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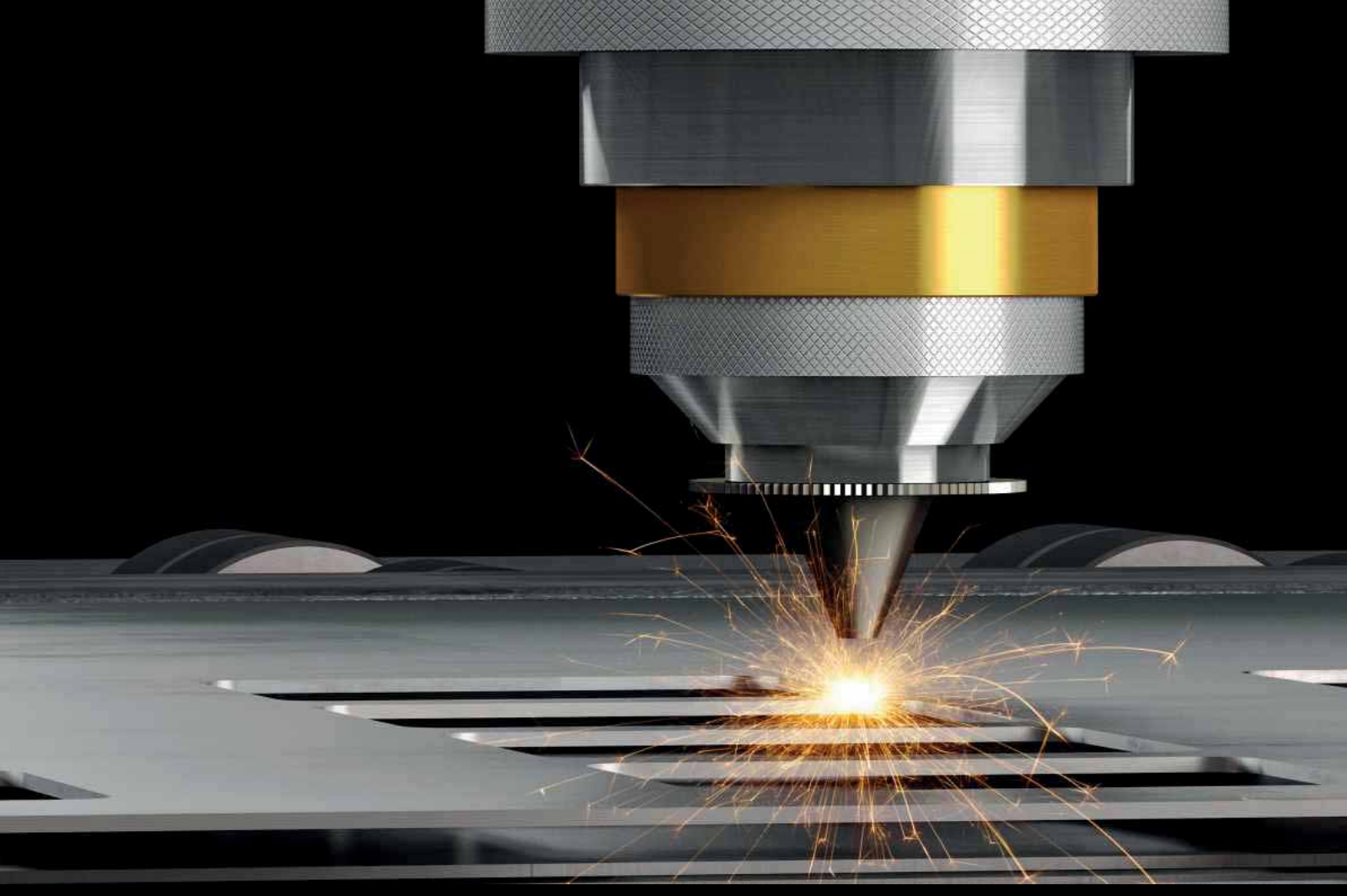

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Productivity, profitability and planet drive Mazak focus for EMO

Yamazaki Mazak is heading to this year's EMO with 12 machines complemented by a range of automation and technology solutions that promise to deliver the three key customer benefits of productivity, profitability and environmentally aware manufacturing operations.

The Mazak stand at EMO 2021, which runs from the 4th to the 9th October 2021, in **Hall 5, Stand E01** of the Fiera Milano in Milan, will focus on how technology can make machine users faster, leaner, greener and more intelligent.

The Mazak stand will showcase a host of new machines, including integrated automation solutions, vertical machining centres and the most recent additions to the INTEGREX i-H series. Under its theme of 'Discover More', Mazak will display two world debuts at the show and another machine being exhibited for the first time in Europe.

In addition, Mazak will display its latest CNC technology, MAZATROL SmoothEz, featuring a 15" touchscreen and an intuitive operating system to deliver increased efficiency through faster setup, programming and operation for those with limited NC programming experience.

One of the key themes will be automation with over half of the products showcased with integrated automation systems on show including the latest generation of its flagship PALLETECH system, a new collaborative robot system and Mazak's latest 5-axis automation solutions for high-mix, low volume work.

Environmentally-aware manufacturing will also be a key focus with technologies such as energy dashboards and digital services helping customers to measure energy utilisation and CO_2 impact.

Mazak will also exhibit the latest in virtual machining with the next generation of MAZATROL SmoothAi and Digital Twin technology that can deliver machine and engineering data directly to those who need it supporting production plans and business decisions.

For those that are unable to attend the show in Milan this year, Mazak will make available a digital experience where customers can discover all the latest and new technologies.

To find out more, visit Yamazaki Mazak's stand at EMO or sign up for the digital experience of the event by visiting: **https://emo.mazakeu.com/**.

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EMO MILANO 2021 fieramilano 4-9 October HALL 5 STAND E01

New digital technologies set to deliver growth for MetLase

A world class tooling and intelligent fixturing specialist is celebrating its 5th birthday in style by setting its sights on 20 percent growth

MetLase, which is a joint venture between Unipart Manufacturing and Rolls-Royce, is launching a new expansion plan that has speed, customisation and data at its heart through the launch of 'smart' products that give its global customer base the ability to reduce costs and be first to market.

Clients, including OEMs and suppliers involved in aerospace, construction, defence and renewables, are already tapping into the benefits of the Rotherham-based firm's SmartGauge, SmartMachining, SmartBench and rapid tooling support.

Through close collaboration with the National Composite Centre (NCC), MetLase has also installed SmartGauge into the NCC's Smart Factory Innovation Hub, which will help companies and composite component producers test quick-fire projects and early-stage technologies.

"Like all good manufacturers, we are continually evolving and making sure our expertise is channelled into giving our clients what they want: speed, customised solutions and data-rich intelligence," explains Richard Gould, business development manager at MetLase.

"Tooling can take weeks to develop and deliver, this is holding industry back. Our response was to develop a rapid tooling and prototyping process that embraces all electro and mechanical elements of design, robust software testing and a range of patented in-house technology applications.

"This, along with the option to integrate electronics and sensors to support self-calibration, metrology and process monitoring, cuts the process to just days and means our customers will have an immediate answer to a production issue or the opportunity to be first to market."

He continues: "A major aerospace client even challenged us to create a bespoke aerospace pipe fixture, which we did in less than 24 hours."

MetLase has modelled its response to the demand for digital manufacturing in fundamental engineering principles and looks at how its fixture and tooling solutions

can generate, harvest and display information in real time that is actionable and makes customers more agile and responsive to their own clients.

This involves taking traditional manufacturing techniques focusing on assembly, bonding, measuring, workholding and assembly workstations and exploring how they can be digitised in a way that allows them to provide their core function whilst also gathering data.

"For us, digital manufacturing is not a standalone entity. Instead, it should be a critical aspect of the process and operation and it should revolve around data and, specifically, digestible, actionable data," adds Richard Gould

"A dedicated team has spent the last twelve months developing 'smart' products, including the SmartGauge, conducting an automated digital dimensional inspection process, SmartBench, ensuring no-fault forward in the assembly process as well as connecting up-front supply chains and SmartCell.

"The latter covers multiple manufacturing processes and can enable human interaction with cobots and robots. This means tasks, including stock control and direct-to-bench supply of components, can be more easily automated.

"Engineers at our Rotherham factory haven't stopped there, taking a similar approach to machining, by creating our new SmartMachining fixture that can gather critical data from a component such as clamping forces, vibration, temperature and dimensional measurement. This provides better process control and ongoing improvements."

MetLase's technology and processes are flexible, customisable and can be aligned to any industry sector and engineers are now throwing down a challenge for existing and new contacts to test them with their manufacturing problems.

Dedicated, multidisciplinary engineers are ready to deliver projects from start to finish, taking a consultative approach to first understand the business need and then, using experienced joining methodologies and in-house capabilities, offer a bespoke solution to concept, design, iteration and final production.

Richard Gould concludes: "Last year we completed our largest ever fixture project, measuring 4 metres in diameter and capable of holding a 2.5 metres tall component during machining and bonding operations. Now that was a challenge, but it got us thinking.

"We believe we have an engineering team that has firmware and software experience, as well as expertise across electro-mechanical disciplines. Everything you need to deliver a solution for every problem imaginable.

"The message to industry is clear… challenge us and let us deliver the answer."

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Exciting development in the management structure at FC Laser

The goal of FC Laser has always been to provide a world class service to current and future business partners. To ensure this continues long into the future, it has made a senior managerial structural change that provides business continuity and a focused approach to both the day-to-day activities of the FC Group and the long-term strategic development and growth of the company.

The managerial structure change sees Daryl Lowe promoted to the position of FC Group managing director, allowing founder Danny Fantom to move into the position of group CEO.

Daryl Lowe has been with FC Laser for almost three years having spent most of his career in aerospace, notably as head of purchasing with Rolls Royce until taking the position of operations manager at FC. His impact in the operations role has seen the company improve its overall performance, culture, quality control and process management while also increasing business turnover by 25 percent.

A natural fit for the day to day running of FC Laser, Daryl Lowe will no doubt continue to lead the business to loftier heights. His promotion is extra meaningful because FC are employee owned and the team are thrilled that a current member of the FC Team will be fulfilling the managing director role.

His promotion allows Danny Fantom to move away from the day to day running of FC to focus on the strategic development and continued growth of the FC group. It enables him to focus on the longer-term goals of the business, namely the opening of the capacity doubling facility as well as the launch and growth of new and existing divisions.

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Soraluce unveils the future of machining solutions #MadeForYOU live at EMO

Soraluce will present its #MadeForYOU client-oriented approach, showcasing its leading generation of machining solutions, along with the most competitive technologies and services, during EMO 2021 in Milan.

The European manufacturer will take its latest developments in milling, boring and vertical turning machines, multitasking solutions, along with automation lines and "best in class" services, to the event. It is one of the most comprehensive and advanced machinery range on the market, which is also designed to be customised to each client's specific requirements.

One its highlights at the event will be the SORALUCE PMG portal gantry milling machine, to be presented to the Italian market for the first time. The model has a longitudinal traverse of 10,000 mm, a cross traverse of 4,000 mm and a vertical traverse of 1,500 mm, fitted with a stepless universal head of 0.001° x 0.001° at 7,000 rpm.

As a trail-blazer in the use of linear guiding systems, it has applied all its expertise to the development of these new portal machines. They combine the linear guiding technology with the damping systems by means of incorporating solutions such as DAS®, an active damping system to eliminate chatter and exclusive to Soraluce.

The result is highly productive machines, with great precision, that are dynamic, stable during machining and reliable as regards to availability.

In keeping with the #MadeForYOU philosophy, the new portal model can be customised to meet each client's requirements, where the work areas can be configured to optimise productivity, by minimising shutdowns while fitting the workpiece, or to increase the versatility and flexibility of the machine, by incorporating the multitask feature with rotary tables for milling and turning. Its options include milling and turning heads and tool storage.

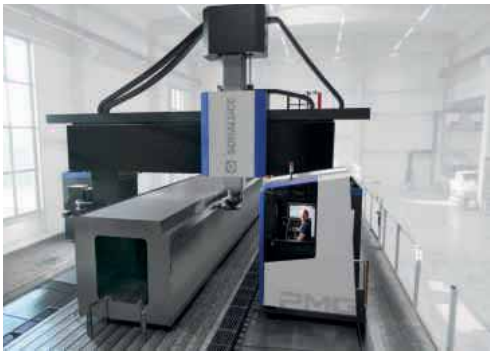
The machine-tool manufacturer assembles this type of machine at its state-of-the-art Soraluce Portal Factory. The company has invested €9 million in the facilities to create a modern and advanced manufacturing centre, that is one-of-a-kind in its category in the world and dedicated to the manufacturing of portal machines.

Along with the latest developments in the portal machinery range, Soraluce professionals will show visitors to the fair the company's whole range of milling machines, multitasking solutions and automation lines. Visitors will also have the chance to learn about the portfolio of "best in class" services that increase the precision, productivity and profitability levels of machining.

Smart technology

Soraluce continues to consolidate its great commitment to technology, by developing high value-added services and offering expert advice to its clients. Thus, during the fair, Soraluce will showcase smart damping solutions to increase stock removal during the machining. The solutions have been developed thanks to the company's high technical expertise and its knowledge of engineering applied to manufacturing solutions. Visitors will also have the chance to find out about these technologies for themselves during the live demonstrations.

The manufacturer has developed different systems to eliminate chatter, thus increasing the cutting capacity of the equipment and the efficiency of the machining processes.



On the one hand, Soraluce will showcase its renowned active damping system, DAS, the smart system that oversees the machining process and selects the best technological alternative to eliminate chatter. Fitted with a very simple interface, this solution allows the evolution of the process to be controlled, by providing comprehensive information on the chatter, the vibration level and the technologies used to suppress it; such as the active damping of the ram, the tuning of the optimum spindle speed of the tool and the harmonic oscillation of the spindle speed.

On the other hand, there will also be a live presentation of the DWS (Dynamic Workpiece Stabilizer) system, an active damping device that eliminates the chatter that is usually generated when machining flexible parts. This patented system, which was the winner of the Prize award in the International Quality Innovation of the Year 2020 competition, provides an effective solution for the problems associated with machining slim-format parts and is an improvement on traditional alternatives.

T.W. Ward CNC Machinery Ltd is the proud partner and exclusive supplier of Soraluce machine tools in the United Kingdom and Irish Republic.

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Making production faster, leaner, greener and more intelligent

In order to stand out in increasingly competitive markets, it is vital subcontractors source the best possible machine tool solutions. Yet the newest generation of platforms must not only be able to provide high-precision machining, they need to also be compatible with automation technology and innovative software developments. Ahead of EMO 2021, Alan Mucklow, managing director of UK & national distributor sales at Yamazaki Mazak, explores this topic further.

As social distancing restrictions have been removed, it has been no surprise to see the subcontractor market continue to grow. In fact, many companies that consciously diversified their portfolios during the pandemic are now faced with new concerns; namely, finding further machining capacity and resources.

The need to be as competitive as possible post-pandemic has been a major driver for subcontractors and has translated into increasing demand for new and advanced models as they continue to expand their portfolios.

This rising demand has been felt at Mazak, with enquiries increasing from October 2020 onwards. Market confidence really started to return from the start of the year, coinciding with the release of the roadmap out of lockdown and, with EMO 2021 fast approaching, we expect the positivity among subcontracts to only increase.

Given the emphasis on becoming more competitive, perhaps our most popular machine tool among subcontractors in the past 18 months has been Mazak's latest compact and fully simultaneous 5-axis machining centre, the CV5-500. It is perfectly positioned to help both those subcontractors taking their first steps into 5-axis technology, as well as more

experienced users who are looking to expand their capacity from a compact footprint.

Indeed, uptake of automation systems among subcontractors has noticeably increased across all sectors post-pandemic as business owners seek to futureproof their operations.

It is for this reason that automation will be a key focus for Mazak at EMO, with 50 percent of machines on our stand equipped with integrated automation systems. These will include the latest generation of the company's flagship PALLETECH system, along with a new collaborative robot system and Mazak's latest automation solution suitable for high-mix, low-volume work on 5-axis machines such as the CV5-500.

Increasing flexibility, improving setup times and cutting changeover speeds are all key objectives for subcontractors who are looking to increase productivity and become more competitive.

For this reason, automation was front of mind in the design process for the latest addition to Mazak's flagship INTEGREX range of multi-tasking machines, the i-H series. Specifically, its flat-fronted design and rear-mounted tool magazine allow for solutions such as articulated robots to be situated at the front of the machine, so operator access to the machining envelope remains unhindered. Visitors to EMO will be able to see the two most recent additions live-cutting on the Mazak stand.

It is crucial automation equipment used on any machine can be simply programmed and easily controlled. One such example is Mazak's SmoothEz CNC control system, to be displayed at EMO. Featuring a 15" touchscreen and an intuitive operating system, it is designed to deliver increased efficiency via faster setup, programming and operation.

Alongside automation, virtual machining capabilities will also be demonstrated as a key theme on the stand. Specifically, Mazak's SmoothAi its Digital Twin technology, which can deliver engineering and machine data to key stakeholders within a subcontractor's facility. This information, which can impact production plans and other business decisions, showcases another important trend within the sector: smart manufacturing.

Some may regard this as a buzz-phrase, or too theoretical, yet with the right practical advice and support, subcontractors can implement Industry 4.0 and become more competitive. It is with this in mind that Mazak has formed a dedicated team within its service department to help customers implement a smart manufacturing approach, known within the company as 'iSmart Factory.'

Mazak personnel will be available to demonstrate how attendees can seamlessly integrate their factory and office networks in this way and also to discuss the company's final theme at EMO, sustainability. Through technologies such as energy dashboards and digital services, subcontractors can measure factors including energy utilisation and CO_2 impact during manufacturing and reduce their footprint accordingly.

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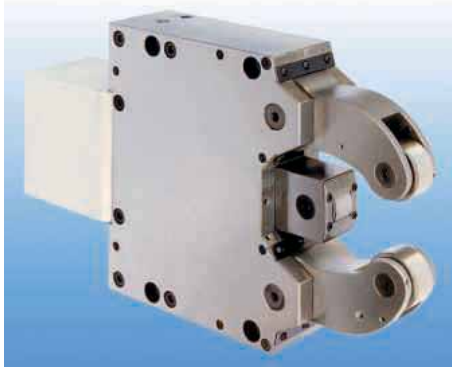
Leader says take a 'steady' rest at EMO

Exclusively represented in the UK and Eire by Leader Chuck International, Fabbrica Italiana Autocentranti Lombardia (FIAL) is an Italian ancillary equipment specialist with its core business focused on clamping equipment for lathes, both traditional and CNC. At this year's EMO international machine tool exhibition, held in Milan from the 4th to 9th October 2021, on **Stand F18** in **Hall 3** the company will launch a number of new ranges of steady rests, including Self-Centring steady rests; the Coolant Series with feed for the steady rest's rollers; a Mini Series for multi axis lathes and mill-turn centres and a range of high accuracy steady rests for grinding applications.

Leader Chuck International's managing director, Mark Jones, explains: "The function of a steady rest is to stabilise workpieces as they are being rotated. As the workpiece turns, the jaws of the steady hold the centreline and the material being rotated never oscillates, wobbles or vibrates. This keeps the machining process precise, and you end up with a part that matches the design specification."



The result of Leader FIAL's ongoing research and development of innovative solutions, this extensive new range of steady rests includes 10 standard self-centring steady rests that cover the most popular sizes of material requirements while keeping the size of the unit to a minimum.

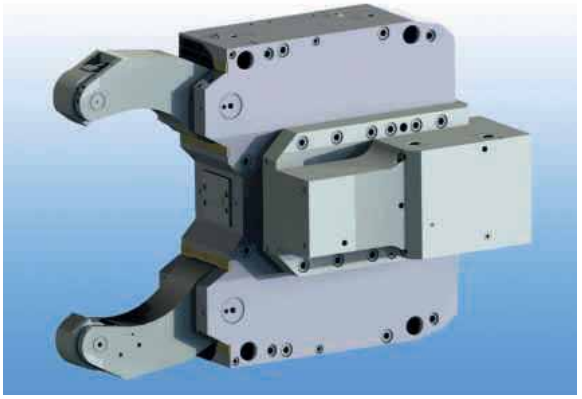
Without roller covers the steady rests increase incrementally to support workpiece or billet diameters from 4-70 mm up to an impressive 125-460 mm. When fitted with the automatically positioned roller covers the capacities drop slightly, starting at 15-62 mm diameter all the way up to 125-450 mm diameter. Heavy duty steadies are available up to 1,000 mm capacity. Even extremely heavy workpieces can be accommodated by the new steady rests, the smallest unit has an allowable load of 10 kg per roller and up to 450 kg per roller for the largest unit. Centring accuracy across the range is between 20 and 60 µm, with repeatability between +/- 5 and 10 µm.

For machine tools where space is limited, Leader FIAL offers the same sizes and technical benefits in a range of self-centring steady rests equipped with side cylinders. This range starts at 8-105 mm diameter capacity and extends to the same maximum size as the inline cylinder design.

Providing extended protection for both the rollers and the workpiece is the Coolant Series of steady rests. With the addition of coolant fed through the arms via a special port, the working area around the rollers is kept clean thereby preventing damage to the rollers and the surface of the workpiece. Again, offering the same size and performance parameters as the standard range.

The Mini Series has been developed for highly efficient multi axis lathes where there is no option for the mounting of a steady rest, such as double turret turning centres. Here, the lower turret is used to mount the steady rest while the upper turret performs any operations required. These steady rests are designed to work on the popular bar fed smaller diameter raw material sizes, up to 65 mm diameter, and they are supplied with mounting systems that exactly match the machine tool used. Most popular mounting styles are supported, including front and radial VDI mounting shanks, Mazak perimeter sliding mounts, bolt-on face discs, Capto trilobe and EMAG tail systems.

For external and internal cylindrical grinding applications, Leader FIAL will launch its High Accuracy steady rests. The four units in this application specific range provide support for parts of between 4-12 mm, 12-40 mm, 20-60 mm and 40-110 mm diameter.



Ensuring longevity, each of the new steady rests benefit from a built-in central lubrication and pressurised air systems that have been designed to ensure the rollers operate correctly throughout the life of the unit. The rollers can be lubricated from the machine tool's coolant system or with high flow grease while the positive air pressure, adjustable between one and four bar, keeps the working area clear of unwanted swarf and fines. Proximity detectors can signal confirmation that the device is fully open and ready to accept loading to the machine tool and/or loading ancillaries.

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Experience the limit of what is feasible at EMO

KERN will undertake live machining demonstrations at EMO to show how injection moulding tools for filter housings can be machined with a precision of less than 1 µm and surfaces in the single digit nanometer range. This unfathomable level of precision and surface finish will be demonstrated on the KERN Micro HD machining centre that is now available in the UK from Rainford Precision.

Superlatives such as 'extremely precise' should be rarely used, but in the case of Rainford Precision and the KERN Micro HD machining centre, how else could 5-axis series production of components with process-reliable accuracies of less than 1µm be described? If you want to see how it works, you can do so at the show or discuss your precision machining requirements with Rainford Precision if you are not able to attend. At the event, KERN will manufacture injection moulding tools for filter housings that are used in respiratory masks.

The parts will be initially roughed with the Heidenhain Optimised Contouring Machining (OCM) option and then brought to the highest quality at critical points with 5-axis grinding cycles via jig grinding. After machining, manual polishing of such precision parts is an industry-standard process, however, the high surface quality in the single-digit nanometer range that the Micro HD achieves, means that this production step can be omitted. Several innovative features are decisive for the performance of this technology from KERN. In addition to the linear direct drives, the microgap hydrostatics guideways and the sophisticated temperature management system are the main contributors to this unfathomable performance level.

Different automation systems can be integrated with the KERN Micro HD depending on the application. That is why Kern considers targeted, project-related advice as almost indispensable. Highly qualified staff will be available to answer questions from EMO visitors regarding the KERN Micro HD and other KERN machines such as the variably configurable Micro Vario and the Micro Pro, a process-stable solution for efficient part processing in a price-sensitive market segment. For further information, please contact Rainford Precision or visit us at EMO.

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Feel the magic of Okuma

European premiere of the MB-80V at EMO

Okuma Europe GmbH will be igniting premiere fireworks at EMO Milano 2021 with the live presentation of its innovative MB-80V machining centre. The company will be celebrating a European premiere under the exhibition motto "Feel the Magic of Okuma.'' The machine, which is particularly suitable for working on large workpieces, is now the second exclusive highlight that Okuma is announcing for the industry event in Milan in October.

Okuma is making new dimensions available to its customers with the largest model in its proven MB-V series. The working area of the MB-80V, which is experiencing high global demand, covers table dimensions of 2,000 x 800 mms. This means the machine is highly suitable for the requirements of automotive suppliers among others and for other industries with large workpieces. Customers benefit from maximum quality and precision during machining thanks to the particularly good repeat accuracy and high dynamics. Great precision is supported by high thermal stability, as are tight tolerances. In addition, the optimised machine design increases productivity as the machine has been designed to attain maximum machine capacity utilisation. This is ensured, for example, by the powerful and optionally arranged chip flushing system together with the integrated, wide slat-band chip conveyors. Longer periods of unattended operation are also possible thanks to the optional pallet changer.

"Since its introduction onto the market at the end of last year, the MB-80V has been highly successful around the world, but it has not yet made a live appearance at an event in Europe. Our guests will be impressed to see its fantastic performance in the flesh," says Norbert Teeuwen, managing director of Okuma Europe GmbH.

The introduction of the MB-80V follows the world premiere of the new MA-600HIII machining centre announced in May 2021,

At the show, Okuma will be engaging guests on its 574 m² stand with an impressive selection from its versatile machine portfolio and with the presentation of innovative technologies which are critical to success.

Further details on everything to do with Okuma's participation at EMO Milano 2021 will be announced at **https://emo-milano-2021.okuma.eu**.

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JEB takes-off with Nakamura turning centre

When JEB Precision Ltd won an order to manufacture a complex component for an aerospace air handling system, the Northwich subcontract manufacturer recognised that its existing production method needed to be upgraded to improve productivity. The solution was a Nakamura-Tome AS200L-MYS turning centre from the Engineering Technology Group (ETG).

In 2019, the Cheshire manufacturer that primarily produces components for the scientific instrument and aerospace sectors had won a substantial order that initially resulted in the complex aerospace parts being machined via three turning operations and two milling operations. The S130 grade stainless steel parts were required in batches of more than 100 per month and the five setups on multiple machines was an unsustainable long-term solution.

Founded in 1974, the ISO: 9001 certified company offers a comprehensive service that encompasses CNC milling up to 5-axis, turning, wire erosion, jig boring, honing, surface and cylindrical grinding as well as full scientific instrument assembly. Despite this comprehensive versatility, the challenging aerospace part required a new process to improve throughput, precision and quality. With six ETG turning centres on-site, JEB Precision was already familiar with the extensive solutions available from the Wellesbourne machine tool experts but this was the first Nakamura-Tome machine to be installed at JEB.

Discussing the project, JEB operations director Michael Bebbington recalls: "While our Hardinge turning centres are very capable machines, the Nakamura-Tome AS200L-MYS is a twin-spindle machine with milling capability and Y-axis machining that is built on a very robust platform. By investing in this technology, we were immediately able to reduce setups, increase throughput, improve process reliability and quality and free capacity on our other machine tools."

Before the arrival of the Nakamura-Tome AS200LMYS in January 2020, the 83 mm diameter by 23 mm aerospace part was precisely machined on two turning centres with the third operation incorporating turning on a third machine with an expanding mandrel to ensure the thin-walled part achieved the concentricity and precision required. The three operations were followed by a milling process that required four reamed and counterbored holes to a tolerance of +0.012/-0 mm with final machining on a second machining centre that milled features on the final face.

"The setup time for the components was two hours for the first turning operation, one hour for the next and 1.5 hours for the third op. We then had two milling setups of 1.5 and one hour respectively, giving us a total setup time of seven hours. Despite this extensive seven-hour setup time, the combined cycle time was only 30 minutes. However, almost all dimensions were tied to a tolerance of +/-10 microns with some features having tolerances below that. What made this part more challenging was the behavioural characteristics of the material between processes with extensive machining and thin wall features creating a susceptibility to deformation."

The Nakamura-Tome AS200LMYS was installed at JEB Precision with a Hainbuch collet chuck in the main spindle and a Hainbuch expanding mandrel on the sub-spindle for ID clamping to ensure complete machining in a single operation. The part is machined complete in just 20 minutes on the Nakamura-Tome AS200LMYS and in the early days of gaining familiarity with the twin-spindle workhorse, JEB had slashed 30 percent off its programming time; a figure that is destined to improve as the company enhances its understanding of the machine.

Just two months after installing the Nakamura-Tome AS200LMYS, the world went into lockdown with the aerospace industry and its supply chain heaviest hit. For JEB Precision, the new order that justified the Nakamura purchase was put on hold. Commenting upon this, Michael Bebbington continues: "The family of

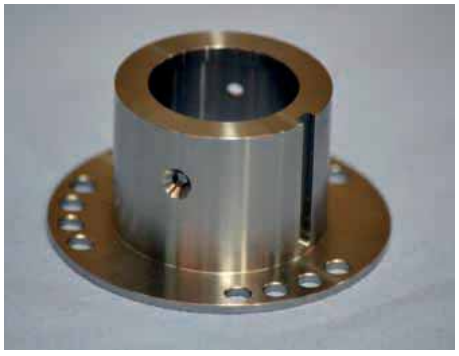
aerospace air handling system components was forecast to be 25 percent of the capacity of the Nakamura. While this work has not been lost long-term, we needed to fill the capacity of the Nakamura throughout the pandemic. As a business, the impact of COVID-19 has not been as devastating for us as it has been for many others. The majority of our work is in the scientific instrument industry and we manufacture a lot of parts and assemblies for mass spectrometers and electron microscopes which have been required by the scientific community throughout the pandemic. We looked at some of our existing parts with multiple setups and how we could transfer those parts to the Nakamura to reduce setups and improve throughput and productivity."

With increased availability on its new Nakamura-Tome AS200LMYS, JEB identified a scientific part that is used on a quadrupole analyser assembly that could be transferred to the new turning centre. The long-term 304L stainless part had historically been machined with three turning operations and an additional two milling operations. This process included one rough turning operation with two subsequent finish turning operations on Hardinge turning centres that were followed by 4th axis drilling, countersinking and 3.2 mm wide slotting on a machining centre with a final operation of drilling holes on a PCD around the flange face on a fifth machine. By transferring this job from a multitude of machines to a single operation on the Nakamura-Tome AS200LMYS, JEB Precision reduced the machining time by almost 30 percent from 28 minutes to 20 minutes.

Once again, the major savings arrived from reduced setups, improved throughput and quality as well as the freeing of capacity throughout the facility. The previous process required eight hours of setups

across the respective five machines, something that has been cut to less than five hours. Commenting upon the benefits, Michael Bebbington says: "As our familiarity with the Nakamura improves, so will our setup times. It has instantly improved productivity and reduced setup times by more than 30 percent. However, this is not the only reason behind the purchase. Single setup machining has reduced manual handling and improved process reliability, throughput, precision and overall quality."

Looking at lead times, Michael Bebbington adds: "With the considerable complexity of many parts and the number of setups, the Nakamura has made an evident impact on lead times. For example, the quadrupole analyser component would have taken at least three to four weeks for us to get the first parts through the shop floor, but with the Nakamura we can set the machine and finished parts can be out of the door in 24 hours. As we get more parts programmed and stored on the Nakamura, we will improve the lead times for many more of our complex parts. The overall benefit to our business will be huge as we free capacity on several older machines and we reduce the pressure on our skilled engineers to programme, set and produce parts on a number of machines."



The future

JEB Precision is delighted with the capabilities and benefits of its Nakamura-Tome AS200LMYS and the company has no qualms about buying more Nakamura machines in the future. As the world exits the pandemic and gradually returns to some semblance of normality, the 25 employee Cheshire company has continued its investment strategy with a twin-spindle turning centre with Y-axis milling capacity arriving from ETG in February 2021. The was installed to replace an older machine. Michael Bebbington concludes: "We've had Hardinge turning centres for over 25 years and some of our existing machines are 20 years old. The new machine was a direct replacement for a Hardinge machine that was at the end of its life."

"The 51 mm diameter capacity machine replaces a 20-year-old machine of similar specification that was at the end of its life. The Nakamura machine has proven invaluable for our business and as we continue to exit the pandemic and grow our business, we have no doubt we'll be investing in more machines from ETG."

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Boeing awards contract to Turkish Aerospace to manufacture Boeing 737 fan cowls

Turkish Aerospace (TUSAŞ) has been awarded a contract by Boeing for manufacturing and supplying Fan Cowls for Boeing 737, the legendary single aisle aircraft family. Turkish Aerospace will be responsible for 50 percent of the monthly 737 Fan Cowl requirements starting in 2025.

The agreement between Boeing and TUSAŞ expands the portfolio of Boeing Commercial Airplane products manufactured by TUSAŞ. The two companies' close industrial collaboration supports the 737 program's performance and affordability while furthering the longstanding relationship between Boeing and Turkey's aerospace industry.

Fan cowl doors provide an aerodynamic surface over the fan case of the engine between the inlet and the thrust reverser and protect engine mounted components and accessories. There are two fan cowl doors (left and right) around each engine that can be opened to provide access for service and maintenance of the engine components and accessories on the fan case of the engine.

Professor Temel Kotil, president and CEO, Turkish Aerospace, evaluates the agreement and says: "Our company continues to be among the manufacturers that have proven in the field of aerostructure with its half a century of experience. In this context, while we continue to produce national projects in the field of aviation industry in our country, we also carry out high-quality critical productions for the world's leading aerial platform manufacturers. We are delighted for the fan cowl production for Boeing as part of the agreement. We bring a new ability to our company. I congratulate all my colleagues and Boeing authorities who contributed to this cooperation."

Aysem Sargın, managing director, Boeing Turkey, says: "Turkey is one of Boeing's strategic growth countries and we see tremendous potential for the country to contribute to the global aerospace industry as an industrial and technology partner. With the launch of Boeing Turkey National Aerospace Industry (NAI) by Boeing and Turkey several years ago, Boeing has expanded its investments, footprint and supply chain in Turkey. The award of the 737 Fan Cowl work package to TUSAŞ is a reflection of our continued commitment to Turkey and the wo rld-class capability of our industrial partners in Turkey."

Fan cowls will be manufactured at the state-of-the-art TUSAŞ premises in Ankara,Turkey, where the company is already contracted from Boeing to manufacture the Boeing 787 Dreamliner elevator, cargo barrier, horizontal leading edge, and 737 elevator, along with the deliveries of thousands of parts/components that are flying in Boeing airplanes for years.

Turkish Aerospace is the centre of technology in design, development, manufacturing, integration of aerospace systems, modernisation and after sales support in Turkey. Located in Ankara, Turkish Aerospace production plant covers an area of four million square metres with an industrial facility of 640,000 square metres under its roof. The company has a modern aircraft facility furnished with high technology machinery and equipment that provide extensive manufacturing capabilities ranging from parts manufacturing to aircraft assembly, flight tests and delivery. For more information, visit **www.tusas.com**.

As a leading global aerospace company, Boeing develops, manufactures and services commercial airplanes, defence products and space systems for customers in more than 150 countries. As a top US exporter, the company leverages the talents of a global supplier base to advance economic opportunity, sustainability and community impact. Boeing's diverse team is committed to innovating for the future and living the company's core values of safety, quality and integrity. Learn more at **www.boeing.com**.

Rhodes Interform secures major aerospace contract

Rhodes Interform, part of Group Rhodes, has won a contract to carry out a major refurbishment on a high temperature Superplastic Forming Press (SPF) in the aerospace industry.

The press, one of a pair manufactured by Rhodes Interform for a major customer in the Northwest of England, is designed to operate continuously at 1000°C, forming highly complex titanium aerostructures. This is the first major refit of the machine since its installation 10 years ago and is one of the largest projects of its type conducted in the UK in recent years.

The refurbishment by Rhodes Interform will focus on the replacement of all the high temperature components including press platens, platen fixings, supporting insulations and heatshield trims.

Rhodes Interform's technical director Peter Anderton says: "This is a large project which involves careful project management to ensure it can be completed on time, so the customer can return to a full production in a planned, controlled manner. We have a highly experienced team of service engineers who have expertise in running contracts which reduce plant downtime and maximise operational efficiency through planned maintenance schedules."

To reduce downtime to a minimum, Rhodes Interform's team of specialist service engineers will provide a seven day per week service for a period of six weeks.

Rhodes Interform's machine refurbishments offer customers a cost-effective solution to dramatically improve equipment life and increase productivity. The company provides a complete one-stop refurbishment service, from arranging for the machine to be transported to the company's maintenance facility in Wakefield, through to retrofitting new components and re-commissioning on site.

Rhodes Interform's parent company Group Rhodes, based in West Yorkshire, boasts a 200-year metalforming history and has also been manufacturing presses to form composite materials from as early as the 1930s. The company has won Queen's Awards for both Innovation and International Trade in recent years, particularly for its work in the aerospace sector.

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Landmark cancer centre benefits from gains made with XYZ vertical machining centre

The National Centre for Eye Proton Therapy, part of The Clatterbridge Cancer Centre NHS Foundation Trust's Wirral campus, is a world leader for the treatment of rare eye cancers and is unique within the UK. The advantage of proton treatment is that the penetration depth of the 60 MeV proton beam can be controlled and only has a maximum range of 31 mm in water, making it ideally suitable for treating any position within the eye and, in many cases, preventing the complete removal of a patient's eye. Patients require four treatments over four consecutive days that each take just 20 minutes. Key to the success of that treatment is a small brass component called a collimator, tailor-made to shape the beam to cover a specific tumour, while protecting the surrounding area. These collimators are now being machined using the centre's new XYZ 500 LR vertical machining centre, in a cycle time that is 95 percent shorter than previously achieved.

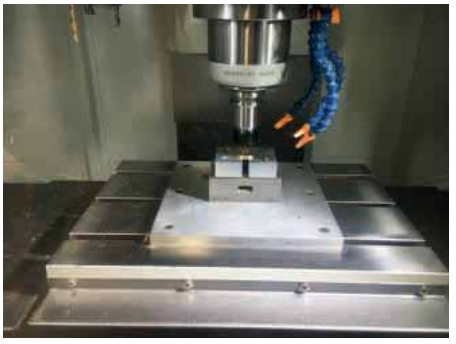
Prior to treatment commencing a patient has the affected eye scanned to precisely identify the size and position of the tumour. That scan is converted using some bespoke software to create a DXF file, which is then processed by the Siemens CAD reader to generate the tool paths for the XYZ 500 LR. The only input required from the centre's lead engineering technologist, Peter Pryce, is to input a variable scribed line, patient name and number to be engraved and, on some parts, a tapped hole is required. From receiving the scanned data to finished part now takes between 15 and 20 minutes, with less than seven of those minutes actual machining time. Prior to the arrival of the XYZ 500 LR, the machining alone would have taken over two hours to complete.

This significant time saving has two major benefits. First, it frees up time in the workshop to carry out other tasks and second, on those occasions where a quick turnaround is required, the collimator can be completed in the time it takes the radiographer to set up the Proton machine and prepare the patient for treatment.

"We were constrained by the design of our previous machine, which lacked a toolchanger and we were not able to run it at the cutting data we can achieve on the XYZ 500 LR," says Peter Pryce.

The XYZ 500 LR is the smallest of the four machine Linear Rail technology machining centres from XYZ Machine Tools. While relatively compact with a footprint of 1,660 x 1,860 x 2,300 mm, it doesn't lack in capability. An 18 hp, 13 kW, 8,000 revs/min, BT 40 spindle is supported by a 12 position tool carousel, with a maximum tool weight of 6 kg. Table size is 580 x 400 mm with a maximum load of 250 kg, with axis travels of 510 by 400 by 450 mm in the X, Y and Z axes. A fourth axis rotary table is an option, along with Renishaw or Heidenhain tool setting probe. Control is provided by the popular Siemens 828D control.

The ease-of-use of the Siemens control was a boon to Peter Pryce, who by his own admission hadn't done any serious CNC programming since his apprenticeship back in the late 1970s. "The two-day on-site



training with XYZ's Mark Higson was fantastic and was enhanced by Mark doing preliminary work on part programs before he arrived. He was also impressed by the fact we had all the tooling and workholding from Ceratizit in place, so we were ready to go as soon as he arrived."

Training wasn't the only element of the machine purchase that impressed Peter Pryce, from the initial sales discussion through to machine installation everything went like clockwork. He concludes: "Our location isn't designed as a workshop, so no large doors to gain access. The machine had to be stripped to get it in position and the delivery team did an amazing job."

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Hurco machining centre raises productivity at marine fittings manufacturer

Graham Brown, managing director of Sea Sure Ltd, a boat fittings and accessories design, development and manufacturing specialist in Warsash, Southampton, bought his wife Judith a Merry Fisher powerboat nearly 10 years ago. It was intended for relatively smooth conditions in lakes and inlets but she wanted to cross the Solent to the Isle of Wight over waters that are much choppier, despite it being one of the most sheltered channels in Europe.

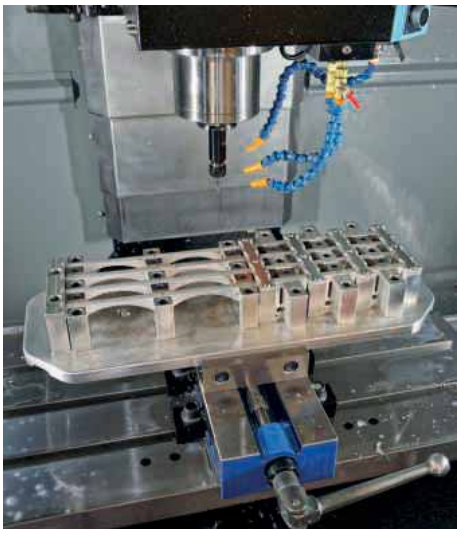
The buffeting she endured when seated in the boat and her observations on how useful it would be to have a suspension system under the seat were the start of a new venture that looks set to transform the fortunes of Graham Brown's company. The shock mitigation product range, SHOCK-WBV, he went on to develop was a difficult project, as jolting in a boat is complex and in multiple axes and the motions have to be monitored by on-board accelerometers to more than 10 g at elevated speeds. The full mitigation solution now includes cushioning in the seat upholstery as well.

Today, sales of three versions of SHOCK-WBV, which were introduced five years ago, account for 10 percent of turnover but it could easily become three-quarters within the next few years. Boat builders around the world are ordering them in quantities of up to 300 at time and there is also a big retrofit market, including on the company's doorstep along the busy River Hamble. In powerboat recreational use and racing globally, the suspension systems that Sea Sure was instrumental in creating are becoming increasingly popular and the firm currently has a two-thirds market share.

A Hurco Hawk CNC knee-type milling machine had been the mainstay of all prismatic machining in the Warsash factory, both for prototyping and production, since it was purchased second-hand in 2012. Travel restrictions due to the coronavirus pandemic has tended to keep people all over the world within their own countries and given them more time to enjoy pastimes such as boating. Consequently, growth on the shock absorber side of Sea Sure's business has quickened and so also have deliveries of the company's 2,000 catalogue items for all types of small craft.

To give an idea of the breadth and depth of products that are produced in batch runs of 200-off down to fives and tens, a large proportion from 316 stainless steel, it is notable that one in five sailing dinghies in the world is fitted with a rudderstock manufactured by Sea Sure. The company's transom kits are also fast-selling. The cooker in use on larger yachts may well have been made by them. Most of the British Olympic squad's boats in Tokyo have been fine-tuned in the company's workshops to optimise performance. Additionally, much of Sea Sure's turnover is not from the marine industry at all. A quarter of production is destined for other sectors such as defence, including the air forces in most NATO countries.

The rising level of demand for all Sea Sure products, but in particular the SHOCK-WBV range, led the company to supplement the Hurco Hawk by approaching the same supplier for a new VM10i 3-axis, vertical-spindle machining centre with a 660 x 406 x 508 mm working volume and 12,000 rpm spindle. It was installed in February 2021 and required the Hurco engineer to dismantle the top of the machine, so that it would fit through a door of restricted height and rebuild it over a period of three days.



Graham Brown concludes: "The improvement in productivity has been dramatic. Previously it took 40 minutes to machine a stainless-steel rear mounting block on the Hawk, for example, whereas we produce them in pairs on the VM10i in 11 minutes over seven times faster.

"We now fixture a complete kit of 10 mm and 15 mm thick billets of waterjet-cut aluminium tooling plate and other raw material for one of our shock mitigation products so they can all be machined in one hit on the new Hurco.

"It saves setup time and shortens overall cycles due to fewer tool changes."

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Dugard announced as new distribution partner for Pinacho machine tools

Dugard has now strengthened its portfolio of turning centres with the arrival of the Pinacho brand of conventional and CNC flatbed lathes. The Pinacho brand is recognised worldwide for its exceptional build quality and performance, factors that certainly appealed to the Brighton based machine tool specialists when formalising a distribution agreement with Pinacho.

Pinacho offers cost-effective solutions to simple and complex turned components and Dugard will be aiming to sell the SE, ST and SH series of Pinacho machines. The SE Series of user-friendly intuitive CNC lathes are perfect for everything from education establishments and job shops to companies undertaking small batch production. With a Siemens 808D advanced conversational CNC unit, linear and solid path graphs, electronic X and Z-axis

handwheel and a multitude of both standard and optional extras, the SE series is available in three different sizes. The SE-200, SE-250 and SE-325 have a respective centre height of 200, 250 and 300 mm with a distance between centres from 750 mm to 3 m.

The ST Series of precision flatbed lathes are supplied with the Siemens 828D advanced conversational CNC control with FANUC 0i-TF CNC control as option. Offered with four variants, the ST Series demonstrate increased spindle motor power, an 8-station automatic tool turret and a headstock through bore from 42 mm up to 155 mm depending upon the variant selected. For heavy-duty roughing, Dugard is introducing the SH-400 and SH-500 Series that offer up to 4-axes that is a platform built upon the highest quality components. The SH machines are the ideal solution for manufacturers turning parts up to 1,050 mm diameter with up to 5 m between centres. All three series will meet the majority of turning applications from small precise components up to large heavy-duty turning that demands the utmost in stability and rigidity.

Commenting upon the addition of Pinacho to the Dugard stable, Dugard sales director Colin Thomson says: "The Pinacho brand has more than 70 years of pedigree in building high-quality machine tools. With the company manufacturing its machines in the Basque region of Spain, an area synonymous with many of the world's leading machine tool brands, we are delighted to bring such a prestigious brand into the Dugard portfolio of products.

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Air bearings manufacturer brings sliding-head turning in-house

The first sliding-head turn-milling centre to be installed at the Ferndown, Dorset factory of Air Bearings Ltd (ABL) is a Citizen Cincom L20-VIIILFV. Delivered in June 2019, it has brought in-house the production of nearly all shaft-type components, saving around £8,000 per month previously spent on subcontract Swiss-type turning. As a consequence, the machine paid for itself within 18 months.

Speeds up to 350,000 rpm are attained by ABL's air bearings, which are used globally in machinery for semiconductor wafer slicing, printed circuit board drilling and micro-machining applications as diverse as polymer lens manufacture for cataract operations, edge grinding of toughened glass for mobile phone screens, watch component manufacture and milling of coining dies. The high rotational speeds demand that sub-micron tolerances be held on some turned bores and other features of component parts of the air bearing.

This in turn means that operations prior to diamond turning and grinding of the bore and outside diameter must also be very accurate to meet pre-finishing requirements. In this department, ABL operates two vertical machining centres, seven 2-axis chuckers, two multi-axis, bar-fed, fixed-head lathes and now the Citizen L20 slider.

Only top-end machine tools are purchased by ABL to meet the levels of precision required to ensure rotational motion of the air bearing spindle to within a couple of microns. The shaft assembly with its six key parts is especially critical.

ABL's senior production controller Dave Stacey advises: "Take the collet, for example, produced from 13 mm diameter tool steel bar. The concentricity of the front bore to the taper is tied up to 30 microns TIR (Total Indicator Reading).

"Dimensional tolerances on diameter and length need to be within 50 microns or sometimes 25 microns to allow post machining to sub-micron accuracy, while there is a 6-micron limit in the bore.

"Originally, before our decision to use subcontract services, these collets were machined in-house in two operations; turning and boring on a fixed-head lathe and then drilling of eight radial holes on a machining centre.

"The time-consuming process led to our pre-finishing department only producing the quantity that was needed, which could be as low as 15-off, yet external heat treatment and stress relieving before final finishing still cost £250 a time, irrespective of component quantity.

"Now, with single-hit turn-milling of the collets on the Cincom L20, we run off typically 500, representing three months supply, at a fraction of the cost of subcontracting them out, added to which we can take full advantage of the fixed-cost heat treatment service."

It is a similar story with the other rotational components in the shaft assembly of an air bearing spindle, such as the EN57 stainless steel collet studs and guide pistons, of which there are six variants. All are produced more economically on the slider, as they involve classical Swiss-type turning from bar less than 13 mm in diameter.

The largest part produced on the Cincom L20 is a 250 mm long push rod turned from 16 mm silver steel bar down to 7 mm diameter in one pass. It would not be feasible to turn the component in several passes, as it is longer than the guide bush; while recourse to turning between centres using the sub-spindle would unduly extend the cycle time and leave a witness mark.

Taking a 9 mm depth of cut in this high carbon steel over much of the component's length is an ideal time to activate Citizen's patented Low Frequency Vibration (LFV) chipbreaking software in the Mitsubishi control. It allows what would normally be long, stringy swarf to be broken into shorter lengths, the size of which is determined within the program, to avoid birds-nesting around the component and tool and the need to remove the swarf repeatedly from the machining area by hand. Economy of production is greatly increased, as there are no stoppages for swarf clearance and the lathe can be left to run unattended. Additionally, absence of chatter improves the surface finish on machined components.

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GM CNC packs a punch with compact machining centre

If you are looking for a small footprint 3-axis vertical machining centre that is robust, stable, precise and built to last, GM CNC has now introduced the compact Victor Vcenter F76. In a competitive arena, with an abundance of 3-axis machine options, build quality and longevity at a cost-efficient price point is often a compromise. However, with GM CNC there is no compromise. The Oldham company is the exclusive UK distributor of the renowned Victor brand of machine tools, a brand that doesn't compromise on quality and performance.

Oldham-based GM CNC offers a multitude of Victor machine tools available from stock. The brand is recognised for its relentless productivity and longevity. This is credit to a design and construction quality that sets the brand apart from its rivals. Despite its compact footprint and space-saving design, the Victor Vcenter F76 packs a punch with its meehanite casting and A frame column design that sets the foundation for high-performance machining.

Built upon this foundation is a powerful 15 kW 8, 000 rpm BT40 belt driven spindle that traverses over the 840 by 500 mm table with X, Y and Z axis travel of 760 by 500 by 510 mm respectively. The Victor Vcenter F76 can traverse at rapid feed rates of 32m/min in all 3 axes. This productivity is met by industry leading stability and rigidity that is derived from NN type double roller bearings, 40 mm diameter ballscrews and 30/35/45 mm guideways.

Furthermore, these attributes eliminate backlash and provide a bi-directional positional accuracy of 0.010 mm with a repeatability of 0.007 mm that sets the standard in the cost-efficient 3-axis VMC segment. Affirming this build quality is an overall machine weight of 5,260 kg with the latest generation of powerful FANUC CNC control system that drives the powerful and compact machine. The automatic tool change unit is a barrel type system that accommodates up to 24 tools with an extremely fast tool change time of just 2.4 seconds.

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Robots, Cobots & ultrasonic machines

Choosing the right solution

The growing interest in collaborative robots has opened up a wider discussion on the whole topic of robots and automation. Changes in the industrial landscape as a consequence of the pandemic, combined with renewed interest in re-shoring and shortening supply chains, has opened up multiple new opportunities for the introduction of robotics and automation.

This article from Telsonic UK's Martin Frost looks at the options available to system integrators and manufacturers when considering how best to incorporate the company's ultrasonic technology and offers guidance on whether using robots or cobots as an alternative to more traditional machine concepts really adds value to the process.

Flexibility is the watch word in many manufacturing environments today as companies strive to offer an agile response to what is fast becoming a dynamic marketplace. For many, the words flexibility and robot are inextricably linked as the general perception is that the best way to achieve flexibility is through the use of robots. While this is true in certain cases, cleverly designed bespoke machines can also offer a degree of flexibility. Another train of thought is to integrate robots or cobots as part of a bespoke solution to achieve the best of both worlds.

There are certain criteria which will influence the decision on how best to use our ultrasonic technology. If cycle times are short and there are also multiple staking/weld points, then a bespoke machine with multiple sonotrodes will provide the highest levels of throughput. It is also worth pointing out that flexibility can be designed into this type of system by either manually or automatically re-positioning sonotrodes and changing part fixtures to allow the machine to handle multiple part variants.

The drive towards increasing personalisation in a growing number of products, especially automotive parts and the resultant need for more flexibility, have been key factors in the decision by some manufacturers companies to introduce robot mounted ultrasonic technology for both welding and cutting processes. It is easy to see why these two technologies have become natural partners in certain applications.

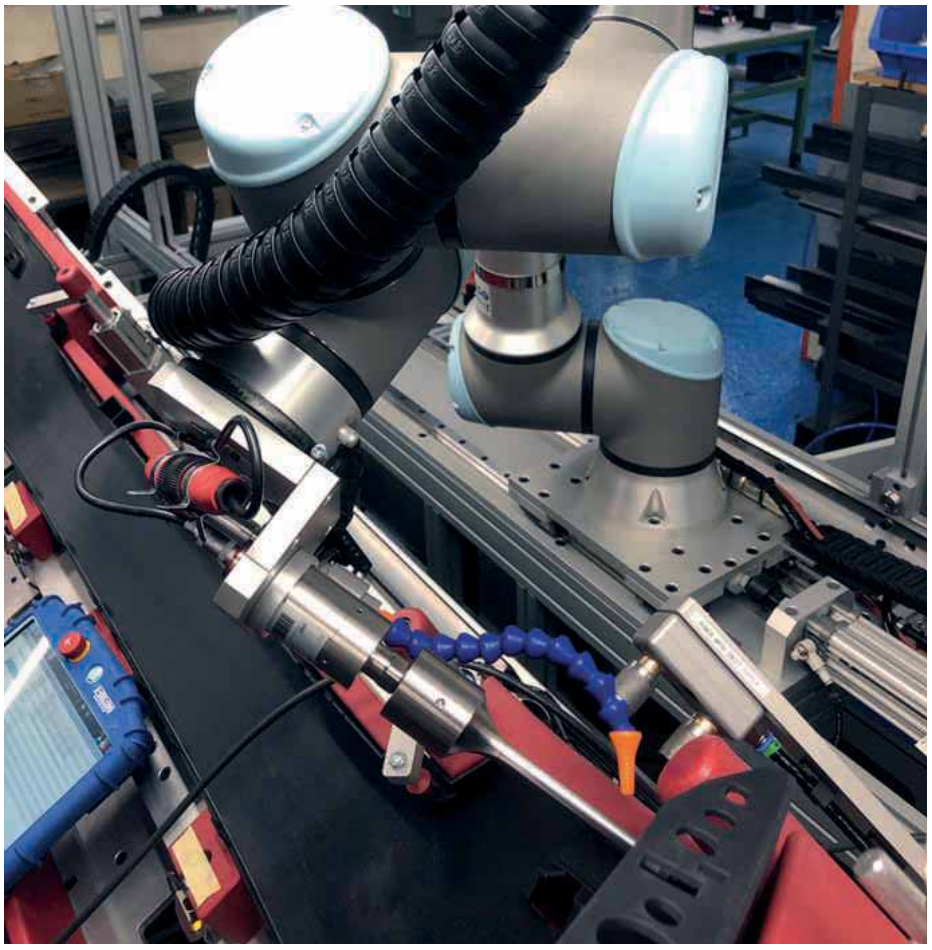
The dexterity of a 6-axis robot or collaborative variant combined with the compact nature of ultrasonic technology and the ease with which it can be mounted to the robot arm, makes for a highly flexible system capable of processing 3D components. The use of coded part fixtures allows automatic robot programme selection for the range of part types to be processed by the system. The single sonotrode concept of a system such as this, although highly flexible, does have some limitations. With just one weld executed at a time, cycle times per part will obviously be dictated by the number of welds required on individual components. The high levels of flexibility offered by this type of solution has to be balanced with the throughput required and this may mean that the system needs to run for longer periods to achieve the required output. Another consideration will be the type and size of robot proposed, with a specific focus on the payload capability of the intended robot.

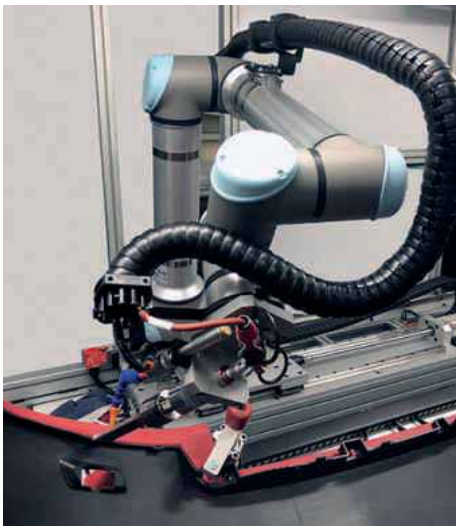
Robot or Cobot? How to choose

The first consideration here is the way in which the system will operate. If human interaction is required as part of the process then, following a risk assessment, the collaborative robot option will probably be the most likely. If high speeds or higher payloads are required then the industrial robot will probably offer the most effective solution, albeit behind interlocked safety guarding or light-guards.

Although traditional industrial robots and collaborative robots both offer 6 axes of movement, thought should be given to the way in which the ultrasonic technology is to be configured on the robot arm, the payload capacity of the robot or Cobot, whether the robot is to be used to provide the movement required to complete the weld or if the robot will be used to carry a fully integrated actuator system such as Telsonic's AC350 or 450 variants, commonly used in automotive applications.

Using the robot to provide the movement required to compete the weld, although a weight saving concept, requires precision robot programming for speed and distance to take account of the melt rate of the material and achieve a consistent weld collapse profile on each weld. In addition, if the weld is to be achieved through force applied by the robot then consideration needs to be given to the capability of the robot to apply such force. When swaging, staking or spot welding, the amplitude of the ultrasonic system influences the force required. Initially there will be a higher force at the point of contact, this then naturally reduces as the material reaches melt point and begins to form a melt pool. However, if the rate of weld is fast enough, maintained





through robot velocity, the force will be maintained."

A further option is to use one of Telsonic's AC series of actuator based systems, which offer a wide range of force and power options. These can be easily mounted to the robot arm and, in this scenario, the robot is used solely to position the actuator at the various weld points and the actuator uses fine pressure regulation to act as a pneumatic spring and complete the weld.

These compact and powerful 35 kHz units are often used in automotive applications and with the AC350 or AC450 weighing around 2-3 kg, these variants are ideally suited to integration with a robot system.

Higher force / power AC750, AC1200 and AC1900 20kHz based heavier actuator based systems are also available from Telsonic.

A major topic in robot ultrasonic welding and cutting is process heat management. Ambient air-cooled converters & chilled air-cooled tooling are mandatory in fast multi point welded part cycles. This is especially important for materials and parts that require high ultrasonic amplitude and repetitive immersion of the tool in the melt pool. These measures serve to control the ultrasonic converter temperature and prevent stringing of molten polymer as the tool leaves the welding point. The cooling must be efficient, preferably around and through the tool via cooling channels and on full wavelength tools used on booster-less mounts, to control the heat conducting up towards the converter. To address these requirements, Telsonic has developed a patent pending vortex booster. This is an integrated design that sits between the converter and the tool, pre-cooling compressed dry air which in turn assists the cooling process, keeping the tool cool, especially during the hold stage of the process.

We are delivering a diverse selection of solutions to our customers. Of course, where multiple welds need to be produced within the shortest cycle time, the optimum solution is still the bespoke machine with multiple sonotrodes. For applications on lower volume or complex components, taking the process to the part, or even taking the part to the process, using a robot or Cobot is definitely growing in popularity. We have also seen the combination of a bespoke system with multiple sonotrodes combined with a collaborative Cobot, which is used to weld the hard to reach areas. We are always happy to discuss options with customers to ensure that the optimum solution is found for their individual applications."

Telsonic UK offers a comprehensive range of ultrasonic modules and systems for a variety of , plastic welding, cutting, sealing, cut'n'seal, food cutting, metal welding, packaging, sieving, and cleaning applications within a wide range of industries.

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New FANUC ROBOSHOT helps injection moulding shops take control

Enhanced control and software functionality is among a myriad of new customer-focused benefits provided by the ROBOSHOT Alpha-SiB

With the release of the FANUC ROBOSHOT ALPHA-SiB series of injection moulding machines, FANUC is building on its already strong market position in the European plastics industry. Numerous enhancements to the machine's control, software and performance provide customers with countless advantages while maintaining the FANUC ethos of high performance, high sustainability and ease-of-use through its all-electric design. Both OEM mould shops and contract moulding facilities serving sectors such as medical, automotive, electrical, optical and packaging, to list but a few, will all benefit from this advanced new machine.

"In the ALPHA-SiB we have a new ROBOSHOT injection moulding platform that brings major advantages in functionality and performance, coupled with established FANUC cornerstones such as all-electric, energy-efficient operation, the demand for which continues to accelerate," explains Andrew Armstrong, head of sales for ROBOSHOT Europe. "The common FANUC motion-control platform is another factor that gives the ROBOSHOT ALPHA-SiB a unique market position, which of course extends to the potential seamless integration of plug-and-play FANUC robots. Then we have arguably our number one USP: reliability. Put simply, ROBOSHOT cost-of-ownership is potentially the lowest in the marketplace. Our customers significantly benefit from the low consumable costs along with market leading energy efficiency."

Large, high-resolution display

Central to the enhancements in the FANUC ROBOSHOT ALPHA-SiB is the new high-performance FANUC PANEL iH Pro user interface, which features a large 21.5" display with full HD resolution, thus improving on the previously available resolution by a factor of 2.6. Supported by additional keys for more functionality, the new HMI facilitates quicker setups, enhanced data viewing and improved graphics. Moreover, with its Windows 10 IoT-based operating system, the PANEL iH Pro makes data collection easy, particularly with multi-USB connectivity for memory sticks that are USB 3.0 capable, camera, 2D code reader, RFID devices and more.

The new control offers a flexible screen layout, including split-screen display capability that provides customers with dual functionality. As a result, ROBOSHOT ALPHA-SiB operators can, for example, view the machine's setting pages while simultaneously interacting with peripheral devices, such as a third-party robot or temperature control device.

FANUC's PANEL iH Pro ensures intuitive operation via swipe or multi-touch commands akin to a smartphone. Notably, the HMI's capacity is now larger in relation to data storage, process monitor history, alarm history and machine operation log.

Expanded AI functionality

Increased software functionality is a major feature of the new FANUC ROBOSHOT ALPHA-SiB. For instance, now added to the standard ROBOSHOT software package are functions that include auto-shutdown sequence, pre-suck back function, automatic start-up parameter change, operator management function and resin character evaluation, when Linki2 is installed.

The optional FANUC Linki2 production and quality information management tool now supports web browsers on PC and tablet devices. Linki2 can also run on the ROBOSHOT screen, while thanks to embedded OPC-UA communications capability, interfaces are available for EUROMAP 77 and 63 to permit data exchange with ERP or MES systems.

Faster injection rates

In support of the faster response times provided by the PANEL iH Pro HMI, notable machine performance enhancements include increased injection rates of up to 350 mm/s, helping customers to boost productivity. Among further performance-related improvements are higher standard injection pressures, expanded screw diameter availability and the potential for up to 4-axis servo-core control.

Lifetime machine support

Thanks to a comprehensive Europe-wide network of service centres, FANUC can offer lifetime support for its machines, providing complete peace-of-mind for customers in the rare event of an issue.

The ALPHA-SiB series is initially available in 50, 100, 130, 150 and 220-tonne models, with various injection capacities. Higher tonnages models, 250, 300 and 450 tonne, are set to follow. Already available for order intake, FANUC intends to give the ROBOSHOT ALPHA-SiB its European premiere at the forthcoming EMO (Italy) and FAKUMA (Germany) exhibitions, assuming they proceed as scheduled in October 2021.

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EROWA automation puts Driven Precision Engineering in the fast lane

Living up to its name, Driven Precision Engineering has invested in three 5-axis machining centres since its inception with the latest Hermle C250 5-axis machine being fitted with an Erowa Robot Compact 80 automation solution from REM Systems.

As Erowa's principal in the UK, REM's managing director Ian Holbeche and sales manager Mark Turner explain the benefits of applying the Swiss company's technology.

Havant-based Driven Precision Engineering was only established in 2015, but the company is already a blazing a trail with its commitment to 5-axis machining and automation. Predominantly working across the general precision subcontract and motorsport sectors, Driven undertakes complex 5-axis work in quantities from one-off to small batches, a factor that makes the automation investment an interesting prospect as it flies in the face of the perception that automation is only for larger batch and bigger volume production demands.

For over 30 years, Erowa has been providing factory automation to most of the world's advanced manufacturing industry sectors. The company's comprehensive range of automation solutions is supplied and supported in the UK by REM Systems. Ian Holbeche says: "Ray Harris from Driven knows one of our existing customers in the Portsmouth area, where a number of Erowa Robot Compact 80 systems are fitted to Hermle and other manufacturers machine tools. At the time, the Driven factory was rather small and the company has recently moved to a new facility to create more space. With the limitations on space, we looked at the Robot Compact 80 system with 2 m^2 footprint and this gave the company the flexibility to enter into automation."

With regards to the pallet system, Mark Turner adds: "We went down the 320 by 320 mm pallet route that gives the flexibility of mounting one or two vices and this meant it could do two different jobs on the same pallet. This enables the company to extend its run time on each pallet. This also provided flexibility for the largely motorsport workload to run lights-out machining in the evenings or at weekends."

As a company that manufactures complex components, investing in automation is an interesting proposition that this South coast subcontractor has fully embraced. Ian Holbeche continues: "It gives Driven Precision flexibility, which is ideal as it primarily manufacturers one-offs and small batch work for the motorsport sector. In the marketplace at this present moment there are a number of smaller subcontractors and general engineering companies looking to take the first step into automation.

"This package of the small Robot Compact 80 system gives customers the flexibility of up to 200 smaller pallets or 60 pallets of 148 mm2 pallets or 320 by 320 mm pallets. These options deliver a lot of flexibility and it future proofs the investment. As your business evolves, you may move from one machine tool manufacturer to another, but the investment in the automation has already been made and can be moved from one machine to another. One robot can even be used to feed two machine tools which provides a significant amount of additional production hours for any workshop."

Occupying a minimum of expensive workshop floor space, the Erowa Compact 80 features a slim and elegant design. Loading or raw material can be via a swing door or optional workpiece loading station. Mixed component sizes with suitable pallets can be accommodated in the configurable magazine rack, with pallet loads up to 80 kg being supported.

REM Systems has witnessed an upwards trend in automation sales to small job shops and general subcontract manufacturers.

Ian Holbeche concludes: "If you have invested in a machine tool in the last couple of years, we can retrofit the system to it. We can also look at adding automation to new machines and even if you have had machines installed in the last couple of years and you don't have all the services, we can adapt the robot to have air to the robot to open and close chucks, so we can come up with the package that will suit your business."

REM Systems Erowa
Tel: 01452 750581
www.remsystems.co.uk

Agile and highly dynamic for short cycle times

The robot is the central element in the QIROX solution package of Carl Cloos Schweisstechnik GmbH. Users benefit from the modular design of the entire mechanics. All components of the robot, from the robot base to the wrist, are perfectly matched to each other. By using different component groups, users get a customised welding robot for every production requirement.

The models of the WM series are designed for standard welding processes. They are characterised by a compact design and act highly dynamically. Therefore, they are ideally suited for use in compact cells and systems.

The QIROX QRC-300 is a 6-axis articulated arm robot. The robot is used in upright or overhead position and is mounted on a base or directly at a robot positioner. The QIROX QRC-300 robot has a classic wrist where welding torches and other working tools with a weight of up to 8 kg can be mounted. It takes over all MIG/MAG and TIG welding processes and optionally leads a laser sensor. The robot convinces with high dynamics due to slim product design, low weight and ergonomic shapes. In addition, it is characterised by repeatability, long service life and maintenance intervals.

The agile and highly dynamic QIROX QRC-300 robot is perfectly suitable for compact cells and systems

Robot and welding technology from a single source

Since 1919, Carl Cloos Schweisstechnik GmbH has been one of the leading companies in welding technology. More than 800 employees all over the world realise production solutions in welding and robot technology for industries such as construction machinery, railway vehicles, automotive and agricultural industry. The modern CLOOS welding power sources of the QINEO series are available for a multitude of welding processes. With the QIROX robots, positioners and special purpose machines CLOOS develops and manufactures automated welding systems meeting the specific requirements of the customers. The special strength of CLOOS is in its widely spread competence. This is because, from the welding technology, robot mechanics and controller to positioners, software and sensors, the company supplies everything from a single source.

Carl Cloos Schweisstechnik GmbH
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IRB 1300 robot enhanced with new protection

ABB's 6-axis IRB 1300 industrial robot includes new protection elements that enable it to be used in tough industrial applications and contamination-free production processes, opening new opportunities for increased productivity, improved product quality and reduced cycle times in a variety of industries including electronics assembly, automotive and metals fabrication.

Originally launched in 2020, the IRB 1300 is now available in IP67, Foundry Plus 2 and cleanroom ISO 4 versions. This will expand its use in tough environments, with high levels of liquids and dust.

For added protection in metals applications, the Foundry Plus 2 version includes the use of stainless steel on the end effector. This will prevent rusting that can occur when liquids are applied to wash away dust particles and metallic debris. By helping to protect against premature wear, this feature can help to prolong the robot's service life, minimising disruption caused by downtime and unscheduled repairs.

For applications requiring a clean production environment, in industries such as pharmaceuticals and semiconductor manufacturing, the IRB 1300 ISO 4 cleanroom version features a number of measures to help eliminate the risk of contamination. Key features include the use of chemical resistant exterior paint which helps avoid paint degradation when using cleaning agents that protect against bacteria. The robot's design also minimises the number of gaps where bacteria could form, providing an added level of protection, while a particle filter and a fully sealed design prevent grease, oil and particles from coming into contact with the products being handled.

Featuring a footprint of just 220 mm by 220 mm, the IRB 1300 is ideal for use in confined spaces, enabling more robots to be deployed in a specific area if required. It is available in three main versions: 11 kg/ 900 mm, 10 kg/1,150 mm and 7 kg/ 1,400 mm. The 11kg payload for the 900 mm reach variant is higher than any other competing robot in its class.

Powered by ABB's OmniCore™ controller, the IRB 1300 offers advanced motion control and best-in-class path accuracy, allowing it to handle an expanded range of applications such as polishing and machine tending.

To maximise the versatility of the IRB 1300, the OmniCore controller can be equipped with a range of additional equipment, including fieldbus protocols, vision solutions, and force control.

ABB Ltd
Tel: 01908 350300
www.abb.com/robotics

ITC gives 'cutting edge' to Game of Thrones

With almost 20 years in business and thousands of successful projects undertaken, Cutting Edge Designs specialises in routing, trade signage, acrylic fabrication, panelling, wood and laser cutting, printing, 3D carving, finishing, assembly and CAD design. Since its inception, the Newry-based company has been working closely with the cutting tool experts at Industrial Tooling Corporation (ITC) to manufacture an extraordinary number of high-profile projects.

Founded by David Hogg, Cutting Edge Designs was set up in a small room at the back of his family's furniture business with a single CNC routing machine. Now, the company is credited for designing, machining and delivering unique projects for some of the most recognised brands in the world. When the first Tekcel routing machine was installed more than 15 years ago, the company turned to Tamworth based ITC for not only its industry-leading cutting tools but also the technical support and service that is second to none.

Commenting upon the Northern Ireland company's journey, founder and managing director, David Hogg recalls: "Prior to starting the business, I worked at the sign-making factory that was using ITC cutting tools, so I was already aware of the range of products and services available. When Cutting Edge Designs was founded, we immediately turned to ITC for their expertise and extensive product ranges. The supplier of our routing machines provided alternate cutting tools when we started out and, like other cutting tools that we have tried down the years, none have matched the performance of the ITC."

The company machines a vast array of materials that range from wood, veneer, MDF, plastics, metals, rubber, composite and much more. For every project and every material, Sally Hunt from ITC has been on-hand with technical support.

David Hogg explains: "During the early years of our business, Sally was fantastic at providing technical support with regards to what tools to use on specific materials and also the speeds and feeds required to optimise machining performance and eliminate vibration. Over the years, our ever-increasing expertise relies less upon this technical input. While it is always important to have technical expertise from our cutting tool supplier, nowadays the key factor for us is service and supply. From this perspective, ITC always has cutting tools in stock and these are supplied with next day delivery. This service is absolutely first class and it is why ITC are the best cutting tool supplier in the industry."

Regarding some of the projects and brands the company has worked with, the list includes names like Ferrari, Guinness, M&S, Liverpool Football Club, Subway and KFC through to famous artists and sculptures as well as the TV and movie industry. Two prestigious projects the company has worked on include the Game of Thrones television series and the Burning Temple for artist David Best, all machined with ITC cutting tools. In Derry, there has been an annual tradition for more than 40 years of burning bonfires and, in the process, Protestants, Catholics and the IRA would leave both their weapons and grievances outside, enter with respect and greet each other, ready to move on.

Working with show organisers Artichoke and David Best, Cutting Edge Designs was commissioned to cut 16 designs, each in a large quantity with over 1, 500 parts being cut from many of the 8 by 4 ft sheets of birch wood. Employing all three of its routers to the project and a variation of ITC cutting tools, Cutting Edge Designs estimates more than 400,000 cuts were made in the 3-month timeframe on this project.

A video of the project can be viewed here: **https://www.youtube.com/watch?v=SfqdLyI3Mgo**

Unlike the Burning Temple that was burnt to the ground, the small business also worked with HBO Studios and Tourism Ireland in the creation of beech wood doors for the sixth series of the TV show Game of Thrones. Again, ITC was integral to this project. Produced from trees downed by Storm Gertrude in a location known as the Dark Hedges, Cutting Edge Designs was commissioned to produce 10 doors and each unique door incorporated designs, iconic symbols and references from the episodes. Receiving the artwork and 3D models, the subcontracting company converted the files into CAM models and applied ITC single flute routing tools and its Tekcel router to the task.

David Hogg says: "We decided on using an ITC 12 mm diameter ball nose tool for our initial rough cutting. This removed the excess material, making it easier and more efficient for the smaller tools to do the finer details. A 90-degree woodcut angle was also implemented to prevent lifting or splitting of the wood along the grain. The rough-cut cycle took about 6 hours per door. Following this, we then utilised ITC's 3 mm diameter ball nose to achieve all the important finer details, machining with a step-over rate of 0.2 to 0.3 mm. This fine detail work took an average of 50 hours per door to complete. When each door was finish machined, it was sent to be sanded and professionally stained by one of Game of Thrones set painters.

The project can be viewed via: **https://www.cncrouterit.co.uk/game-of-thrones-doors**

For the majority of the machining, Cutting Edge Designs applied ITC's 180 Series of solid carbide tools as their ability to prolong tool life, perform at higher speeds and feeds and subsequently reduce cycle times is a huge benefit. For finish machining, the company applied ITC's 180-1181-10-A-XL single flute cutting tool, a 3 mm diameter tool that demonstrates exceptional tool life and rigidity. This is credit to its reinforced 6 mm diameter shank, 10 mm length of cut and 30-degree helix geometry that is produced from an ultra-wear.

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GARANT multi-cut burrs

Low-vibration all-rounders for better surface finishes and higher metal removal rates

The new generation of burrs from the Hoffmann Group can be guided more easily by hand, increasing metal removal rates by 25 percent coupled with longer tool lives

With the new GARANT Multi Cut, the Hoffmann Group presents for the first time a new generation of general-purpose burrs. The low-vibration all-rounder burrs machine steel, stainless steel, aluminium and non-ferrous metals with high process reliability and are suitable for use both on manually guided power tools and also in industrial robot cells. With the newly developed tooth geometry, they generate about 30 percent less vibration than conventional burrs and are particularly free cutting. This results in better surface qualities, 50 percent longer tool life, 25 percent higher metal removal rate and up to 60 percent greater cutting performance.

The new burrs from the GARANT brand consist of an optimised carbide substrate and up to ten different profiles, coupled with the option of a TiAlN coating. The latter feature reduces heat input into the substrate, improves the chip evacuation and in addition increases the tool life.

With their innovative tooth pitch, the new GARANT Multi Cut burrs generate extremely low vibration values. That is particularly beneficial when used on manually-guided power tools, since the tool can be guided significantly more accurately, the surface quality is better and the operator experiences fewer physical effects due to vibration.

All this with the most smooth cutting action, even at high depths of cut. In addition, the newly developed tooth geometry renders the burrs extremely free-cutting and ensures a high metal removal rate. Specially honed edges protect against premature wear and increase the tool life. The defined shaft surface quality prevents any slippage and provides secure clamping in the collet. The special qualities of the new GARANT Multi Cut burrs mean they are versatile across a wide range of applications.

The new GARANT Multi Cut burrs are now available as part of the 2021/2022 Hoffmann Group catalogue, as well as in the online eShop at **www.hoffmann-group.com**.

Compared to a conventional burr, left, the GARANT Multi Cut, right, generates less vibration and permits better surface qualities even when used in manually-guided processes

GARANT Multi Cut low-vibration burrs are available in ten different versions. They are available both uncoated and with a TiAlN coating.

Hoffmann Group is a leading European partner for quality tools, workstations and storage and personal protective equipment. More than 4,000 highly-motivated employees deliver the performance that make it what it is today. With services that complement its products, the Hoffmann Group simplifies procedures for procurement and supply for 135,000 customers in 50 countries. In addition to machining, clamping, measuring, grinding and cutting tools, the portfolio also comprises hand tools, occupational safety equipment, workstations and storage, workshop articles and digital services and solutions. Customers include large stock market listed corporations as well as small and medium-sized companies.

The Hoffmann Group offers over 100,000 quality tools of the GARANT and HOLEXbrands and other leading brands. With comprehensive customer service in all regions and a TÜV-certified delivery quality rating of over 99 percent, the Munich-based specialist for industrial tooling and equipment can be trusted as a reliable and efficient partner for its customers. In the trading year 2020 the Hoffmann Group achieved a turnover of more than 1.3 billion euros.

As a leader for quality tools with over 135,000 customers, 95 percent classify Hoffmann as their preferred supplier.

Its customer numbers are growing all the time, proving just how successful the Hoffmann Group is. In Germany, it works with virtually every single company in the metalworking industry. Companies of all different sizes and from a range of different areas trust in its performance. Numerous awards are not only a testament to its success, but also an incentive for the Group to achieve even more.

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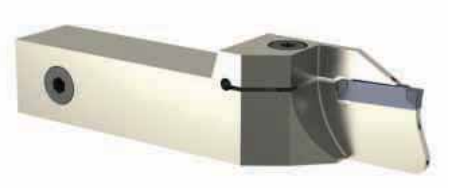
Guhring gets 222 groovy with new parting system

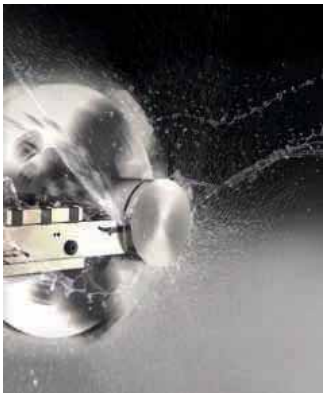
With the arrival of the new 222 System of turning and grooving tools, Guhring has extended and defined its position as a leading supplier of full-line turning solutions. The new parting-offline demonstrates productivity, efficiency and performance parameters beyond its rivals.

Incorporating an extensive line of indexable inserts and toolholders, the new 222 Series provides a productive and cost-effective solution for all material types and applications. The 222 designation is derived from the two cutting edges with an effective depth of cut up to 22 mm. The 222 System is available with both a toolholder or as a blade type to suit the demands of the end-user. The dedicated toolholder is nickel plated to present extended tool life and longevity with three internal coolant supply channels to suit the specific setup of the end-users machine tool and coolant supply configuration. High-pressure coolant delivery is supplied to the cutting edge via two channels that are positioned both above and below the cutting edge. This design extends tool life and performance and it also supports chip breaking and evacuation.



The toolholders are available in left and right-hand designation with tool body dimensions from 12 by 12 mm up to 25 by 25 mm, making the new 222 System suitable for everything from small compact turning centres and sliding head machines through to large more robust machine tools. The impressive toolholders can be selected in overall body lengths from 108 mm to 152 mm depending upon the tool selected. Rigidity and performance are further assured by a tool design that also incorporates a new clamping screw design and insert support that guarantees maximum insert clamping torque and stability during machining.

Like the toolholder designation, the nickel-plated blade type toolholder is available with and without through coolant facility with a blade length of 120 or 150 mm, a height of 26 or 32 mm and a



width of 2.25 mm depending upon the selected tool. The new blades are compatible with existing Guhring blade holding tools as well as industry-standard blades from alternate manufacturers.

The pressed-to-size solid carbide indexable inserts are coated with Guhring's innovative proprietary Fire coating technology that demonstrates outstanding performance and longevity.

Guhring Ltd
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www.guhring.co.uk

Tools for titanium with twice the expertise

Walter has now launched its MD377 Supreme and MC377 Advance solid carbide milling cutters for the effective machining of titanium. Developed as high-end specialist tools for the aviation, motorsport and medical industries, the new arrivals are universal tools that are suitable for roughing, semi-finishing and finishing operations.

Incorporating a corner radius and central through coolant supply, the new MD377 utilises Walter's proven HPC Ti40 titanium geometry and new WTZ coating that makes it perfect for full slotting up to 1XD, ramping, shoulder milling and plunging. Also, the MD377 Supreme is suitable for dynamic milling processes. In comparison, the MC377 has a centre cutting geometry without the through coolant supply.

The MD377 Supreme has been developed for the aviation and aerospace industry and is therefore precisely matched to its requirements. The titanium specialist with a central coolant supply represents a benchmark when it comes to machining engine and structural components. It allows for tight tolerance machining and it stands out thanks to its extremely high metal removal rates. This high material removal rate is a credit to the optimised cutting geometry and the five cutting edges that can improve productivity levels and reduce vibration credit to its differential pitch design.

The MD377 Supreme is available with a range of corner radii in diameters of 6, 8, 10, 12, 16, 20 and 25 mm with a flute length of 13 mm on the 6 mm diameter tool ranging up to 45 mm on the 25 mm tool with each tool designed with a back radius into a necked diameter for clearance when machining deep cavities.

In contrast, the MC377 is a four-flute titanium end mill that is also suitable for ISO P and M material designations. This diversity is credit to a tough AlCrN coating that works with Walter's WK40EA substrate that makes the MC377 suitable for steel, stainless as well as titanium alloys. With regards to the MD377, the tool life and performance is assured with the latest Walter-exclusive AlTiN+ZrN (WTZ) coating with HIPIMS technology.

The impressive new MC377 end mill without corner radii is available in diameters of 2, 3, 4, 5, 6, 8, 10 and 12 mm while the MC377 with corner radii is offered with a 2, 3, 4, 5, 6, 8, 10, 12, 16, 20 and 25 mm diameter with the 2 mm tool having a 3-flute geometry and all other diameters having 4-flutes. Depending upon the tool diameter, each MC377 tool is available with a choice of corner radii from 0.2 to 4 mm. The series has a flute length that ranges from 6 mm on the 2 mm diameter tool through to 45 mm on the 25 mm diameter tool. The MC377 cutter range is also designed with the back radius into a necked diameter feature for clearance.

Both tools are the perfect partners for the machining of small parts, engine components or structural components as well as additively manufactured components in the aerospace, motor sport and medical technology sectors.

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

Milling expansion for difficult-to-machine materials

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

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

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

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

The S771HB and S773HB cutters are suitable for narrow pocketing, trochoidal slotting and profiling applications. These end mills include a chip divider to break swarf into manageable smaller pieces, helping to reduce spindle load and increase metal removal rates. This provides a 50 percent bigger width of cut compared to tools without a chip divider.

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

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

Meanwhile, Dormer Pramet has added three multi-application high performance cutters within its S7 range for use on both CNC and conventional machine tools.

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

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

Finally, the global manufacturer has added a new solid carbide cutter to enhance its assortment of end mills for hardened steel above 49HRC. The S561 is specifically for high performance milling in a variety of applications, including die and mould machining.

This four-flute end mill features a specific tooth design for improved chip evacuation. A sharp cutter for hardened steel, 52-70HRC), the S561 offers excellent surface finishing, while a gash land improves strength and chipping resistance.

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Lehmann rotary table puts CNC Techniques in pole position

Although Formula One is a global phenomenon, currently seven out of the ten competing teams are based in the UK. Much of the work related to F1 takes place in what has become known as Motorsport Valley, an area of Oxfordshire and the Midlands. Here a large cluster of companies supply cutting-edge technologies to F1, in addition to Formula Electric, F2, F3 and GT3. Motorsport Valley hosts approximately 4,300 companies that employ around 41,000 people. One such busy company is Oxfordshire-based specialist machining subcontractor CNC Techniques Ltd.

After gaining extensive experience in the precision machining of demanding F1 components, including employment with both the McLaren and Williams FI teams, Paul Eden established CNC Techniques in 2014. As many Formula One subcontractors prefer to avoid the machining of 'exotics', such as titanium, Waspaloy, Inconel and Hastelloy, he saw this challenging aspect of F1 subcontract machining as an opportunity and used his considerable expertise and contacts in the field to employ skilled staff and to source the relevant high-quality machine tools and associated equipment.

Word soon spread within the F1 community regarding CNC Techniques range of capabilities and Paul Eden's fledgling business quickly established a loyal customer base. The mainstays of CNC Techniques machining capabilities are its high-performance Hurco 3-axis and 5-axis machine tools. To provide an additional 2-axies to the company's 3-axis machines and to add greater machining flexibility, CNC Techniques recently invested in an advanced rotary table from pL LEHMANN

Paul Eden explains: "As of 2019, Motorsport in the UK had a turnover of £9 billion, a figure that had more than doubled in the previous twenty years. More F1 cars are made in Britain than in any other country and UK teams have won more titles than any other nation. As a passionate motorsport enthusiast I am proud to be involved in this successful sector.

"Although we are kept busy throughout the year, our workload more than doubles in the traditionally busy F1 months of December through to February. Therefore, at this time of year, apart from working around the clock, we need to work smarter and employ equipment that provides greater flexibility. The need for machining flexibility and the requirement for an additional 2-axes on our Hurco VMX 30, 3-axis machining centre, were the major motivations behind our recent rotary table purchase.

"Even though I was aware of the excellent reputation of pL LEHMANN products, I was open to the idea of purchasing alternative brands of rotary tables. However, when compared to the indifferent response I received when I contacted some other manufacturers, the reaction I had from pL LEHMANN was first-class. All of my questions were answered quickly and several constructive suggestions were made by the company's technical staff.

Paul Eden continues: "In addition to giving us the ability to achieve five-sided machining in a single setup, I was assured that a pL LEHMANN CNC rotary table would withstand the high forces involved in machining exotics and also deliver the standards of precision we need.

"The installation of the rotary table was carried out by a couple of knowledgeable technicians who made all of the connections to our Hurco VMX 30 3-axis machine tool's control system. Then, whilst observing the rotary tables try-out, I realised how easy it was to operate. We now use the rotary table along with our LANG Technik workholding. In addition to standing up to the machining forces used to machine exotics, our new CNC rotary table is simple and fast to operate and is making a significant contribution to our 3+2 axis machining capabilities."

Increasingly, users of 3-axis VMCs are fitting pL LEHMANN CNC rotary tables to their machines as they represent an extremely cost-effective means of entry into 5-axis machining for. When mounted in a VMC, the popular CNC rotary tables are able to deliver a tilting A-axis and/or a rotational C-axis.

Given the compact nature of pL LEHMANN's CNC rotary tables, they allow workholding devices to be located alongside them inside VMCs. If required they are able to remain in the machine, or they can be quickly removed and later replaced according to the machining jobs being carried out.

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ZSG mini centric vice from CERATIZIT packs a punch

For existing users there's no turning back; centric vices are the route to making day-to-day machining activities so much easier. CERATIZIT has now extended the advantage of these vices with the arrival of the ZSG mini vice, developed to enhance the machining of small and delicate workpieces.

Thanks to growth in sectors such as electronics and medical technology the demand for small components remains high, with these parts becoming commonplace in machining businesses. With these smaller components come several drawbacks and challenges, with particular focus on workholding. The new ZSG mini centric vice for small parts, part of the WNT Performance series from CERATIZIT, is aimed squarely at improving process security and quality-critical steps in the machining of these parts.

When it comes to machining smaller parts, fixed connections are particularly important for vices, mainly due to extremely tight tolerances that are generally required.

"There are various ways to achieve this," says Christoph Retter, product manager for clamping fixtures at CERATIZIT. "Workpieces can be pre-stamped by investing in a special machine prior to clamping, creating a positive mechanical connection using the negative embossed profile in the jaw. However, this is eliminated with our new ZSG mini. Thanks to its very-high clamping force of 16 kN, our approach is simple: clamp, lock, go."

Quick and easy part handling is also a deciding factor in minimising non-productive time and the ZSG mini offers significant advantages, as it can be easily accessed from all sides, expediting the machining of raw and finished parts, multi-clamping and automated applications. However, the biggest time saver is the ability to change jaws in a matter of seconds without any tools. This is achieved through the integrated pull-down action, which is generated via two spring pressure pins, ensuring total machining precision and quality.

The ZSG mini centric vices are available in lengths of 80 mm and 100 mm, with quick change jaws in widths of 45 mm and 70 mm, all case-hardened to between 54 and 56 HRC and available in different versions with either smooth faces or with serrated grip variants. "The real highlight here is the fact that all jaws can be used on any ZSG mini. This makes the system extremely flexible," adds Christoph Retter. "The stainless base body that is hardened to 45 HRC also promises a long and reliable service life for the clamping system."

Extremely small but incredibly strong, the ZSG mini from the WNT Performance range by CERATIZIT is the ideal partner for clamping small workpieces

The ZSG mini centric vice for small parts is now available from stock.

You can find additional information at: **https://cuttingtools.ceratizit.com/gb/en/machining-know-how/workpiece-clamping/product-overview/zsg-mini.html?referrer=direct#ls**

Its quick-change jaws keep non-productive time conveniently short and its stainless base body ensures long operating times for the user

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

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

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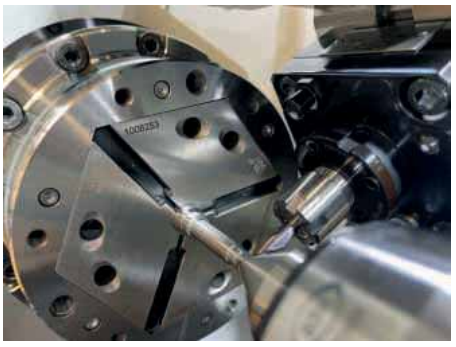
JWA gets a grip on productivity with Hainbuch

JWA Tooling has grown exponentially since its inception in 1985 when founder John Wood set the company up from his loft, designing special purpose machines and subcontracting the work out. The company quickly bought its first factory and manual machines and subsequently CNC machine tools. More recently, the company has added a new facility and invested heavily to fill the site with new technology. The investment strategy has reaped rewards with the Leicester business growing by 150 percent with a 40 percent increase in the workforce and the new investments boosting machining capacity by 60 percent in recent years.

The company has a plant list of over 20 CNC machine tools that includes a multitude of wire EDM, machining and mill/turn centres, grinding and manual lathes as well as moulding, laser marking and automation technology that are all complemented with an inspection department primarily kitted out by Mitutoyo. Residing in this machine shop is equipment from brands such as HAAS, Spinner, Hardinge and Miyano.

Adding to the plant list, the company has invested more than £2.5m in an additional factory, three new FANUC EDM machines, three new automation-ready Mazak machining centres that includes the company's first dedicated 5-axis machine, a Doosan cobot, a Doosan Lynx turning centre and a Colchester Harrison Alpha 1400XC. The link that is increasingly tying more of these machines together is the workholding and clamping technology from Hainbuch. The reason for investing in quick changeover workholding from Hainbuch is borne out of the workflow that passes through the company. It has an annual product spread of more than 8,000 different part types with batches frequently less than five-off.

JWA Tooling founder John Wood says: "If

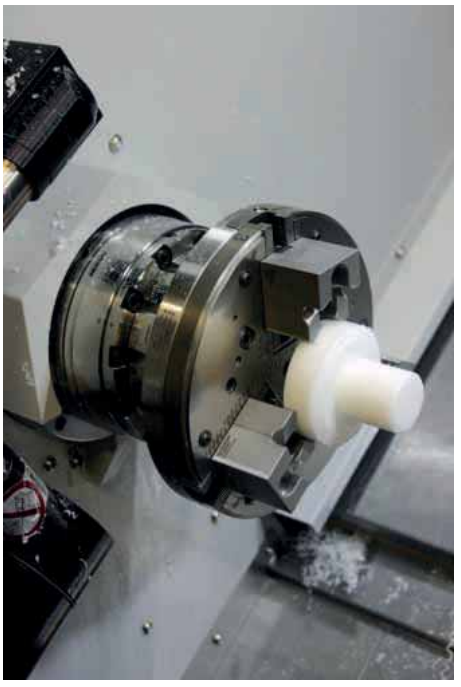


you analysed our company, you'd see that we have lots of machines and lots of setup times, which means the machines can be stopped for longer than they are running. We have chosen to address this issue by investing in new workholding systems."

The workholding experts from Hainbuch were introduced to JWA Tooling when the company invested in a Colchester Harrison Alpha 1400XC manual and semi-CNC turning centre. The decision to invest in the Hainbuch TOROK 65 manual chuck was influenced by the ability of the innovative chuck to offer extremely fast and precise changeovers. The flexibility of the Hainbuch TOROK 65 also permits the fast changeover from I.D clamping to O.D jaw clamping of components.

The flexible TOROK system can be supplied with a selection of O.D and I.D clamping heads, jaw clamping adaptations, face drivers and morse tapers as well as magnet modules and flanges, which offers JWA complete flexibility for its existing and future turning requirements. The Hainbuch TOROK is capable of clamping components from 3 to 65 mm in diameter with an actuating torque of 90 Nm and a maximum radial clamping force of 105 kN. However, jaw adaptions permit clamping far beyond the 65 mm diameter of the clamping heads.

So, when the company decided to install a Doosan Lynx 2100LY turning centre more recently, the subcontract manufacturer once again opted for workholding technology from Hainbuch with the TOP PLUS 65 combi pull-back collet chuck. John Wood continues: "The reason for picking this particular design of chuck is quite critical, as we have been well established with round collets over the years. But if you look at the modern machines with live tooling and C-axis configurations, you need to index accurately and know where the component



faces and locations are. So, with the Hainbuch system and its hexagonal fitting, you can identify your mark on the chuck and the collet and you can put the collet back in the identical position."

JWA Tooling conducts a significant amount of low-volume fast turnaround work and, for this, the Hainbuch system is perfect.

John Wood concludes: "At present, we have invested in a range of Hainbuch collets and chucks for two turning machines and we have a decision to make regarding taking existing collets and chucks off other turning centres. If we do invest in more new turning centres, they will automatically have the Hainbuch collet chuck system installed. It really is a game-changer for our business."

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Electromechanical vice for series production

A new, high precision, electrically actuated vice for securing workpieces on vertical, horizontal, 5-axis and mill-turn machining centres has been introduced by Roemheld UK. Operating functions of the Hilma AS 125 E can be integrated into the machine CNC system or regulated via a separate control.

The Industry 4.0-compatible vice is equipped for automatic jaw change, making it ideal for unattended machining involving robotic load and unload of components, as is often found in series production environments. Entire families of parts can be manufactured without manual intervention.

The AS 125 E lowers operating costs by eliminating the need for hydraulics or pneumatics and by retaining the holding force without the power supply connected, thanks to the the self-locking mechanical spindle. The motor precisely adjusts the tightening torque, so thin-wall components and other delicate workpieces can be held without damage. The vice is also suitable for applications where the risk of contamination by hydraulic oil must be avoided.

Guido Born, the product manager in Germany responsible for the launch comments: "Beta tests in production applications have shown that the electric vice lends itself well to accurate retention of parts, as the pressure may be finely controlled to suit the workpiece material and geometry.

"The automatic jaw change has been particularly impressive. One user told us that the system paid for itself quickly and plans further investments.

"Electromechanical designs are now being developed for other proven clamping systems in the Roemheld range and will be released in the near future.

"Additionally, we are planning further innovations such as using sensors in our hydraulic workholding systems to enable determination of clamping force."

Roemheld (UK) Limited was founded in 1975 to supply innovative workholding solutions to the UK and Ireland. From its base in Hertfordshire, it is proud to provide workholding and materials handling solutions to a wide range of companies from large OEMs down to the smallest of machine shops.

The company provides sales, service and ongoing technical support to customers across varied industry sectors and is involved in training programmes designed to support the next generation of engineers.

Roemheld UK Ltd
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Flexible machine workholding system removes need to buy new fixtures

WDS Components Ltd is offering a flexible method of holding metal workpieces for machining that removes the need for multiple, individual fixtures. The MicroLoc System is an expandable means of clamping parts relative to known datum positions. Reducing the cost of procuring new, additional workholding pieces, MicroLoc can also increase the speed of machine setup.

Where hundreds of individual fixture pieces would normally be required to machine new designs, MicroLoc's modular system can significantly reduce cost and save time in procurement. As a result of the system's flexibility, it's also a rapid and cost-effective way of machining prototypes or one-off items.

Designed for milling machines and machining centres, the MicroLoc system clamps metal work pieces with a modular approach and can be used across vertical, horizontal or multiple-axis machines. Including a base plate with t-slots, clamping units are inserted relative to a known datum position to securely hold square, rectangular, round or irregular shaped parts. Clamping like a vice, MicroLoc can rotate base clamping elements through 90 or 180 degrees, giving wide positional flexibility.

MicroLoc clamping designs can be recorded and reproduced when required in future, increasing the speed of machine setup. By introducing more than one base plate and set, systems can be used across multiple machines, thus reducing the time in setup and increasing productivity. This approach also allows operators to work across more than one machine at any one time.

"If you regularly make new parts, with a coinciding requirement for new machining fixtures, MicroLoc can save significant cost for future designs and prototypes," says John Marshall, technical manager at WDS. "By using two or more sets together, with one set used on the current machine and the second set ready in place on the next machine, setup time is reduced, giving faster productivity."

WDS stocks the full MicroLoc range, including base plate t-slot pitches of 50, 60, 75 and 100 mm. The torque lock, quickly fastened by hex key, applies to a variety of jaw styles, including aluminium soft jaws as well as hardened steel jaws, which clamp components across X, Y and Z axes. Jaws are ground to ±10 microns relative to the tenon keys, and machine baseplates are produced to a similar tolerance over one metre, giving a system repeatability accuracy of ±25 microns.

WDS Components Ltd
Tel: 0113 290 9852
www.wdscomponents.com

A clear winner

Looking for ways to improve the inspection of its critical components, Beatson Clark sought the help of Bowers Group, investing in a Baty Venture XT 3030 CNC to assist in its measurement of critical dimensions of mould components that produce the necks of glass bottles and jars.

One of the UK's largest manufacturers of pharmaceutical glass containers, Beatson Clark has been designing and manufacturing glass bottles and jars for 270 years and is still leading the way in quality, flexibility and innovation.

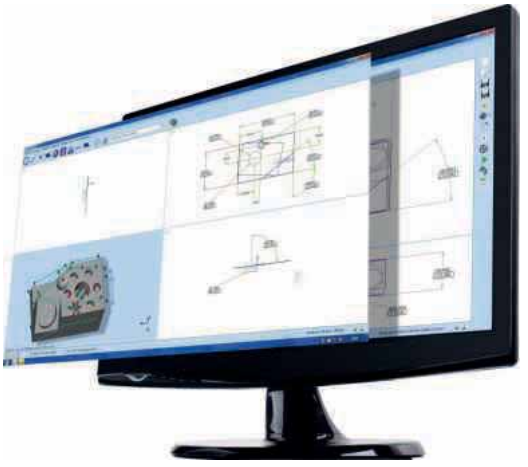
While constantly striving to provide superior performance in its quality and service, the company also has an ongoing commitment to continuous improvement, investing in future technologies.

Offering a wide range of glass containers for the food, pharmaceutical and beverage markets, and working with clients such as Gaviscon, Hendricks and Baxters, the products Beatson Clark produce must be of the highest quality to protect its reputation and that of its customers' brands.

As highly specified tooling is the start to the process at Beatson Clark, an improved inspection system was the next logical step in its evolution as the company looks for improvements across the whole factory. The Baty Venture XT offered the ideal solution for its unique measurement requirements for presented within its mould shop.

Used every day, primarily by quality department inspectors, the Baty Venture measures components that form the neck area of bottles and jars. These components have many critical dimensions and form the bulk of the systems work, allowing the team to check batch parts thoroughly and ensure only quality components are used in production. With its user-friendly design making the machine quick and easy to learn, the XT is also utilised to qualify machinist's work, allowing for all components that make up a tooling set to be inspected along the manufacturing process.

Daryl Fletcher, mould shop manager at Beatson Clark, says: "The vision system is very impressive. It is fast, accurate and user friendly. Being able to import DXF files gives us the option of comparison as well as direct measurement. The software is intuitive and easy to use, yet very powerful with recognising features and alignment. We can very quickly give basic training to many users, so we are not reliant on a single person. There is one particular feature on our guide plates that previously was near-impossible to measure with any sort of accuracy and repeatability. The Baty now makes this measurement very easy and has already proved its worth."



The Venture XT has a 300 mm x 300 mm x 200 mm XYZ stage and includes a controller and two 19-inch monitors. With its simple teach and repeat process, the powerful CNC model takes the power of fusion software one step further by completely automating the inspection process. This allows advanced features, such as scanning and best fitting, to be done quickly without taking up the time of skilled operators.

The critical features that make up the neck equipment are extremely difficult to measure with any form of accuracy using traditional equipment, leading to the inspection of components being both difficult and time-consuming. The XT now renders the process simple and reliable with its ability to measure with complete accuracy, ensuring good tooling through to the moulding machines which translates into fewer quarantined products.

Speaking of the success of the Venture system, Daryl Fletcher says: "The Baty Venture 3030 has been a great addition to Beatson Clark. So far it has improved speed and accuracy when inspecting the mould components that has translated to improvements in production, and we are still finding uses for it due to its ease-of-use and versatility. As a previous user of Baty, I was pleased to see that the team has continued to be extremely professional with good communication from the start and everything promised has been delivered. The ongoing support and backup have been excellent."

Bowers Group
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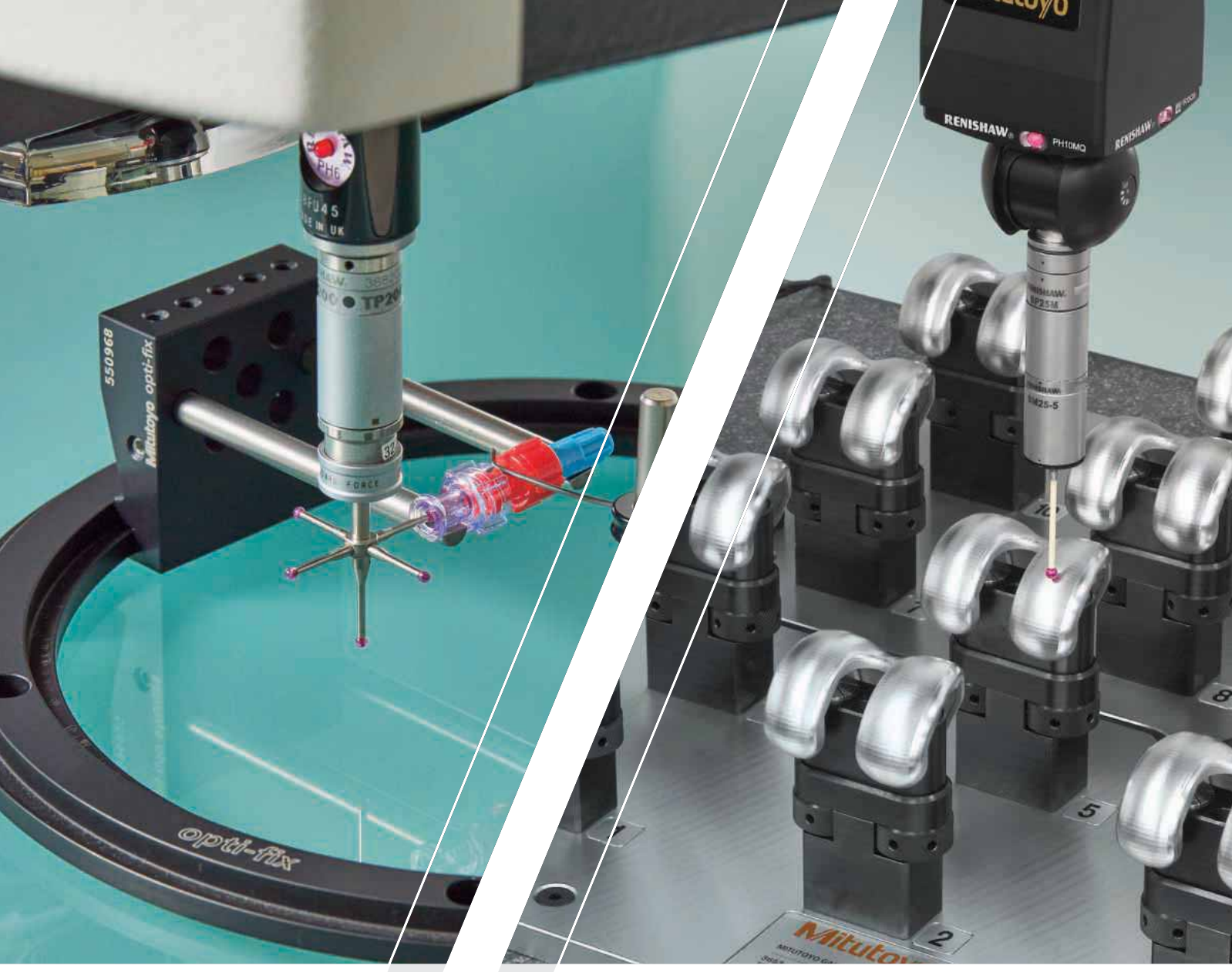

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Qualiturn projecting a quality image with Mitutoyo

With a history stretching back over 100 years, the classic profile projector remains an indispensable item of metrology equipment. Amongst other reasons, the profile projector's enduring popularity is due to its continuous technical evolution. Over the past century a wide range of beneficial innovations have enabled this mainstay of shopfloor and quality department inspection to remain at the cutting-edge of metrology developments. For example, the introduction of automatic edge detection helped to remove operator subjectivity while the adoption of linear encoders improved profile projectors' measuring accuracy. A further leap forward was the introduction of digital readouts, making the precise measurement of linear and angular features much easier and enabling the efficient generation of detailed inspection reports.

As a leading designer and manufacturer of optical measuring systems, Mitutoyo has remained at the forefront of profile projector developments and has recently introduced a further major technological innovation in the field. Rather than utilise traditional halogen lighting, the advance new Mitutoyo PJ-Plus profile projector series make use of superior LED illumination. Now, in addition to several other advantages, images projected under LED illumination are much sharper and easier to inspect.

Hertford based Qualiturn Products Ltd is an enthusiastic early user of Mitutoyo's advanced, new PJ-Plus profile projectors. Qualiturn provides a full range of subcontract machining services, including precision CNC turning and milling. To keep-pace with increasing demand for the company's services and to ensure the continued high-quality of its output, Qualiturn has invested heavily in a range of modern, high-yield CNC machine tools. The company has also installed cutting-edge robotics and automation systems that allow highly efficient lights-out production. To enable the high-volumes of components passing through the company's busy quality department to be inspected precisely and efficiently, Qualiturn use a range of advanced quality control equipment.

Having been a user of profile projectors for many years, after witnessing a demonstration of Mitutoyo's advanced new PJ-Plus profile projectors, Qualiturn Products Ltd managing director Nick Groom promptly placed an order for two units. He explains: "Although we were happy with our existing relatively modern profile projectors, after seeing a Mitutoyo PJ-Plus profile projector being used to inspect a range of fairly complex, precise components, I was amazed to see the difference that the inclusion of LED lighting made to the crispness of the images on the projector's screen. Also, as the regular replacement of halogen lights following lamp burnout has always been a down-side of using previous generations of profile projectors, I was happy to discover that the use of LED illumination delivered extended service life and reduced running costs.

"Now in regular use, our two new PJ-Plus models are proving very popular with our quality personnel. As well as the use of LED lighting reducing eye fatigue, improved screen images enable easier and more precise component inspection. In addition to helping us to ensure the continuing quality of our output, the ease and speed of use of our new Mitutoyo profile projectors has further improved our levels of inspection efficiency. So impressed have we been with the outstanding performance of our two new profile projectors, I have recently placed an order with Mitutoyo UK for an additional three PJ-Plus models."

With a resolution of 0.001 mm/.0001",

PJ-Plus profile projectors are heavy-duty, bench-top units that are designed to provide accurate, reliable measurements within manufacturing environments and other areas where conventional profile projectors struggle to cope. Suitable for use by experienced quality personnel or by production staff, PJ-Plus projectors feature an intuitive operation system that enables precise dimensional and angular measurements to be achieved with ease.

In addition to delivering much sharper images, Mitutoyo's adoption of an LED illumination source has eliminated the need for a cooling fan to be used in the projector's main unit and drastically reduced the potential for the ingress of oil mist and dust into the instrument. The possibility of oil adhesion to the profile projector's internal mirror, lens and light source has also been considerably reduced.

LED Illumination offers a further range of benefits, including improved durability, longer lamp life and a reduction in the rate of illumination decline by approximately 50 percent. Also, main unit power consumption has been lowered from 400 W to 60 W.

The new Mitutoyo profile projectors deliver enhanced on-screen images and maintain high optical performance even when used in harsh industrial environments. Rather than use a conventional 2-step method, a much more efficient illumination control adjustment system is now used. The 'stepless' arrangement delivers improved images by allowing lighting levels to be set to precisely harmonise with the surface texture and colour of the workpiece under inspection.

PJ-Plus profile projectors feature a built-in digital XY counter mounted on the front of the machine. The digital counter displays XY axes and angle readings using high-intensity LEDs and a large character display for ease of viewing. Providing improved ergonomics and faster readings, operators can also view the readout directly on the projector, rather than looking at an auxiliary DRO. All inspection results can be easily downloaded to computers, data loggers and printers.

Now available on PJ-Plus profile projectors, Mitutoyo's advanced touch-screen interface with M2 software. This easy to use, feature rich system combines a familiar user experience with up-to-date touch screen conventions.

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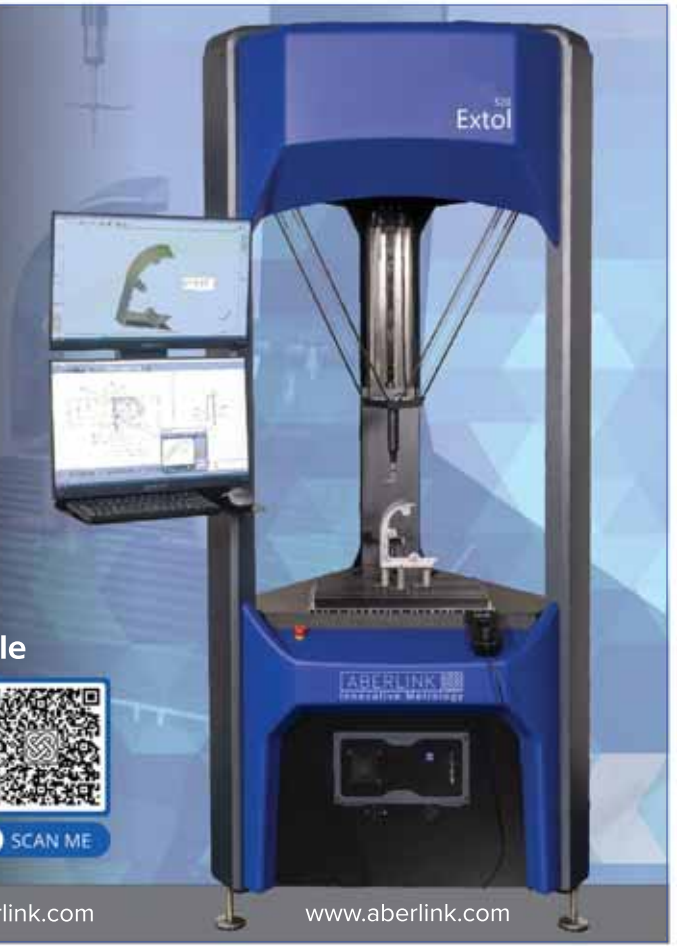


Hi-Spec Precision extol the virtues of its latest CMM purchases

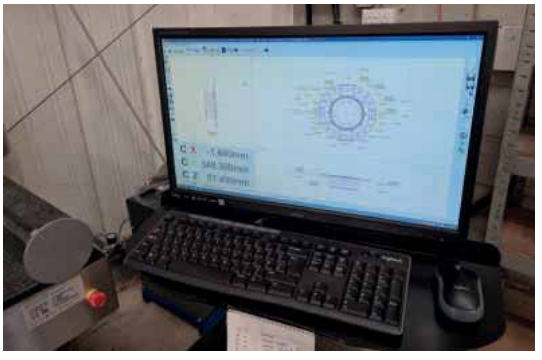
Formed in 2004 by Darren Grainger, a highly skilled draughtsman and machinist, Hi-Spec Precision Engineering has developed from a small start-up business to an established company specialising in bespoke machined components and assemblies. Based in Market Overton, in the heart of Rutland, Hi-Spec combines knowledge, experience and skills to ensure that its products and services are manufactured and delivered to the very highest standards.

The company incorporates modern day production technology and automation with traditional methods and practices to provide engineering solutions for today's marketplace, offering its customers a complete service from product design and prototyping through to the manufacture of one-off, small and large batch productions runs.

To keep up with the demands of a growing subcontract engineering business, significant investment has been made, Darren Grainger explains: "Any new investment in capital equipment has to be quick and easy to learn and obviously demonstrate time saving benefits. In the last couple of years we have invested in automation in our machining cells, due to the cost savings and the continual difficulty in recruiting the right calibre of people. It's always nice to buy British, but that's not always possible. You spread your machining capability across a wide base of technology so that you can cope through times of recession and cater for current and future customer demands."

Having owned a small manual CMM for over ten years and more recently investing in an articulating arm, it became obvious that certain complex machined features required another level of CMM capability. The search began for a better CMM, that could demonstrate the same quick and easy-to-learn capability as the machine tool investment. Darren Grainger continues: "Customers now expect CMM inspection reports along with their parts. Knowing the metrology limitations of what we already had, we quickly searched the internet and Aberlink was shortlisted. I attended a demonstration, expecting to buy another manual CMM with an up-to-date CMM software package, but it became obvious during the demonstration that investing in an easy-to-use, capable and affordable CNC CMM was the better option for us. The ability to create a fully dimensioned inspection program in a matter of minutes, and the ability to measure multiple parts in a single setup was a light bulb moment. In addition to being easy-to-use, British designed and made, Aberlink's transparent pricing policy was a breath of fresh air. I could check their prices on their website before I took the enquiry any further."

Following the demonstration at Aberlink in Gloucestershire, the decision was made to buy an Axiom too 600 CNC CMM, with fully automatic indexing probe head and probe change rack. The larger measuring volume, when compared to Aberlink's smaller shop floor Extol CNC CMM, would future proof any requirement to measure bigger parts. Four weeks later, the Axiom too was installed and the full potential of having this new CMM was quickly realised, following the comprehensive two-day training course.



Darren Grainger says: "Within the first few days we were creating programs and loading multiple parts so that they could be measured fully automatically whilst we kept other machines running. In no time at all, we had two or three different jobs that needed to be inspected on the new CMM at the same time, so we were waiting to break down one inspection set up to quickly changeover to another; we had a bottleneck. I looked at where we needed the extra CMM capacity and remembered the shop floor CMM I'd seen during my demo and I got in contact again."

Recognising the Extol CNC CMM was the answer to put shop floor CMM measurement where it was needed, Darren Grainger ordered another machine. Within two weeks it arrived and was installed, calibrated and measuring parts within two hours of its arrival. Parts made within the automated machining cell were being measured and verified on the shop floor.

Darren Grainger adds: "The Extol CNC CMM arrived and was sited and commissioned within a few hours of delivery. We quickly had it programmed and running in-process checks for one of the parts running on our VMC's. Approximately 40 dimensions were inspected automatically

within a couple of minutes with no operator intervention and that's a win to me."

Summing up his experience, Darren Grainger concludes: "Since buying the Axiom too CNC CMM and then the Extol CMM for the shop floor, we have transformed the way we verify our part quality from our automated production cells. The Axiom too is used to validate batch production and provide inspection reports. The Extol verifies what's coming off the machines within the production cell, they're both fantastic bits of kit. The price transparency, the demonstration and the team we met in Gloucestershire left us in no doubt that Aberlink is the right choice for us. I have no hesitation in recommending Aberlink to anyone looking to buy a CMM for the first time or improving their CMM capability. We're now thinking of buying another Extol shop floor CMM for another production cell."

Aberlink is proud to be the only major metrology manufacturer to supply machines with zero annual software maintenance contracts and free software updates for the life of the machine. This means that the cost of ownership is very low providing a fast return on investment.

It is now able to offer remote online demonstrations for the entire range of CMMs, measurement software and accessories to customers who are unable to travel to a regional demo facility.

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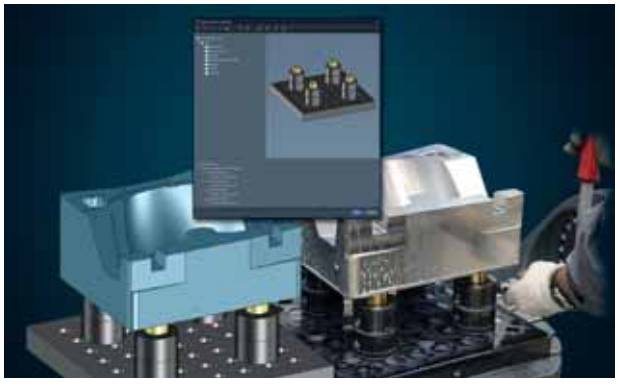
Optimise your CNC machining process with Tebis V4.1 intelligent manufacturing

High productivity and high quality with maximised utilisation of machines and cutting tools are everyone's goals for CNC machining. Tebis release version 4.1 moves one step further for achieving these goals with additional functions for optimisation of CNC machining process. Added to Tebis CADCAM Intelligent Manufacturing offerings of manufacturing database libraries, Tebis V4.1 has been extended to include a new clamping device library, intelligent collision avoidance strategies, in-process measurement cycles and seamless integration of Tebis ProLeiS MES system.

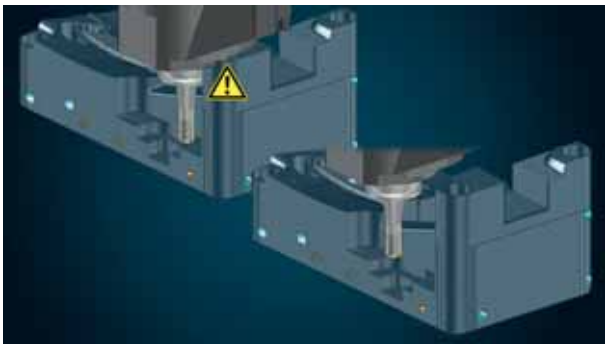
Clamping device library completes the virtual process digital twins libraries

The proven manufacturing database libraries, in which all of the manufacturing components and experience data are stored, have been supplemented with a new clamping device library in the form of digital twins. This can be used to conveniently create and manage clamping elements and clamping device groups and to set up the machine in the virtual environment.

The new Tebis clamping device library also represents all common devices for fixing parts in the machining process. From the screwless vise to clamps and chucks, all common clamping devices can now be easily managed in a library and quickly used for realistic simulation and collision checking. In the CADCAM model, the precise clamping position can be exactly aligned, zero point and conventional clamping systems represented and all assembly possibilities checked.



Virtual machine setup



The setup process follows logic similar to the assembly of clamping device groups, only clamping devices that fit on the selected machine are offered. It can also create the reference point when clamping. With just a few clicks, you can use connection points to position the clamping devices on the part and position the entire part on the machine table. The part, collision elements, clamping device groups and individual clamping elements can also be positioned independently.

The unique advantage means that the result arrives at the setup station with no loss of information as the NC output automatically generates precise and comprehensive NC documentation. The person responsible for the setup can immediately see what needs to be done. Clear component designations show the clamping devices required, how many are needed and where they have to be positioned.

Shorter setup and machining times with in-process measurement cycles

Completely integrate your measuring tasks in the manufacturing process with NC programs, easily and with reliable collision protection. The CAM programmer can simultaneously check to ensure that the part is correctly set up and that the blank is correctly dimensioned and oriented. This can be monitored automatically and again prevents unnecessary downtime and even tool breakage or machine damage.

All of the necessary functions are structured together, from probe calibration to point measurement, angle measurement based on points or circles, circle and rectangle measurement, to checking of grooves and ribs. Integrated tolerance testing can be performed to determine whether the order can continue to be machined or must be interrupted. This results in a reliable and highly automated process with combined milling, turning and measurement operations that prevent damage to tools and machines. This results in shorter setup and machining times, higher component quality and fewer correction grinding operations.

Tebis ProLeiS MES software fully integrated

Large savings can potentially be realised in single-part manufacturing thanks to optimised and stored manufacturing processes.

With ProLeiS and Tebis 4.1, you can split up entire assemblies and individual parts into proven processing sequences. Even complex manufacturing projects can be planned, controlled and implemented. Logistics for purchased parts, blanks and machine components are also accounted for throughout the process. The key advantage is your machines are optimally utilised and all activities can be assigned to specific manufacturing designers, NC programmers and machine operators.

ProLeiS MES can also be easily combined as an integration platform with upstream and downstream systems like PDM, ERP and machine control systems.

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World's fastest injection moulding service adds Critical to Quality Inspection with no delays

One of the world's fastest digital manufacturers has launched a Critical to Quality (CTQ) inspection service for its on-demand injection moulding, while maintaining its rapid dispatch times. Protolabs, which operates from a state-of-the-art facility in Telford, will continue to offer unmatched production speed as little as one day from CAD upload to the shipping of parts.

This new service will save design engineers days or even weeks of time for the delivery of quality assured parts. A key aspect behind this rapid reporting and delivery is the company's revolutionary new software platform, which creates a digital thread as soon as a customer uploads their CAD into the system.

Working within the new platform, the client simply submits a print of their model and uses red circles on their design to highlight up to five features where dimensions and tolerances are critical. They can also use a blue circle to indicate additional features they want measuring for reference. These are not critical to the part but will still need reviewing.

Engineers from Protolabs will then review the model and email an Inspection Statement of Work, which will highlight if any of the features circled as critical have issues with tolerances and mouldability. If there are no issues, the order is issued to meet the customer's delivery schedules without delay while, if there is an issue, the client will be notified and will need to liaise with engineers to decide on what steps to take.

After completing the mould development process, Protolabs will inspect the first three shots from the tool using a Coordinate Measuring Machine (CMM). This will measure the critical features highlighted in the CAD and provide a First Article Inspection (FAI) Report.

Using the same CMM, the company will then inspect a further 30 parts from the order, taken at equal intervals from the

production run, to produce the Critical to Quality inspection report.

The new service is available as part of Protolabs' on-demand manufacturing service, which allows engineers to control the complete development and production of their parts from their own desktop. Even if a design needs altering, they are not waiting for the supplier to come back to them as they have full visibility of the process.

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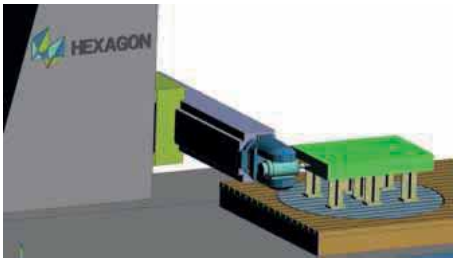
Hexagon automates complex 6-axis production of large, heavy parts to improve operational efficiency

New Computer Aided Manufacturing (CAM) technology now introduced by Hexagon's Manufacturing Intelligence division makes it possible to efficiently use complex 6-axis milling machine tools to produce large parts for a variety of industries and applications. The specialist programming tools provide accurate simulation and generate efficient 6-axis toolpaths to ensure that the advanced machinery can be used to its full potential for increased productivity.

The ability to machine components of any size in a single operation increases efficiency, but it is especially beneficial when machining large parts because it eliminates the need for the labour-intensive repositioning of heavy and cumbersome workpieces. Ideal for cutting large components, 6-axis machine tools are often used to produce parts that can measure three metres or larger in diameter, including jet-engine containment cases that ensure passenger safety or parts for the energy and marine industries.

The new tools introduced in Hexagon's EDGECAM software focus on 6-axis machines equipped with two rotary axes on the head and one rotary table, where this sixth axis enables milling tools to machine all sides of a large part, including areas that are otherwise impossible to reach without repositioning workpieces. The new dedicated 6-axis tools provide greater toolpath control and more accurate simulation of processes, reducing the need for expert intervention on the shop floor, improving the utilisation of advanced machinery and avoiding the risk of costly damage.



"The ability to perform seamless 'one-and-done' operations with 6-axis machinery enables manufacturers to produce massive and often quite challenging components without the burden of under-utilised machinery or over-reliance on expert intervention," says Miguel Johann, product and market manager at Hexagon's Manufacturing Intelligence division. "You may have the most sophisticated machinery in the world, but without software that can harness its strengths, it can be very difficult, If not impossible to reap its true potential."

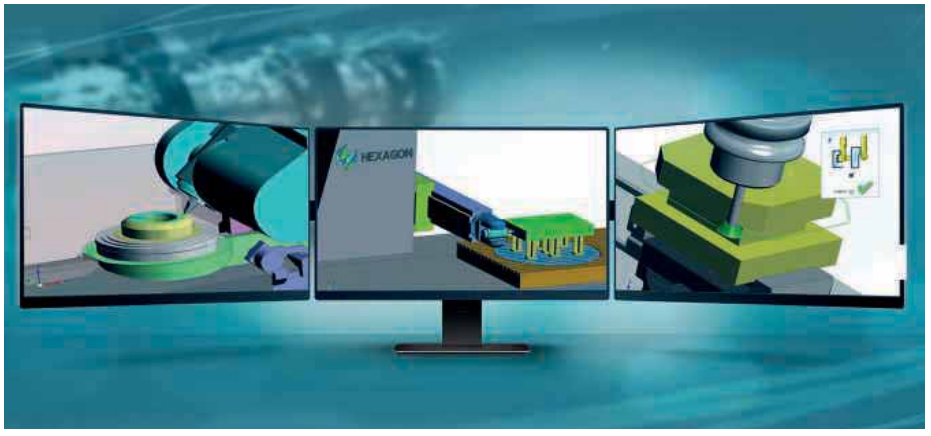
EDGECAM improvements also provide greater flexibility for 5-axis milling by offering tools that allow Computer Numerical Control (CNC) programmers to select the level of automation they prefer when creating toolpaths. Using these tools, CNC programmers can choose to automate toolpath generation, manually create all toolpaths, or generate toolpaths using a combination of automated and manual tools. The ability to customise programming preferences increases control over exactly how parts are machined, helping users cut programming time on tasks that are simple to automate and making it easier to work more closely with complex toolpaths when needed.

Productivity is also improved with rough grooving operation optimisation that eliminates unnecessary machine movement, resulting in a reduction in cycle time of up to 60 percent. When enabled, the configuration ensures that the system will recognise the shape of irregular stock when needed. By taking the true shape of stock into account, the software helps users to avoid the generation of surplus toolpaths that lead to unproductive 'air cutting' when the program is sent to the machine tool.

EDGECAM now makes it easier to execute helical toolpaths, offering manufacturers tighter and more efficient machining than is offered by the ramp approach and opportunities to extend tool life with smoother and less damaging operations. Users need only define a minimum helix value for roughing operations, then the software ensures parts are cut using a helical tool pattern and the toolpath will not revert to a ramp approach. Computer performance optimisations also now significantly reduce programming time, generating roughing toolpaths two to three times faster than previous software for both wireframe and solid models.

Waveform turning ensures that cutting tools maintain constant engagement with material, as well as a constant chip load to extend tool life, but can result in long NC code programs. A new option reduces the amount of numerical control code generated by up to 75 percent by converting line segments into fitted arcs that require less NC code to program. Users benefit from smoother waveform toolpaths and therefore machining and faster executed code that is also shorter so that it runs effectively on older machine tools.

Interoperability with Hexagon's CAM portfolio benefits EDGECAM users working with 3-axis milling operations. They can now test and optimise programs in Hexagon's NCSIMUL Essential machining simulation software.



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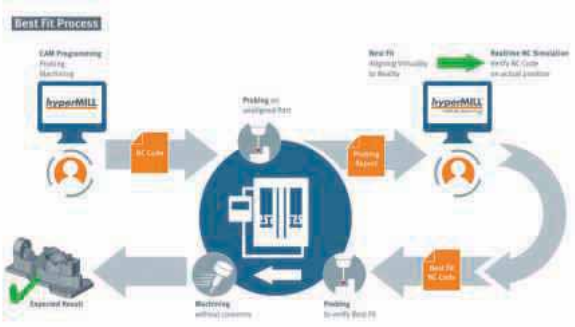
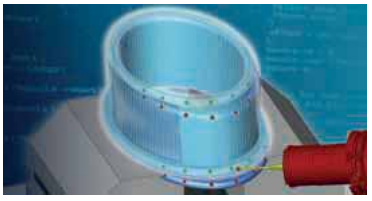
OPEN MIND presents CADCAM function hyperMILL BEST FIT

Component alignment at the touch of a button

OPEN MIND's hyperMILL® BEST FIT is a new function that is revolutionising planning in machining operations. Instead of having to align the unmachined part in the clamping to the NC program manually, the hyperMILL CAM system aligns the NC program automatically to the component position. This method saves time and increases process reliability, especially with cast, forged, welded and additively manufactured stocks with small or irregular allowances, when reworking heat-treated parts and during machine changeovers. Each of these processes requires a delicate touch to calibrate it with the CAD model of the end product.





hyperMILL BEST FIT takes full advantage of the options offered by the virtual machine in the CAM program and communication with a 5-axis machining centre capable of 3D measurements to eliminate the uncertainty that comes with manual alignment.

Up to now, it has been standard practice to adapt the stock and the clamping in the machine to the conditions of the NC program. The component is aligned manually, using a dial gauge, control cycles, plus a great deal of sensitivity. The actual clamping operation is adapted to conform to the virtual programming. This process was time-intensive, often needed to be repeated multiple times, and involved a number of uncertainties. One way to solve this issue is to align the component in CAM in real time. The unaligned stock is probed on the machine by way of a 3D measurement, the measurement log is sent to the CAM system and hyperMILL BEST FIT adjusts the NC code to the actual position of the component. The virtual world, programming, is adapted to the real world, clamping, not the other way around. The adjusted NC code is then simulated in the virtual machine on the actual clamping setup and automatically optimised.

"Thanks to hyperMILL BEST FIT, time-consuming and unsafe component alignment on the machine is a thing of the past. hyperMILL detects the situation on the machine and aligns the component virtually," explains Manfred Guggemos, product manager at OPEN MIND Technologies.

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Increase productivity and sustainability with VERICUT Version 9.2

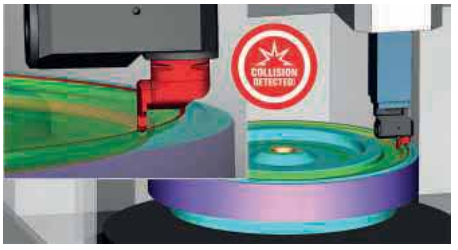
CGTech has announced the latest release of VERICUT software, Version 9.2. VERICUT CNC machine simulation, verification and optimisation software simulates all types of CNC machining, additive and hybrid manufacturing processes. The software operates independently, but can also be integrated with leading CAM systems.

VERICUT 9.2 increases productivity and sustainability with several new features that boost manufacturing efficiency, help preserve machines and cutting tools, increase machine capacity and dramatically reduce repair & scrap costs. Substantial speed increases to collision checking and overall performance, a New 3DLive™ interface, improved cutting tool support and reporting enhancements are just a few of the notable features in this latest release. Hundreds of customer-driven improvements and software requests were also incorporated in this latest version.

"VERICUT has been designed to meet the needs of all types of shops, from small job shops to OEMs and Tier 1 suppliers that are regularly pushing the limits of CNC technology. The enhancements in version 9.2 provide the speed that shops of all sizes need to produce more efficient programs faster and get their products to market more quickly and competitively, while promoting conservation of valuable material and human resources," says VERICUT product manager, Gene Granata.

CGTech's integrated simulation-optimisation solution, VERICUT Force, also benefits from these latest enhancements. Force drastically reduces machining times, extends tool life up to 2x or more, prevents undesirable cutting conditions and improves part quality. VERICUT 9.2 provides Force optimisation users with more options for setting and adjusting optimisation limits, more comprehensive tooling data and greater customisation options for Graphs and Reports.

"VERICUT Force is one of the most exciting new tools for predicative processes control I have utilised," says Joshua Koch, business development manager at Oregon Manufacturing Innovation Center (OMIC). "I've been in the industry for over a decade and programming for half of that and it's clear to see how the Force workbench is leading the way in predicative and optimisation systems for manufacturing. The system changes the fundamental approach to NC program creation, reducing failure potentials while optimising toolpath. I am excited to show manufacturers the opportunities for improvement and the potential savings that Force can uncover in their NC programs."



VERICUT 9.2 highlights

Collision and performance Improvements

VERICUT 9.2 brings significant speed increases and improved accuracy to collision checking and overall performance. Users gain substantial speed increases for deep concave collision penetration, turning operations, especially inside diameter work on large parts and collision checking between highly detailed models such as those having high triangle counts. Simulate material removal at tight cutting resolutions is up to 30 percent faster.

More options for Optimising

Optimise your programs by setting target Chip Thickness and any combination of Force limits, including Maximum Force, Maximum Power and Maximum Tool Deflection (*new in VERICUT 9.2). Force can now also control the Spindle Speed. OptiPath has a new "Learn" mode which enables users to choose how aggressively to learn from current cutting results. "Learn From Results" in Graphs can send Force or OptiPath optimisation settings, or change optimisation strategies for corresponding cutters.

Sandvik/Walter stock material (TMC) alias names have been added, enabling optimisers to search for material names known to them and determine if suitable Force Materials exist.

Force Turning Improvements

Extend the life of your turning inserts with new 'Adjust Turning Interrupted Cut' settings that slow feed rates on motions through gaps or obstructions on turned parts.

New Assembly Manager
Manage libraries of component assemblies, such as robot end effectors, interchangeable machine heads, bolt-on rotary tables, part/fixture setups and more to use in other VERICUT projects, or be accessible to other users. Export/import assemblies via right-click options added to the Project Tree, or options in the Configure Component panel.

New 3DLive™ interface
Simplify the VERICUT machine building process and create more realistic setups in a matter of seconds by importing 3DLive data. Import GDML format files containing 3D geometry, including colours for CNC machines, fixture components and cutting toolholders along with kinematic information, travel limits, min/max feed rates for axes and initial machine position.

Enhanced support for cutting tools
VERICUT 9.2 features many new, easy-to-define cutting tools. A few examples are Conical End Mills, Spherical End Mills and new Thread Mills. VERICUT checks for machining errors according to the specific tools' capabilities and limitations. VERICUT's dimensioning tool, X-Caliper, can be used to check the dimensions of drilled or threaded holes and also to display machining information for that related hole.

Enhanced support for cutting tools
New options for hole making tools enable users to specify how VERICUT will use Profile or Model File cutters. After choosing the cutter's use, enter any supporting values required to enhance its definition. VERICUT checks for machining errors according to the specific tools' capabilities and limitations.

New dockable graphs and tool use windows
The improved Graphs window combines Info Graphs and Force Charts in a new comprehensive and configurable Graphs window. Select any combination of Cutting Conditions and Force Conditions to view in graphs, display cutting limits, and compare optimised versus original values. A new Tool Use window provides convenient views of tool and program run times, as well as optimisation savings. Dock either window in your VERICUT desktop to see the information in real time during simulations.

Report enhancements
Detailed reports for tools using Multi-Tool Stations can now be documented. This includes the ability to store an image of a Multi-Tool Station, along with its orientation, that can be used in VERICUT Reports. There are also several new columns in Reports to describe the turret positions and multi stations used in your simulation. "Instruments" can now be defined in an Inspection Report. Measurements and tolerance values are all editable. Additional enhancements in VERICUT 9.2 reports include; table header and cell fill colours, table cell text coloring, additional control with table column widths and the ability to copy and paste tables in reports.

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Waterjet cutting for all weather conditions

The importance of open-air eating has increased significantly in recent years. After all, isn't it great to sit comfortably outdoors as a guest and enjoy life regardless of the weather? This is made possible with solutions from Meissl, the pioneer of umbrella bars, which have been developed further into genuine entertainment zones over the decades. They come fully equipped and produced to a high standard, of course. For more than four years, the required sheet metal blanks have been produced on an StM waterjet cutting machine.

Meissl Open-Air Solutions GmbH has been creating prime conditions for people to meet, laugh and enjoy themselves outdoors for more than 40 years with its large umbrellas, umbrella bars and windbreak solutions for all weather conditions. "New product ideas and solutions have turned our initial umbrella bar, consisting of a bar with a stable large umbrella, into a very broad range of products, right up to individual large-area canopies and mobile wind screens," Hermine Meissl explains. She has been working in the company since 1989 and took over management from her father and company founder in 2001.

Such versatile "open spaces" on terraces and elsewhere are becoming increasingly important not only for restaurant proprietors, but also for hotels, municipalities or retailers. The attractive meeting points liven up boulevards and promenades, squares and green spaces. Meissl concepts create striking, lively points of attraction and today prove their reliability in alpine highlands as well as in coastal

regions or in highly frequented city locations. "Each solution is unique and tailored exactly to the individual needs of the customer no matter how extreme the location and the load," adds Hermine Meissl.

In order to meet its own high quality standards, Meissl Open-Air Solutions relies on a 100 percent Austrian value chain at its Pfarrwerfen, Salzburg site with around 50 employees and 8,500 m^2 premises, both for raw materials like steel, stainless steel, aluminium, textiles or wood and purchased components, as well as for its own production.

This also applies to sheet metal cutting. For more than four years, a waterjet cutting machine from Austrian manufacturer StM has been performing to absolute satisfaction. "When it comes to investments or purchasing materials, we pay special attention to strengthening Austrian and, if possible, even regional companies," Hermine Meissl explains. In Eben in Pongau, less than 20 km away, they found StM, one of the leading suppliers of waterjet cutting systems, who ultimately won the contract. "The decision made in 2016 was the right one. The machine convinces with highest part quality, economic efficiency and convenient operation. The service provided by StM is also exemplary in terms of response time and competence," Hermine Meissl says.

Flexibility and creativity gained

An StM PremiumCut 4020 with a 2D cutting head was ultimately chosen, which can also process large-format sheets. "StM PremiumCut waterjet cutting systems are fully equipped high-performance systems, which leave nothing to be desired. They are ideally suited for cutting tasks with high accuracy requirements and high speeds. The systems work resource efficiently and excel with extremely low power, water and air consumption. All structural components and screws are made of wear-resistant stainless steel or aluminium," Jürgen Moser, managing director of StM Waterjet GmbH describes the advantages of the machine.

Environmentally conscious and resource-saving

"For the environmentally aware and resource-efficient operation of the StM waterjet cutting system, we also provide our customers with solutions for treating wastewater. The mostly multi-stage systems enable cleansing of wastewater up to the detection limit for solids and dissolved substances. The filtered water can either be discharged into the local sewer or recycled if necessary," Jurgen Moser adds. The system in use in Pfarrwerfen, for example, is a multi-stage abrasive application system. Used abrasive is flushed out of the cutting tank by the automatic abrasive desludging system.

"All parts of the system that are coming into contact with the abrasive are arranged outside of the cutting tank. This reduces downtimes during maintenance work and also the running costs that must be estimated for abrasive separation," Jurgen Moser concludes.

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Blade (Chippenham) Ltd installs second Flow dynamic waterjet

Blade, based in Chippenham Wiltshire, is a family business with over 30 years' experience in design & manufacture of metalwork for a wide range of industries. It specialises in stainless steel enclosures, tanks and brackets for the water utilities sector.

Over the years, the company has invested in leading technology such as Flow Dynamic Waterjet for precision profiling as well as Bystronic CNC pressbrake for folding. Much of the work is in stainless steel, mild steel, aluminium and copper and it can process materials up to 100 mm thick.

Fabrication utilises Mig, Tig and synergic welding in ferrous & nonferrous metals, plus the use of Demmeler jigging tables for accurate welding of parts and assemblies. Solidworks and AutoCad are used for product design where material use, ease of assembly and appearance functions are considered in parallel to reduce product costs and lead times.

In 2008, Blade installed its first Flow WMC Machine and this was recently added to with a new Mach500 Series Dynamic System. The Dynamic Waterjet® Technology is on both machines and this provides automatic taper and jetlag compensation resulting in very precise geometry and at fast cutting speeds. Both machines are working in tandem to provide the additional capacity needed for their increasing order book.

Invented and patented by Flow to counteract stream lag and taper, Dynamic Waterjet allows you to cut at high speed and to a fine precision. Stream lag and taper are no longer an issue in the waterjet process and the most versatile cutting tool has been transformed into a system that is highly competitive with alternative cutting methods in accuracy, precision and speed.

Dynamic Waterjet Technology utilises advanced SmartStream™ mathematical models that automatically tilt the waterjet head to the side as needed in order to eliminate taper. Additionally, those same models tell the waterjet head when to tilt forward in order to control the stream.

The Mach500 Series is the flagship machine from Flow and combines the latest in machine design and drive technologies with well proven pump technology and Dynamic Waterjet.

Interview with Mark Beaven, CEO of Blade

What is your company's core business?

Blade is a family run business with over 50 years' experience in fabrication. We specialise in general fabrication of stainless steel, mild steel and aluminium. Waterjet cutting has become a big part of our business in cutting parts for making fabrications as well as waterjet cutting parts for customers in various materials.

What do your products bring to the market?

We waterjet piece parts for fabrications and we also offer waterjet profiling for the bespoke industry. We have two Flow warterjet machines, gaining experience over the years of cutting a wide range of materials which include stainless steel, aluminium, mild steel, brass bronzer copper, wear plate materials, mother of Pearl, porcelain, granite, marble, ceramic, bullet proof glass, foam, rubber and composite materials.

Are these final parts or part of a more complex production?

We specialise in both final parts and parts of a complex production.

What made you decide to choose Flow?

We chose Flow D-WMC for our first machine in 2006 because Flow's machines had a good reputation in the waterjet market. Flow's design of the tank being separate from the machine bridge makes perfect sense. Also, Flow's dynamic head stood out from other manufactures. In 2019 we purchased our second waterjet, a Flow Mach 500. We chose Flow again after great success and confidence with our first machine and we continue to run both machines daily.

How easy the machine is to use?

The machine is very easy-to-use and all maintenance is done in house. We have a number of operators that know how to use the machine with ease and confidence.

What is the degree of finishing quality above the others?

The quality of parts produced by the flow waterjet still impresses us today even after 15 years.

Did Flow meet your expectations?

Our expectations have been met and exceeded.

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

High cutting performance at low pressure with Water Abrasive Suspension

Waterjet cutting with ConSus

With the innovative ConSus abrasive mixing unit, waterjet cutting specialist ConSus ANT enables the stationary use of Water Abrasive Suspension (WAS) systems in the processing industry. A continuous suspension jet provides a more efficient cutting performance at lower pressure compared to conventional Water Abrasive Injection (WAIS) systems. For easy, customisable performance comparison of both methods, a free web app is offered.

In many industries, materials research regularly develops new materials for which suitable machining processes must be found. For a large number of materials, waterjet cutting with WAS proves to be technically superior and economically more profitable than conventional cutting techniques. Compared to WAIS, the ConSus suspension jet operates at less than half the pressure and up to three times as fast. The user receives thin kerfs without hardening or material deformation. ConSus demonstrates its strengths particularly at increased cutting depths.

Suspension process convinces with higher efficiency

In contrast to three-phase WAIS systems with water, abrasive and air, the ConSus WAS system operates with a two-phase cutting jet of water and abrasive having a precisely adjustable flow rate. ConSus applies high pressure to the suspension before it reaches the remotely handled cutting nozzle. The high level of energy creates a cutting jet that emerges at almost twice the speed of sound. Its efficiency is much higher than that of the injection process, where turbulent mixing losses occur due to the contained air. The more focused WAS jet cuts precisely through even the hardest materials. That way, material with a thickness up to 1,000 mm can be cut, while still maintaining a very good surface structure.

Less energy consumption, wear and emissions

ConSus operates at a maximum pressure of 1,500 bar, even at enormous material thicknesses, which significantly reduces energy consumption and component wear. Due to a worldwide patented airlock process, ConSus also offers advantages in terms of work safety. Studies by the Fraunhofer Institute for Production Technology confirm that, even at maximum working pressure, 1,500 bar, noise levels are around 70 percent lower than an injection jet operating at 5,000 bar. Low system pressures and high abrasive loadings, which are characteristic of ConSus, also reduce the emission of solid particles by up to 50 percent.

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Upgraded manufacturing capabilities

Ansaldo Energia Group is a leading provider of engineering, manufacturing and testing in the nuclear decommissioning, nuclear energy and defence industries. It maintains 3,500 employees worldwide and a £1.1 billion turnover. In the UK alone, Ansaldo Nuclear Ltd. employs more than 650 experienced suitably qualified and experienced personnel in the UK, including nuclear engineers and manufacturing specialists.

To maintain its position in the industry, the engineering department at Ansaldo Nuclear performs optioneering, developing concepts through to detail design, safety case support, design substantiation, peer reviews, feasibility studies, site surveys and various other reports. But to do all of this work, the manufacturing side of the company must be able to keep up.

In 2019, Phillip Heeley, project manager and improvement engineer at Ansaldo Nuclear, was tasked with updating the company's Wolverhampton manufacturing site with technology that would enable the cutting department to produce high-quality parts with quicker lead times. At the same time, he sought to reduce the workload of the manufacturing site's milling machine operators by enabling the cutting specialists to create already inclined and beveled shapes out of flat raw materials.

He concluded that a height sensor guiding a 3D cutting head would allow the machining of uneven material surfaces. Whatever the solution, it needed to allow the cutting department to prepare materials in a way that would avoid time-consuming alignments, clamping and manual rework on milling machines.

Aquajet Machining Systems, the Chorley-based UK OMAX distributor, suggested the perfect machine solution for Heeley's task: a MAXIEM 3060 JetMachining Center. A fast, smooth and exceptionally precise abrasive waterjet machining centre, the MAXIEM 3060 is ideal for full-scale advanced manufacturing needs. The exclusive IntelliTRAX linear drive system uses magnetic encoders to provide location feedback with one-micron resolution so the machine knows precisely where the cutting head is at all times. The mobile control station with widescreen display provides flexibility in controller positioning.

Equipped with an A-Jet multi-axis cutting head, automatic terrain follower, rapid water level control and 50 hp direct-drive pump delivering 4,100 bar pressure, the MAXIEM 3060 is a complete waterjet powerhouse. The system also includes a fully automatic 170 L garnet feed hopper and solid removal system to keep the machine's water tank clean and free from slurry and sediments.

Andy Bull, operator and machining specialist at Ansaldo, praised the addition of the MAXIEM to the cutting department: "The new OMAX system replaces two older waterjet systems with intensifier pumps that we previously used. I am very happy that our management decided not only to replace the existing technology, but to upgrade our cutting department with the best waterjet cutting system available."

Particularly important to Ansaldo was the flexibility of the MAXIEM, which eliminated non-value-added time and allowed for the creation geometries that wouldn't otherwise be possible with the company's traditional CNC machines. "The water level can be raised and lowered within seconds and ensures that neither our employees nor our facility nor the machine itself will be harmed with dust, spreading water or noise," says Phillip Heeley. The relatively clean manufacturing of an abrasive waterjet produces noise of approximately 76 dB, about the same as a household garbage disposal.

IntelliMAX is an all-in-one package CADCAM suite including LAYOUT (CAD) and MAKE (CAM). The software can control individual part features. IntelliMAX's LAYOUT CAD program is a quick way to get mental geometry onto the computer screen. The drawing is easily and accurately exportable to CAM software.

With its new MAXIEM 3060, Ansaldo will continue to reform its shop practices to be more efficient. With Aquajet providing continual support, Ansaldo's work toward achieving fully optimised processes will be supported for decades to come.

OMAX is now a proud member of the Hypertherm family

As a wholly-owned subsidiary of Hypertherm, OMAX will continue to provide innovative waterjet solutions as well as world-class aftermarket service with the added resources of a global company. It's a combination that allows it to accelerate new waterjet technologies through engineering and research collaboration, strengthened global logistics and reach and continued customer focus.

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AAG continues to expand in the waterjet cutting industry

AAG continues to expand in the waterjet cutting industry via its range of WARDJet systems. These are founded on over 20 years of experience in waterjet cutting technology and now represent a major part of the wide range of CNC machining solutions supplied by the group to multiple industries.

The machines supplied by AAG share individual as well as common design and performance characteristics to accommodate different production and workspace requirements. These range from the manufacture of small parts and components by engineering shops and machining centres to the high-volume and larger-format output undertaken by industrial-sized companies. The machines have been developed to process a wide range of materials.

Key design features of the machines include the now familiar robust solid steel construction to accommodate the most vigorous machine operation likely to be encountered, multiple cutting tool head options and ball screw drive systems for optimum machining accuracy and the elimination of problems frequently encountered with conventional belt-driven waterjet cutting systems. An optional water level control system and machine enclosure minimise splashback to conserve water and to reduce noise levels.

An important optional machine enhancement is the latest Apex-60 5-axis cutting head. This enables cutting at angles of 60 degrees via a cutting force of 39N at speeds of up to 50.8 m/min which, according to AAG, sets the Apex-60 apart from any comparable 5-axis cutting head. With a Z-travel of 304.8 mm, the Apex-60 will process materials in the widest and thickest materials likely to be required, with full maximisation of the cutting envelope and no compromise on quality.

The X-Series and Z-Series of large-format WARDJet machines have been designed with a CNC platform that has a wide range of different configurations, including up to 16 cutting heads on one gantry. Available in three different-sized models, 1515, 1570 and 2040, the X-Series has a maximum cutting speed of 20 metres/minute. The Z-Series comes in five different-sized

models, 2043, 2543, 2546, 3043 and 3046, each providing cutting speeds of 12.7 metres/minute.

Part of the A-Series of small-format machines, the A0612 smaller-format model effectively meets the requirements of a market for which hitherto there were only limited options. Significantly, the A0612 shares the design and performance characteristics of a full-size waterjet system, including a cutting speed of 12.7 m/min, but at a commensurately lower cost

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Unison launches new range of tube bending machines

Unison Ltd, a leading name in all-electric tube bending machines, has launched a brand-new range of hybrid models to make its uncompromising levels of quality, reliability and support available to an even wider range of companies involved in tube manipulation.

Called Synergy HBM, hybrid, multi-stack, the new machines will be available in 50 mm and 80 mm, maximum tube diameter, versions initially and will feature the company's latest Unibend Lite control system.

"In developing the Synergy HBM range, our objective was simple. To offer all the values associated with the Unison brand to a greater number of tube manipulation businesses," comments Unison Ltd managing director, Alan Pickering. "The new Unison Synergy HBM range is the result of an extensive development programme and will provide a lower cost entry point for businesses that do not require the extensive capabilities of our all-electric premium range of Unison Breeze machines."

Since the introduction of its infinitely controllable Unison Breeze range in 1994, Unison has become the brand of choice for numerous organisations and specialist subcontractors involved in small production runs of ultra-precise tubular components for shipbuilding, aerospace, performance automotive and other sectors.

"Our new Synergy HBM range is the direct result of enquiries from prospective customers whose tube bending requirements wouldn't typically demand the high levels of flexibility and rapid setup times associated with our industry-leading Breeze models," adds Alan Pickering. "They have been in touch because they are crying out for the quality, reliability and global support that is standard with Unison Breeze tube benders, but in a machine designed for less complex, repeat applications.

"All too frequently, lower cost tube bending machines seem to be equipped with less sophisticated, less intuitive levels of control. That, however, isn't something that can be said about the new Unison Synergy HBM range. In line with our core values, Synergy buyers will benefit from exceptional levels of control, with functionality and user-friendly features as close as possible to those enjoyed by users of Unison Breeze machines. Synergy HBM tube benders may be lower priced, but that's not at the expense of quality. They are the perfect solution for companies that aspire to own a Unison Breeze machine."

As hybrid machines, Unison's new Synergy HBM range combines electric and hydraulic operation. Just like Unison Breeze machines, each model benefits from exceptional power and rigid mechanical design. As with Breeze models, bend arm, carriage, plane of bend and carriage side shift are servo driven, while mandrel, pressure die and clamping system are hydraulically controlled. This makes Synergy HBM machines well suited to high volume, repetitive tube manipulation operations that don't necessitate the rapid setup times and all-electric control provided by Unison Breeze machines for right-first time repeat subcontract work.

Alan Pickering continues: "Although our new Synergy HBM range has a lower price point than our all-electric Breeze machines, that certainly isn't reflected in the build specification. Each Synergy HBM machine is equipped with our user-friendly Unibend Lite control system, with touch screen, 3D component simulation and measuring machine interfaces.

"We have used Eaton hydraulics, Yaskawa motors and drives and our own, tried and tested, Unison tooling mounts. Additionally, the Bendpro CNC control system can be specified as an optional extra by customers in the USA. Thanks to the extremely high residual values associated with previously owned Unison Breeze machines, we also anticipate that purchasing a Synergy HBM tube bender will prove a sound investment, with exceptionally good, retained value for any customer wishing to upgrade to an all-electric Breeze model at a later date."

Established in 1973, Unison Ltd is a leading manufacturer of tube and pipe bending machines, offering the largest range of all-electric benders for diameters from 4 mm, 5/32", to 275 mm, 10" schedule pipe. With a reputation for building highly powerful, highly robust machines that deliver uncompromising levels of accuracy and repeatability, Unison Ltd continually innovates the tube and pipe bending marketplace.

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All-in-one solutions from transfluid for chipless cuts of tubes with a diameter of up to 80 mm

The t-cut tube cutting machines from the mechanical engineering company transfluid in Schmallenberg makes it possible to use orbital cutting technology for tubes with a diameter of up to 80 mm. Director Stefanie Flaeper says: "Perfect cuts are one of the key production benefits of this technology, as well as fast cycle times and clean processes. The RTO 628 for tube diameters of 6-28 mm and the RTO 2080 for tube diameters of 20-80 mm cut tubes with the greatest precision, including steel and stainless-steel tubes."

The intuitive controls of the system integrate very well with the production processes and can be combined with different concepts for loading tubes or flexible unloading systems, if the customers wishes to. Speed and flexibility are qualities found in the machine, both as stand-alone or as part of a production cell. Stefanie Flaeper adds: "We have built the t-cut tube cutting system with focus on economy and maximum efficiency. This starts with the very durable cutting blade and continues with the clean cutting results, which makes it possible to continue working on the item without further steps. With the optional software available to optimise cuts, scrap and any associated waste are a thing of the past.

As an all-in-one solution, the t-cut can manufacture medium and large volumes with different cutting options, using a cut-through, pull or pull-/and break method. Changing the setup for other tube sizes or lengths takes very little time.

In addition to the orbital cutting technique, transfluid also offers the familiar blade-cutting method. If needed, the cutting step can be integrated with the process on the bending machine. The bending and cutting process are easily and reliably combined, with very little chip generation.

transfluid is a valued partner all over the world for the production of tube bending and tube processing machines. transfluid

has been developing its customer-focused technologies for tube processing since 1988 and offers tailor-made solutions for the construction of plants and machines, for the automotive, energy and shipbuilding sectors and the manufacturing of medical equipment.

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The many advantages of VpCI-148 grease resistant paper

Metals packaging calls for different materials in different circumstances. In many cases, VCI films and bags play a critical role in protecting metals from corrosion and rust during storage and shipment. In other cases, Cortec® VpCI® Paper is the preferred option in terms of cushioning, environmental impact and the handling of residual moisture on warm parts going into a package. When it comes to grease resistance in particular, Cortec VpCI-148 Paper stands out with exceptional environmental and performance advantages for specialty applications.

Cortec VpCI-148 is a protective packaging paper for ferrous and non-ferrous metals. It provides corrosion protection on one side and excellent resistance to grease, oil, and solvents on the other. It is available in custom sizes wider than the industry average to accommodate large parts. Furthermore, it offers a degree of natural cushioning not found in standard VCI plastic.

VpCI-148 Paper also presents positive environmental aspects and a worker friendly profile. As paper, it is sourced from renewable materials, whereas common VCI plastics are sourced from fossil fuels. Furthermore, it uses a water-based coating for grease resistance, rather than the wax or poly coatings typically used for barrier papers. VpCI-148 Paper is non-hazardous and free of fluorochemicals, nitrites, phosphates, silicones, chromates and other heavy metals.

Due to its oil and grease resistance, VpCI-148 Paper is ideal for protecting bearings and other metal parts that require lubrication or cannot be cleaned from residual process oils before packaging. VpCI-148 protects against humidity, SO2, H2S, and galvanic corrosion from dissimilar metals.

An excellent example of how VpCI-148 protected in the presence of process oils comes from a leading European automaker that was experiencing tarnish spots and corrosion on SUV frames wrapped in VCI film. The problem occurred because it was not possible to remove the process oil from the frames before shipping. The process oil was making the polyethylene film break

down and allowing the metal to corrode and tarnish at these points, causing the frames to be rejected.

Cortec came to the rescue by providing VpC-148 Paper. It was the only supplier able to produce the rolls of grease resistant paper at almost 2.5 m wide, the size needed to wrap the large frames. VpCI-148 Paper eliminated the tarnish and corrosion problem even in the presence of process oil.

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ESAB launches 600- and 800-amp options for iseries of high-precision automated plasma systems

For increased productivity when automated plasma cutting, ESAB has launched enhanced versions of its 200-, 300- and 400-amp versions iSeries high-precision plasma power sources to double cutting output to 400, 600 or 800 amps, respectively. The new capability, standard on iSeries systems manufactured after March 1, requires using matching consumables, a connection kit with cabling and associated software for the controller.

"The concept is similar to paralleling two welding power sources to use larger diameter electrodes for increased productivity," explains Dirk Ott, VP for global plasma automation. "This new capability features some modest software and hardware enhancements, but the challenge was developing the new 600- and 800-amp consumables for stainless steel and aluminium."

He notes that consumables are the most highly engineered components in an automated plasma cutting system and that achieving optimal cut quality and speed requires changing consumables to match the application. ESAB now offers consumables for automated plasma cutting outputs from 15 to 800 amps.

Target applications include fabricators and steel services centres that use two torches on the same gantry and those cutting sections of stainless steel and aluminium material up to 160 mm, 6.25 in, which are primarily in the power generation, pressure vessel, chemical and petrochemical processing industries. Users of 600- and 800-amp systems primarily want faster cutting speeds on non-ferrous material that ranges from 50 mm to 100 mm, 2 to 4 in. As an example, the 600-amp system cuts 75 mm stainless steel at 330 mm/minute using H35, the H35 process uses 35 percent hydrogen/65 percent nitrogen for the plasma gas and nitrogen for the shielding gas.

Connected or independent

With the new capabilities, users of iSeries 200, iSeries 300 and iSeries 400 systems have the flexibility to operate two systems of the same output independently or together.

"Putting two plasma torches on the same gantry to cut identical shapes is a common strategy to increase productivity in high-volume applications," says Dirk Ott. "When fabricators want to double output to cut thicker materials or increase cutting, all they need to do is switch consumables. We made this easy because our 400- 600- and 800-conumables all use the same Torch. With the quick-change consumables cartridge, users can change consumables in less than 30 seconds."

Water Mist Secondary (WMS) process

The Water Mist Secondary process, which incorporates nitrogen as the plasma gas and ordinary tap water for shielding, produces superior cut quality and a lower cost per cut on stainless steel and aluminium. On stainless steel, the WMS process cuts up to 300 percent faster and lowers cost-per cut by 20 percent or more compared to systems that use Argon-Hydrogen (H35) for the plasma gas.

"With our previous technology, the WMS process could cut material up to about 40 mm. Now we have increased WMS output up to 800 amps for cutting non-ferrous* material up to 125 mm," says Dirk Ott. "No other manufacture offers a system with these capabilities."

In addition to WMS and H35 for non-ferrous, ESAB offers a full line of consumables for cutting ferrous materials, as well as using argon for plasma marketing. All XT torches use existing parts for underwater cutting for that fabricators want to reduce smoke and glare.

* Automated plasma cutting on mild steel is generally limited to thicknesses of 50 mm or less. On thicker material, the oxy-fuel process offers similar cutting speeds, good precision and lower cost of operation.

Additional flexibility

The iSeries is available in 100-, 200-, 300- and 400-amp configurations for cutting plate up to 50 mm thick. All models feature a common cabinet and components, as well as StepUp™ modular technology, allowing users to increase the output from 100 amps all the way up to 400 amps by adding inverter blocks and 400, 600 or 800 amps by paralleling 200-, 300- or 400-amp units. The modular design minimises parts inventory and repair time.

"Between Step-Up technology and the ability parallel iSeries units, fabricators never have to worry about purchasing a system that does not have enough capacity to meet current and future needs," Dirk Ott concludes.

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Robotic welding for weld quality optimisation

Several traditional manufacturing methods have been automated overs the years, in response to several influencing factors, such as supply versus demand, product integrity considerations, access to a skilled labour pool and maintaining competitive advantage. Welding falls into this category and as a manufacturing process in today's current climate, automated robotic welding is gaining in both popularity and progression.

The automotive and aerospace sectors have traditionally been the advocates of automated welding. Since welding is one of the most effective methods of joining metal, both industries have plentiful need for it, specifically MIG and ARC welding. Though now as the benefits of automated robotic welding are becoming apparent, the adoption of the process is being seen across other sectors, with factors such as speed of execution and cost-effectiveness championing its integration into high-output production facilities.

Mass production of multiple product iterations and mass customisation deliver significant challenges to manufacturers who adopt hard automation principles. However, as consumers behaviours diversify, demand evolves and market trends fluctuate, the need to respond quickly and efficiently is critical through the implementation of flexible production systems.

The beauty of flexible automation systems is the ease of which a designated programme or application can be changed according to a specific manufacturing requirement. In addition, the footprints of many standard welding cells are relatively small, meaning that substantial reconfiguration of an existing operational footprint is not necessary. While some consideration is necessary surrounding what is to be achieved and what is imperative, the limitations that might apply to hard automation do not exist. In fact, standard welding cells afford several returns: simple automation capability; optimal process reliability; system availability; system flexibility.

The manual application of a weld is one that requires both skill and dexterity to complete. It has been widely acknowledged

that robot process automation delivers a level of repeatability and accuracy that can't be sustained by manual means and, as such, product integrity and quality output are two of several key considerations when deciding to adopt automation.

Automation is the logical solution. Why not employ a robot to undertake the welding activity and redeploy operators into other areas of your business, where they can add value and apply skills to high value applications/tasks.

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New £2m specialist welding machine now fully operational at Brighouse

Charlotte Peterson, customer relations manager at Siddall & Hilton Products; Mayor of West Yorkshire, Tracy Brabin and Andy Dawson,

Siddall and Hilton Products, one of Brighouse's longest-established manufacturers and largest employers, has announced that its new £2m specialist welding machine is now fully operational after an extensive three month-long commissioning programme. Running over 40 percent faster than any of the company's existing machines and producing up to 70 percent less process scrap, it will increase capacity and efficiency at the business which manufactures welded steel mesh for high-security fencing, general fencing and industrial mesh panels.

In March 2021, the new LGR102 welding machine travelled from Austria, having been manufactured by EVG in Graz, to its new home in West Yorkshire where it joined the welded steel mesh manufacturer's existing fleet of four EVG machines.

Utilising the latest medium frequency welding technology, the new machine will focus on the production of industrial mesh, freeing up capacity on the other machines and enabling the business to increase through-put as it continues to grow.

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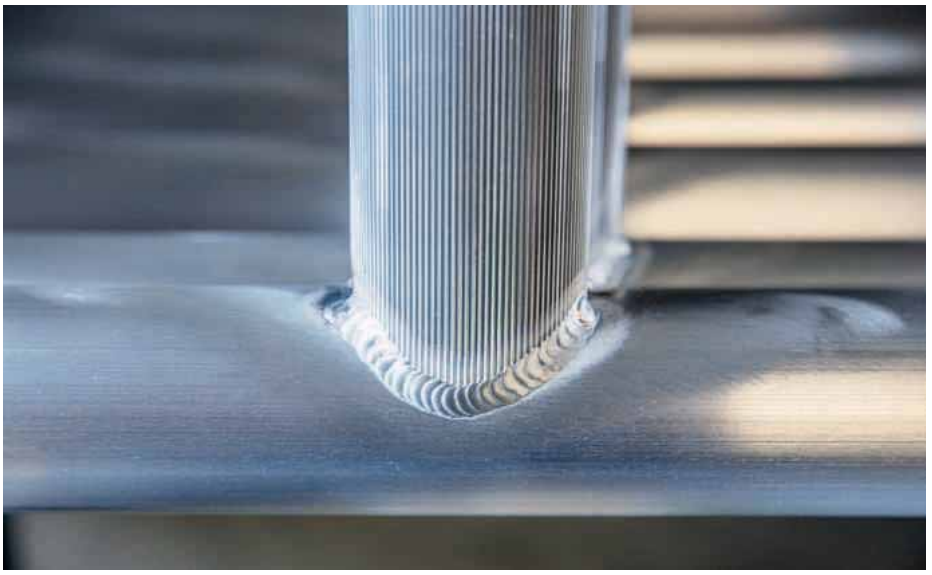
Fronius welding technology moves in at ALTEC

ALTEC manufactures a wide variety of largely aluminium scaffold-based access solutions, such as aircraft docking systems, by relying on welding technology from Fronius. With the CMT welding process and the Rippledrive pulse characteristic, ALTEC's industrial production lines are fully equipped for future challenges.

It is not only in lightweight automotive construction or aerospace technology that aluminium is a byword for dynamism and pushing the boundaries of accepted engineering limits. It also facilitates everyday life wherever large structures have to be moved by human hands, such as the diverse range of access solutions offered by ALTEC Aluminium-Technik GmbH & Co. KGaA.



The medium-sized enterprise from Mayen in the western German state of Rhineland-Palatinate has an extremely broad product portfolio: from rolling scaffolds, facade scaffolds and flat roof fall-protection systems to complete docking systems for the aviation industry and numerous special solutions. These include mobile maintenance stairs, working platforms, transitions or platform stairs for industrial applications.

Up to 95 percent of the metal processed and welded on ALTEC's production lines is aluminium. Steel applications account for just five percent. Yet as a specialist welding company with EN 1090-1 and 1090-3 certification, ALTEC and its 50 employees can master even the most complex orders thanks to 35 years of experience in welding aluminium components.

As part of an ongoing automation process, a specific aluminium framework part, AlSi1, two mms, that has since become required in large quantities was to be transferred from manual production to robotic welding. One of the main goals here was to achieve a high welding speed in order to gain a competitive advantage. At the same time, the structure was to be joined with the greatest possible process reliability.

As a specialist in thin sheet and aluminium applications, Fronius therefore had the opportunity to beat the competition in 2018 as ALTEC found the best possible solution for its needs with the Fronius CMT (Cold Metal Transfer) process. When deployed in combination with the high-tech TPS 320i welding system platform, CMT delivers particularly high welding speeds, especially in the thin sheet range. As a result, Fronius succeeded in establishing itself in ALTEC's production operations.

After 25 years of automated production, however, other areas of ALTEC's robotic welding technology were also becoming long in the tooth. Following the positive experiences gained with the CMT process, the welding expert once again turned to the German sales and service team at Fronius Kaiserslautern.

In the case of the scaffolding system concerned, the outdated welding technology from a third-party supplier was now causing up to 70 percent rework due to a steady increase in weld seam defects. Time, material and labour costs were therefore no longer in proportion and the advantages of robotic welding were being completely cancelled out. In addition, the weld seam appearance no longer came close to satisfying ALTEC's strict demands. However, the production volume of the component was not high enough to justify investing in a modern robot system.

ALTEC's requirements were therefore clear: a new system would first have to be compatible with the old robot technology. In addition, the greatest possible process reliability had to be ensured which would reduce downtimes to almost zero.

Extensive welding tests conducted at the Fronius Germany competence centre for application engineering ultimately led to a successful conclusion. The PMC Rippledrive welding process variant, a special characteristic used for pulse welding, represented the most suitable solution for ALTEC's welding challenges.

Rippledrive works in a way that is as ingenious as it is simple. Between a number of pulses defined by the welder, defined pause times are set in which the arc is completely switched off. This gives the weld pool time to cool down, making welding possible in all positions. The necessary gap-bridging ability of two millimetres is also guaranteed without any problems. In terms of appearance, the Rippledrive function also leaves a rippling pattern that is in no way inferior to the elegance of TIG welding.

The Pulse Multi Control (PMC) functions also allow the number, shape and size of the individual welding spots to be set by precisely defining the pulse currents.

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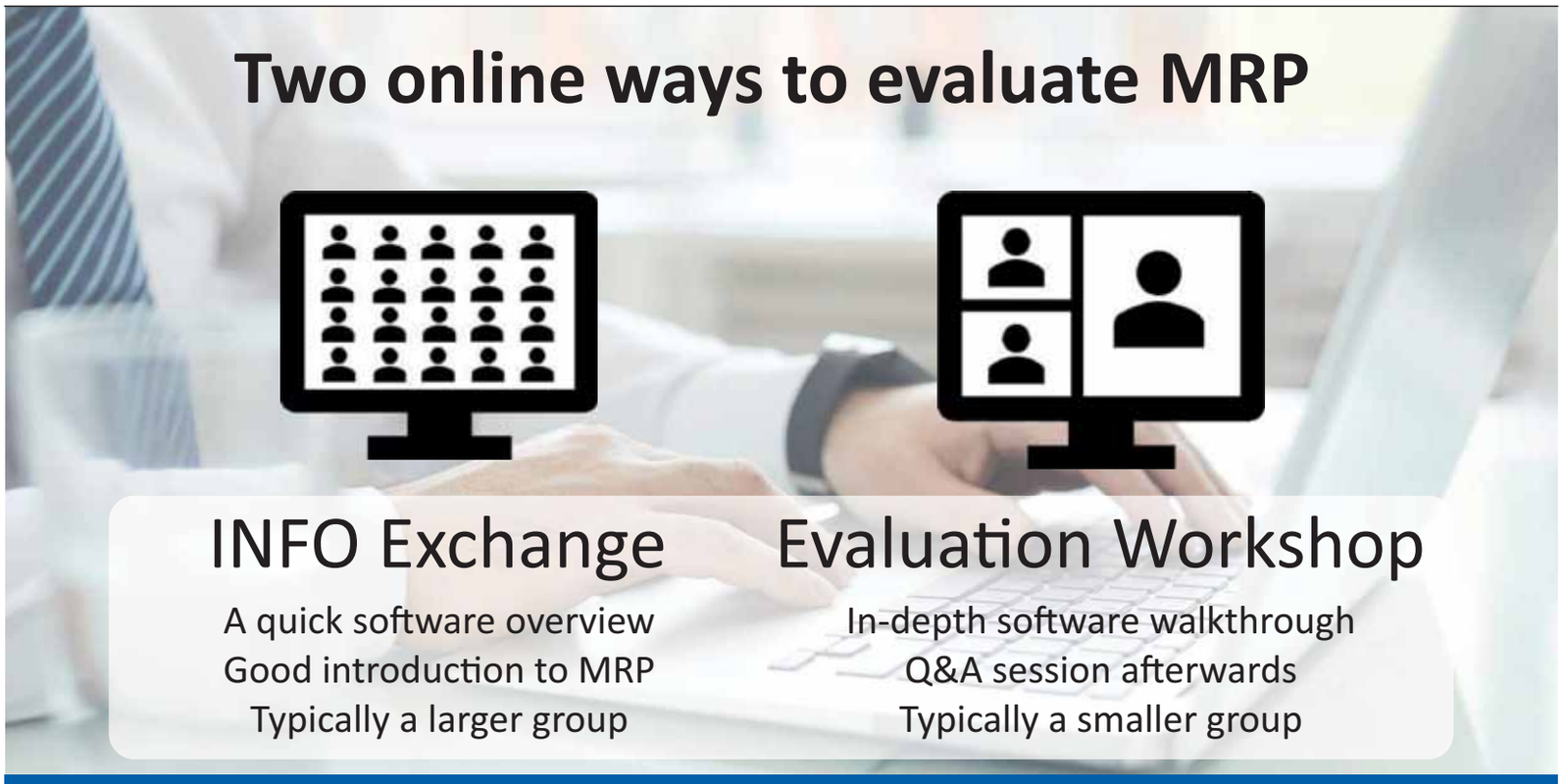
Considering manufacturing software?



Two online ways to evaluate MRP

INFO Exchange

A quick software overview
Good introduction to MRP
Typically a larger group

Evaluation Workshop

In-depth software walkthrough
Q&A session afterwards
Typically a smaller group

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