to the business. "We've already been busy wiring many different parts, including special profile gauges," says Tony Styles. "Recently, we won a tender to manufacture a family of intricate, high-value steam turbine wear parts, which has a particular profile in the bore. We use profile gauges as an initial check of the labyrinth's profile form during machining operations. In addition, the labyrinths themselves are split into numerous segments. We have around 240 specific segments to wire from machined rings measuring between 300 and 600 mm in diameter."

Styles Precision initially considered three machines but chose Sodick because of its brand reputation and the support on offer from Sodi-Tech EDM.

Tony Styles says: "We knew the latter point would be important as it was a new process and our first wire EDM. It seemed likely that we might need a little help in terms of technical support, service and back-up."

The key to success at Styles Precision is recognising its core strengths and being able to apply its technical knowledge to the full. Collectively, the company's focus is on quality, customer satisfaction and flexibility. This combined effort has enabled the business to grow its skilled workforce and continually invest in the latest machinery.

"We are over the moon with our Sodick machine," states Tony Styles. "We have



some fascinating projects on the go at present, so the ALC600G will make a big contribution to the ongoing success of our business, particularly as we will soon be running it lights-out. In addition, I won't be stopping at just one machine. The Sodick will almost certainly create a lot of new opportunities that will eventually lead to requirements for further machines from Sodi-Tech."

Styles Precision, which had a record-breaking year in 2020, anticipates that some of these opportunities will come from its existing customer base.

Tony Styles concludes: Thanks to the new Sodick, not only will we get wiring enquiries, we'll also get more milling and turning enquiries. This is great for our growth as we're an ambitious company and want to be twice our current size within the next five years."

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# Vargus introduces new industry benchmark

As a leading developer, manufacturer and supplier of precision threading, grooving, turning and hand deburring tools, Vargus Tooling UK Ltd has now launched its new series of MACH Supersonic Threading products. Developed for unparalleled productivity when threading, the new MACH Supersonic Threading range is the new industry benchmark.

The new series incorporates a complete range of thread turning tools and thread milling products. The patent-pending turning range has been introduced with a comprehensive range of MACH TT external inserts and corresponding MACH TT toolholders. The MACH TT external turning inserts are available with both a 55 and 60-degree partial profile, ISO metric, American UN, Whitworth for BSW and BSP, BSPT, NPT, NPTF, Round and Trapez, UNJ, MJ, API Round and Metric Buttress.

This range of inserts caters for the complete threading spectrum and is capable of producing threads twice as fast as competitors' products, due to several unique innovations. Each of the respective thread geometries incorporates an improved rake with a reinforced geometry that creates a strong insert design with a high resistance. This permits cutting at higher speeds and reduces the number of passes required.

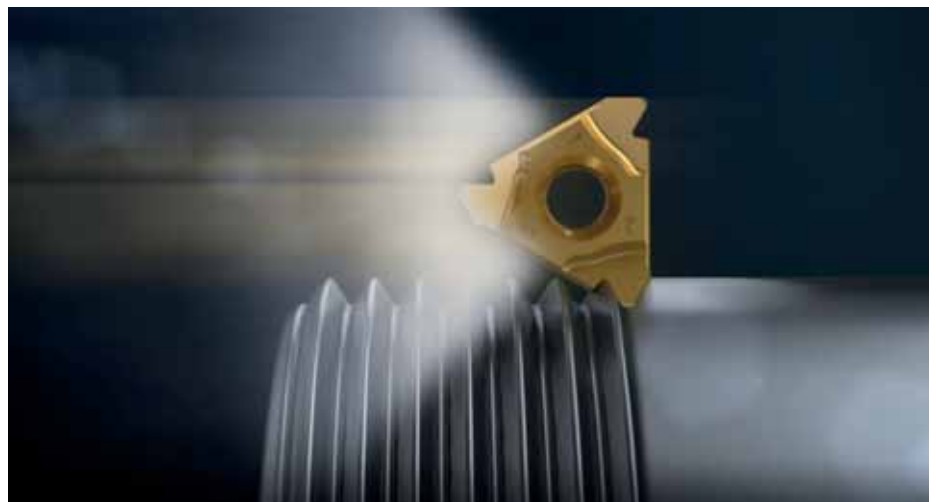
Adding to this geometry is Vargus's new VK8 insert grades that combine an AlTiN and TiN PVD coating to give exceptional durability and performance on a complete range of materials from steel and stainless, cast iron and nonferrous materials through to heat resistant alloys and hardened steels. The advanced surface treatment and improved profile design reinforce the strength of the cutting edge while providing a smooth surface finish and superior thread profile. This abundance of innovations reduces the number of passes required to dramatically decrease machining times and extend tool life, while delivering unsurpassed thread quality.

Every thread designation is available with a vast array of dimensions and thread pitches to meet all of the threading demands of the industry. Working in complete synergy with the indexable triangular inserts is the respective toolholder with the Vargus dovetailed clamping system that is extremely rigid for



high load machining. The toolholders are available with or without through coolant facility that improves chip breaking and prolongs the life of the tool by delivering high-pressure coolant directly to the cutting edge with both a top and bottom coolant

and feed rates. Further enhancing the ability to cut at high feed rates is a design feature that includes a fourth flute that further improves cutting performance and



outlet channel. The tool shanks are available with a 12 or 16 mm width and depth for application on Swiss-type sliding head turning centres with 20, 25 and 32 mm toolholders also available for application on a complete range of turning centres. Additionally, the toolholders are available in lengths from 84.5 mm to 170 mm to suit specific machine tools.

Complementing the thread turning range of MACH products from Vargus is the new MACH TM thread milling range. Like the thread turning range, the MACH TM thread milling line is available in a complete range of thread geometries to cater for the complete demands of any machine shop.

The solid carbide high-performance treadmills incorporate an improved cutting-edge design with a reinforced geometry to allow cutting under high loads with maximum efficiency. Complementing this design is a large core diameter that increases the stability and strength of the MACH TM series to enable higher speed

evacuates the swarf at speed. Assisting this tool design in removing chips from the cutting area is a through coolant facility that flushes the swarf from the cutting edge.

For prolonged machining performance, Vargus has introduced its innovative new VH4 high wear resistance TiCN PVD coating technology to its new MACH TM series. This advanced surface treatment enables the new thread mills to improve surface finishes while prolonging tool life by reinforcing the cutting edge. Creating further stability and rigidity for the cutting edge, Vargus has optimised the flute length of the MACH TM series taking performance and tool life to a new stratosphere.

The helical flute tools are available in a complete range of thread sizes and pitches to suit the end user's requirements.

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# Kennametal introduces lightest weight version of electric vehicle tooling

**Award winning 3D printed stator bore tool weighs just 7 kg, ensuring fast tool changes and spin-up on machining centres**  
 Kennametal has introduced its next generation 3D printed stator bore tool for the machining of aluminum engine housings for electric vehicles. This latest version of the tool features a newly designed arm structure, a larger centre tube made of carbon fibre and a further weight reduction of greater than 20 percent over the original design. The complex tool is capable of machining three large diameters in just one operation, saving setup time and machining time for automotive component manufacturers and delivering the highest accuracy and surface qualities.

The newly redesigned tool recently won MM MaschinenMarkt's Best of Industry Award in the production and manufacturing category based on votes by readers and industry experts.



"As our automotive customers expand their offerings of hybrid and electric vehicles, we continue to respond to their need for lighter weight tooling solutions. By leveraging advanced manufacturing techniques like 3D printing, we've reduced weight a further 20 percent over the first-generation tool, while improving chip control and increasing tool rigidity. These innovations help our customers machine faster and more efficiently," says Ingo Grillenberger, product manager for Kennametal.

Machining three diameters in one operation, the stator bore tool ensures the alignment and concentricity of the machined surfaces whilst reducing the cycle time significantly. The lightweight 3D printed combination tool enables a faster tool change and spin-up even on

less powerful machines. The surface specifications and component tolerances are achieved without constraints.

Hassle-free chip removal is ensured by means of airfoil shaped arms that are through coolant featured to ensure precise and powerful coolant supply to the cutting edges and guide pads. This would be difficult or impossible to economically produce with traditional manufacturing, but 3D printing enables us to realise even such complex internal features. Additionally, the Kennametal RIQ reaming system features easy diameter adjustment and a trouble-free setup of new inserts.

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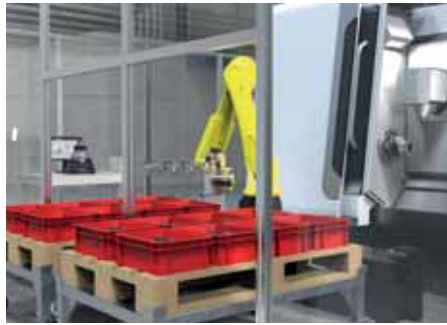
# Hainbuch IQ adds intelligence to workholding

As a leader in the workholding and clamping arena, Hainbuch has now taken innovation to a new level with its IQ range of chucks and mandrels. Chucks and mandrels with the new IQ technology manage and monitor production to improve workflow, productivity and consistency for the end-user. By incorporating measuring intelligence, the new Hainbuch IQ reduces measurement procedure times and scrap rates while improving productivity and process capacity, monitoring the defined clamping parameters and documenting the results for repeat production orders.

How does the IQ system achieve all of this? By integrating sensor technology to deliver a solution that makes the transition to Industry 4.0 and digitalisation a simplistic process.

The IQ system provides many different measurements and monitoring possibilities, recording data and relaying the information via contactless transmission directly to the machine controller where it is analysed. The controller executes a setpoint comparison and if any deviations are found, an output message or correction is initiated. This makes long-term process control possible by using the data obtained through condition monitoring. The data between the rotating clamping device and a stator fixed on the headstock is transmitted with a field-bus system directly to the machine controller or a gateway.

The intelligent new IQ system is available with the dead length and pullback TOPlus



IQ hexagonal chucks and the SPANNTOP round IQ chucks. This caters for a clamping range from 3 to 100 mm with the TOPlus and 3 to 160 mm with the SPANNTOP system. The IQ technology has also been integrated into the MAXXOS and MANDO mandrel ranges to support the clamping of components from 8 to 200 mm diameter across the range. This combination of options provides machine shops running everything from turning and milling centres through to grinding, measuring and assembly workstations, a completely new outlook on how to measure and control its clamping processes.

### New measuring possibilities

The new IQ system makes it possible to measure a multitude of parameters such as the workpiece diameter, temperature, RPM, workpiece contact and clamping force, providing the customer with complete process control. The workpiece diameter can now be clamped and measured in a single step with no additional measuring



machine, attaining a measurement accuracy of  $\pm 0.01$  mm diameter. This can help to detect whether the correct diameter has been produced in upstream machining processes.

The IQ system can measure the temperature of the clamping device to within  $\pm 0.1$  degree  $^{\circ}\text{C}$ . By detecting gradual temperature changes during machining, the IQ enables any deviations to be accounted for in measuring procedures. For condition monitoring, the IQ can measure the spindle speed to a precision level of  $\pm 1$  percent. By monitoring the RPM with analysis diagrams, the system can detect any loss of inertia.

The measurement of workpiece contact is conducted via sensors in the body and through the 3-point part support contact on the workpiece end-stop. This enables the IQ system to detect swarf on the component and end-stop to less than 0.03 mm without complex air sensing control that requires rotary units and subsequent piping.

The IQ system provides workpiece clamping force measurement to ensure that a continuous clamping force is maintained on the component. Any deviation from the calibrated clamping force value is therefore determined. This gives the end-user an understanding of whether the clamping force is suitable for the respective component and if the forces have been set correctly on the hydraulic unit or clamping cylinder, a factor that is essential for automated production scenarios.

The new IQ system can be integrated into most machine tools and requires very little preparation.

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# Walter expands Tiger-tec Silver WSM45X range

Walter now offers the high-performance Tiger-tec Silver WSM45X indexable insert grade for ISO S for titanium and heat resistant alloys and M for austenitic stainless steels for the Xtra-tec XT range of M5130 shoulder milling cutters, the M5468 copy milling cutters, the M5008 high-feed milling cutters and the BLAXX F5041 and F5141 shoulder milling cutters.

The combination of the special substrate, which is wear-resistant yet tough, with an aluminium oxide coating, is the only one of its kind on the market and ensures a high level of process reliability. The coating protects the substrate against excessive heat and is extremely smooth enabling a high level of productivity and superior resistance to the formation of build-up on the cutting edge. This makes the Tiger-tec Silver WSM45X grade a proven problem solver, particularly when it comes to roughing titanium alloys in the aerospace industry and when machining stainless steel. The two-tone Tiger-tec Silver coating is designed to ease the detection of edge wear. Typical components that are

machined using the WSM45X grade are exhaust turbochargers, turbine blades and titanium structural components for the aircraft industry.

In addition to the new program extension, the Tiger-tec Silver WSM45X range of inserts is already available across the previously launched Xtra-tec XT and M4000 universal milling system platforms which include face milling cutters, shoulder milling cutters, high-feed milling cutters, octagonal insert and copy milling cutters.

Walter AG was founded in 1919 and is now one of the world's leading metalworking companies. As a provider of specialised machining solutions, Walter offers a wide range of precision tools for milling, turning, drilling and threading applications. Walter works together with its customers to develop custom solutions for fully machining components for use in the aviation and aerospace industries, as well as automotive, energy and general engineering. The company demonstrates its Engineering Kompetenz at every stage of the machining process. As an innovative



partner capable of creating digital process solutions for optimal efficiency, Walter is pioneering Industry 4.0 throughout the machining industry. With over 3,500 employees worldwide, together with its numerous subsidiaries and sales partners, Walter AG serves customers in over 80 different countries.

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# Billet machining cuts time to market for Techni

With the support of Ceratizit UK & Ireland, Techni has dramatically cut time to market for its compressor mount kits used for van-based refrigeration and compressed air units

Techni Ltd is a leader in the design and manufacture of cast mount and drive solutions, with its products used across many industry sectors. If you have had a supermarket home delivery, the chilled or frozen products in the van were most likely kept cool by a fridge system that used a Techni compressor mount kit. Or, if you have had need for a mobile tyre fitter or utility vehicle, their compressors would probably have made use of a Techni systems mount kit.

Typically, the compressor brackets are machined from SG iron castings as normal batch sizes make this the most cost-effective method. However, driven by the significant increase in home deliveries due to the COVID pandemic, customers have demanded faster turnaround and volumes in much lower numbers, but more diverse configurations. This has been particularly the case for the American market, which traditionally hasn't had a strong home delivery culture. This increase in demand for lower volume and fast turnaround posed issues for the casting method of production which, for a new product, could take as long as six months to get to market.

"In order to compete, we needed to review our methods to reduce these lead times by as much as possible and billet machining was the logical step," says Ali Kerr Techni's manufacturing engineer who worked on the project. "This is a new road for us to go down and it is one that makes shorter runs, even one-offs, viable to produce as we are eliminating lots of cost, such as fixture design and manufacture, all we need now is a vice and good tooling."

To help with the workholding, tooling and methodology, Techni turned to preferred tooling supplier Ceratizit UK & Ireland and technical sales engineer Derrick Jones.

The first stage in the process is to take a 3D scan of the engine bay of the van to be fitted with the system. OE CAD is then required to allow the design engineers to meticulously design the mount brackets. A big advantage with billet machining is that there is no longer any need for the draft angles or runners required for castings, which make the parts much simpler to design. Typically, the brackets can then be



produced from an aluminium billet measuring 270 mm by 90 mm by 180 mm. To grip these, a WNT ZSG 4 centric vice is mounted on a WNT Zero Point MNG Riser Console. With its maximum gripping force of 35 Nm, unlike some other systems, the WNT ZSG 4 vice is able to grip on as little as 3 mm of material without any pre-preparation of the billet. By mounting the

vice on the MNG Riser Console, access to five-sides of the billet is straightforward and helps to reduce tool overhangs. This allows increased cutting data to be applied. In the case of Techni, that 3 mm of material is left in situ after machining rather than removing it with a second operation thus saving further time.

With the billet gripped up to 90 percent of



the machining, both roughing and finishing is carried out using a WNT CircularLine end milling cutter, with CERATIZIT's extremely wear resistant Dragonskin Diamond Like Carbon (DLC) coating. It provides up to 80 percent of the hardness of natural diamond to protect from damage caused by built-up edges or abrasive alloy accretions to deliver extended tool life and elevated cutting data. In the case of Techni, these cutters are being run at a conservative 450 m/min surface speed, 0.2 mm/tooth feed on this 14 mm diameter five flute cutter, with a 10-20 percent step over. After a machining cycle time of one hour and 45 minutes, the Circularline cutter is engaged for about 95 minutes. After an initial batch of 50 brackets, it was still delivering the surface finish results required, helped by the innovative cutter geometry. This is advantageous where the wall thickness is minimal and where the requirement for a 2 mm corner radius is required.

"The help we have received from Ceratizit on this project has been invaluable and, while some elements of billet machining are greater than casting, for example a casting may cost as little as £20, compared to £80 for a billet of aluminium, machining time for

a casting is around 20 minutes, not 105 minutes," says Ali Kerr. "Even with these increased numbers the argument for billet machining is easily won, simply with the reduced time to market, initial cost to create a casting and typically around £2,000 - £10,000 for fixturing.

"We can now deliver finished machined parts to customers within a week if required, this would compare to four months for a new cast product. This gives us a valuable competitive edge with new customers or projects. In future, with batch quantities up to 300, billet machining will offer a significant advantage and we already have more parts lined up for billet machining."

In working closely with Ceratizit UK & Ireland, Techni has developed a process by which it can respond to new customer demands anywhere in the world in a timely and cost-effective way.

Derrick Jones concludes: "The ZSG 4 vice and MNG zero-point system along with the



Circularline DLC cutter are popular standard elements of our product portfolio and provide an excellent example of how a highly effective solution to a machining problem can be created with minimum investment or disruption that can take months of a product lead time."

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## Precision fast change chucks for sliders

In 2018, BIG KAISER introduced hydraulic chucks for Swiss-type turning centres in what was considered the first major improvement to the technology for more than 30 years. Now, BIG KAISER has expanded the program to include inch-size Standard Type chucks, as well as the new F-Type and R-Type chucks that are all now available in the UK from Industrial Tooling Corporation (ITC).

The new F-Type single wrench system simplifies cutting tool changes on the tool post significantly, saving setting time for the machine operator. The easy-access rear clamping design is ideal for configurations where the hydraulic chucks are installed on the front tool post of the sliding head turning centre. Clamping from the opposite side of the cutting tool and the optimised overall length design improve overall ease-of-use. The F-Type is available in a clamping range from 3 to 10 mm and through coolant delivery is also possible.

Alongside the new F-Type single wrench system is the exciting new R-Type designation. This innovative design

eliminates interference when working on both the upper and lower tool post positions. This is credit to a unique block design and screw tightening at an offset position on the tool side. The R-Type is available in a clamping range from 3 to 10 mm and its oil hole drills can be used for coolant delivery when mounted on the upper section of a sliding head turning centre.

The Standard Type Hydraulic Chucks with tool-side clamping have now been expanded to create availability in inch sizes with the clamping range of 1/8", 3/16" and 1/4" diameter.

To minimise machine downtime and provide operator safety, the new hydraulic chucks use a simple hex wrench that requires only two to three turns for both clamping and unclamping. Tightening is complete when the clamping screw hits the bottom, so controlling the tightening torque is not required. Once the hydraulic chuck is centred, the runout will not vary even if the cutting tool is repeatedly changed. Runout of fewer than three microns at four times



diameter can be achieved, improving precision, concentricity and repeatability. The hydraulic chucks have a standard pipe thread for through coolant connection and are available for most sliding head turning centres with a 22 mm straight shank capacity.

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## The innovations marketplace

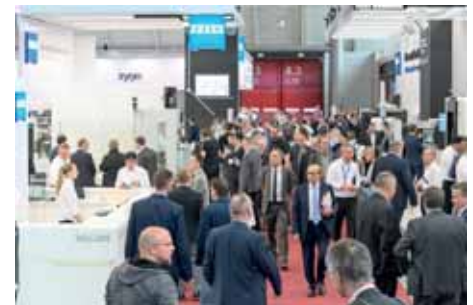
The 34th Control international trade fair for quality assurance will take place from the 3rd through the 6th May 2022. The live trade fair is being eagerly awaited with great excitement and anticipation all over the world. More than a third of all registered exhibitors come from outside of Germany. Visitors will experience further developments at the event in Stuttgart in the fields of vision technology, image processing and sensor technology, as well as measuring and test technology.

Significant new developments have taken place over the last two years in the field of industrial QA. Zero defects production, efficient use of resources, smaller batch sizes and shorter product cycles are driving QA. The industry sector is booming and Control 2022 is the platform where suppliers and users will meet and exchange ideas.

### Precision for Performance

"For me personally, the 30th Control will be an additional reason to celebrate in 2022 in addition to Kordt's 75th anniversary," says Thomas Jantzen, CEO and managing partner of Kordt GmbH & Co. KG in Eschweiler, Germany. "We're pleased to be able to meet up with our customers and partners again during our anniversary year. As the leading trade fair for measuring technology, Control has been offering an ideal forum for personal contact for decades." In keeping with the principle of "Precision for Performance", Kordt will be exhibiting new developments in the field of automation and operator-independent measuring systems. "By means of personal discussion, we want to find out how we can help our customers improve their performance with our precision equipment," observes Thomas Jantzen.

Control is the world's only trade fair to present technologies, processes, products and system solutions for industrial QA in a comprehensive manner. The sector is looking to the future optimistically because QA solutions have never been as important as they are right now. Integration of QA technologies into the manufacturing process will be experienced live in all of its facets at Control 2022. Heiko Müller, managing director at Renishaw GmbH, is also looking forward to the trade fair: "After two years of abstinence I'm looking forward to lots of contact with our business partners,



the latest information from the market and our own team dynamics." Renishaw will showcase highlights in the areas of precision measurement, control solutions and systems for generative manufacturing in Stuttgart.

### Leading technology, communication and business platform for QA

"We're observing great demand for trade fair participation in the QA industry. Visitors are already asking for tickets months before the trade fair opens," reports project manager Fabian Krüger from trade fair promoter P. E. Schall GmbH & Co. KG.

"Exhibitors and expert visitors want to finally exchange ideas face-to-face about QA innovations again, because a lot has happened in recent months." As the leading trade fair for QA, Control is thus an indispensable, compulsory event for many companies. "This is reflected in the good mood and the already high proportion of foreign exhibitors amounting to nearly 35 percent," emphasises Fabian Krüger.

Advances in the fields of automation, digitalisation, contactless workflows, remote services and end-to-end traceability are affecting all industries and, in the meantime, the service sector as well. Requirements for measuring and test technology, materials testing, analysis equipment, vision technology, image processing and sensor



technology, as well as weighing and counting technology, have risen to new levels. Users of test technology take advantage of various inline QA solutions in networked processes including contactless applications. This will be explored in greater depth at the special show on "Contactless Measuring Technology" held by the Fraunhofer Vision Alliance, which will take place for the 17th time at Control. The show will feature a cross-section of innovative technologies from the field of contactless measuring and test technology in Hall 6. Control's considerable practical benefits for trade fair visitors and the exchange of technical information on a world-class level are emphasised again and again. And thus exhibitors and visitors have plenty to look forward to in May.

[www.control-messe.de](http://www.control-messe.de)  
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## RONDCOM NEX aids HydraForce inspection efficiency

HydraForce is the world's largest supplier of high-performance hydraulic cartridge valves, electro-hydraulic valves, custom manifolds and electro-hydraulic controls. Global sectors served by the business include the demanding material handling, agriculture, fluid power, construction and mining industries. The challenging nature of HydraForce's customer base means that it applies industry leading quality standards in all of its global manufacturing sites.

Located in the Advanced Manufacturing Hub in Aston, Birmingham, HydraForce Hydraulics Ltd is the European Headquarters of HydraForce Hydraulics Inc, USA. To ensure that HydraForce, Birmingham upholds the company's hard-won reputation for the quality and durability of its products, regular investments are made in advanced quality control equipment. The most recent addition to HydraForce's impressive collection of high-precision measuring aids is an advanced Accretech RONDCOM NEX roundness and form measuring instruments that was supplied via Zeiss UK.

Explaining the reason for the RONDCOM NEX purchase, European quality/warranty manager at HydraForce Ali Mohammed says. "We manufacture a comprehensive line of high-quality hydraulic valves and manifold systems. Our products meet global quality standards including ISO 9001 and QS 9000. To confirm that they perform beyond industry standards our hydraulic products go through rigorous testing and inspection routines. Also, to ensure global consistency, the teams at HydraForce plants in North America, Brazil, Asia, and here at our Birmingham European headquarters, follow the same manufacturing processes and standards.

"The bores in the high-precision hydraulic manifolds manufactured by HydraForce Birmingham have extremely challenging geometrical tolerances. Parameters checked include roundness, roughness, cylinder form, perpendicularity, parallelism, straightness, flatness, coaxiality and concentricity. All of these attributes need to be inspected to an extremely high degree of accuracy.

"We have recently increased the number of European suppliers we deal with and reduced the amount components we import from our US plant. As all of the parts



previously sent from our North American operation arrived in a fully inspected condition, to enable all brought-in European components to be 100 percent inspected we needed to increase our quality control capacity in the critical area of highly precise bore geometry measurement.

"This situation was further compounded as we have recently considerably increased our bore honing capacity. To help overcome these potential difficulties I searched for a suitably accurate and efficient profile measuring instrument. Having studied the available models, from three leading metrology manufacturers, I came to the decision that Accretech's advanced RONDCOM NEX CNC instrument was the most capable option.

"As the RONDCOM NEX is relatively easy to operate, following operator training, our new ACCRETECH profile measuring instrument soon proved its high-precision capabilities across all bore parameters. As we are now able to quickly recall pre-written programs and start fast, highly accurate bore inspection routines, our RONDCOM NEX is now making a significant contribution to the efficient operation of our quality department."

ACCRETECH products integrate seamlessly into the renowned range of industrial measuring technology offered by ZEISS UK. When challenged with HydraForce's demanding precision and efficient operating criteria, the staff of ZEISS UK were confident that the recently launched RONDCOM NEX would provide the ideal metrology solution.

In addition to other innovative facilities, the advanced RONDCOM NEX boasts an axis speed potentiometer, an auto force detector and automatic centring and tilt correction, making all precision measuring routines considerably more efficient.

The ACCRETECH CNC instrument provides the best concentricity and straightness precision figures in its class: 0.02+3.2H/10,000  $\mu\text{m}$  and 0.15  $\mu\text{m}$ , Z300, respectively. These advantages are made possible by the extremely high rotational accuracy of the instruments' air-bearing based rotary tables. The RONDCOM NEX Rs variant also enables highly accurate roughness measurements, as per DIN EN ISO, in linear R and X direction, also in rotational directions on workpiece circumferences.

The flexible RONDCOM NEX series' ingenious design enables the high-precision measurement of form, diameter and surface simultaneously. The modular nature of the new form measuring instruments means that they are available in a wide range of variants, ensuring that customers can now specify a system that will be configured exactly to their own individual requirements.

**ACCRETECH SBS UK**  
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**[www.accretech.eu/en/products/industrial-metrology/](http://www.accretech.eu/en/products/industrial-metrology/)**

**Hall 4 - Stand 4109**

# KLINGELNBERG unveils innovative solutions for midsized gears

System-supplier KLINGELNBERG will once again be present at Control. At this year's show, the company will be unveiling innovative solutions for mid-sized gears. It will also be presenting optical measuring technology on its P 40 precision measuring centre, while the P 26 model will be used to demonstrate the award-winning Done-in-One principle for different measurement processes in a single operation.

KLINGELNBERG measuring technology has been recognised on numerous occasions. In 2018, iF Design Forum Design GmbH awarded the company its iF Design Award in the Product category. This was followed in 2018 and 2020 by the Best of Industry Award, given out by the trade magazine MM Maschinenmarkt, first for its cyberphysical production system and then for the Done-in-One solution. In 2021, the Done-in-One solution also won over the German Design Council, which recognised KLINGELNBERG with the German Innovation Award.

### P 26 - Done-in-One for different measurement processes in a single operation

KLINGELNBERG precision measuring centres systematically follow the approach of enabling as many measurement tasks as possible on one machine. They execute the entire process in a single automated sequence directly on the shop floor. Particularly when producing larger series of rotationally symmetrical drive elements with their many GD&T features, it is important to monitor the process in real time and as close as possible to the production environment. The Pseries has proven itself particularly in these types of shop-floor applications. KLINGELNBERG precision measuring centres themselves are used as a reference around the world, not just by countless customers, but also by renowned metrology institutes.

### P 40 - More measurements daily with Hybrid Metrology

KLINGELNBERG Hybrid Metrology is a smart combination of tactile and optical measuring technology. An optical sensor



system developed specifically for gear measurement, as well as the rapid changeover between the 3D NANOSCAN tactile sensing system and the HISPEED OPTOSCAN optical sensor, enable flexible, fast and highly precise measured value acquisition under all conditions.

With the current version of this option, pitch, tooth thickness and gear concentricity can be measured optically on cylindrical gears, making it possible to increase the number of measurements for shop-floor quality control per shift and machine by 20 percent on average. The appeal of this option grows with the number of teeth on the gear to be inspected. Approximately two minutes of quality control time can be saved per gear when it comes to gears of interest to the automotive industry. For gears used in electromobility, which frequently have a large number of teeth, the measuring time savings are even greater. Optical pitch measurement, like tactile pitch measurement, is performed in accordance with VDI/VDE 2613 Group I.

The measurement and analysis are performed using KLINGELNBERG's well-known cylindrical gear software. With the latest version of the software, hybrid use of tactile and optical precision measuring centres as part of a networked system is made easy. As the optical measuring system



used by the company is highly accurate on nearly every metallic surface, approximately 90 percent of cylindrical gears in a typical portfolio are suitable for optical measurement. All KLINGELNBERG precision measuring centres in the P 26 to P 100 series can be optionally equipped or retrofitted with an optical solution.

KLINGELNBERG continues to develop its optical measuring technology, always striving to further decrease measuring times. In many cases, a software update is all that is required to participate in these advancements. The way to achieve this is with a maintenance contract that provides continuous access to the latest developments.

Visitors can learn more about individual options and prices for this type of maintenance contract at its exhibition booth.

## P 152 - Large-scale series for mid-size gears

The increasing cost pressure on large components for wind power requires new technologies that will enable proven principles for high-volume and mass production of smaller components to be transferred over to large components. To meet this need, KLINGELNBERG has developed a new precision measuring centre. The P 152 is the latest addition to its family of precision measuring centres. It is capable of measuring components with a maximum outside diameter of 1,520 mm and workpiece weights up to 8,000 kg with the usual precision. Despite this high workpiece weight, no special foundation is required because the design engineers succeeded in extending the machine concept of the small and medium series to the large component dimensions. The inherently rigid machine bed with a 3-point support plays a key role here. The bed design and floor support have been so cleverly selected that even when loaded with workpiece weights of up to 8,000 kg, the angular position of the individual machine axes to each other does not change significantly.

With its broad range of varied workpiece diameters and measurement tasks, this measuring device is also ideal for contract gear manufacturers. This ensures high precision across the entire component spectrum from smaller to larger gears, and also dimension and form measurements. The 3-point support enables the integration of an active vibration platform into the machine bed. This means that even the low frequency vibrations from the shop floor can be safely absorbed.

As the machine is isolated from these vibrations, the P 152 can be located on the normal shop floor without having to build an inherently vibration-isolated foundation. Despite this, it is ensured that all changes visible in the measuring results actually do come from the component and are not induced by the ambient conditions. The P 152 thus acts as a bridge for medium sized gears such as planetary gears used in wind power and combines dimension, form, and position measurements with gear measurement, making the operating principles used in high-volume and mass production applicable to large gears as well. Form measurements, such as roundness and cylindricity measurements, are becoming



increasingly important on machine elements. The P 152 also offers all the possibilities of the Done-in-One principle in the mid-sized diameter range.

**Hall 6 - Stand 6307**

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## Bowers Group demonstrates quality control and connective metrology

Bowers Group will be showcasing a variety of metrology solutions at Control. Visitors will be able to enjoy live demonstrations of effective data transfer between measurement equipment and applications, showing how Bluetooth IoT and connectivity can improve efficiencies and reduce errors.

Visitors will have the chance to see the new Bowers DigiMic, the brand-new digital external micrometre. With its large screen and advanced, built-in Bluetooth connectivity, DigiMic offers quick, simple, and highly accurate measurements that can be easily integrated into any Industry 4.0/SPC system.

The Venture XT, Baty's highly flexible multi-sensor vision system, will also be on the stand, demonstrating the latest Fusion Software release featuring lens error mapping and off-line vision/touch-probe programming from CAD. The combination of contact and non-contact measurements in the same automated inspection, combined with ease-of-use and graphical reporting, make Baty's Venture XT a

cost-effective measurement solution for both production cells and QC labs alike.

Richard Grocott, Bowers export sales director says: "Control is always a much-anticipated date in the Bowers Group calendar and we are delighted to be returning after a 3-year break due to the pandemic. We will, of course, be following all guidelines and precautions to ensure this is a safe event and the perfect platform to demonstrate how our range of bore gauges, micrometers, and indicators all participate in data exchange. This enables measurement instruments to be easily paired with applications, making receiving data more efficient and improving quality."

Also on display will be the new Baty R400 profile projector with a 300 mm x 150 mm measuring range, which offers a range of improvements including positive adaptations to the lighting system and focal length that makes it an ideal tool for a wide range of parts. The FT2-E Touch Screen Display with the new high accuracy screen-mounted edge sensor features the



latest Fusion Software, which enables measurement data points to be taken automatically, removing operator influence and dramatically improving repeatability. The 22" touch screen display allows DXF CAD files to be displayed for profile comparison and allows dimensioned drawings of measured parts to be easily generated. The FT2-E readout can also be retrofitted to your existing Profile Projector, transforming it into a highly accurate, 2D measuring machine with powerful reporting, without breaking your budget.

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**Hall 7 - Stand 7102**

# Competing on a global scale

Castle Precision Engineering has been an advocate for the use of VERICUT CNC simulation software on its shopfloor for many years, protecting high value customer components as well as its own advanced machine tools. More recently, the Glasgow-based company has embraced the efficiency and productivity gains offered by the FORCE module of the software.

While Castle supports a number of advanced industry sectors, such as medical devices and power generation, the majority, around 90 percent of its circa £20m annual turnover, comes from the aerospace and defence sectors. To cater to the diverse needs of its customer base, there are three focused sub-divisions that encompass what the business has to offer; Rotatives, Prismatic and Toolroom.

Roy Yuile, manufacturing engineering manager at Castle, explains: "Rotatives and Prismatic are the two core areas of our production business and both require extremely high levels of precision and machining expertise. Over the years we've carved out a niche for ourselves in manufacturing critical rotating parts for the aero engine market. Failure of these parts can bring an aeroplane out of the sky, so our OEM customers are not only trusting us with their reputations but also with the safety of the pilots and passengers whose flights they power. We also manufacture a wide range of complex prismatic products to very exacting tolerances for applications such as defence optronics and hydraulic actuation systems for control surfaces and landing gear."

Prismatic parts are typically machined from relatively straightforward materials, primarily aluminium alloys along with some steel and titanium. However, rotating aero



engine components usually involve more exotic and difficult-to-machine materials including titanium and nickel-based super alloys, where forgings valued up to \$100,000 for a single workpiece are not uncommon.

With a population of around 60 CNC machine tools, representing the very latest multi-axis manufacturing technology from DMG MORI, Makino, Doosan and Grob, the shopfloor at Castle is a lesson in housekeeping and efficient organisation for all to see. Looking more like a cleanroom than a workshop, it highlights what a class leading aerospace supplier should strive to achieve and creates an environment that nurtures professional behaviour at every level.

Protecting this advanced manufacturing capability is VERICUT CNC simulation software. Roy Yuile says: "CAD is at the front end of our engineering workflow. We'll

either import a 3D model supplied by customer or draw one up from a 2D definition and break this down into the various stages of manufacture from material supply to finished part. These stage models and their accompanying fixtures or workholding devices are transferred to CAM, where we'll build tools, generate toolpaths, post NC code and then port the whole job straight into VERICUT using their CAM interface.

"VERICUT has been an established part of our workflow for well over a decade. Nothing goes out to a machine without first going through VERICUT and that is across the board. It is an essential safety net, not just for the product but for our machines and our personnel as well. We'll have some programs in our factory that have been around for 10 or 20 years, alongside jobs that are fresh out of CAM. We use VERICUT to simulate any new or modified code before it goes out to a machine. We have a digital twin for almost every machine tool and because VERICUT reads the same G-code as the machine controller, it's completely CAM-agnostic and can simulate code from any source."

Very often, process improvements are done using VERICUT, because the software offers the opportunity to prove edits in a virtual environment. "We don't edit at the machine console because of the risk involved," Roy Yuile adds. "If you mess up you have no safety net. Instead, our engineers will bring the code back into





VERICUT, make their edits and then hit simulate to check that the program is safe to release. Smashing pixels is a whole lot cheaper and safer than writing off a machine tool, so verifying code using a digital twin before we actually put anyone or anything at risk is an integral part of our workflow. This risk-based approach is absolutely crucial, not just in aerospace and defence but for any high value product and business."

With VERICUT an established part of Castle's business for the past 12 years, the software has proven its ability to protect the company, as well as being a key improvement tool for their manufacturing processes. Roy Yuile states: "VERICUT Force is a step further along this curve. Moving beyond the goalkeeper functionality, Force allows us to start optimising our processes as well as proving that they are safe."

During the evaluation phase, the engineering team at Castle worked with CGTech UK to create a test case based on an existing process involving both turning and milling, which was provided to multiple software vendors.

Roy Yuile points out: "To be honest they all came back with broadly similar results for cycle time reduction, but it was the useability that was the differentiating factor for us. We have everything built up in VERICUT already and, because CGTech has done a really good job of making Force as user-friendly as possible, it helps make the benefits of physics-based optimisation a lot more accessible.

"It is exciting, the idea that we can go through our existing workflow, take a job that we have proven as a stable process and then say 'Right VERICUT, analyse this for me and tell me where there's room for improvement'.



"The interesting thing is that, because we are working with a lot of difficult-to-machine materials, it's not always about cycle time. It sounds counterintuitive, as typically the main benefit of optimisation is the opportunity to speed things up, but sometimes it's also about slowing things down to reduce peak loading on the tool. Smoothing out spikes in cutting force or chip load can have a major effect on tool life, but it is harder to quantify the benefit as you can't tell until you go and try it.

Roy Yuile concludes: "We trust VERICUT and that trust comes from experience. When manufacturing high-value components for such critical applications, we need to have confidence that we're using the very best tools for the job and VERICUT delivers."

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## Intelligent manufacturing with Tebis software

With Tebis 4.1 Version, there are a number of ways to optimise and automate your CAM programming. One of the ways is the process template for CAD/CAM automation. Tebis software can export any kind of CNC program process and is able to reimport this process and change some basic parameters to replicate the original process but on a completely new component.

Joe Zhou, managing director at Tebis UK explains: "With ever rising labour costs and a getting-worse labour shortage, Artificial Intelligence (AI) and automation are getting more important day by day. Manufacturing best practice experience and data are very valuable, so CAD/CAM systems should support the accumulation and share of

valuable manufacturing process and data."

Traditionally, CAM programming is mostly about calculating toolpath. However, for improved productivity, quality and safety, the emphasis should be on CNC machining process and cutting condition optimisation. For this reason, AI and automation should play a very important role for future CAD/CAM technology development.

Tebis software is able to pre-select the surfaces and the starting stock necessary for manufacture by geometry layers, colours and attributes together with variable statements within the programming operations. Tebis also supports user-defined variables to control the CNC machining process.

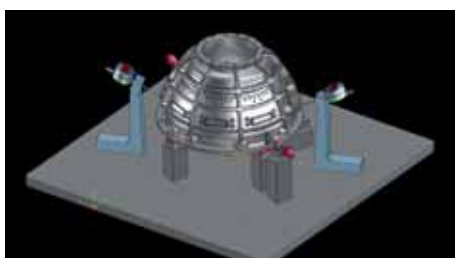
For example, with Tebis CAM automation, CAM programming of this vacuum fixture is just an exercise in the organisation of data. If the data is on the correct layers then Tebis will machine the component automatically and correctly. This means an inexperienced engineer can produce work that is of the same standard and consistency of your experienced CAM

programmers, leaving your more experienced programmers to get on with higher complexity and higher value work such as optimising CNC manufacturing processes.

Tebis advanced parameter selections in Tebis Templates are able to incorporate the use of feature recognition and the use of NCsets within a machining template making the template package extremely powerful and very flexible. Geometry feature dimensions and attributes can also be used to automatically choose cutting tools, machining parameters and machining processes.

Tebis template supports automatic tool axis orientation, automatically generating very complex 3+2 machining NC programs. Once the CAD work is done, Tebis template takes care of all the programming, leaving the programmer to continue with more pressing work.

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# Polymer-based die release lubricants

## The superior alternative to water-based die lubrication

With the market demanding more efficient solutions and higher rates of production, Quaker Houghton's new Smart Polymer die release lubrication technology brings a host of added benefits over the water-based lubricants currently available within the market. Matt LoCoco, director for the centre of innovation at Quaker Houghton, breaks down the current issues with temperature variation in die casting and how a reactive approach can greatly improve manufacturing processes:

## Advances in die casting technology

As die casting technology has progressed, so has the reliance on lubrication to deliver an effective protective coating. New dies are becoming more complex each year and the variation in parts has grown significantly over the past decade. Intricate die casting, using highly accurate and detailed dies, is fast being adopted in automotive manufacturing where one complex part can replace a similar unit manufactured expensively from dozens of individual components.

Wide variances in die design, size and complexity impact the flow of the alloy through the die and give each system a unique thermodynamic profile, leading to significant temperature variation, where there are both hot and cold areas on the die's surface. Hot areas are a cause for concern for manufacturers, as higher temperatures can cause defects in the final cast of the alloy, impacting both the quality

and efficiency of production. To address this broad temperature range, the application manifolds for traditional siloxane lubricants are often complex and spray cycles are detailed and lengthy.

As a result, the cooler areas of the die are often over-sprayed. The excess lubricant increases the need for maintenance and creates costly downtime in production.

## Intelligence is key

As manufacturers' requirements get ever more complex, the die casting process must become more intelligent. This is where innovative products in the die casting value chain really matter. In this case, an adaptive release lubricant is required to improve the efficiency of the process.

To meet this need, Quaker Houghton has introduced a new Smart Polymer die release lubricant, specifically for intricate die casting applications. It differentiates itself from traditional siloxane lubricants by incorporating thermodynamic reactive polymers which actively adapt to variations in die temperature. When exposed to high heat areas, the lubricant's polymers react via a crosslinking mechanism, ensuring that the lubricant is appropriately distributed across the die and avoiding the need to spray excessive release coating.

Breaking down the chemistry behind the technology, special polymers within the lubricant contain reactive sites which, when exposed to high heat on the surface of the die, allow for the formation of chemical bonds between neighbouring polymers. In application, the lubricant can adapt to

specific temperature changes throughout the die casting process.

When exposed to low temperatures from 110°C-220°C, the lubricant polymers will remain inactive, offering standard protection from molten alloys. At medium temperatures ranging from 220°C to 330°C, the polymer will begin to react, forming a stronger, more heat-resistant coating. Once the die temperature exceeds 330°C, the smart polymer will react quickly and adhere more effectively to the die, providing the best protection and strongest coating.

## Improved efficiencies through intelligent solutions

Inevitably, die casting maintenance is time-consuming and labour-intensive and often the only solution to solder or die build-up is manual abrasion of the alloy or residue from the die. Failure to do so is detrimental to the long-term performance of the die, causing staining, ejector pin failures and imperfections on the finished alloy castings.

With improved chemistry, Quaker Houghton's reactive polymer-based die release lubricant comprehensively outperforms conventional siloxane lubricants while enhancing efficiency. For example, a die coated with a standard siloxane lubricant produced between 2,500 and 3,000 castings before needing essential maintenance. The same die treated with Smart Polymer lubrication lasted far longer, achieving between 7,000 and 9,000 castings before maintenance was required. Furthermore, the polymer-based lubricant



solution requires far less application per casting, reducing lubricant consumption and costs.

For manufacturers open to smarter, more intelligent and more innovative die release lubricants, there are multiple advantages. These include reduced cycle times, fewer maintenance intervals and less or no soldering. This prevents considerable expense in the long-term and improves both productivity and efficiency with the financial benefits that brings.

#### Tailored solutions to maximise capabilities

When challenged to provide a lubrication solution for a leading Japanese die casting and precision machining manufacturer, Quaker Houghton proposed its Smart Polymer die release lubricant, which resulted in increased efficiencies well beyond the customer's expectations.

The manufacturer wanted to achieve optimal conditions for casting, eliminate soldering time and reduce cycle times and sought a complete lubricant solution. Analysing the customer's specific challenges, Quaker Houghton tailored a polymer-based solution, the DIE SLICK 45

series, to meet the demands of the customer perfectly. The benefits were striking with productivity increasing by 10 percent, soldering was virtually eliminated and both lubricant consumption and wastewater were decreased by 45 percent.

#### Providing the market with adaptative solutions

As modern die casting capabilities grow in complexity, it's imperative that die casting lubrication continues to evolve to serve the needs of manufacturers. Smart Polymer technology enables reactive solutions previously impossible with traditional water-based lubrication, reducing downtime, cost and improving die capabilities.

To better serve the demands of the modern die casting market, Quaker Houghton has introduced a new offering, DieCast iQ™, bringing together class-leading lubricants alongside the highest quality equipment and technologies currently within the market providing a 'one-stop' package for die casting excellence.

To find out more about Quaker Houghton and DieCast iQ, visit:  
<https://diecastiq.quakerhoughton.com/>

Quaker Houghton is a leader in industrial process fluids. With a robust presence around the world, including operations in over 25 countries, its customers include thousands of the world's most advanced and specialised steel, aluminum, automotive, aerospace, offshore, can, mining, and metalworking companies. Its high-performing, innovative and sustainable solutions are backed by best-in-class technology, deep process knowledge and customised services.

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# Abbey cuts fluid costs with ROCOL

Like many subcontract companies, Abbey Tool and Gauge Ltd was started by a husband-and-wife couple out of a small shed near Kelso Abbey, hence the name. The ethos of the subcontracting company since it opened its doors in 1970 has been to buy the best equipment and machine tools possible. In its 50 years, this has seen the company invest in numerous Nakamura-Tome, Doosan and DMG MORI machines, with a spend of more than £6m in the last five years on five to 9-axis machines for one-hit machining.

Under the management of second-generation brothers Iain and Alistair Reid, the subcontractor company has expanded its portfolio and is now working in the oil and gas, nuclear, automation and medical industries. The ISO:9001 and ISO:14001 certified manufacturer has a programme of continuous improvement that not only encompasses machine tools but also complementary technology. This is why Abbey Tool and Gauge Ltd has invested in cutting fluid from ROCOL.

Director Iain Reid says: "At first, we were a little sceptical when ROCOL came in to see us, because they said they could run our oil consumption at two percent and we were running at somewhere between six and eight percent. Alistair and I thought long and hard about it and we filled two machines with the product. We ran the two machines for six weeks and we were delighted. This change is good for the



environment, as it is only running at two percent. It will be good financially for our business long term, as there will be a big saving which we are monitoring at the moment. Thirdly, the backup and support we have had from the ROCOL team has been absolutely phenomenal."

Since implementing the ROCOL Ultracut 370EP, the benefits have cascaded throughout the business.

Iain Reid continues: "We have had some really good feedback from the guys on the shop floor. We were initially concerned, as

we machine a lot of Super Duplex and we thought that the ROCOL Ultracut 370EP wasn't going to do the business, but it most certainly has. It has also been a huge success on materials like Inconel, 625, 718 and many others."

The Roxburghshire facility in Scotland is home to more than 30 machines and, despite the volume of machine tools, the facility is completely odour free.

Iain Reid says: "It's quite incredible because the odour disappeared almost immediately. We do manage the coolant very well and a ROCOL engineer comes in every couple of weeks to inform us where we are with regards to our coolant management. So, the fluid is managed to a very high standard."

While the cutting fluid is managed both internally and at intervals by ROCOL engineers, the fact that ROCOL Ultracut 370EP is free from bactericide, silicone, chlorine, formaldehyde, nitrites and any animal-derived materials prolongs fluid life and performance. Additionally, ROCOL Ultracut 370EP is compatible with hard and soft water, is tolerant to tramp oil and is low-foaming. It also demonstrates exceptional residual corrosion protection.

Iain Reid continues: "I think the savings could be anything from £20,000 to £40,000, but as we have not been using the ROCOL fluid for a full 12-month period, we cannot give an exact calculation at present.



"With regards to the cutting tools and looking at our historical usage, we would estimate that we have already saved between 10 and 12 percent on our cutting tool costs and this is massive in our game. We always try to minimise the tip changes and, in some cases, we slow the machines down to eradicate the tip changes. We find it is better to run the machines for eight hours at slower speeds and then change the inserts at the changeover shift, rather than change the tips three times per shift by



running faster. We get a higher volume of parts by running like that and the ROCOL coolant helps us in extending the life of our tips hugely."

The improvement to tool life and machining performance can largely be accredited to the extremely high-pressure additives that provide medium to heavy-duty machining capabilities with excellent surface finishes on a very wide range of ferrous and nonferrous materials and aluminium alloys. Furthermore, the high performing semi-synthetic fluid enables the customer to rationalise one fluid for both machining and grinding operations.

Iain Reid concludes: "There were no issues whatsoever in changing the fluid over. However, with so many machines on site, it was quite a lot of work and this meant we had to do the changeover over an extended period of time. One of the things I would recommend is that you completely clear everything out of the machine and clean through the system. This was hard work for the guys, but it's critical that you completely clear out the machine."

Having opted for the ROCOL Ultracare package of support, the team at Abbey Tool and Gauge Ltd have nothing but praise for

the service. Iain Reid explains: "Alastair and I will receive a report probably around four hours after the ROCOL engineer has visited. This report gives us a detailed state of every machine, as well as peace of mind as a company and also for our employees."

Ian Fenney from ROCOL says: "The process has run really smoothly and we have changed the fluid in all of the machines. We cleaned the machines out and started afresh. Whether we follow this complete clean-out process or not depends upon the fluid we are providing, but in this instance, there were key differences between the existing product and the product that we proposed. The team at Abbey Tool and Gauge was a little sceptical at first about the projected savings, but we started on just one machine, trialled ROCOL Ultracut 370EP and essentially we reduced the fluid usage, which obviously includes the financial spend. The fluid is also reducing the carbon footprint through buying less oil and having less waste."

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## Plot a path to sustainability with Wogaard

Sustainability is coming to the forefront for all of us in business and our personal lives. Many important decisions going forward will have an impact on our environment, economy and society. Wogaard's product focus and design team has a clear vision to encompass all the elements and provide oil and coolant solutions that optimise manufacturing processes and make them more cost-effective and environmentally friendly.

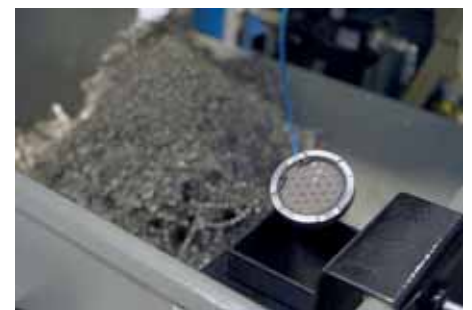
"At Wogaard, we like to say that we are in the business of saving oil and coolant costs, the environment and improving health and safety; a lot of tick marks for any manufacturing business," says Jason Hutt, managing director of Wogaard. "We realise sustainability will have a significant impact on people, society and the environment. So, the manufacturing industry needs to work hard to reduce its effect on nature and climate."

Wogaard's flagship product, the "Coolant Saver", was designed with cost-saving being in mind, as it involved a solution to reclaim the good coolant from the swarf bin and

return it to the machine for re-use. It has made a huge difference to so many businesses since its creation. It enables companies to save money by improving efficiency, protect the environment and reducing disposal costs by cutting down waste and keep their working area cleaner by diminishing the amount of mess left in the swarf bin.

"Over the last decade we have assisted hundreds of businesses in reducing the environmental impact of their manufacturing activities," states Jason Hutt. "Of course, we want to support clients in making cost savings and improving their manufacturing processes, but together we have a bigger mission, which is to become more sustainable to support the environment. With thousands of units supplied globally, saving millions of litres of coolant every day, along with a great customer base, we are proud that we are achieving this and are focused on designing more unique products with this in kind."

However, spreading the message of sustainability is not always easy, as



Jason Hutt concludes. "We sometimes encounter negative mindsets when we talk to clients about sustainability. Therefore, we often find it more effective to highlight how much our products will save them in terms of money and resources first and then mention that these savings are also good for the environment."

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## Integrating MRP/ERP with other data systems

### What can you link to and what benefits can be achieved?

While MRP/ERP systems span all key departments within a business, every company will have its own collection of standalone systems that deliver specific functionality, such as CAD/CAM or testing. However, linking them with MRP/ERP can deliver multiple and significant benefits. 123 Insight's marketing manager Martin Bailey explains what you can integrate with and why you should do it:

#### What software should I link to an MRP system?

Every manufacturing type will have a need for dedicated systems at certain stages of manufacture, or within specific areas of their business. Chemical companies will have laboratories that analyse and test products, electronic companies may run automated tests for component failure and metal manufacturers will use products such as CAD (Computer Aided Design), CAM (Computer Aided Manufacturing) and nesting software. Products may come back for servicing, where testing and measuring equipment captures further data. In each case there may be value in linking or passing that data through to MRP.

#### What are the problems with standalone systems not linked to MRP?

A lack of connectivity to an MRP system will cause different problems, depending on what the standalone system does, but generally the issues will relate to accuracy, visibility and speed of retrieving data. For example, a company using unconnected weigh scales will require the operator to enter data into the MRP system to accurately record the weight of components. By linking the two, you remove a step in the process and eradicate the possibility for user error during input.



Let's take an example: a metals engineering company may have a bill of materials where some components are designed in one CAD system and others in another. Milled parts are produced on a machining centre, where the NC code that programs the CNC machine needs to be generated. Sheet metal parts are designed in CAD, but then must be run through nesting software. After the parts are cut on a CNC laser, they may also go through a bending process. Further down the line, the assembled part may go through an inspection process where precise measurements need to be logged. Staff may need to interact with multiple pieces of software to produce the finished parts for this BOM, often entering the same information repeatedly.

Audits are much more labour-intensive, with auditors following a trail until they hit a digital brick wall. Then, off they go with a part or invoice number to manually follow on with the standalone system. Where multiple systems are involved, this can significantly increase the time that an audit would take, also potentially raising questions about the effectiveness of the systems in place.

#### What are the benefits of linking other software to an MRP system?

By automating the exchange of data from MRP to these systems, you can drastically reduce the time taken to perform each task, reduce the possibility for error and tie the systems closer together. It also de-skills the process, making it easier to train new staff.

Using the engineering company example above, MRP could pass a list of ordered components to the separate CAD and nesting systems for processing, with NC code for the machines being automatically generated. Machine monitoring equipment

on the CNC laser could update order status, as well as provide additional information on material used or scrap, which could be used to calculate costs more accurately. Once the finished part is inspected the test report can be automatically passed back to its associated part record within the MRP software, closing the loop.

#### How do I exchange data between an MRP system and other software?

This will mostly be affected by two key factors: what data needs to be exchanged and what methods of data exchange are available to both systems.

Another consideration is how to deal with 'what if' scenarios. For example, if ten fields of data are specified in information that is being passed between systems but some are not populated or have the wrong type of data, what happens next? Either error handling needs to be added or checks need to be put in place to ensure that only the right data can ever be output in the first place.

The simplest method of data exchange is by exchanging data in CSV (Comma Separated Values) format. Your MRP system outputs the required information into a simple text file, with each item of data separated by a comma. This is then imported into the standalone system, either by the user or automatically, as some systems can be set to monitor a folder and process new files, simplifying the process and drastically reducing the possibility of error. Both methods remove the user having to input the data manually. If the standalone system has data that can feed back to MRP then this can often be done using the same method. A major benefit of this is that most systems can import/export CSV data and it's human-readable, making it easy to find and fix any issues.

Automating CSV data exchange may present challenges. For example, maybe you can output the CSV automatically from MRP data source but must import it manually. However, some automation is better than none. It is better to have systems generating files that may require some manual effort to process than be open to the time, effort and possible errors of replicating it by hand.



While CSV offers a reliable solution that is often the quickest option to implement, tighter integration may be available. MRP systems will generally use industry-standard databases, such as Microsoft SQL Server or Postgres, however it is recommended that you do not write to tables directly. Instead, use whatever data exchange methods your chosen MRP supplier can offer.

## Examples of MRP data exchange

Customers connect 123insight to a wide variety of external systems through various methods. What is common throughout is that each method removes human interaction and the possibility for error. Here are just some examples of integration between standalone systems with MRP:

- A metal forging company that supplies small components in their thousands connected their weigh scales to 123insight. Operators simply scan a works order, to identify the part and pour out components onto the scales until the desired number of components has been reached, determined by weight. The operator then confirms this with a single tap and the parts are booked against the works order.

- A plastic injection moulding company linked 123insight to its Statistical Process Control quality system, with measurements and part records logged, providing information such as tool wear.

- A company serving the marine industry connected its e-commerce website to 123insight, allowing customers to place and track orders. Once placed, orders were injected directly into 123insight, with status updates available live when customers logged back into the site.

- A plastics company linked its data acquisition machine monitoring system to 123insight, capturing parts manufactured, waste streams and down time.

- An electronics manufacturer linked a surface mounting line to 123insight. The AOI (Automated Optical Inspection) system scans completed circuit boards and submits a pass or failure status against the associated serial number back to 123insight.

One concern with linking systems together relates to stability after software updates. What if a future update of either system breaks the link? This is less of a concern when using simple data transfer

such as CSV unless fields change, but tighter integration needs to be tested with every upgrade of either system. 123 Insight offers a robust solution with its Software Development Kit (SDK) option. This provides a common communications gateway, allowing any external system to communicate, safe in the knowledge that the SDK will be updated to support any core changes within the 123insight MRP system.

## Summary

As an MRP system is the only software that spans virtually every area of administration, production, stores and despatch, it makes sense that it is the backbone for your data. Connecting MRP to standalone systems can reduce lead times, simplify processes and aid with quality. It is worth taking the time to see which systems within your business might allow connectivity, so that you can consider what benefits might be gained.

Companies interested to learn more about MRP can attend one of 123 Insight's free online events by visiting its website at [www.123insight.com](http://www.123insight.com)

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# BCN3D unveils Viscous Lithography Manufacturing (VLM)

### New resin-based 3D printing technology to unlock manufacturing autonomy

3D printing solutions manufacturer BCN3D has announced new 3D printing technology to run alongside its FFF solutions: Viscous Lithography Manufacturing (VLM)<sup>™</sup>. This never-seen-before technology has been derived to specifically address BCN3D's vision of unlocking manufacturing autonomy, where all manufacturers can experience full control over every stage in their production processes with Additive Manufacturing (AM) solutions.

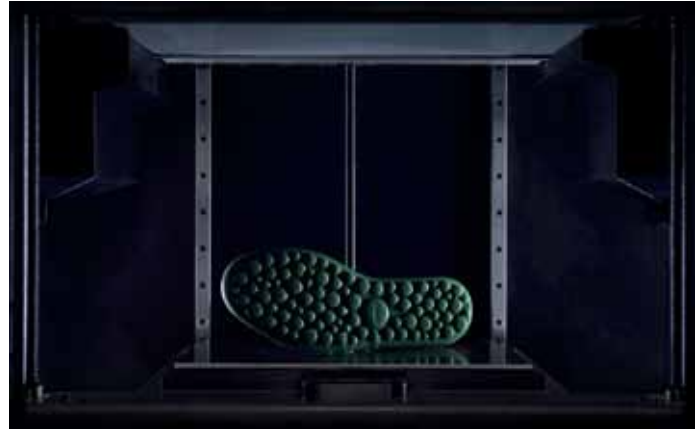
VLM comes as a breakthrough from three years of dedication from BCN3D's R&D team as a game-changing way of surpassing stoppers such as initial investments in money or space, mechanical properties not up to standard or incapability of large batch production. It is through the fresh perspective of using high viscosity resins for better mechanical properties, in combination with this huge leap forward in productivity and accessibility, that ultimately satisfies all demands to unlock manufacturing autonomy.

VLM is a patented lithography-based 3D printing process that laminates thin layers of high viscosity resins onto a transparent transfer film, producing high-performance parts rapidly and affordably. What distinguishes VLM from other resin technologies on the market is its ability to process resins 50x more viscous than the industry standard.

The mechanical system allows the resin to be laminated from both sides of the film, making it possible to implement strategies to speed up printing times or even to combine different resins to get multi-material parts and easy-to-remove support structures.

Without a strict low viscosity constraint, chemical companies obtain the freedom to formulate, as a whole new set of ingredients and modifiers can be added in the resin to achieve the desired effect on thermal and mechanical properties. VLM processes resins that obtain 3x the amount of impact resistance for rigid materials and a 200 percent increment in tear strength compared to industry-standard formulations.

Specialty materials company Arkema has been part of the process, through a Joint Development Agreement (JDA) in which the two companies are co-developing new materials capitalising on the singularities of VLM to obtain properties that can't be reached with other resin-based 3D printing processes. As a global key player in the 3D printing industry and a pioneer in designing high-performance photocurable resins, Arkema utilised its



experience spanning decades to ensure resins for VLM were of the highest quality.

BCN3D has also partnered with Prodrive, the world-renowned motorsport and advanced technology company and one of the first in the world to put VLM technology to the test. It has been seen assembling end-use parts made with VLM mounted directly on cross-country cars.

By using a light source consisting of UV light and an LCD screen, VLM delivers a constant time per layer, regardless of whether we are printing one or 100 parts at once. Furthermore, since it is not limited by the vat dimension, a complex temperature, or tricky components, all that's needed to scale up is a bigger LCD screen. This combination of a quick layer time and a large surface area makes VLM the most productive additive manufacturing solution on the market.

There is no denying that 3D printing has evolved from a rapid prototyping tool into a clear trend in manufacturing. All that was missing was an affordable solution to reach all corners of manufacturing, from small to medium-sized businesses. Unlocking manufacturing autonomy using 3D printing should not be just for Fortune 500 companies but for every single business that develops and manufactures concepts or products, in any industry. VLM-based solutions will be under 50,000 Euros, with a compact footprint, no dedicated space or critical infrastructure.

This low entry barrier, in combination with its big printing volume and high throughput, puts the fixed cost of the solution ahead of the rest. By implementing the use of VLM, the cost-per-part is significantly lower than those of powder-based and resin-based technologies.

VLM also uses monocomponent resin formulations at room temperature to avoid pot life limitations and speed up setup times. Thanks to its proprietary lamination system, the absence of a resin vat means that no initial investment of resin is required.

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## Electron Beam Additive Manufacturing (EBAM)

Hexagon's Manufacturing Intelligence division has entered a partnership with Sciaky, Inc, a leading supplier of industrial metal 3D printing solutions and subsidiary of Phillips Service Industries, Inc. (PSI), to enhance its innovative EBAM® technology with predictive analysis tools.

Sciaky's turnkey EBAM metal 3D printers use high-value materials, such as titanium, tantalum, and nickel-based alloys, to produce parts and structures up to 20 feet in length. This award-winning process has produced large-scale parts significantly faster, cheaper and with less waste than traditional manufacturing methods for some of the largest aerospace companies in the world.

Printing large parts composed of high-value metals can be tricky, because material behaviours are tougher to predict for large geometries. To address this matter, Sciaky's unique Interlayer Real-time Imaging and Sensing System (IRISS®) enables closed-loop control of the EBAM 3D printing process to eliminate variations and improve its quality and production throughput by sensing and digitally

self-adjusting metal deposition in real-time, with precision and repeatability.

To further support EBAM's closed loop control, Hexagon's Simufact solution has been validated to accurately simulate the thermal-mechanical behaviour of the DED process, enabling users to analyse thermal history, stresses, strains, and distortions throughout the process and optimise build setup and process parameters virtually before deposition. As a result, the software reads EBAM's printer trajectories and process parameters directly, reducing the effort required to produce the simulation model. The entire process is streamlined, because the G-code is directly compensated within the software.

"Sciaky's customers demand high quality, high-performance parts," says Scott Phillips, president of Sciaky, Inc. "Hexagon's Simufact solution helps increase confidence for our customers to ensure the best quality outcome."

"Our goal is to deliver process simulation solutions that enable manufacturers to perform predictive analyses for parts faster than the part can be physically built and



measured," says Jeff Robertson, business development for virtual manufacturing and costing solutions at Hexagon, "Not long ago, it took months to complete high-quality simulations for these types of additive processes, but through our collaboration we now have the ability to make the same accurate predictions in days or hours, so the technology can facilitate the efficient use of Sciaky's powerful additive capabilities for parts of any size or complexity."

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## Lantek celebrates another record-breaking year

Lantek, a multinational company that develops and markets CAD/CAM/MES/ERP solutions and pioneers in the digitisation of companies in the sheet metal sector, has again consolidated its enviable position following the announcement of its 2021 turnover. Despite the continued pandemic, the company has set a record turnover of 26.6 million euros, increasing sales to the machine tool manufacturer channel by 40 percent.

2020 was a record year for the company, despite the COVID-19 crisis and its tough restrictive measures. Now, in 2021 in the face of the continued pandemic, the Spanish multinational has gone on to set a further all-time sales record, achieving total growth of 26 percent above 2020 levels.

The number of active customers at the end of the year exceeded 29,000, with 3,400 new customers across 100 countries during 2021.

### International leadership

Lantek continues to strengthen its growth in international markets with an increase in

sales volume of 42 percent in Asia, 13 percent in America and 19 percent in the EMEA region. Growth in countries such as Germany with 33 percent and Italy, with 25.6 percent are stand out results.

In Italy, the company has further consolidated its presence with the construction of a new building. This new facility, located in Turin, has a surface area of over 1,200 m<sup>2</sup>.

For both solutions and digitisation sales volumes, Italy has achieved rapid growth making it one of the main markets for these Lantek products.

### A commitment to innovation

To build on its technological leadership even further, Lantek has already started a long-term R&D growth and investment plan that extends to 2025.

"In 2022, we're making the largest investment in the history of our company. In this first phase of our strategic expansion



plan, we have increased our commitment to research and development by 70 percent. Our workforce will grow by 50 percent, with a special emphasis on the R&D area and our international customer service team," concludes López de Biñaspere, the company's CEO.

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# New PlateSaver technology from Hypertherm helps customers maximise parts and profit per plate

Hypertherm, the manufacturer of industrial cutting systems and software, has introduced PlateSaver™, a new SureCut™ technology that automatically maximises the number of parts on a plate for more profit per plate.

PlateSaver is available through Hypertherm's ProNest® and other authorised software for fabricators cutting mild steel on a CNC table using X-Definition plasma. It combines the arc stability of X-Definition plasma with specialised software parameters to dramatically increase material utilisation. These parameters cause PlateSaver to use shorter leads when starting and finishing a cut for less wasted space between parts. In addition to shorter lead-ins and lead-outs, PlateSaver takes molten metal into account by using moving pierces that cause molten splatter to fall within a predictable "splash zone."

"We are excited to introduce this new SureCut technology, as it will allow customers to increase their profits through the reduction of waste," explains Tom Stillwell, a Hypertherm product manager. "By fitting more parts on a plate, customers will spend less time and money purchasing, moving, and storing metal, and also less time tracking and conducting inventory on partially used plate."

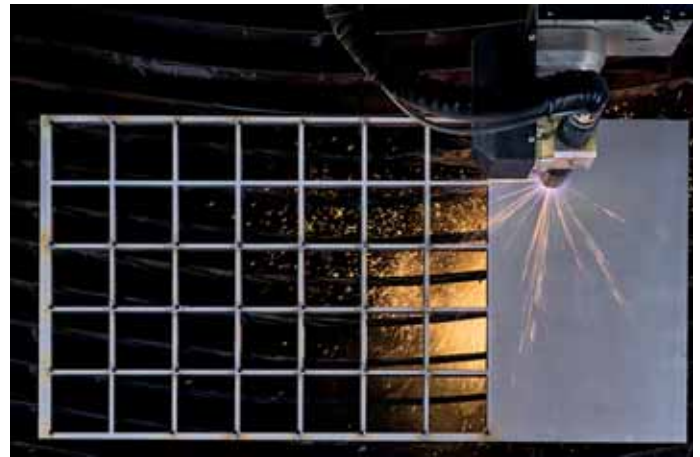
SureCut technology maximises cutting performance by automatically embedding thousands of cutting parameters into authorised hardware and software products. It includes True Hole® for bolt ready holes, True Bevel™ to simplify the process of cutting beveled edges, and Rapid Part® to markedly reduce cut-to-cut cycle time. To learn more about SureCut, visit [www.hypertherm.com/SureCut](http://www.hypertherm.com/SureCut).

Hypertherm engineers and manufactures industrial cutting products used by companies around the world to build ships, airplanes, and railcars, construct steel buildings, manufacture heavy equipment and more. Its products include cutting systems, CNCs and software trusted for performance and reliability that result in increased productivity and profitability for hundreds of thousands of businesses. Founded in 1968 and based in New Hampshire, Hypertherm is a 100 percent Associate owned company, employing more than 1,800 Associates, with operations and partner representation worldwide.

Hypertherm has also announced three new air plasma systems called Powermax SYNC®. Featuring built-in intelligence and a

revolutionary single-piece cartridge consumable, this next generation of Powermax65/85/105 systems is unlike any other plasma in the world.

Powermax SYNC and its SmartSYNC® torch replace the traditional five-piece consumable stack-up with a single colour-coded cartridge. Technology embedded in each cartridge automatically sets the correct amperage, air pressure and operating mode and lets operators know when a new cartridge is needed.



Additionally, controls on the SmartSYNC torch allow operators to adjust the amperage and change the cartridge without returning to the power supply.

The cartridge is manufactured as a single piece, so everything within it is perfectly aligned and optimised. As a result, the Hypertherm cartridge for Powermax systems will last up to twice as long and deliver cleaner cuts versus traditional consumables. The cartridge can even track data, like starts and arc-on time, to identify trends and make a user's operation more efficient.

"The Powermax SYNC series delivers incredible ease-of-use, a lower operating cost and better performance than any other air plasma before it," says Erik Brine, general manager of Hypertherm's Powermax team.

"We are excited to introduce what is truly a groundbreaking new product to the fabrication industry. This simplified operation serves to help fabricators address many of the toughest challenges they face today by eliminating operator errors, downtime, troubleshooting, waste and training time, while offering the same leading reliability all Powermax systems are known for."

In keeping with Hypertherm's commitment to offer technology updates to owners of its older plasma systems, Hypertherm engineers have developed an adapter for Duramax® and Duramax Lock torches. This will enable owners of the Powermax45 XP and Powermax65/85/105 to enjoy some benefits of the cartridge consumable platform, such as faster change-outs, easier ordering and inventory tracking, longer life and improved cut quality.



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## Schröder Group sets standards with EVO Heavy Duty

Bending sheet steel with a thickness of up to 16 mm over a working length of 3,240 mm is possible for the first time with the Schröder EVO Heavy Duty in the swivel folding process. The EVO Heavy Duty, which is equipped with innovative hydraulic compact drives, takes over tasks that previously required press brakes and also performs them much more precisely. For flexible use, Schröder has equipped the machine with state-of-the-art control software, including the option of offline programming to maximise machine availability and productivity.

The EVO Heavy Duty sets a new standard in industrial folding and combines highest precision with the greatest possible folding performance. Compared to press braking, swivel folding increases productivity due to the easier handling of the workpieces and allows for greater accuracies. Innovative hydraulic compact drives enable a clamping force of 200 tonnes. The main drive has an output of 37 kW. The clamping and folding beam drives on both sides ensure extremely fast closing of the clamping beam and swiveling of the folding beam. The clamping beam stroke of 500 mm offers plenty of space for workpieces. 16 mm thick sheet steel can be formed up to a bending angle of 180°, which means that pre-bent sheets can also be closed.

The EVO Heavy Duty is operated with the POS2000 Professional or optional POS3000 Professional control. The folding programs on the ergonomic and user-friendly machine can also be prepared offline, i.e. away from and without loading the machine, in the SCHRÖDER Unfold CAD/CAM solution.



The Schröder Group consists of Hans Schröder Maschinenbau GmbH, which is located in Wessobrunn-Forst, Germany, SCHRÖDER-FASTI Technologie GmbH, located in Wermelskirchen, Germany and the SMU GmbH, located in Leinburg-Weißenbrunn.

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## More sizes to meet all needs

### Fully-automated CNC tube bending machines fulfil the toughest demands

With the t bend tube bending machines from the engineering company transfluid, it is possible to bend tubes in multiple dimensions and automatically. The highly efficient CNC technology ensures the greatest precision with all bending tasks, whether big or small. The fully automated t bend solutions deliver ideal cycle times and big production volumes without problems. "The flexibility of our advanced CNC tube bending machines make it possible to have bending processes that are very



economical. Our machines fulfil the toughest demands," says managing director Stefanie Flaeper.

transfluid has further adapted and expanded the range of machine sizes and tubes sizes it can handle, so it can satisfy the different needs of its customers. "We can offer the solution that is the best fit for each requirement. The expansion of the range creates even more versatile and flexible options for tube bending for all our customers and markets," adds Stefanie Flaeper.

### t bend masters the most extreme geometries

The bending machine with mandrel and servoelectric control delivers additional efficiency. The electric axes can be programmed to operate in synchronicity to ensure the best cycle times. Tools for bending on multiple levels with automated tool change allow bending of different radii and even the most extreme geometries on a tube. The valued clockwise/counter-clockwise bending machines from transfluid

produces even the most complex bends with precision and dimensional accuracy and they are also available in the earlier familiar sizes.

Individualised equipment options mean optimised and personalised tube bending possibilities. That includes bending on multiple levels, free-form processing of large bending radii, as well as cutting during the bending process.

A centreline booster can also be added, as well as systems for automated loading and unloading. The machines can easily be included in a complete production process, process chain. With the optional t project software, the bending processes are safe and without collisions. Full bending simulations help to establish bending and process data in a reliable way.

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## Scan head with beam shaper increases throughput in fuel cell production

Collaboration of photonics experts exploits new applications

SCANLAB GmbH, together with its sister companies Blackbird Robotersysteme GmbH and Holo/Or Ltd., is developing promising new system concepts for laser applications such as laser welding of bipolar plates and additive manufacturing. By integrating tailored beam shapers, the novel scan setup showed the potential to nearly double the productivity of welding bipolar plates for hydrogen fuel cells.

Fuel cell technology was considered a niche market for a long time. Due to the transition phase in energy generation and the search for alternative drives, the market demand might grow notably. For efficient mass production an increase of throughput in welding of metal bipolar plates, used to build the stacks in a fuel cell, is needed. High welding speeds require fast scan systems and high-power lasers, both available. However, it's the welding process itself which determines the maximum reachable speed. Weld seam failures such as humping effects and undercut occur when a certain speed limit is exceeded.

Blackbird Robotersysteme set up a test rig integrating the 2D scan head intelliSCAN from SCANLAB and HOLO/OR's latest development the Flexishaper, a full range adjustable beam shaper. The necessary beam shape was determined based on welding process simulations. The layout of the utilised beam shaper is the result of a combined optical design, integrating both Diffractive Optical Elements (DOE) and scan system. The processing tests demonstrated to shift the speed limit of failure free welding speed from 45 m/min up to 70 m/min.

Thin sheet welding of bipolar plates has similar requirements to Laser Powder Bed Fusion (LPBF) processes. Both require scan field sizes up to 500 x 500 mm<sup>2</sup> with a typical processing speed around 1m/s and below. Also in metal 3D printing the processing speed is not limited by the speed of the scanner or the available laser power, but it is mostly the process itself which limits the throughput. Thus, the encouraging laser welding results are the first step on the way to further optimise LPBF processes as well.

"Our joint company holding creates the trust that is necessary for such a close cooperation to explore innovative solutions. Only in a setup like this can you openly analyse the upcoming market requirements and transfer the outcome in an optical design" recounts Georg Hofner, CEO SCANLAB.

"Our sister companies provide a construction kit for us, which we can translate into tangible benefits for our markets and customers based on our specific experience and application knowledge" adds Karl Christian Messer, CEO Blackbird Robotersysteme.

"This is exactly the kind of cooperation that creates high value products by combining our unique beam shaping expertise with our sister companies market understanding" says Israel Grossinger, owner and president of HOLO/OR.

The next steps will be to test the laser welding concept in a larger



scale setup and to pursue different applications in parallel. As the fiberSYS meets requirements of both LPBF and laser welding processes, the integration of DOEs into this scan system, particularly suited for multi head laser machines, was included in the development road map.

With over 35,000 systems produced annually, SCANLAB GmbH is a leading and independent OEM manufacturer of scan solutions for deflecting and positioning laser beams in three dimensions. Its exceptionally fast and precise high-performance galvanometer scanners, scan heads and scan systems are used in industrial materials processing and the electronics, food and beverage industries, as well as biotech and medical technology.

For more than 30 years, SCANLAB has secured its reputation through pioneering developments in electronics, mechanics, optics and software, as well as the highest quality standards.

Blackbird Robotersysteme GmbH manufactures system solutions for remote laser welding with scanning optics. The mirror-based beam deflection units can be integrated seamlessly into industrial manufacturing systems, particularly robot cells. The company's core competency is the development of powerful control technology, intuitive user software and additional process monitoring solutions.

Combined with 2D and 3D scan systems of the affiliated company SCANLAB, Blackbird offers machine and system builders a broad range of highly efficient pre-integrated solutions for high-volume production in the automotive industry, e-mobility and numerous other manufacturing sectors.

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# Unleash your welding potential



See our products at work at our  
Fronius UK Open House  
18 - 19 May, Milton Keynes

Register:

[froniusopenhouse.co.uk](http://froniusopenhouse.co.uk)

Welding connects metals,  
industries and people

Professional welders have high requirements for their systems: These include a stable arc for uninterrupted work, as well as easy and intuitive operation. The welding systems must also be robust and mobile, so that they can work at any time and in any location. Fronius welding systems meet all of these criteria, and also offer further advantages that turn manual welding into a true experience.



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our products:  
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# Fronius to host fifth Open House in May

Fronius UK will be opening the doors to its Technology Centre in Milton Keynes to unveil the latest cutting-edge welding technology as it hosts its fifth Open House on 18th and 19th May.

Fronius has put together a wide variety of demonstrations across its range of products, solutions and applications and a programme of talks from specially selected guest speakers and industry partners. The event promises to be informative, hands-on and packed with fun and, whether you are looking to review your welding processes, or find out what's new, this is just the event for you.

This is a real opportunity to explore the world of Fronius and to see up close the most recent advances in welding technology, including the new iWave Multiprocess Pro, launched this January. This machine gives you full freedom to unleash your welding potential. In addition to all the TIG functions, you can weld all MIG/MAG process variants with a single system. If you want to weld faster, with less rework, you can try out the TransSteel Pulse range of MIG/MAG welding machines and never have problems welding those hard to reach areas again with the new Fronius Flex-Drive, hear from an expert on the development and possibilities of Wire+Arc Additive Manufacturing (WAAM), plus see some world leading automation and robotic welding solutions.

You can also be one of the first to see the all-new Magic Cleaner 150/300. This innovative technology allows optimum reworking of TIG weld seams and stainless



Milton Keynes  
18 - 19 May

Fronius UK Open House 2022

steel surfaces in a single step, with minimal impact on the material surface. The electrochemical cleaning devices make it possible to polish welds to a lustrous finish and permanently print logos and serial numbers on workpieces.

Whatever your welding challenge, you can use the day to come and talk to Fronius and see some of the solutions it has on offer, while enjoying a schedule of entertainment, a hot lunch and refreshments throughout the day.

James Anderson, director of welding for Fronius UK, comments: "This event provides an ideal opportunity to visit our facility and understand the very latest solutions available on the market.

"We look forward to welcoming all those involved in welding. I would also encourage anyone currently experiencing welding challenges to come and talk to us about them to see where we could potentially help to improve processes."

The day will also incorporate the company's other two business units: Solar Energy and Perfect Charging. With the imminent increase in energy prices, take the opportunity to look at the company's industry leading solar products and services including its hybrid solar inverter that recently won first place for efficiency in the Energy Storage Inspection 2021 and its new powerful, yet robust, project inverter for high yields, the Fronius Tauro. If your operation uses any electric forklifts or warehouse trucks, you can also find out how unique, intelligent battery chargers from Fronius can reduce your energy costs and CO<sub>2</sub> emissions.

This is just a snippet of what you can expect to see on the day. To find out more, including which industry leading speakers you can expect to hear from as and when they are announced, visit [www.froniusopenhouse.co.uk](http://www.froniusopenhouse.co.uk)

Due to the success of its previous Open Houses, the company has made the decision to spread this year's event across two days to allow everyone the time and space to observe demonstrations safely, provide time to speak to experts and try out products where possible. Fronius UK will welcome guests from 9:30am until 3:30pm on both days. Register to attend either day at [www.froniusopenhouse.co.uk](http://www.froniusopenhouse.co.uk)

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# KUKA

## Maximum productivity \_lowest operating costs

KUKA welding robots ensure maximum efficiency & perfectly processed weld seams, even in continuous operation.

### Top weld quality

Thanks to outstanding path accuracy & repeatability as well as stable robot arms, KUKA robots ensure optimal weld quality even in demanding continuous operation.

### Low operating costs & maximum availability

Service-proven KUKA robot technology ensures high system availability in 3-shift operation with minimal maintenance requirements.

### Rapid integration

Drag & drop configuration with preconfigured profiles from a wide range of different welding source manufacturers ensures high compatibility, minimizes risks & start-up times during commissioning.

To find out more about our arc welding robots, please contact call 0121 505 9970 or email [sales.uk@kuka.com](mailto:sales.uk@kuka.com)



## C-Gate IoT Platform

### Digitisation of welding technology

The digitisation platform C-Gate IoT Platform enables the demand-based management of welding and robot data. With the integrated information and communication tool you visualise the performance of your robot systems, localise shortages and increase the efficiency of your welding production.



**CLOOS**

Weld your way.

## Kemppi introduces the new MasterMig product family

Kemppi has introduced the new premium compact MIG/MAG series, which includes three class-leading models. 353, 355 and 358 feature alternative Manual, Auto and Auto Pulse specifications.

MasterMig is the premium compact MIG/MAG series that elevates industrial welding performance and excellent usability for manual, synergic and pulse MIG welding. Digital arc control, fast setup techniques and excellent power-to-weight ratio set new standards for welding quality. Market deliveries for models 353 and 355 will start in April 2022. The 358 model will enter the market later in the same year.

“MasterMig elevates industrial welding performance. The digital arc control, fast setup and excellent power-to-weight set new standards for weld quality and work-based efficiency,” says John Frost, product manager for Kemppi welding machines.

Switch on the integrated LED work lights for your safety and convenience and enjoy this useful and supplementary light source, with or without mains power connected, improving safety and increasing productivity in low light conditions. For higher duty welding cycles, add the MasterMig Cooler and maximise the use of the 350A 40 percent duty cycle welding power source.

Parameter setting is extremely quick and easy with Weld Assist. Simply select your joint type, welding position and material thickness and you are ready to weld.

New MAX arc performance processes MAX Speed, MAX Cool and MAX Position

elevate productivity, increase welding speed, improve weld pool control and lower heat input, optional with MasterMig 355 and 358 models.

MasterMig 358 connects wirelessly to WeldEye welding management software and includes a free 3-month trial license option for a new WeldEye ArcVision module, which tracks and records arc-on time and welding parameters. WeldEye ArcVision trial license also includes a new digital WPS, dWPS function.

The safe-lift mechanical design ensures the MasterMig can be carried by hand or suspended above ground level by crane, ensuring the safe and convenient movement of the power source on site. In addition, four optional transport carriages support alternative circumstances and movement on site including the new T35A Travel cart.

### New Beta e for safety helmet product range is now available

Kemppi has also announced the launch of a new product range Beta e for SH which provides cost-efficient occupational safety with full head and face protection, operators keep their hard hat on even during welding.

Beta e90 SH welding masks are equipped with either passive or auto-darkening lense in order to provide improved occupational safety with full face and head protection against sparks and spatters. Operators can leave their mandatory hard hat with hearing protection on while welding. According to the occupational safety and health law, a hard hat must be used at the construction



site at all times. It is also mandatory to provide site workers with personal eye and hearing protection, notes Roger Rasmussen, head of Kemppi safety business unit.

### Easy installation, improved cost-efficiency

Quick and secure installation to the hard hat earmuff holder means easy switching between different work modes. The Beta e SH welding mask clicks into three positions for multiple applications from welding to grinding and inspection. This makes the Beta e SH welding mask a cost-efficient solution to easily convert the hard hat into a welding helmet.

The Beta e for SH product range consists of the Beta e90 SH welding mask with passive or automatic darkening filter, the Beta e397 Kemppi branded Kask hard hat and the Kask SC3 earmuffs. The Beta e90P and e90A complete kit is a ready to wear package which includes the welding mask, hard hat and the Kask SC3 earmuffs.

Kemppi is a design leader in the arc welding industry and is committed to boosting the quality and productivity of welding by its continuous development of the welding arc. Kemppi supplies advanced products, digital solutions and services for professionals from industrial welding companies to single contractors. The usability and reliability of its products is its guiding principle. The company operates with a highly skilled partner network covering over 70 countries to provide expertise locally. Headquartered in Lahti, Finland, Kemppi employs close to 800 professionals in 17 countries.

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## Telsonic launches Telso Terminal TT7

### Digital innovation for ultrasonic metal welding

Telsonic AG, recognised as a leader in the development and manufacture of Ultrasonic Technology for welding, cutting, cleaning and screening, has once again demonstrated its commitment to product development and innovation with the launch of the new Telso® Terminal TT7.

This new system is set to revolutionise ultrasonic metal welding applications in a variety of areas, especially within the fast-growing Electromobility Sector, where there is an increasing demand for the highest levels of quality and process control in cable assembly, terminal assembly and battery production applications.

It incorporates the latest version of Telsonic's proven PowerWheel® welding technology, which ensures maximum reliability and optimum process control for welding metal cable cross sections up to 200 mm<sup>2</sup>. Additional benefits include the ability to change tools in under five minutes, thanks to the TT7's new quick-change system. The Telso Terminal TT7 also

features standardised interfaces for digital networking and ease of integration into production systems.

The Telsonic Group, headquartered in Bronschhofen, Switzerland, has been providing ultrasonic technology solutions in Europe, America and Asia since 1966. Continuous innovation helps to ensure that, in many applications, the company maintains a lead over competitors, offering added value to users. With more than 250 highly-qualified staff the owner-managed family company specialises in plastic and metal welding, together with ultrasonic cleaning, screening and cutting. Current trends mean that these skills are in strong demand in areas such as lightweight construction, electromobility, battery production, the packaging industry, medical technology and 3D printing.

Telsonic UK was the first subsidiary established in 1977 and is based in Poole, Dorset. It has a complete laboratory with a full range of equipment from its UK product portfolio for trials and demonstrations. It also offers tooling design using the latest



FEA simulation package as well as joint design recommendations for faultless results. Its range of ultrasonic welding equipment includes hand-held units, bench top systems and bespoke special purpose welding systems. In addition to this, it has a range of equipment aimed at the OEM market for specialist machine builders.

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## DC-H3000A high duty DC spot welding power supply

AMADA WELD TECH has announced the availability of the DC-H3000A High Duty cycle, DC Spot Welding Power Supply for high precision micro-joining applications. This power supply is designed for use in the medical device industry and other applications where the highest level of accuracy, process control and traceability is required.

The switching system architecture of the DC-H3000A provides unsurpassed levels of DC current purity, with ultra-low ripple and fast loop response, which enables it to react to and control challenging applications, achieving a stated accuracy of +/- 1 percent of the controlled parameter set point. The precise pulsed output delivered to the weld, is controlled in terms of either the peak voltage, current or power.

The DC-H3000A also features an exceptional user interface and system connectivity capabilities. A modern, intuitive Touch Screen display allows easy access to the weld settings, data logging and communications functionality. The DC-H3000A is equipped with USB,

Ethernet, RS232 and conventional I/O communication ports for interfacing with control systems and/or the capture of all welder performance data, which allows for simple automation and machine integration.

For a complete solution, the DC-H3000A can interface directly with the high-performance AMADA WELD TECH WH-L090A Linear Motor Weld Head or pneumatically driven weld heads for improved process control.

The DC-H3000A, formerly known as DC2013-T, is suited to any micro-joining application requiring a current of less than 3,000 A.

Learn more by visiting the website: <https://www.amadaweldtech.eu/products/resistance-welding/mid-high-frequency-inverter-power-supplies/dc-h3000a-high-duty-dc-spot>

AMADA WELD TECH is a leading manufacturer of equipment and systems for laser welding, laser marking, laser cutting, resistance welding, hermetic sealing and hot bar reflow soldering and bonding. It customises its products around specific



micro-joining applications for all of its customers around the globe. AMADA WELD TECH product markets include medical devices, battery, automotive, solar industry, electronic components and aerospace. It is an ISO9001 certified company. AMADA WELD TECH is part of the Amada group and is known as being an innovator in finding creative joining and metal processing solutions.

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## Directly from the welding point to a clean hall

The quality of the hall air was already at an acceptable level, but as a rule, it always tended to be very close to the maximum legal provisions. This was clearly not good enough for Aebi Schmidt Nederland B.V. with regard to the health of its employees. It is true that, as an international comparison, the Netherlands already has one of the lowest workplace exposure limits for production plants. However, the company, located in Holten in the eastern part of the country, wanted to improve the air quality in order to push the concentration of hazardous substances even further below the prescribed limit of 1 mg/m<sup>3</sup>, particularly in the welding shop.

“One focus at Aebi Schmidt was clearly on improving working conditions,” emphasises facility manager Steven Koenderink. “Air quality was one of the central issues here.”

For example, the company wanted to completely ban hazardous substances with lung-damaging, toxic or even carcinogenic effects. Precisely those that arise in large quantities, especially in the MIG/MAG welding process used to manufacture the steel-heavy add-on parts from production. Increasing demand in recent years had generated more welding work.

The company’s development into a leading supplier of systems for cleaning and clearing traffic areas, as well as maintaining green spaces, brought with it higher protective welding equipment requirements. Aebi Schmidt wanted to continue this history with a healthy and satisfied workforce. After all, arguments concerning employee health are playing an increasingly important role in the competition for the brightest minds.

In the search for a supplier of extraction technology, KEMPER GmbH came out on top. “Mainly because of the positive test experiences and the comprehensive advice we received in the course of our decision-making process,” reflects Steven Koenderink.

### Mobile high-vacuum extraction units for flexible production

The requirements were clearly defined. The cleanest possible hall air in line with the needs of production was required. For example, the intake systems for the hazardous substances generated during welding should effectively extract them



while maintaining flexibility in production. A fixed budget defined the framework for the investment in protective welding equipment. KEMPER adhered to these specifications from the outset and put together a customised protective welding equipment concept for Aebi Schmidt. To allow for possible adjustments to the welding shop layout, the manufacturer decided on mobile extraction units.

The German company recommended welding fume extraction by means of high-vacuum systems with connected extraction torches. This was due to the following benefits: firstly, the immediate capture of welding fumes directly at the point of origin and, secondly, the forced tracking of the extraction elements during welding. Following a comprehensive test, Aebi Schmidt ordered several units at once.

After the order was placed, KEMPER quickly delivered a total of 13 VacuFil 250 high-vacuum systems to the Dutch company. As they can each be coupled with two extraction torches, Aebi Schmidt employees are able to weld safely at 26 workplaces at the same time. The systems are matched to each other in terms of extraction capacity so that the welding fumes are optimally captured without destroying the protective gas envelope. Unlike other extraction systems such as extraction arms, the welders automatically carry the extraction system integrated in the



torch. The system reliably extracts the hazardous substances at the point of origin via an extraction nozzle in the torch.

This means Aebi Schmidt achieves high production capacity, as well as clean hall air for its employees. Even at high welding intensity, the VacuFil-250 units extract high levels of smoke and dust in continuous operation with a maximum output of 250 m<sup>3</sup>/h, without any loss of quality, even when two employees are welding at the same time.

Thanks to the particularly high filter quality provided by the special KemTex® ePTFE filter cartridges with surface filtration, the systems permanently filter out more than 99.9 percent of the captured welding smoke particles. Even particles smaller than 0.1 µm have no chance of escaping back into the hall air after extraction.

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