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**CONTENTS**

<b>SOUTHERN MANUFACTURING PREVIEW</b>	<b>4</b>
<b>MOTORSPORT REPORT</b>	<b>16</b>
<b>METAL CUTTING</b>	<b>20</b>
<b>FEATURE - AUTOMATION</b>	<b>26</b>
<b>CUTTING TOOLS</b>	<b>36</b>
<b>WORKHOLDING</b>	<b>42</b>
<b>FEATURE - FASTENING &amp; ASSEMBLY</b>	<b>46</b>
<b>MEASUREMENT &amp; INSPECTION</b>	<b>52</b>
<b>FEATURE - METAL MARKING</b>	<b>56</b>
<b>CADCAM</b>	<b>64</b>
<b>FEATURE - EuroBLECH REVIEW</b>	<b>68</b>
<b>FEATURE - WATERJET MACHINING</b>	<b>74</b>

**NEXT ISSUE FEBRUARY 2019**

- MEDICAL REPORT
- 5-AXIS MACHINING
- CUTTING TOOLS
- MEASUREMENT & INSPECTION
- SAWING & CUTTING OFF

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## Hurco Open House mirrors success of MACH and caps another record year

More than 90 visitors from the UK, Ireland, Sweden and Estonia representing 62 manufacturing companies attended an Open House at Hurco Europe, High Wycombe on 4th and 5th December 2018.

Managing director David Waghorn says that the figure was 25 percent up on the previous two years, which mirrors the increase in footfall on the company's stand at the MACH exhibition in Birmingham earlier in the year. In the immediate aftermath of the latest in-house event, quotes to the value of £4 million have been issued.

It concluded a record year of trading for Hurco in the UK, with turnover just short of £26 million, an increase of £2 million over 2017. Around one-third of sales was to first-time users of the company's machine tools, a proportion that stays remarkably constant over the years.

Average annual growth since 2002 for the machining centre and CNC lathe supplier has been 10 percent, a rate of expansion that has resulted in the firm outgrowing its current showroom and offices, heralding a move in 2019 to new premises nearby.



The rise in sales resulted from a higher average price for each of the more than 300 machines purchased in the 2018 financial year. This was mainly due to the increasing popularity of 5-axis machining centres, especially the SRTi B-axis models. There are now 14 different Hurco 5-axis machine configurations to suit different applications.

Additionally, the increased turnover reflects a greater tendency for customers to order optional extras such as through-tool coolant, on-machine probing for tools and components, and both single-axis and compound CNC rotary tables. Sales of Roeders machining centres, mainly into the mould and die sector, under a long-standing agency agreement with the German manufacturer, also helped to achieve the record result.

In parallel with the continued business buoyancy, the headcount at Hurco Europe has grown to 50, more than one-third of employees being service engineers. The number of application engineers has increased as well, reflecting the high level of support that is being provided to the firm's expanding list of customers; the installed base of machines now exceeds 4,500.

Looking forward to 2019, David Waghorn foresees the already increasing interest in automation gathering pace.

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# Full house expected for the UK's biggest annual engineering show

Southern Manufacturing & Electronics, the UK's largest annual engineering show, returns to Farnborough from February 5th to 7th 2019. The move to a new permanent setting last year proved an indisputable hit with both visitors and participants, driving a rise in stand bookings for the 2019 show. The organisers, European Trade & Exhibition Services, are predicting a 20 percent increase in exhibitors for 2019, which will comfortably carry the event to its full capacity.

The show's site, Farnborough International Exhibition and Conference Centre, opened in 2018 and is the most significant purpose-built exhibition site to open in the UK for twenty years. Now fully complete, the venue was still under construction for Southern 2018, FIECC offers truly world-class, comfortable surroundings complete with all the amenities one would expect. Free onsite parking for 3,500 cars and easy access from the motorway network make visiting Farnborough a far more pleasant experience than some of the UK's other exhibition centres.

Its location is also a significant one for those involved with or seeking subcontract services. With roughly 22 percent of the UK's 3,400 aerospace enterprises and sizeable numbers of automotive, medical technology and marine engineering businesses located within a 50-mile radius of Farnborough, the exhibition is situated at the heart of one of the UK's most important manufacturing regions. Not surprisingly, many of the local subcontract firms exhibiting are AS9100-rated and seasoned operators in demanding sectors such as aerospace and medical technology.

For many visitors, the show's extensive machinery demonstration area provides the main attraction. Given its location at the birthplace of the UK's aerospace industry, the event is highly regarded by the major machinery vendors and is one of the key UK showcases for their latest products. Southern 2019 delivers its customary impressive line-up of big-name manufacturers and their latest offerings.

Additive and subtractive 5-axis CNC machine tools and 3D printers can be seen



working in harmony on the Matsuura Machinery stand to demonstrate the production strategies now available to UK manufacturers. The show will also mark the first appearance of the MX-850, the largest capacity 5-axis CNC machine the company has ever demonstrated, using fixtures and workholding printed on the company's HP Multi-Jet Fusion 580 colour 3D printer.

Bystronic will demonstrate its Xpert 40 press brake with Mobile Bending Robot. The robot is available for feeding the press brake, turning it into a compact, automated bending cell for producing 3D sheet metal components. Retrofittable to any Xpert 40 press brake, the robot is suitable for subcontractors as it allows automatic production for larger runs of components, or rapid access for manual bending of smaller batches and one-offs by quickly setting the robot module aside. As the automation module is on wheels and the press brake itself is small enough to be moved by fork lift truck, the entire assembly can be relocated anywhere in a factory to suit variable production needs.

Citizen Machinery returns to Southern Manufacturing for the first time since 2008, highlighting two leading manufacturers of CNC automatic lathes, Cincom CNC manufacture sliding head lathes up to 38 mm in diameter, while the Miyano range of fixed headstock lathes has a bar diameter range up to 64 mm and larger billet sizes. Also highlighted this year will be Low

Frequency Vibration (LFV) technology, a new, universally applicable and, so it's claimed, highly efficient cutting technology that increases productivity by chipping swarf from almost all part geometries from the most varied materials. Swarf is broken up in a controlled way thus eliminating machine stops due to tangles, says the company.

As the exclusive distributor of Doosan machine tools in the UK and Ireland, Mills CNC will showcase the DVF 5000 simultaneous 5-axis machine. The compact machine provides simultaneous 5-axis machining capability. It will be exhibited equipped with Heidenhain iTNC640 control and a powerful 17.5 kW/12,000 rpm directly-coupled spindle, although other options are also available. Rapid rates of 40 m/min can be achieved on the X-, Y- and Z-axes. The machine is also equipped with integrated automation provided by a six-position auto-pallet work-changer and a generous servo-driven ATC that can hold up to 120 tools with a 1.3 second tool-to-tool changeover time.

Tooling and workholding is also well represented at Southern 2019. Another notable returning exhibitor is Hainbuch, highlighting its modular system, which it claims is highly accurate and rigid enough to take the demanding speeds and feeds of modern machining. The system can be added to quickly and easily, with a range of mandrels, jaw chucks and a variety of other adaptations available, making a versatile

workholding set up which can be changed over accurately thanks to its patented simple zero-point location system. Gewefa UK showcases spindle nose toolholding in standard sizes and popular formats, collet chucks, end mill holders, hydraulic, milling chucks and heat shrink clamping, as well as special designs suited to specific industry applications. The company will also present its new concept of a hydraulic chuck toolholder designed for turning applications on multi-task machines. There will also be examples from the face and taper range of toolholders and the UK debut for the M96ER hydraulic collet chuck, which features a cutter securing concept that reduces spindle run out and automatic tool centring.

Quickgrind highlights its recently launched Infinite Possibilities range, an alternative to standard ranges of cutting tools, providing customers with a bespoke cutting tool that allows the user to optimise tools paths and produce highly accurate parts in a cost-efficient manner. The company says that it offers customised tools that will not cost very much more than an off-the-shelf standard tool. There are "infinite options at a standard price", according to the company. The independent manufacturer supplies to the aerospace, aircraft, automotive, defence, F1, medical, motorsport, mould and die, oil and gas industries and to subcontractors. It also offers a remanufacturing service. New tools on display include conical, tangential and lens type barrel tools, lollipop, high feed and chip breaker trochoidal end mills.

Southern Manufacturing is also a rich marketplace for all the ancillary hardware



and consumables essential to any engineering business. Another well-known name returning for 2019 is oil mist filter specialist Filtermist International. Celebrating its 50th anniversary in 2019, the firm offers a wide range of products and services designed to minimise exposure to oil mist and other airborne contaminants. Alongside its range of aqueous cleaning machines, MecWash Systems is highlighting its broader range of capabilities that include laboratory analysis of components, developing specialist detergents and the manufacture of a range of standard or purpose-built washing machines. Machines such as its Duo, to be seen at the show, are used in the aerospace, automotive, defence, medical and general engineering industries to clean metal and plastic engineering components and are relied on by engineers around the world including Rolls-Royce, UTC Aerospace Systems, Delphi, Perkins, JCB and Eaton.

Together with a record volume of exhibitors expected, the show has formalised relationships with a number of important industry organisations, which includes Composites UK, the Confederation of British Metalforming, Farnborough Aerospace Consortium, The British Gear Association, Society of Motor Manufacturers and Traders and the Gauge and Toolmakers Association. The partnerships will enable the roll-out of new show features and access to a high level of technical expertise in a wide variety of sectors via the show's comprehensive free technical seminar programme, open to all visitors. Some examples include a look at large scale 3D printing, incremental sheet metal forming and wire & arc additive manufacturing (WAAM), alongside a whole raft of other technical and business oriented sessions.

Farnborough International Conference and Exhibition Centre offers free car parking for 3,500 vehicles and is well-served by road and public transport links. A regular free shuttle bus service operates from both of Farnborough's mainline railway stations directly to the show. The venue itself offers a high standard of facilities including a free WiFi service in the foyer area and high-quality catering outlets.

Southern Manufacturing & Electronics 2019 opens from February 5th to 7th. Admission to the show is free. More information and tickets are available from [www.industrysouth.co.uk](http://www.industrysouth.co.uk).

**Southern Manufacturing Show Ltd**  
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## 3D printing capability brought to life by LOCTITE

Henkel is a leader in adhesive technology and it has consistently introduced new developments for industrial applications at successive Southern Manufacturing shows. These products have been for the core engineering applications for which the Henkel brands: LOCTITE®, TEROSON®, BONDERITE® and TECHNOMELT® are best known. They include structural and general bonding, threadlocking and sealing, gasketing, retaining and functional coating.

Southern Manufacturing 2019 continues this trend with latest generation and new products being demonstrated for all of these established applications, but this year Henkel will also introduce visitors to an exciting new development, its 3D printing material solutions for industrial manufacturing.

Henkel is applying its know-how in high performance materials such as light cure acrylic, silicone, epoxy and polyurethane adhesives to the rapidly growing market for additive manufacturing, from prototyping to final parts production.

Henkel is also developing tailor-made products and services to provide high-impact solutions for various industrial sectors and expanding its strategic partnerships with other technology leaders such as HP, for which Henkel is the first global reseller of its 3D printers' portfolio.

The company's 3D capability will be demonstrated on the stand by experts who are skilled in combining the correct 'building' materials with the optimal printing process and software to enable customers to realise the full potential of additive manufacturing.

There will again be clear evidence of Henkel's continuous product development



across all technologies at Southern Manufacturing 2019 and one good example is LOCTITE 518 gasket sealant. This product's scope of application has been increased by its newfound capability to cure through light surface contamination and to work well on stainless steel and aluminium without an activator.

First introduced to overcome problems associated with conventional pre-cut compression gaskets, it has now also been made available in pen form. This allows LOCTITE 518 to deliver its proven leak-fighting properties via a roller, making application easier than ever with no waste and less mess. It fills all voids, resists high pressure and, when fully cured, maintains clamp load and prevents corrosion.

LOCTITE Universal Structural Bonders have transformed the design and assembly of many products throughout the UK. The bond strength, speedy cure and durability that are characteristic of these adhesives are thanks to Henkel's hybrid technology. They are further examples of how Henkel continues to push the boundaries of adhesive capability and naturally they will all be featured at the show.

Another field in which Henkel stands out from the crowd is its ability to develop and supply the best equipment to dispense its adhesives. As the company builds its own systems rather than work with a dispensing 'partner' it can

supply a turnkey solution that is truly fit for purpose and for which the customer has a single point of contact.

Henkel operates globally with a well-balanced and diversified portfolio. The company holds leading positions with its three business units in both industrial and consumer businesses thanks to strong brands, innovations and technologies. Henkel Adhesive Technologies is a global leader in the adhesives market, across all industry segments worldwide. In its laundry and home care and beauty care businesses, the company holds leading positions in many markets and categories around the world.

Founded in 1876, Henkel looks back on more than 140 years of success. In 2016, Henkel reported sales of 18.7 billion euros and adjusted operating profit of 3.2 billion euros. Combined sales of the respective top brands of the three business units, Loctite, Schwarzkopf and Persil, amounted to more than six billion euros. Henkel employs more than 50,000 people globally, a passionate and highly diverse team, united by a strong company culture, a common purpose to create sustainable value, and shared values. As a recognised leader in sustainability, Henkel holds top positions in many international indices and rankings. The company's preferred shares are listed in the German stock index DAX.

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**Stand H165**





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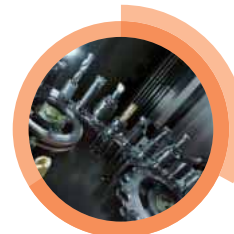
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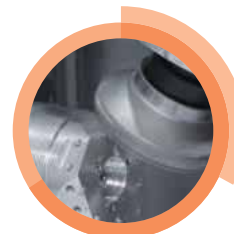
To find out more or see a demonstration, visit us at Southern Manufacturing & Electronics, **5-7 February** at **Farnborough International, Stand J220**.



1500mm bed length provides added flexibility for long workpieces and reduced interference between turning and milling heads



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**5-7 FEBRUARY 2019**  
**STAND J220**

**SOUTHERN**  
**19** Manufacturing  
& Electronics

# SCHUNK introduces finest technology

At the Southern Manufacturing 2019 exhibition, SCHUNK Intec Ltd will be demonstrating its finest technological advances alongside established industry leading product lines. It will be demonstrating its expertise with firm favourites like the Vero-S, TENDO and MPG-Plus.

The flagship VERO-S NSE3 quick-change pallet technology has revolutionised the industry with its enormous pull-down forces of 8,000 N or 28,000 N, with activated turbo function, as well as increased dimensional stability for the module body. This has a positive impact on the rigidity of the clamping solutions. Even the highest tilting moments and transverse forces can be reliably absorbed when parts are clamped at the base then machined at height. Clamping and positioning also occur via a short taper with a repeat accuracy of <math><0.005\text{ mm}</math> with the premium modules. This ensures maximum precision even in the most demanding applications.

Alongside the VERO-S NSE3 will be the SCHUNK TENDO Slim 4ax hydraulic expansion toolholder. This market leader makes it possible to combine the complete outside geometry of heat shrinking mountings according to DIN 69882-8 with the proven qualities of SCHUNK hydraulic expansion technology. The slim precision mounting makes it ideal for use in series production, particularly in the automotive industry. It was particularly designed for axial operations and shows its strength during milling close to interfering contours, countersinking, and reaming in 5-axis centres and the die and mould industry.

As with every SCHUNK TENDO hydraulic

expansion toolholder, the SCHUNK TENDO Slim 4ax also has permanently high run-out accuracies, perfect vibration damping, and a fast tool change with a wrench. Even narrow shape and position tolerances can be met precisely; therefore, investments in high-priced peripheral devices are not required. Since the precision mounting can replace conventional heat shrinking toolholders by Plug & Work without having to reprogram the machine, the benefits can be tested in a real application. SCHUNK TENDO Slim 4ax can be used without expensive peripheral devices.

From the SCHUNK automation line-up at Southern Manufacturing, it will be demonstrating the new MPG-Plus miniature parallel gripper. It is the most powerful miniature parallel gripper currently

available. Compared with similar modules, that require the same input, it achieves a significantly higher output, paving the way for increasingly smaller and more efficient systems. The higher force and maximum moment enable longer gripper fingers and higher gripping forces in modules of the same size.

To ensure maximum flexibility, the module can be mounted either on its side or bottom. In addition to inductive monitoring, the MPG-plus can also be equipped with programmable magnetic switches. Both the standard and precision version of the small parts gripper are available in sizes 16 to 64 with finger strokes from 1.5 to 10 mm and gripping forces from 25 N to 350 N. The maximum part weight is between 0.13 kg and 1.25 kg, depending on the size.

The company was founded in 1945 by Friedrich Schunk as a mechanical workshop and has developed under the leadership of Heinz-Dieter Schunk to a competence and leader for gripping systems and clamping technology. Today, the company is run by the third-generation siblings Henrik A. Schunk and Kristina I. Schunk.

SCHUNK has an extensive market presence thanks to its 3,400 employees in nine plants, 34 directly owned subsidiaries and distribution partners in more than 50 countries throughout the world. With 11,000 standard components, the company offers the world's largest assortment of gripping systems and clamping technology from one source and also the largest product range of standard grippers. The complete program of gripping systems comprises more than 4,000 components.

Its main customers are all manufacturing companies with assembly, handling and metal-cutting processes. The customer base includes the who's who of mechanical engineering, robotics, automation and assembly handling and all the renowned automotive brands and their suppliers. Since 2012, goalkeeper legend Jens Lehmann has acted as brand ambassador for safe, precise gripping and holding in the SCHUNK team.

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**Stand G240**





See the Doosan DVF 5000 simultaneous 5-axis machining centre in action at Southern Manufacturing 2019.

**Mills CNC: Stand C220.**

**SOUTHERN**  
**19** Manufacturing  
& Electronics  
FARNBOROUGH | Herts | GU14 6XL  
5th to 7th February 2019

# At every exhibition there's always one centre of attraction.



The DVF 5000 is Doosan's latest simultaneous 5-axis machine and is taking centre stage at Southern Manufacturing 2019.

As well as its stylish good looks the machine is equipped with a range of productivity-enhancing technologies and features that include:

- A 17W/12,000rpm direct-drive spindle (22kW/18,000rpm option)
- 40m/min rapid rates
- Integrated thermal compensation system
- Up to 120-position tool changer

- The latest Heidenhain TNC 640 Control
- Auto-pallet work-changer (6, 8 or 10 pallet system)
- Grease slide-way lubrication
- 400kg maximum table load

**If productivity, speed, accuracy are all high on your agenda - visit Mills CNC's Stand (C220) and check-out the new Doosan DVF 5000.**

**The Doosan DVF 5000 - it's going to steal the Show.**

**Mills CNC: Like No-one Else!**

# Network software allows machine tools to be monitored from anywhere

The focus on HEIDENHAIN's stand at Southern Manufacturing will be the company's Industry 4.0-compatible StateMonitor software. It runs on a PC, tablet or other mobile device and enables a user to capture, visualise and evaluate the status of connected machine tools and the current jobs being run.

Results can be displayed on any terminal over a network. It could be a CNC system in production that is monitoring and displaying centrally the status of several machines, or an interconnected PC in a manager's or programmer's office. Alternatively, a networked mobile device is able to display identical information. It frees the operator to leave the machine to source a new tool or attend a meeting, for example, and still know what the machine is doing in real time.

Forming part of HEIDENHAIN's Connected Machining package, which is compatible with all TNC controls including older CNC systems, StateMonitor makes extensive use of charts and graphs to assist visualisation of the status of the connected machines. The data can be configured to meet the user's requirements, facilitating its evaluation and so boosting efficiency and productivity, thereby increasing competitiveness.

Neil Prescott, managing director of HEIDENHAIN (GB) in Burgess Hill, says: "At the Southern Manufacturing show we will have a TNC control on our stand linked to a number of networked terminals and displays to demonstrate the ease with which StateMonitor acquires and analyses information to reduce downtime during machining.

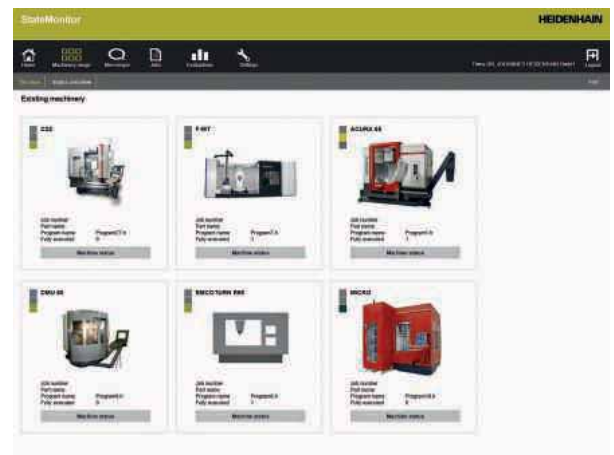


"The software is compatible with other makes of CNC system equipped with the MTConnect protocol interface, so is not limited to use on our own controls. That would go against our data-driven approach to manufacturing, for which exchangeability and interoperability are essential."

HEIDENHAIN offers a StateMonitor commissioning service to assist a manufacturer in installing and setting up the software, which is especially useful in factories where the network is complicated and a highly customised configuration involving multiple options is needed. The service is available irrespective of which controls are being used. This is subject to compatibility and whether they were supplied by the OEM with the machine tool or purchased separately to upgrade an existing machine. Training is provided so that the user can undertake further modifications and additional machine connections on their own.

The control-centric structure of HEIDENHAIN's production IT-based networking exploits other functional modules within the Connected Machining suite, a core component of which is the manufacturer's DNC interface. Two-way communication with a CAM system and other Windows applications is facilitated by Remote Desktop Manager software; while using Batch Process Manager, the operator is able to monitor the NC program and tools and schedule the execution of several production orders simultaneously.

A leading developer and manufacturer of encoders, digital readouts and TNC/CNC numerical controls, HEIDENHAIN (GB) Ltd is the UK subsidiary of Dr JOHANNES HEIDENHAIN GmbH, a leading international manufacturer of precision measurement and control equipment. Its superior technology is utilised in high-precision motors,



motion control and machining systems worldwide.

HEIDENHAIN's high-precision machine tool controls and encoders have been setting the standard for positioning excellence since 1948.

The company is committed to providing customers with the products they need to meet the continually increasing demands for accuracy, precision, speed and cost savings. It develops products to ensure productive and efficient plants and machines today while leading the way toward the automated plants and production machines of tomorrow.

As long ago as 1930, Dr Johannes Heidenhain formulated the three principles of service to the customer, highest achievable quality and continuous improvement as prerequisites for a company's success. To this day, these principles remain the basis for HEIDENHAIN'S work and actions. The requirement for highest achievable quality refers not only to the final products, but also to all activities in our company. The high HEIDENHAIN quality standard has been confirmed by certification according to ISO 9001.

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**Stand E185**

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**SOUTHERN**  
19 Manufacturing  
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## Ultra-fast 5-axis machining centre

At Southern Manufacturing, Whitehouse Machine Tools will promote the machine tool ranges it sells into the UK and Ireland under sole agency agreements with several overseas manufacturers. Included are machining centres from Brother, Japan, as well as from Spinner and AXA, Germany, and Akari and WELE, Taiwan. Marketed also are CNC turning centres from Spinner and also from Biglia, Italy.

Demonstrated on the stand will be a Brother Speedio M140X1 5-axis, 30-taper mill-turn centre with a 2,000-rpm direct-drive C-axis table and an A-axis trunnion tiltable from +120 to -30 degree, allowing machining of features at the rear of components and facilitating loading and unloading of parts at the front of the machine. X- Y- and Z-axis travels are 200/440/305 mm and a 16,000 rpm BIG Plus face-and-taper contact spindle can be specified in place of the standard 10,000 rpm spindle.

Brother has removed every conceivable element of non-productive time. Not only are speeds fast during non-cutting motions,

but they also take place simultaneously in X, Y, Z, A and C, together with tool change. The spindle motor's rapid acc/dec and a highly responsive servo control enable a 0.2 second start / stop time. Start-up time of the turning table from zero to 2,000 rpm is less than 0.3 second.

The specification includes 0.9 second tool change from the 22-position magazine, giving 1.4 seconds chip-to-chip time. Rapids of 50 m/min in the linear axes help to minimise non-cutting times further, while 30 m/min cutting feed rate maximises metal removal rate. Synchronised tapping is world-leading at 377 m/min peripheral tap speed. Accessibility for workpiece transfer is ergonomic and the generous door opening can be automated for high production environments.

A video of the machine demo-cutting an aluminium component from a solid billet may be viewed at: [www.youtube.com/watch?v=\\_JogBxM7uA&app=desktop](http://www.youtube.com/watch?v=_JogBxM7uA&app=desktop)



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**Stand G270**

## Live 3D printing and live 5-axis machining

At the Southern Manufacturing exhibition, Matsuura Machinery Ltd will be exhibiting its MX-850 5-axis CNC machine tool and HP Jet Fusion 540 3D printer, working in harmony to demonstrate the production strategies now available to UK manufacturers from Matsuura.

Exclusively at the event, Matsuura will be machining live on the MX-850, the largest capacity CNC machine that the company has ever demonstrated at the show, utilising fixtures and workholding printed on the HP Multi-Jet Fusion 3D printer.

The MX-850 is the largest in the MX Series so far, offering users a large capacity, high quality and cost-effective single table 5-axis CNC machining platform.

As the sole UK machine tool reseller of HP Multi-Jet Fusion 3D Printers in the UK, Matsuura's strong applications experience will be demonstrated at the show through a variety of sample parts printed on the HP Jet Fusion 540 3D printer, in addition to live printing on the machine.

At the event, the company will also be

presenting a seminar entitled "Applications in 3D Printing and Post Processing with HP Multi-Jet Fusion", which aims to be a short and interactive session, with plenty of "real-world" examples on the capabilities of 3D printing and how traditional methods of manufacturing can work alongside 3D printing.

Roger Howkins, managing director of Matsuura Machinery Ltd, says: "Southern Manufacturing has always been a very well attended exhibition and with the organisers' focus on 3D printing we're certain it will be a strong show for us. The two machines we have selected to bring to next year's exhibition perfectly highlight our commitment to providing quality, innovative and tailored solutions to enhance our customers production facilities and deliver a proven return on investment. Our team of application engineers are busy creating new and exclusive demos, workholding and fixtures which we're excited to unveil in February."



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**Stand E260**

# Free mobile App for T Cards Online

Managing a workload is an essential requirement for any business or department and many companies will be familiar with the manual T Card Board developed by T Cards Direct over 60 years ago. The visual, tangible nature of the T Card display is ideal for managing workflows such as health and safety tasks. In fact, this low-cost, efficient system is often a vital cog in the running of a successful business or department.

In recent years, a natural progression has been the development of T cards online; a version which mirrors the simplicity of the manual board system. This can be shown on large screens and desktops simultaneously, giving users the most up-to-date information at the click of a mouse.

T Cards Online has seen many additional features and developments, often at the request of customers, such as; attaching files, creating alarms, task allocation, activity review and analysis. Recent updates and enhancements have made all these functions and features easier, enabling many customers to maximise the benefits of the online system to suit their specific

requirements. T Cards online can also be integrated with other software packages, using the Rest API, so tasks can be created and updated automatically and so avoiding duplication, yet providing so much more visual information.

Now, to take full advantage of the latest communications technology, T Cards has announced the launch of the mobile App for T Cards Online making it easier for users, not necessarily office based, to keep track and update workflow. Phil Heine, managing director, says: "As a well-established, yet forward thinking company, we are always striving to provide cost-effective solutions for our clients. Taking advantage of the latest communications advances is vital and the development of our T Cards App demonstrates this."

The new App will enable users to access the same T Boards from different locations which will be a great advantage, whether you are on site, in the office or in transit. Setup and configuration of the App is via the main licence on the T Cards website and it can then be downloaded via user login



details with a unique QR code. Any future changes on the App are then simultaneously updated to the main licence for anyone to see.

The App is available with a full, no obligation, free 21-day trial.

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## The latest in CAD/CAM technology at Southern

Edgecam, Radan, VISI, and WorkNC will be demonstrating their very latest CAD/CAM technology at the forthcoming Southern Manufacturing exhibition.

The four leading brands are part of the production software business of Hexagon Manufacturing Intelligence and will be sharing stand J240 with Hexagon.

Each software system is featuring its 2019 R1 release, which contains items of new and enhanced functionality aimed at improving efficiency and reducing production time.

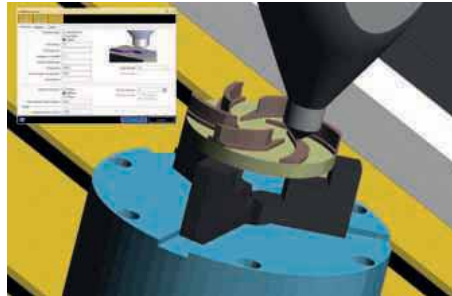
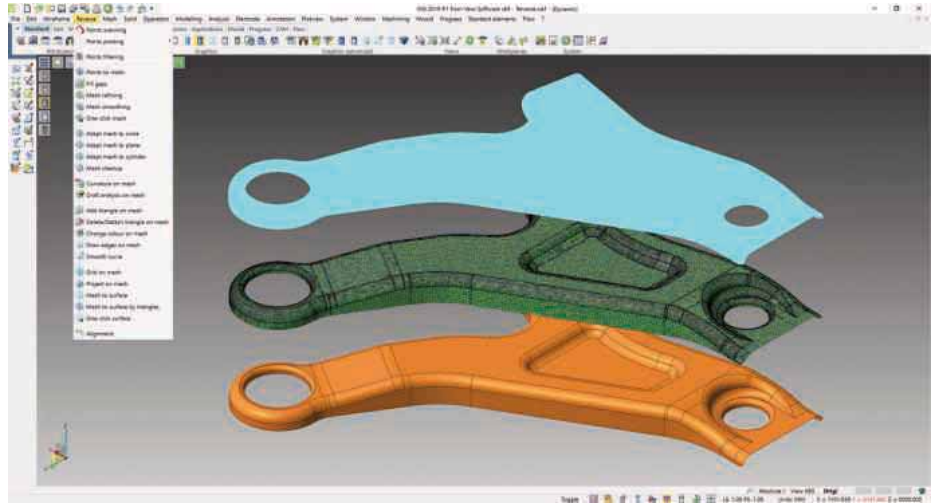
Edgecam 2019R1 comprises more than 30 individual updates, geared towards keeping manufacturers ahead of the game, with the best technology available. It includes an additive manufacturing module. Supporting the direct energy deposition method, Edgecam now offers a dedicated manufacturing cycle which accurately guides a laser as it deposits material to form a shape. After that, the shape is machined using Edgecam's milling cycles to create the final component.

As Edgecam 2019 R1 now offers full ToolStore support for additive manufacturing, shapes can be built using almost any milling cycle, including advanced functions such as rotary and 5-axis simultaneous machining. The new Additive Lace cycle is designed to construct geometry on a layer-by-layer basis, depositing a continuous molten bead of material which adheres to the parent material.

The updates in sheet metal software Radan 2019 R1 focus on doing more with fewer clicks, including saving users an estimated minimum of 50 clicks a day in the Grab Part in Nest Mode function. There are also major updates to Radbend, including fingerstop positioning for sharp-angled parts, pre-selection of the bend process depending on the tool selection and filter tool profiles.

The popular Radquote function is stand-alone, making it easily accessible to employees who don't use Radan for programming. As well as calculating sheet metal costs, all aspects of quoting are now included, such as cutting, bending, welding, painting and assembly.

For the mould and die market, VISI now includes a boost for reverse engineering, along with a range of new and enhanced CAD/CAM functions. VISI 2019 R1 introduces an extended direct interface to multiple



Romer and Leica scanning devices from Hexagon. In conjunction with the enhanced dedicated module, this provides a full reverse engineering solution, as well as the ability to generate casting and stock models from the software's existing modelling and machining environment.

The new ejector pin labelling functionality enables all the ejector pins in a mould design project to be identified in a table by a user-defined label. This simplifies the maintenance process of the mould itself, where one or more ejector pins needs to be replaced.

The latest release of WorkNC allows users to break free from previous constraints caused by tool shapes, slashing cycle times by up to 74 percent. Adding the Z-Level pattern to the advanced Toolform technology means tool shapes such as barrels, ovals and parabolic can be

calculated over the part surfaces, including negative allowances. WorkNC brand manager Miguel Johann says combining the new pattern with the ability to define the slope angles that the toolpath will cut on, makes this the most modern technique for part finishing:

"Before, these high feed cutters could only be used to rough or semi-finish the part, as the allowances weren't constant. But the constraints are now removed, and, depending on the individual tool and part shapes, we've demonstrated time saving of between 47 and 74 percent."

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**Stand J240**



## Xtreme metrology from Aberlink

Aberlink will be demonstrating its most recently launched Coordinate Measuring Machine (CMM) at Southern Manufacturing. The development of the new Xtreme 500 CNC CMM was prompted by the global success of Aberlink's innovative Xtreme 350 model and considerable customer demand for a larger capacity Xtreme version.

Based on a non-Cartesian structure,



Aberlink's cost-effective Xtreme CNC CMMs use mechanical bearings and need no compressed air supply. The innovative CMMs use linear motors and struts are all pre-heated to 40 degrees centigrade, meaning that they are not affected by fluctuations in ambient temperature. These advantageous attributes mean that easy-to-use Xtreme CNC CMMs are ideal for precise shop-floor inspection use.

To help illustrate its impressive high-speed, high-accuracy capabilities when used for both contact and non-contact inspection applications, Aberlink's best-selling Axiom Too CNC CMM will be performing inspection routines using both Renishaw's RTP20 touch probe and also Aberlink's advanced CCD camera system. Despite the Axiom Too's generous measuring volume, the machine's compact design occupies a relatively small footprint with the machine's controller and all peripherals housed within the Axiom Too's workbench.

Also, being put through its paces at the exhibition will be the latest iteration of

Aberlink's popular inspection software. In addition to touch-trigger probing and vision measurement, Aberlink 3D CNC Inspection software now enables the extremely accurate, rapid scanning of features and profiles. The enhanced Mk IV software version delivers improved functionality, it boasts a superior CAD Comparison module and also the easiest to use 'off-line Programming from CAD' software module currently available.

Now the largest UK-owned CMM manufacturer, Aberlink's comprehensive range includes 40 standard sizes of both CNC and manual CMM variants. Aberlink CMMs enable the precise inspection of components measuring from just a couple of millimetres, to parts of over three metres long and up to six tonnes in weight.

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# Goodfabs controls toolroom work with help from XYZ CNC turret mill

Goodfabs has been supplying fabricated exhaust systems for leading motorsport teams since it was founded by former McLaren employee Steve Good in 1982. Since Steve's untimely death in 1999, his work has continued through a dedicated team that has developed business with customers that include many current and former Formula One teams, along with those racing in other series including Le Mans, Nascar, Indy Car, World Rally and Touring car championships. Its reputation is built on its expertise in welding thin wall materials, in particular titanium and Inconel. As the business developed, it also started to manufacture its own tube in-house, which is then bent and fabricated into complex forms to add performance to the cars they are mounted on. With its demanding customers, that have inflexible timetables, deliveries are paramount and this drive to control production continues, with its latest investment being an XYZ SMX SLV turret mill to produce fabrication jigs.

Paul Watson, process manager for Goodfabs, says: "Because the exhaust systems we produce are bespoke, we either need the car here to fit the exhaust system, which is impractical, or need a jig made to replicate the actual mounting points on the car. Prior to getting the XYZ SMX SLV machine, we could only machine the smaller parts of jigs, with the rest being put out to subcontract. While our subcontractor produced the quality and accuracy that we required, we suffered some loss of control and with lead times being short, control of production is vital to us."

The XYZ SMX SLV is the largest turret mill available from XYZ Machine Tools, larger bed mills are available, with a table measuring 1,473 x 305 mm and capable of carrying components weighing up to 580 kg. This is enhanced by axis travels of 1,000 mm x 410 mm x 400 mm, X, Y, Z.

The head can be tilted front to back by +45° to -45° and from left to right by +90° to -90°, with a full 360° rotation of the turret possible. Customers have the option of a 3-axis DRO, 4th axis optional, or can opt for the ProtoTRAK control in either its 2- or 3-axis configuration, the latter being the choice for Goodfabs.



Companies choose machines for a variety of reasons. At Goodfabs these included familiarity, with one of their operators, during his appraisal, suggesting improvements to production and highlighted XYZ as an option as he had used them before at a previous company. Secondly, was the sales support received from the initial contact with XYZ's area sales manager.

Paul Watson explains: "The fact that he could bring a desktop version of the ProtoTRAK control in to us for a demonstration was a big plus, that gave us the confidence that the control would meet our requirements."

The next concern for Goodfabs was delivery, with space being at a premium, other machines would have to be moved and production interrupted to get the XYZ machine in place.

Paul Watson continues: "Given who we work for and the tight deadlines, we can't afford to be stopping for too long, so we needed a specific time, let alone day, for delivery so disruption could be kept to a minimum. XYZ was very clear that the machine would be delivered when promised and this allowed us to make the necessary plans to minimise any downtime and we were cutting metal on the XYZ mill within hours of it arriving."



The addition of the XYZ SMX SLV turret mill has helped Goodfabs to smooth its manufacturing process, giving it greater control over manufacturing and quality. It also improved flexibility as changes to designs can be quickly implemented.

Paul Watson concludes: "While we already have 3- and 5-axis machining capability to produce fittings for our exhaust systems, the addition of the XYZ turret mill has added an extra dimension to our machining capability."

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# OPEN MIND to show hyperMILL version 2019 at Autosport

## Motorsport CAD/CAM experts return to exhibition

The latest version of the hyperMILL® CAD/CAM suite, Version 2019.1, will be seen for the very first time at a UK exhibition at the Autosport show from 10th to 13th January. As a leading manufacturer of CAD/CAM solutions for the motorsport industry, OPEN MIND has expanded its hyperMILL MAXX Machining performance package and this can be seen at the Birmingham NEC on its stand. Other highlights that will be shown include in-operation process-optimising improvements as well as new functions for reducing calculation times.

## New functions

New functions in the finishing module of hyperMILL MAXX Machining include the "5-axis prismatic fillet finishing". Thanks to the geometry and automatic setting of the barrel cutter, this feature can be used in accordance with the principle of a high-feed milling cutter. The processing takes place in a plunging and pulling movement with an extremely high feed and this allows the highest machining performance possible with high-performance conical barrel cutters, also called circle segment or parabolic cutters. Ball and radius cutters can also be used efficiently with this strategy.

## hyperMILL 2019.1

Thread milling options have been completely redesigned for hyperMILL 2019.1 to improve convenience and user friendliness for the programmer. The module supports a variety of different thread milling cutter types and allows extremely easy selection of right-hand and left-hand threads or the definition of the milling direction from bottom to top or vice versa. The thread milling feature also offers automatic approach and retract macros, a selection of roughing options and simplified programming.

## V-Sketch geometry extraction

In Version 2019.1, hyperMILL introduces the new V-Sketch module. This new feature allows users to extract a geometry from a model and adjust the model with respect to

the tolerance band of specific part features. Offering a geometrical boundary for milling and turning, the associative support for V-sketch ensures the contour selection remains in-tact when a change is made by the programmer. This option enables hyperMILL users to insert radii and chamfers without having to select the geometry again.

## Spherical face analysis

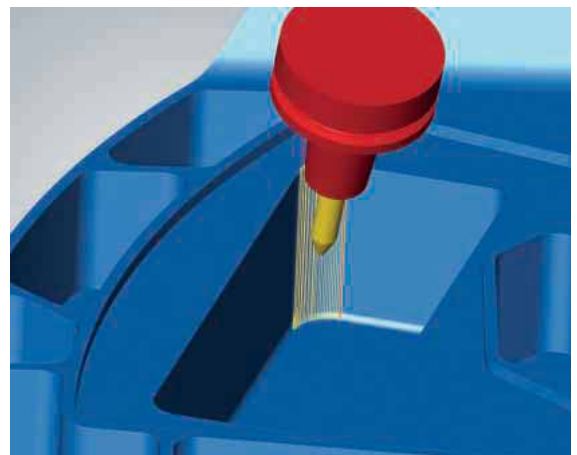
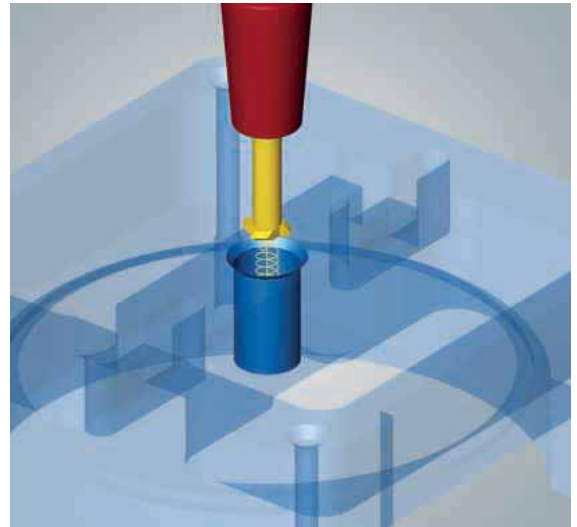
To enhance user friendliness, the latest edition of hyperCAD-S introduces a series of polyline functions that include automatic trim, curve trim, split, extension or shortening and invert orientation and continuity to name a few functions. From an analysis perspective, this enables users to create a bounding box to minimise volume, generate centre points and increase dimensions. To create greater efficiency when programming, the analysis of spherical faces and curved radii on faces with spheres can be identified with a colour map that simplifies use and identification of features for the programmer.

## 3D Profile Finishing

Another offering in Version 2019.1 is the newly enhanced 3D Profile Finishing feature. Added to improve surface finishes and reduce the re-working or secondary finishing operations, this surface precision mode can be activated when working to tolerances below five microns. The NC calculated points back to a mathematical surface to optimise precision levels and surface finishes.

## Thread milling

Recognising the importance of thread milling operations, OPEN MIND has introduced a new thread milling feature to Version 2019.1. Simplifying operation for the programmer, the new thread milling



package incorporates feed rate re-positioning, collision checking for the core diameter and it also generates a cycle output that is dependent upon the parameters of the process. With roughing options and the cycle output parameters, this new feature improves cutting tool performance and efficiency with a constant lateral in-feed and continuous chip flow. This new facility has been developed to work in conjunction with single tooth complete helix tools and multiple tooth tools with several rotations or a single rotation.

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# Move into the fast lane in blisk machining

Blisk, bladed disk, volumes in aircraft production are increasing massively. Large engines now have several of these high-pressure compressors which are manufactured from a single piece of high performance, often exotic alloy materials. The efficient machining of these materials is therefore becoming a focal point for project planning with a wide range of potential methods and combinations thereof available, from mechanical cutting to waterjet cutting. A recent study by the Fraunhofer Institute for Production Technology (IPT) and the Laboratory of Machine Tools and Production Engineering (WZL) at RWTH Aachen in Germany has now shown that Precise Electro-Chemical Machining (PECM) from EMAG drastically cuts costs for users, particularly for dressing the component surface.

Components inside an aircraft engine are exposed to extreme stresses, high temperatures and long service lives. Developers, therefore, use very hard, heat-resistant materials such as nickel-based super alloys for the construction of blisks and disks with single blades. This development presents a range of problems to manufacturing engineers, since conventional cutting methods become uneconomical as the material hardness increases and the service life of expensive tools drops, therefore causing unit costs to rise. A recent study by the specialists at Fraunhofer IPT, together with WZL and EMAG ECM GmbH, compared a total of seven different blisk machining strategies, from multi-axis milling, combined with polishing to high pressure waterjet cutting combined with PECM dressing. The results are impressive: for an assumed production volume of 800 nickel-based HPC blisks, the unit costs can be reduced by more than 50 percent compared to mechanical cutting if users adopt the correct machining strategy. PECM dressing proves to be the essential final process to make radical improvements to the efficiency of the production process.

### Gentle material removal

In view of this, the PECM technology supplied by EMAG ECM is currently being studied very closely by many OEMs and their suppliers. The electro-chemical process removes material without contact



and causes minimal tool wear while being fast and reliable. The basic principle is simple to explain, during the process, the workpiece becomes the positive anode and the tool the negative cathode. An electrolyte solution flows between them, removing metal ions from the workpiece. The form of the cathode, tool, with its active, conductive zones results in material removal from the workpiece at the required

component contours. Ring ducts, grooves, bell hollows and other contours can be produced without contact, but with very high precision and excellent surface quality. With their PECM technology, the experts from EMAG ECM have developed this process in a targeted manner and tuned it to perfection. Two factors play a major role in this: firstly, the gap between the workpiece and tool, through which the electrolyte



solution flows, is particularly narrow. Secondly, the supply of electrolyte solution is enhanced by a mechanical oscillation motion. Both factors together ensure that material removal is even more effective and precise.

### From single turbine blades to the blisk

EMAG ECM has two machine types for the different machining tasks of engine production. While the small model PO 100 SF is designed for machining single turbine blades, the larger PO 900 BF is for machining the complete and therefore much larger blisk. The systems differ in machining area size, footprints, generator capacity and the number of machining axes with precise PECM technology and EMAG high performance components available in both.

Richard Keller, member of the Board of Directors at EMAG ECM GmbH, says: "We launched the PO 900 BF in 2011 for blisk machining. The PO 100 SF development was the second stage in 2013 when an ever-increasing number of customers demanded an electro-chemical machine solution for single blades. We now have an ideal basis for the development of precise,

cost-efficient production solutions for small and large engine components."

Both these machines also provide the user with central EMAG innovations such as a Mineralit® polymer concrete machine base, intelligent software and hardware interfaces and efficient automation solutions.

### Components certified for practice

This method has already been implemented into actual production with top results. For example, a well-known engine manufacturer has already certified single blades made on the PO 100 SF for use in aircraft in 2014, unusually quickly after the start of production of the machine at a supplier's plant. A similar stage is currently pending for blisk production. Components from a whole host of engine companies are currently in the qualification phase for use in practice.

Richard Keller continues: "The technology is currently in the validation phase in a number of test programs. The long-term strategic focus on these components and application technology is proving successful and each additional certification of components manufactured with PECM will only boost our sales success."

The geometric machining precision is one



of the main factors behind the technology's success. In addition, it produces high surface quality with low peak-to-valley heights. Subsequent finishing processes on the blades, such as slide grinding, are therefore no longer required or can be completed much quicker, both of which result in a further reduction in unit costs. This is a massive plus point for a component which is becoming ever more important and whose volumes are rising massively.

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## Meeting customer expectations isn't all about winning races for Swiftune

For over 50 years, Swiftune Engineering has been at the forefront of race preparation for the A-series engine, found in the original mini and other open formula of race cars. Success on the race track has seen Swiftune powered Minis to national, international championship and race wins. Relocation to new premises in the heart of Kent instigated a new chapter in its history and provided a clean slate to develop its engine build and dynamometer bays.

Nick Swift, CEO of Swiftune Engineering, says: "The racetrack has always been our shop window. Success on the track, whether in one of our own cars or a customer using our engines, guarantees interest. Our workshop was always just that and I used to go to extreme lengths to discourage customers from visiting. I would drive the length and breadth of the country picking up engines rather than the customer delivering them."

During the planning stage for the relocation to the new purpose-built

workshop facility, Nick Swift's attitude started to change, or rather his attitude was changed for him by delegations from employees and then his wife, who convinced him that first impressions were important and allowing customers to see how their engines and cars were being prepared was an important aspect of customer service. With Swiftune's race prepared engines and transmissions, which boast 130-150 bhp compared to the original 25 bhp, costing around £20,000 or, a complete race-prepared Mini between £75,000 and £90,000, customer service is paramount.

"It made perfect sense not to bring all of our old storage and workbench equipment over to the new workshop, as we recognised that first impressions are vital in any business, so the decision was taken to call in System Store Solutions. The initial brief was to equip the engine build and dynamometer bays with up to date cabinets and work surfaces. The result is that now, everything has a place and everything is in its place, the



workshop is more efficient and I have no qualms in letting customers come and look around. In fact, we now get a surprising number of customers visiting, and that is due in part to the look of the place thanks to the work done by System Store Solutions."

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# Brown & Holmes invests in a large-capacity Doosan vertical machining centre

Tamworth-based bespoke workholding systems solutions supplier and precision machining specialist, Brown & Holmes Ltd has recently invested in a new large-capacity Doosan 3-axis vertical machining centre from Mills CNC.

The machine, a FANUC controlled Mynx 9500, was installed at one of Brown & Holmes' two facilities in Tamworth in May 2018 and is the third new Doosan machine the company has acquired in the last four years.

The decision to invest in the Mynx 9500 was made, primarily, as a direct result of a growing order book and anticipation of a new business contract to machine high-precision titanium components for a defence sector customer.

To machine the parts, made from titanium plate, to the accuracies and surface finishes required and to hit the lead times demanded by the customer, Brown & Holmes determined that it needed to invest in additional in-house milling capacity.

Kevin Ward, Brown & Holmes' joint managing director, says: "We make regular investment in new, high-performance CNC machine tools, including machining centres and turning centres and have a good range available at our disposal, installed at both our facilities.

"However, owing to a sustained and significant upturn in business experienced over the last few years, we realised we just didn't have the right type of milling capacity available to fulfil the new business order.

"As a consequence, we investigated the market and discussed our requirements with a select number of machine tool suppliers."

The new machine tool checklist drawn up by Brown & Holmes contained a number of 'must have's' that focused not just on the technical specifications and cost of the new machine, but also on the quality and responsiveness of the after-sales services and support provided by the machine tool builder.

As part of its decision-making process, Brown & Holmes discussed its options with Mills CNC, the exclusive distributor of Doosan machine tools in the UK and Ireland.

Kevin Ward explains: "We have a good relationship with Mills CNC and in recent



years have purchased a large Doosan Puma 600 lathe in 2014 and a Doosan DNM 750L Mk II vertical machining centre in 2017.

"We are also one of Mills CNC's technical partners and have worked in collaboration with them delivering customised turnkey and process improvement projects to a range of UK and Irish component manufacturers.

"We like and respect Mills CNC's approach. The emphasis the company places on customer service and after-sales support matches our own business ethos.

"Having discussed our requirements with Mills CNC representatives we were introduced to the Mynx 9500 machine."

The Mynx 9500 is a large-capacity vertical machining centre equipped with a powerful 50 taper high-torque, gear-driven spindle designed for heavy-duty machining operations capable of delivering high volumetric removal rates.

The machine's rigid build and design, that includes box guideways on all axes, minimises deformation and improves accuracy.

The Mynx 9500 has large axis travels, X-axis = 2,500 mm; Y-axis = 950 mm; Z-axis = 850 mm and can accommodate workpieces weighing up to 3.5 tonnes.

A key issue affecting Brown & Holmes' new investment decision concerned the type and level of after-sales service and support provided by the machine tool builder.

Kevin Ward explains: "As an existing customer, we had first hand experience of the after-sales services provided by Mills CNC. In our estimation they are amongst the best in the business.

"The proactive approach taken by Mills' projects team ensures that nothing is left to chance and that last-minute hitches do not occur.

"Some machine tool manufacturers are quoting lead times of six months and over for new machine deliveries. However, because Mills CNC holds a high number of Doosan machines in stock at any given time, at its Campus facility in Leamington, deliveries can occur in days, as opposed to weeks or months."

Even with non-stock machines, as was the case with the Mynx 9500, the time taken from customer order to delivery was eight weeks.

Kevin Ward concludes: "The quick availability of the machine, combined with its impressive technical specification and the support services provided by Mills CNC, all contributed to us deciding to invest in the Mynx 9500."

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# Pushing productivity levels in high grade fastener production

NDB Engineering is a highly specialist subcontract fastener machining business. Its portfolio of fastener production contains many that are bespoke, with most demanding high precision components machined from toughened and corrosion resistant higher-grade super alloys including exotic materials, Hastelloy, Super Duplex stainless, cobalt and nickel alloys.

Managing director, Andy Williams, says: "With customers in oil and gas, MOD, chemical processing and power generation sectors, machining capability and quality are critical to our business platform and being a small global machinist company, we cannot begin to tolerate errors."

This, he explains, is why investment is so important leading to NDB spending £500,000 in the last 12 months on the latest turn-milling technology from Citizen Machinery UK. This budgeted spend, funded through Citizen's tailored finance package, covered two Citizen Cincom L20-VIIIIFV sliding head turn-mill centres and a Miyano BNE-51MSY fixed-head, turn-mill centre plus Citizen's Alkart CNC Wizard programming aid, all now forming a

critical part of the future business strategy. As a result, opportunities are being created to gain higher productivity and spindle utilisation with ever greater confidence in quality being maintained.

Andy Williams continues: "These machine installations have also saved us having to seek outside help to satisfy our growing order book as we were very concerned about loss of direct control especially over quality if we used outside subcontractors."

NDB was originally set up in Birmingham in 1998 with Andy Williams as a founder member. This led to him leading a management buyout in May 2017 with joint director Rebecca Dainter. Together, following the acquisition, they championed the direction and growth potential focusing on direct sales rather than through distributors bringing today's head count to 41 people.

With sales of £3.1 million, in addition to UK customers, NDB produced fasteners can be found in use around the world including Argentina, Australia, Brazil and even in China and India, each of which have highly competitive indigenous suppliers.

Rebecca Dainter says: "During the last nine months we have invested over £500,000 on high specification material from leading European and American suppliers and therefore we view scrap parts as to be not only upsetting to our customer base but also being the cause of a large financial burden."

She explains that over the previous 15 years, the company had installed sliding head machines, but swarf control was a constant attention seeking headache.

She follows on to reveal how when Low Frequency Vibration (LFV) technology became available from Citizen they immediately saw the potential to bring greater security and control when machining difficult materials.

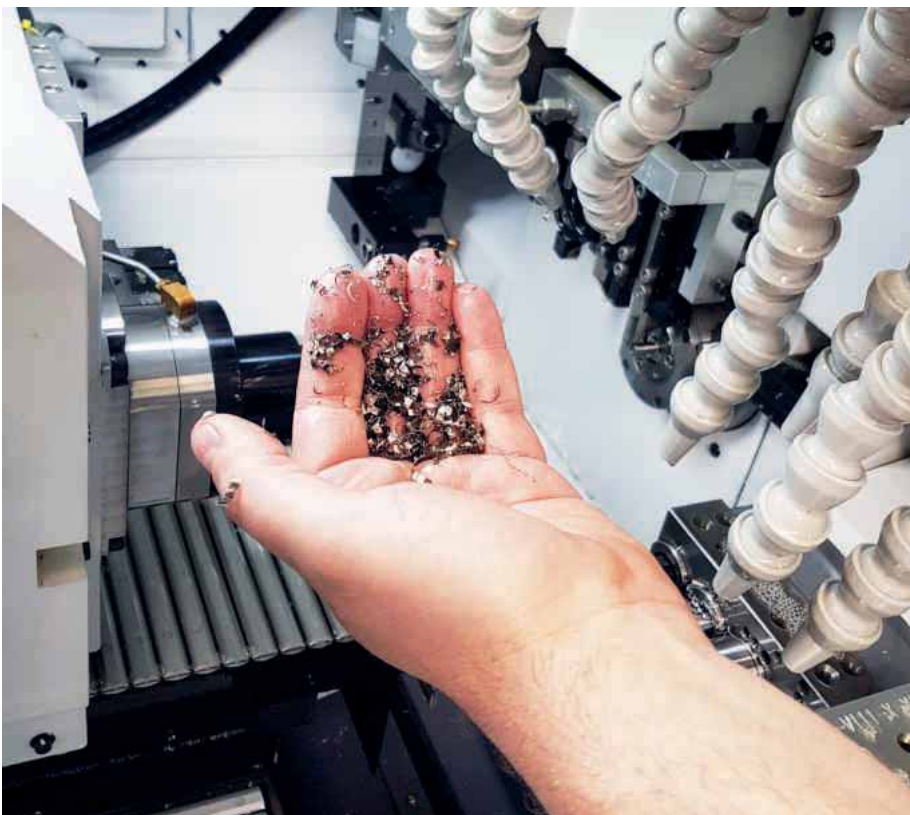
Rebecca Dainter explains: "By eliminating swarf nesting problems, that demanded constant attention from the setters, these have disappeared. We have now really improved our productivity by having the confidence to run unmanned and on many parts, we can go through the night giving us a massive leap in capacity with the added bonus of one setter operator running three machines."

Andy Williams takes up the investment theme, commenting on the decision to also buy the Miyano BNE-51MSY: "The machine gives us a greater capacity than the sliding heads and is very rigid enabling us to use the power available to maximise productivity on larger bar size difficult to process material."

He then describes a nickel alloy fastener with a milled hexagon head that was previously a troublesome 6 min cycle time over three operations. It is now machined complete in one operation taking 2 minutes.

Andy Williams says: "We now have the 'shortest route to invoice' which helps our cash flow while making us so competitive with a level of accuracy we could only have dreamed of before, plus an immediate gain in surface finish achievements."

On the Citizen Cincom machines the patented LFV technology is not based on changing macros at the control, but on the initiation of selectable G-code sequences programmed at the machine control to impart the most appropriate size of chip to be produced. This introduces oscillation to





the action routine of the cutting tool, backing it off through the servo axes in the direction of feed using the enhanced development of the machine's special drive system. This happens in phases of tens of microns which are precisely synchronised with the rotation of the machine's spindle.

The resulting controlled 'air-cutting' breaks the swarf into the designated chip length which prevents 'stringing' and 'bird-nesting' and can be applied to turning, drilling and even threading cycles. LFV can be switched in or out of the programmed cycle as required and helps reduce the on-set of built-up edge on the tool tip thus extending, as NDB quickly found, its in-cut life.

Cycle times on the 5-axis Type-L20-VIII LFV tend to vary between 52 seconds and two minutes. The machine has a more than adequate 37 tool positions enabling further improvements to be made in the ratio of cost-to-performance. The main spindle is powered by a 3.7 kW, 10,000 revs/min motor and the back spindle has a 1.5 kW, 8,000 revs/min drive. The driven tools on the gang toolpost are 1 kW, 6,000 revs/min while the opposite and back toolpost both have 0.75 kW, 7,500 revs/min drives. The

B-axis driven tools are powered by 1 kW 8,000 revs/min motor and rapid travel rates are fast at 32 m/min in each axis and 8 m/min for Y.

Meanwhile, the 8-axis Miyano BNE-51MSY has created a massive advantage in lead time reduction due to its ability to overlap in a cycle and cut with up to three tools simultaneously on bar sizes up to 51 mm diameter. The machine has two 12-station driven turrets one with three axes, the other with two that can simultaneously service either, or both spindles.

The main spindle has a 15 kW drive and the secondary 2-axis spindle is powered by a 7.5 kW motor. Both spindles have a 51 mm capacity with a maximum speed of 5,000 revs/min. Each driven tool position is ideal for milling with a 2.2 kW high torque 25 Nm drive and programmable speed of 6,000 revs/min.

Since the management buyout, NDB Engineering has also invested over £100,000 in revamping its freehold premises



in Willenhall. Unlike many, the firm was able to avoid the recent oil industry slow-down as demand for specialist fittings from one customer in particular, a larger end-user in the oil and gas sector based in North America, continued unabated.

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## 100 hardware and software options for new lathe

New from DMG MORI is a universal turning centre, the CLX 550, featuring robust construction, a powerful 33 kW, 40 percent DC / 3,250 rpm / 630 Nm spindle and the option of a FANUC 3D control instead of the standard 19" SLIMline multi-touch control panel with Siemens 840D solutionline and Operate 4.7. The lathe joins two smaller models, 350 and 450, to expand a range that was announced at the AMB 2016 show in Stuttgart.

Able to turn components up to 480 mm in diameter by 1,225 mm long, the CLX 550 offers users a larger work area in a compact footprint of 7.4 m<sup>2</sup>. The sturdy, innovatively designed, cast iron bed ensures rigidity, minimises vibration and allows improved chip evacuation.

Large ballscrews, sturdy spindle bearings and a VDI 40 turret with 12 stations, live if required, ensure high productivity and accuracy, which is further promoted by feedback of axis positions via linear scales. When configured as a bar automatic, the machine produces parts up to 80 mm in diameter, or alternatively 102 mm, to a high

degree of precision; circularity is less than three microns is quoted.

A choice of over 100 hardware and software options enables application-oriented specification and upgrading of the CLX 550. In addition to the optional larger bar capacity and the possibility of choosing a 120 mm Y-axis, VDI 30 or VDI 50 turrets are available as well as a tailstock and a steady rest, both of which can be programmable to facilitate the manufacture of crankshafts, for example. If a counter-spindle replaces the tailstock, 6-sided machining of complex workpieces can be carried out in one-hit.

To increase machining efficiency further, technology cycles from DMG MORI are available such as easy tool monitoring, which prevents damage due to a broken tool or overload by bringing the spindle and axes to a controlled stop.

By combining sales and service activities, DMG MORI offers a broad product portfolio and unique market presence. The



cooperation covers sales and all technical services, such as customer services, training courses and technical support. More than 7,400 employees are available to assist its customers in 164 national and international sales and service centres in 76 countries.

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# Hurco machining centres mill wood as well as metal

At the Market Overton factory of subcontract machinist Hi-Spec Precision Engineering, five Hurco machining centres and various other machine tools are to be found producing parts from mild and stainless steels, bronze, brass, aluminium and plastic over a single daily shift from Monday to Friday. Nothing unusual there, but the weekends bring a different and unexpected role for two of the Hurco machines.

On Saturdays and Sundays, Hi-Spec's owner Darren Grainger and his brother Gavin indulge their lifelong passion for music by milling electric guitar bodies from solid wood. Initially they used CAD files downloaded from the internet but latterly have produced five designs of their own, including one for a bass guitar. It is a hobby that is proving lucrative, as some of the instruments sell both at home and abroad for up to £3,500 under the brand name Grainger Guitars owned jointly by Gavin and Darren Grainger.

Gavin Grainger says: "To produce the guitar bodies, necks and other parts from wood, we now mainly use a Hurco VM30i machining centre and sometimes also a smaller VM5i, both 3-axis models were installed in 2017. However, we started out two years earlier using other machines and began selling guitars in 2016 at exhibitions around the UK.

"All that's needed is to wipe down the machine table on Saturday morning and block off the coolant nozzles to prevent ingress of sawdust. When we've finished profiling wooden components, we simply vacuum out any wood residue, clean down the machine, uncover the coolant holes and we're ready to cut metal again on Monday morning."



A large and exotic array of woods is used in the creation of the guitar bodies. Early materials were maple, alder and poplar, but lately the Grainger brothers have introduced swamp ash, mahogany, ebony, wenge, walnut, buckeye burl, limba, purpleheart and some wood/resin composites. Pearl and stone materials are also machined on the Hurcos for the marquetry inlays.

Router cutters were used at the outset, but solid carbide end mills and ball nose mills designed for machining aluminium were found to produce a much better result, as the sharpness of the cutters virtually eliminates burrs and produces a fine surface finish. It is consistent with the final use of ultra-fine, 2,000 grit sandpaper with an average particle diameter of 10 microns to smooth the wooden components prior to the application of multiple coats of gun barrel oil to achieve a lustrous finish.

Everything for the guitars is manufactured in-house, including all metal components apart from the pickups and their associated electronics. Unlike the wooden elements, the turned and milled metal parts are sold to other guitar builders worldwide over the

Internet via [www.graingerguitarparts.com](http://www.graingerguitarparts.com), forming another profitable sideline.

Commenting on the company's main subcontracting business, Darren Grainger says: "In 2015, we invested in a second 5-axis machining centre from Hurco, a VM10Ui, and the same time upgraded the control software on a similar, pre-existing model to the manufacturer's WinMax 10. The 5-axis machines are used mainly for producing components using 3-plus-2-axis strategies programmed conversationally directly at the control.

"Two years later we installed the VM5 and part-exchanged a small Hurco VM1 machining centre for the VM30i with a 1,270 x 508 x 508 mm working volume so that we could produce larger metal parts for rock crushers. It is this machine that is also the mainstay of wooden component manufacture for our guitars."

He added that the Hurco control system on the latest machines has a smoother, more convenient touchscreen graphical user interface. Scrolling through fewer menus allows the operator to arrive at the required screen more quickly. Even a simple operation like entering a code to jog the axes while the doors are open is easier, without having to go through the diagnostics screen.

In addition, WinMax 10 software enables faster cycles through the use of Hurco's Ultimotion and Adaptipath control software, which has powerful look-ahead and optimisation capabilities that reduce cycle times, especially when milling the corners of multiple pockets. The Tool Change Optimisation feature is also helpful, as it automatically rationalises the number of cutter exchanges for optimal efficiency.



Darren Grainger adds: "We have been able to save a lot of machining time through a combination of the latest Hurco software, plus the use of trochoidal milling with solid rather than inserted carbide end mills.

"In some instances, we have more than halved cycle times. For example, we produce batches of 38 puller ends for hydraulic tooling two at a time from EN24T billets in two operations on the VM30i in a cycle that previously took more than four hours.

"Now, taking a 16 mm depth of cut with a solid carbide, 12 mm diameter end mill at 6 m/min feed rate, and using Hurco's twin nozzle coolant delivery together with the



standard air blast facility, which incidentally is used on its own when machining wooden components, the same job takes approximately two hours.

"In another case, production of a steel matrix used to take 40 and 35 minutes for ops 1 and 2 respectively, which have been reduced by an even greater percentage to 17 and 12 minute cycles."

Hi-Spec Precision Engineering is continuing to grow, despite operating with fewer staff compared with two years ago, so profitability is up. The hydraulics sector accounts for around 40 percent of turnover, with components machined frequently finding their way into hydraulic actuators and valves, rock crushers and access platforms. Automotive and agricultural parts are also routinely produced at the Market Overton factory.

Batch sizes range from one-off to hundreds for prismatic machining,



while production runs on the company's six CNC lathes can be in the thousands. Customers stretch from the south coast of England across to Norfolk and as far north as Scotland.

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## The UK's best-selling 5-axis just got bigger

The Haas UMC-1000 is the perfect choice for shops wanting an easy-to-use 5-axis solution to handle larger parts. It offers the same shop-proven performance as the UMC-750, but with larger travels and a bigger platter, making them perfect solutions for 3+2 machining and simultaneous 5-axis machining of large parts.

The 5-axis UMC-1000 features a 40-taper spindle with 1,016 x 635 x 635 mm travels and an integrated dual-axis trunnion table. The machine is equipped with a 10,000 rpm inline direct drive spindle and comes with a servo-driven 50+1 side mount toolchanger.

The UMC's dual-axis trunnion table positions parts to nearly any angle for five-sided (3+2) machining or provides full simultaneous 5-axis motion for contouring and complex machining. The trunnion offers +35°/-110° of tilt and 360° of rotation for excellent tool clearance and large part capacity. Its 635 mm platter features standard T-slots and a precision pilot bore for fixturing versatility.

The UMC-1000's inline direct drive

spindle is powered by a 22.4 kW, 30 hp, vector drive system, yielding 122 Nm of cutting torque. The Haas inline system couples the spindle directly to the motor to reduce heat, increase power transmission and provide high quality surface finishes.

The Haas WIPS (Wireless Intuitive Probing System) is fitted as standard. Easy on-screen directions guide beginning users through the process. Experienced users have access to the full power and capabilities of custom probe routines.

Dynamic Work Offsets (DWO) and Tool Centre Point Control (TCPC) simplify varying part setups, in both 3- and 2-axis machining and 5-axis simultaneous machining, by allowing users to program the component relative to a work location of their choice, rather than relative to the intersection of the rotary axes. This makes it easier for users to set up the machine, saving valuable time eliminating multiple visits back to the CAM system to adjust the component location.

In addition to the standard model, Haas has also introduced a Super Speed version: the UMC-1000SS, with 30.5 m/min rapids



and an integrated high-speed, dual-axis trunnion table. This faster machine is equipped with a 15,000 rpm inline direct drive spindle.

The UMC-1000SS's high-speed, trunnion table offers 170°/second feed rates to quickly position parts for five-sided, 3+2, machining or provide full simultaneous 5-axis motion for contouring and complex machining.

Both machines are equipped with through-spindle coolant, benefitting from an auxiliary coolant filter and a programmable coolant nozzle.

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# How will 2019 look for automation?

by Tom Bouchier, managing director of FANUC UK

Current estimations state the UK is going to remain behind other leading manufacturing nations until 2022, with the likes of Germany presently having a higher production rate of 30 percent per hour. According to the International Federation of Robots (IFR), there are just 71 industrial robots per 10,000 workers in the UK. That positions the UK behind 14 other European countries. In contrast, Germany, Europe's most automated country, has 309 units, while the Czech Republic, the closest European country to the UK, has 101 units per 10,000 workers.

The UK is the only G7 country with a robot density below the world's average. Currently, there seems to be a stigma attached to the use of robotics and automation and linking it to unemployment, but many manufacturers are missing an opportunity to upskill their current staff.

## Upskilling and apprentices

There is a clear upskilling opportunity where automation is concerned. FANUC, for example, has a dedicated training academy at our Coventry headquarters which engineers can use as part of the bedding-in process, both pre- and post-sale. Introducing automation and robots to a plant can mean engineers can learn how to programme and maintain the machines which could, in turn, lead to greater



productivity rates. Programming can take as little as four days, meaning the number of skilled engineers could increase sharply across the UK.

2018 has seen some positive improvements for UK manufacturing, especially linking with automation. While it isn't directly linked to the Autumn Statement, we are seeing manufacturers slowly starting to adopt new technology and more automation. This trend, which was started by other countries a decade ago, is an important step, but there are still those that hold negative views about automation and the role it can play to assist their processes. This perception needs to change

in 2019 if the UK is going to catch up with the rest of the world.

One of the changes industry needs to focus on in 2019 is the perception of automation within manufacturing. 'Robots' is a global term and it is very easy to be misunderstood. Government and industry bodies need to work together to change its perception. Whether it is the widely claimed links between automation and job replacement, or the general perception that manufacturing is not seen as a viable career choice at a young age, 2019 needs to be the year this changes.

Additionally, the perceived costs often wrongly associated with industrial robotics can often play a role in UK manufacturers choosing not to adopt new technology in their plants. However, industrial robots are not as expensive as people think and, on many occasions, the return on investment can be recouped in as little as 18 months.

As automated systems can be reprogrammed, industrial robotics offer manufacturers a long-lasting solution that goes beyond first use. If this is then coupled with the training of engineers to be able to programme robots, it has more benefits than originally thought.

The image of manufacturing to young people also needs changing. The industry needs to be more of an attractive proposition to those who are starting their career journey and with the role that automation is going to play in UK manufacturing, it is possible for this to change.





It would be good to see the delivery of apprenticeships slightly change. It is important that apprentices in manufacturing spend time learning the entire process of how a plant works, rather than focusing on one or two departments. Having this clear vision of the different processes will help train young people and enable them to understand that a career in industry is more than just one process.

## What can we expect in 2019?

As previously mentioned, improvements are being made by UK manufacturers but some sectors are still slow to adopt new technology and automation. However, FANUC expects to see further growth in automation across a number of sectors, including many areas that have yet to utilise it.

One of these sectors is food manufacturing, where FANUC has started to receive a rise in enquiries from a number of different companies. Despite being the UK's largest manufacturing sector, it has been a historically labour-intensive industry. Automation will, however, be a key driver in supporting food processors improve their productivity levels.

As it stands, Brexit is still the great unknown and while we expect a period of uncertainty when the UK eventually leaves the EU, we see it as an opportunity for manufacturing. In order to compete with leading countries, the UK is going to need to manufacture more and adopt new technologies. Manufacturers will therefore need more support in understanding how the adoption of automation, as an example, will help their business and how to make the important first steps.

## Rise of the co-bots

Collaborative robots represent a step-change in industrial robots. They are already in use in certain processes in the UK, particularly within the aerospace industry.

With built-in sensors and the vision systems, FANUC 'co-bots' can be used for operations, such as thread-tapping, whilst the human operator performs other tasks. They can be used to lift struts and spars, indeed, everywhere throughout the entire aircraft production and assembly process. Where our robotic products have an advantage over the competition is that underneath the skin, it is an industrial 'production-ready' robot, rather than a collaborative robot that has come from an academic, R&D background.



However, collaborative robots are yet to go fully into mass production as there seems to be a wider reluctance to accept them as a safe process. They have been more widely used in the US and approved as safe in most European countries, including the UK. However, in the UK there is still a preference for traditionally guarded robots. Guarding can take up a considerable amount of space and every factory knows it is floor space that costs money.

The more efficiently we use that space, the more efficiently our factories can work, the more productivity rises and the more we earn from manufacturing.

As the name says, collaborative robots work with people and they are not replacing people. If we can use them to fulfil parts of the tasks humans shouldn't do, can't do, or are not good for them to do, that can only be positive. We need to upskill people. There will always be a need for people in production processes but skills have to change and adapt as they always have. We have as many people in manufacturing now as we did 20 years ago but with a lot more automation.

## Final thoughts

As we look forward to a new year, it is clear that UK manufacturing has an opportunity to grow and change its perceptions. Automation and industrial robotics can play a big role in achieving these goals, but the industry must work hard in changing the views of how it will impact productivity, budgets and employment. If attitudes change and more support is provided, then 2019 could be the year that sees the UK increase its productivity and re-establishes itself on the global manufacturing map.

From its inception in 1956, when company founder Dr Seiueemon Inaba first pioneered the concept of numerical control (NC), FANUC has been at the forefront of a worldwide manufacturing revolution. Evolving from the automation of a single piece of machinery in the late 1950s, to the automation of entire production lines in the following decades, Dr Inaba initiated this ground-breaking development when he invented the first electrical pulse motor, programmed a numerical control for it and put it into a machine tool.

Always striving to push back the boundaries of automation, increase productivity and produce a better product while reducing costs, Dr Inaba and his team followed this up with a robot that employed the same principles to load the machine tool.

Dr Inaba's work soon meant that other manufacturers and engineering companies around the world were also benefiting from this technology, lowering costs and increasing productivity. And with products like the ROBOCUT, ROBODRILL and ROBOSHOT hitting factory floors through the 70s and 80s, FANUC was able to provide optimised solutions for an increasingly wide range of industrial applications and customers. In Japan, FANUC had become the first company to build and operate an automated factory with NC machine tools and robots.

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## Productivity increase of 40 percent

KÖNIG METALL has integrated an automation and storage solution by Remmert in order to meet increasing customer requirements. KÖNIG METALL customers now benefit from shorter reaction times and increased flexibility in the supply of components and tools. The Remmert solution supports the production with a fully automated Remmert MIDI sheet metal store in combination with Remmert Laser FLEX 4.0. The loading and unloading of laser cutting systems works independently and without any personnel resources. This results in a 40 percent increase in productivity and space savings of more than 50 percent.

KÖNIG METALL specialises in the processing of pipes and sheet metal for exhaust systems, bending and drawing tools or painted sheet metal parts. Founded in Gaggenau in 1901, the family business is owned and driven forward by its fourth generation. 600 employees in Germany and a total of over 1,200 worldwide, with subsidiaries in Italy, Poland, Canada and Croatia, produce goods for well-known customers in various industries, such as metal and electrical industry, as well as the automotive sector and mechanical engineering. The success of the company is based on the production of parts according to individual customer requirements.

The company faced a big challenge when a major customer closed its production from one day to the next day and planned to outsource its parts to KÖNIG METALL.

Mario Eberle, CNC sheet metal technology production manager at KÖNIG

METALL, says: "Our warehouse was about to burst. We stored in about 600 m<sup>2</sup> within the production area. Our total load capacity contains only 350 insufficient storage spaces in the existing sheet racks. The rest was stored where there was space on the floor."

Despite the use of an ERP system, this situation repeatedly led to shortages. In addition, the supply of sheet metals for the processing machines became increasingly complex. The material first had to be searched for, relocated, and transported manually by forklift.

The Remmert solution, favoured by KÖNIG METALL, primarily included the direct connection of the production facilities to the warehouse with a fully automated central supply system. The agreed goal was to provide material to the processing machines automatically and to move finished parts back from the machines into the Remmert MIDI sheet metal storage or to the next process step. The warehouse management of the raw materials and finished parts has also been improved in order to meet all customer requirements, such as batch tracking and documentation on a permanent basis.

Today, this is achieved by the Remmert system which supports these requirements regarding inventory control with the greatest transparency and traceability.

KÖNIG METALL entrusted Remmert GmbH, to implement the new intralogistics concept.



Mario Eberle explains: "It was important for us that our project partner delivers a complete solution: from consulting to own storage and automation systems through after-sales services. Remmert has offered us a solution with a high degree of flexibility and modularity, which we can constantly expand in an easy and modular way. This provides us with a high level of investment security and future-proofing. It was also particularly important that the software and hardware solution is manufacturer independent. A further main topic was to connect all our punching/nibbling and laser machines in our material flow system."

Remmert redesigned the warehouse in order to make the increase in productivity more sustainable for KÖNIG METALL. The expert for material flow placed the existing processing machines closer to the storage. This allows an excellent and optimal loading and unloading of the machine. On the one hand it saves a lot of space and on the other hand it simplifies and speeds up our material flow.

At the heart of the Remmert automation solution is the MIDI sheet metal storage with a height of six metres, 595 storage spaces, and a maximum storage volume of 1,785 tonnes. Due to its compact design, the storage system offers high storage density and enabled KÖNIG METALL to reduce 300 m<sup>2</sup>. Two of the machines connected to the system are in operation 24 hours a day. In order to make optimum use of their capacity, they are supplied with raw material from the storage in parallel via the Remmert automation Laser FLEX 4.0.



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# Sawing machine company joins NextGenAM project

Sawing machine manufacturer KASTO is supporting the NextGenAM project, the aim of which is automation of industrial 3D printing to optimise workflow and cut costs for large scale production. The project initiators in 2017 were aerospace supplier Premium Aerotec, automotive manufacturer Daimler and EOS, a provider of industrial 3D printing systems.

The focus is on introducing a high degree of automation upstream and downstream of the actual construction process, which accounts for only about 30 percent of manufacturing cost. The aim of the project is the development of a complete system for the production of aluminium components for the automotive and aerospace industries.

The innovative KASTOwin amc sawing technology impressed the project partners with its ability to perform component separation reliably and efficiently. The automatic machine is designed specifically for separating additively manufactured components from their build platform by inverting them and sawing horizontally so that they fall into a container.

Cutting range of the saw is 400 mm x 400 mm and the electromechanical servo motor blade feed is infinitely adjustable. A frequency-controlled spur-gear drive enables blade speed to be selected between 12 and 150 m/min. The heavy, torsion-resistant, welded construction with



its optimised ribbing ensures smooth running and reduced vibration. The machine is fully enclosed, protecting the ambient air from tiny particles produced by cutting additively-manufactured components. Optionally, an extraction system can be connected.

A KASTOwin amc is being used in the Technology Centre in Varel (TZV), Germany, where the first NextGenAM automated pilot plant for industrial 3D printing, post-processing and quality assurance was recently commissioned. The centre, inaugurated in 2011, brings together researchers and users to develop techniques for processing metallic materials.

## Automatic storage system ensures efficient sheet metal processing

To create space and capacity for growth, a new 4,000 sq m plant has been built on a

25,000 sq m site in the German town of Hettenleidelheim by Blum GmbH, a company that specialises in sheet metal working and switch cabinet manufacture. It supplies anything from individual parts through small and large batches to complete assemblies.

The company holds raw sheet material and finished parts in a high density Uniline sheet storage system supplied by Achern-based KASTO. It ensures safe and reliable material handling and efficient supply to connected flat-bed sheet metalworking machinery. Bending and folding as well as manual and robotic welding are also carried out on site.

Blum's managing director since 2003, Jörg Neu explains: "When the company was founded in the 1960s our premises were on the edge of town, but over the years they were encircled by residential areas. Large trucks were finding it increasingly difficult to enter and leave.

"In addition, the buildings were showing their age and were not high enough to accommodate new, larger machines. So, we decided to relocate and at the same time gain additional capacity to increase production."

At the previous factory, mild steel, stainless steel and aluminium sheet were stored in a warehouse served by forklifts. Machine operators moved material to the production machinery by hand, which was time-consuming and laborious. To cut costs, the company decided to streamline and automate these operations but wanted to do so independently of the metalworking machine suppliers.

Jörg Neu recalls: "We described our requirements to KASTO, who took all of our needs into account and found a solution that was not only cost-effective but also ideal for our needs. Modular design of the storage facility makes optimum use of the available building height. They were the decisive factors."

KASTO installed an 8 m high Uniline inline storage system with space for up to 686 pallets that can hold sheets measuring up to 3 x 1.5 m. They enter the warehouse via a station with a longitudinal carriage, from where they are transported automatically to a free location by a storage and retrieval



machine. It is equipped with dynamic drives for fast, direct material handling.

Integrated KASTologic warehouse management software allows Blum operators to identify the position of every pallet and the stock it holds, as the information is keyed in at the control panel using an intuitive graphical user interface as the material is stored.

At the front of the warehouse are seven stations with lateral transport carriages for removing and returning material. There are also two metalworking machines, including a pre-existing laser cutting machine fed by a manually operated overhead crane. However, when new material is needed, employees can request it by simply pressing a button and the pallet arrives automatically in a matter of seconds.

A newly purchased punch press and laser cutting combination machine capable of unattended operation is connected directly to the storage system. KASTologic software interfaces with any control system, regardless of manufacturer. A loading and unloading device with vacuum suction units picks up sheets that have been taken from storage and conveys them automatically to the new facility, saving time and lightening

the operators' workload. Cut parts are automatically put back onto a system pallet for storage.

The warehouse control has been connected to Blum's ABAS enterprise resource planning system and to KASTO'S Achern factory for remote diagnostics and troubleshooting.

Jörg Neu concludes: "KASTO did a great job here. The warehouse runs perfectly and has given us significant gains in speed, efficiency, transparency and safety."

KASTO Maschinenbau GmbH & Co. KG, based in Achern, Germany, specialises in sawing and storage technology for bar stock. The company is a leader in the manufacture and sale of metal-cutting saws and semi-automatic and automatic storage systems for bar stock and sheet metal. It is also a leading manufacturer of automatic handling systems for metal bars, sheet metal and pre-cut parts, as well as the corresponding software. One of Europe's oldest family-owned companies, KASTO celebrated its 170th anniversary in 2014. In the course of its successful history it has registered 170 patents, delivered more than 140,000 sawing machines to all parts of the world and installed more than 1,900



automatic storage facilities. In addition to a branch in Schalkau, Thuringia, KASTO has subsidiaries in England, France, Switzerland, Singapore, China and the USA.

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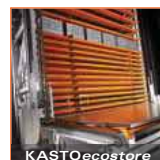
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# Intelligent workpiece handling

## Taking machine tool automation to the next level

Intended to boost the productivity of machining centres and reduce labour costs in factories, a new range of workpiece handling cells is available in the UK and Ireland from Salisbury-based 1st Machine Tool Accessories sole agent for the French automation equipment manufacturer, Engineering Data.

The systems are designed to allow components to be clamped manually onto pallets, automatically loaded into store and subsequently retrieved for robotic transfer into and out of 3-, 4- and 5-axis prismatic metalcutting machines. Such arrangements are ideal for long periods of unattended and lights-out running and hence for extracting maximum value from investment in machine tools when producing parts in small to medium size batches.

The competitively priced cells are manufactured by Engineering Data at its production plant in Fondettes, near Tours. The modular handling systems, which feature easy access for maintenance, are said to increase production output from non-pallet-change machining centres by up to 50 percent. The control software and touchscreen graphical user interface, which can be operated wirelessly from a tablet, are especially easy to use and allow deskilling of the machine loading function. Half a day's training is all that is needed for an operator to become conversant with a system.

Noel Boumediene started Engineering Data 27 years ago to design and manufacture special fixtures. Mainly hydraulically actuated and with the accent on complex turnkey workholding solutions, they are used widely in the automotive and aerospace sectors as well as in the rail industry and general engineering.

In 2012, the company introduced robotic loading and unloading of components and the initiative quickly mushroomed into the production of different automated pallet handling cells under the trade name, EasyBox. There are already dozens of installations in factories across France and elsewhere.

The first model, L80, appeared on the market in 2015. It has a linear rail-mounted robot capable of feeding up to six machining centres with workpieces of 80 kg maximum weight. There are now five styles



of EasyBox cell, including a version with rotary robot motion for feeding one or two machining centres. Maximum handling capacities range from 250 kg down to 30 kg.

They are all based on standard equipment that is customised with workpiece handling and clamping to suit each user's specific needs, leveraging the long experience of Engineering Data in this area. Quick-acting SMED (Single-Minute Exchange of Die) tools integrated into Engineering Data's own EasyLock modular zero-point clamping systems allow rapid repositioning to within five microns. EasyClamp self-centring vices are also available.

A recent product introduction was the EasyBox T30, which was launched in the UK on the 1st MTA stand at the MACH machine tool exhibition in April 2018. It is a compact system with a footprint of just 2 sq m that can be configured to feed a machine from the left, right or front. Two versions are available for storing 42 or 64 pallets. They are equipped with a 3-axis robot capable of handling components up to 200 x 200 x 180 mm and a maximum load of 30 kg including workpiece, fixture and pallet.

The single load/unload station is positioned at an ergonomic height at the

front of the store for convenient workpiece clamping and unclamping. The adjacent touch-screen panel for operating the robot is easily interfaced with all major types of machine tool control including Heidenhain, Siemens, FANUC and Mazatrol. Most recently, an EasyBox T100 was introduced with a 5 sq m footprint, a storage capacity of 32 pallets and a maximum load capacity of 100 kg.

A video showing a typical EasyBox system in use may be viewed at: [www.youtube.com/watch?v=qNEfWTlsldk](http://www.youtube.com/watch?v=qNEfWTlsldk)

One French company that has invested in EasyBox technology is SAH Leduc, which designs and manufactures nearly a quarter of a million custom-made hydraulic cylinders annually, 24 hours a day, at a 27,000 sq m factory 20 km from Nantes. To keep production in France while remaining competitive, the company turned to Engineering Data to increase the productivity of its machining centres.

Thierry Hervy, industrial and production manager explains: "Our single-acting, double-acting and telescopic cylinders are diverse because they are found almost everywhere, on mobile machinery in particular.



“Our engineering team uses Catia CAD systems to design the products and then finite element analysis and fluid dynamics calculations to optimise them. They come in all sizes up to a maximum stroke of 7 m and with a diameter of up to 250 mm.

“Whether one-offs or series production is involved, our strength is to analyse a customer's specification together with a 3D model of their machinery and to adapt the hydraulic cylinder to suit the intended application, be it in agriculture, construction, civil engineering, industrial handling, transport or the marine industry.”

He went on to explain that previously the machining centres in the factory were underutilised and therefore inefficient due to spindle idle time during workpiece loading and unloading. Additionally, the operator had to be in attendance for most of the time.

EasyBox L80 automation equipment from Engineering Data was an obvious choice when a new 5-axis machining centre was installed. Four extra hours of production is gained every night, leading to return on investment that Thierry Hervy estimates will be less than five years.

He continued: “After the rapid

development phase and start-up was completed, the automation significantly reduced the number of man-hours required for production and the productivity gain is very important.

“With this system, once the setup and programming for a new batch run are finished, the operator simply deposits each workpiece on a pallet, switches to the correct program and the machine starts producing autonomously.”

Workholding devices specific to SAH Leduc's production were also developed and manufactured by Engineering Data. Patricia Bouger, sales manager at Engineering Data says: “Our strength is not only to bring an automated solution for loading and unloading machining centres that is accessible to all and whose rapid installation on site does not disrupt the workshop, but also to propose a solution that encompasses positioning, clamping and supervision of parts.

“We develop and assemble each solution

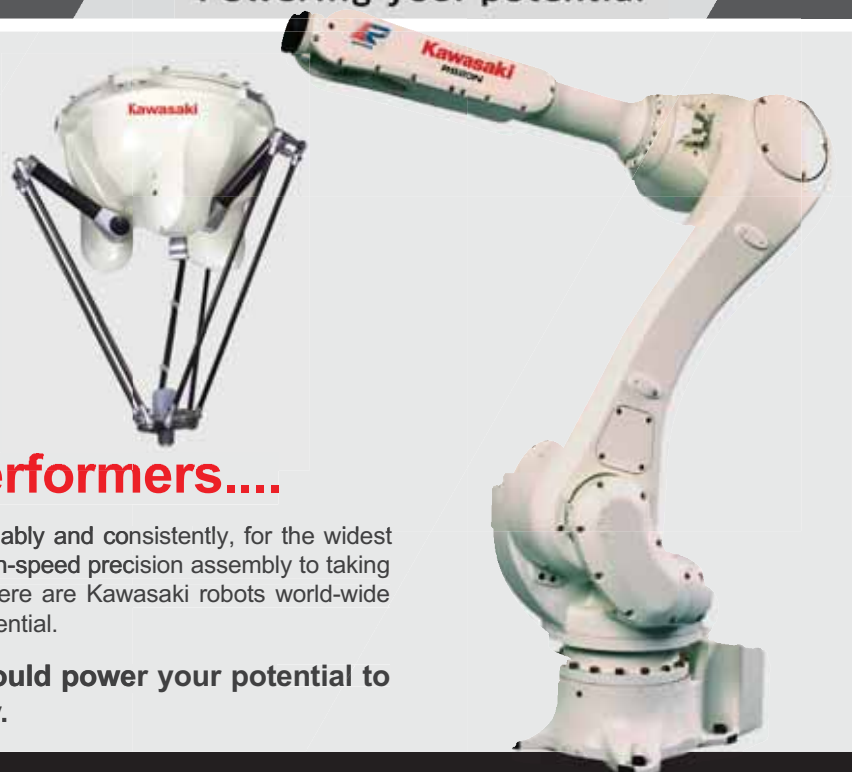


in our Fondettes factory and test the functionality so that when it reaches the customer, after installation and commissioning which takes from three to five days and a short period of operator training, the cell is ready to start producing immediately.”

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## Joining up the welding skills gap with robots

With the UK engineering skills gap making it increasingly harder to find skilled welding staff, finding ways to automate welding tasks is becoming an increasingly attractive prospect for companies looking to keep pace with competitors and make best use of their existing headcount. In this article, Mike Wilson, business development manager UK and Ireland for ABB Robotics, looks at how the latest developments in robotic automation can help fill the welding skills gap and explains why it's time to call in the robots.

With the UK facing an ongoing shortage of skilled welders and estimates pointing to at least 20,000 vacant positions all needing to be filled, there has been a growing interest in recruiting robots to help take up the slack.

Previously, shortfalls in skilled labour were able to be partly addressed by recruiting workers from overseas. With uncertainty around the UK's future relationship with Europe, however, this supply of workers has already started to dry up, making it harder to find replacements from within the UK. For metal fabrication companies, the downturn in the availability of workers with the skills to carry out welding tasks restricts both the quantity and overall range of products that can be produced, limiting competitiveness.

In the US, where 290,000 welders are needed to fill a predicted skills gap by 2020-21, a growing number of companies have turned to automation for a solution, with the number of robots supplied for welding applications increasing by six percent in 2017.

By helping to share the production workload, automation is not only helping to fill the skills gap but is also helping organisations to make better use of the workers they already have by deploying



The benefits that robotic welding cells can deliver can often see payback on investment being achieved within a maximum of two years



Using an automated welding cell has enabled agricultural machinery manufacturer Shelbourne Reynolds to redeploy its welding team to add value to other production processes

them to handle other, higher value tasks or to work on new product lines.

To date, the take up of robotic welding cells in the UK metal fabrication sector has been hampered by concerns around a lack of technical expertise, the resources needed to program, operate and maintain robots, as well as confusion around how to justify an investment and how to demonstrate potential payback. Added to this are concerns around the applicability of robots. While the ability of robots to improve product quality and throughput is understood, there is a lingering belief that robotic systems are for mass production and lack the flexibility to be applied to low volume, or even one-off, production processes.

Developments in robotic welding automation are already helping to address these and many of the other concerns that have traditionally held back the adoption of the technology in the UK.

One significant development has been the arrival of standardised packaged solutions such as ABB's FlexArc and FlexWeldLaser systems. Combining everything needed for a welding application in a pre-tested package, including the robot, positioner, welding equipment, lighting and other peripheral devices, plus centralised power distribution, these all-in-one solutions help to take the complexity and much of the cost out of implementing a robotic welding cell. Typical installation times vary according to the size of the system, ranging from around three days for a smaller system through to around eight days for a larger scale installation.

Robot manufacturers, ourselves included,

have also worked hard to help our customers reduce the time needed to learn, operate and look after our equipment. Today's robots offer a combination of intuitive graphical user interfaces and



Available in a range of sizes and configurations, standardised packaged solutions such as ABB's FlexArc can greatly simplify installation by providing everything needed for a welding application

simplified programming that can be mastered relatively quickly, with a fully-trained operator able to become fully proficient in robot operation within a matter of weeks.

ABB's own training courses teach operators how to program the robots and to set up the various weld process variables, including torch angles and the speed of the actual welding process itself. They are also taught how to use the RobotStudio offline programming tool, which can be used to help test, simulate and refine different setups and welding processes before they are implemented for real on the factory floor.

The same software can also be used to pre-program and test new parts in advance



of them going into production, which can help to iron out any issues or problems that might otherwise cause disruption and / or result in wasted product.

Where investing in a robotic solution is concerned, the benefits that robotic welding cells can deliver can see payback on investment being achieved within a maximum of 18 months to two years, with savings possible in a range of areas.

In terms of manpower, for example, an automated welding cell can typically do the work of four welders in a fraction of the time,

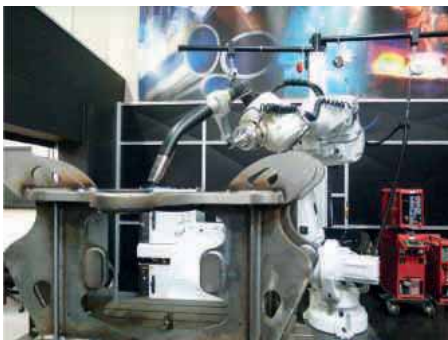


ABB runs welding training courses at its Milton Keynes site to provide operators with the knowledge and skills needed to program and use robots in welding applications

increasing output and freeing up resources to handle other tasks. While retaining, rather than releasing staff may not generate an immediate direct cost saving, the ability to utilise existing workers more smartly can help to drive up both productivity and quality, with a resulting positive impact on profitability.

For agricultural machinery manufacturer Shelbourne Reynolds, for example, the introduction of an automated welding cell meant members of the company's welding team could be redeployed to add value to other production processes including fast turnaround tasks and any product that was too large for the robot to handle. The robot is used to carry out any welding tasks that take longer than an hour to do, with the manual welders' expertise being utilised to help in the manufacture of other products.

Another area for improved cost performance is the ability of robotic welding cells to help reduce waste and improve quality consistency. The improved precision of robotic systems enables them to offer much greater consistency than even the best manual welder, minimising problems such as over-welding and errors that can lead to wastage and / or costly reworking.

Added to this is the inherent durability of robots, which helps to offer greatly enhanced efficiency compared to human workers.

Evidence from successful robotic welding applications demonstrates that efficiencies of 75 percent to 95 percent can be achieved, compared with the 30 to 50 percent typical in manually operated processes, with none of the errors associated with human factors such as fatigue or lapses of concentration.

By working faster and more precisely as well as applying only the energy needed for the process at hand, robots can also help to increase the lifespan of components such as nozzles, thus reducing the frequency and cost of purchasing replacements for worn-out equipment.

To find out more about how switching to robotic welding could help you to get more from your existing workforce and help make your operation more productive and competitive, contact:

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## igus robolink DCi robotic arm lowers price barrier for simple automation

With robolink DCi from igus®, machine builders and production engineers can automate simple pick & place and assemble tasks without the associated high price tag. It is a complete automation package consisting of robotic arm and controller for intuitive operation. Suitable for lifting parts weighing up to 1 kg, with an accuracy of ±0.5mm, engineers can quickly install and commission the robotic arm without prior robotics experience using online tutorials, simulation tools and other services.

Robert Dumayne, dry-tech director at igus, says: "The modular control system of the robolink DCi, supplied by our software partner Commonplace Robotics, is located in the foot of the gripper arm of this 4- or 5-axis robot. This makes the articulated robotic arm extremely compact and a permanent connection to the PC or control cabinet superfluous."

With the intuitive CPRog control software, motion sequences can be learned quickly and easily, complex sequences can be

simulated within the software in a 3D environment. These include programs with joint- and linear- digital outs, loop- or if-then-else commands. Further components, such as image processing systems, can be integrated via plug-ins.

The software is supplied on CD, so that only a Windows-compatible computer is required for commissioning. After setup, the stand-alone system does not require the otherwise obligatory PC connection and can be operated with a touch display. In addition, the controller can set up to communicate with other controllers via inputs and outputs.

The complete robolink DCi system can be ordered directly online, with a delivery time of around two weeks.

For more information, please visit: **www.igus.co.uk/robolink-DCi** or call igus directly on: 01604 677240.

Since its establishment in 1964, igus has distinguished itself by its high innovative power and reliability. In addition to the



development of long-lasting products adapted to the individual needs of an industry, a comprehensive supply of spare parts plays an important role. Spare parts are available even for products that are no longer listed in the igus product range.

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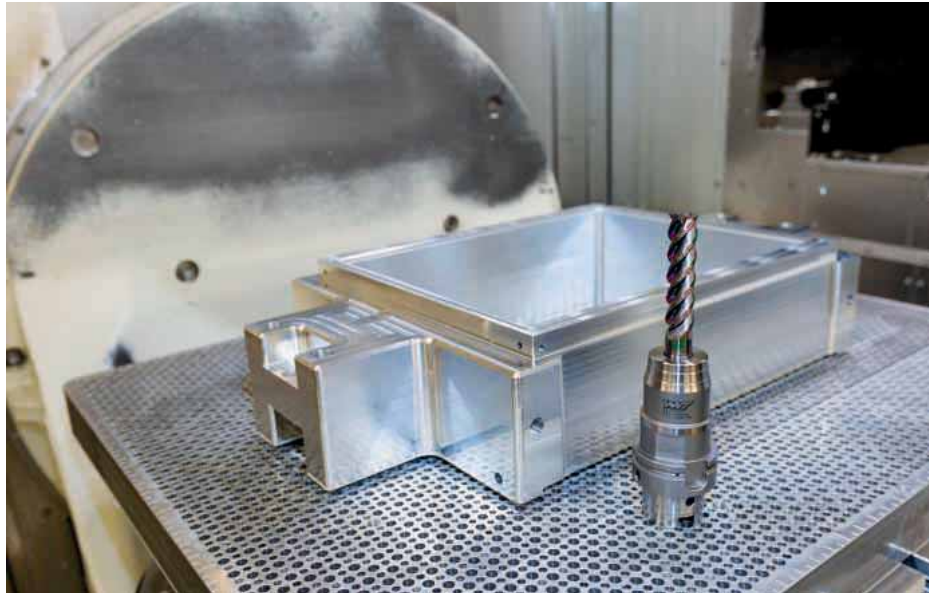
# Machining strategies drive progression at TMB Patterns

### TMB Patterns partners with CERATIZIT UK & Ireland to improve machining performance

With one eye on its existing business as a leading manufacturer of thermoforming tools for the food processing sector and one eye on future opportunities in sectors such as nuclear and aerospace, TMB Patterns is working closely with CERATIZIT UK & Ireland, through its WNT brand, to develop machining strategies that will radically improve cycle times.

Graham Alford, production manager at TMB Patterns, says: "TMB Patterns has been manufacturing thermoforming tools since 1977, but there are always opportunities to develop processes to improve things for ourselves and our customers. Like many companies, it is easy to continue to do the same things day in day out, because they work. However, we recognised that there may be better ways and began to develop the relationship with CERATIZIT UK & Ireland through WNT technical sales engineer, Iain Tattersall and applications sales engineer Vince Whitham."

CERATIZIT's team of sales and applications engineers provide customers with on-site support for projects, using their practical experience and detailed knowledge of the WNT range to help implement tooling developments. The initial project that was looked at saw major improvements in cycle time for the machining of large cavities in pressure



vessels for mould tools. These large aluminium billets require large volumes of material to be removed, with a typical cavity measuring 420 by 315 by 70 mm deep. Traditionally TMB patterns had used a 50 mm shell mill to rough out these cavities, with a 2 mm depth of cut and 35 mm step-over. Rough machining took 33 minutes to complete, then multiple passes with a finishing cutter brought the total machining time to 45 minutes.

Reviewing the process, Vince Whitham

suggested a change to a WNT Circular Line CCR AL end mills with diamond-like coating: Choosing a 20 mm diameter cutter with a 0.2 mm corner radius and 80 mm flute length. With this cutter held in WNT's positive lock chuck, which has a clamping power of up to 600 Nm of torque, TMB Patterns' programmers could then switch to a trochoidal milling strategy that allowed full 70 mm depth of cut with a 1 mm step-over. Using the Trochoidal method where a shallow infeed is combined with a high feedrate, 17 m/min in this case, allowed TMB Patterns to maximise the 16,000 revs/min, 32 kW spindle on their GROB G750 5-axis universal machining centre. The result of this switch of cutter and machining strategy was that the part could be rough and finish machined with just one cutter, with the complete process only taking 12 minutes, with an improvement in surface finish.

Dave Meaker, programmer for TMB Patterns, says: "We were taken aback at the metal removal rate that we could achieve by using the CCR cutters and Trochoidal milling. It allowed us to fully utilise the capabilities of our GROB 5-axis machine's spindle power and speed. Having Vince from CERATIZIT UK & Ireland stood at the side of us while we did this was reassuring, as we were certainly pushing cutters and machine way beyond anything we had done before."



This confidence, provided by having an applications sales engineer available for cutting trials, was also witnessed on the next project when TMB Patterns was asked to quote for a job manufactured from titanium, a material it had never machined before.

Dave Meaker explains: "Vinny stood by the machine and gave us the confidence to run at the speeds and feeds he suggested. As a result of these test cuts we knew we could achieve a good cycle time and quoted accordingly. Without that advice and assistance, we probably would have either declined or been too expensive to win the contract."

The pattern of success and reducing cycle times continues, with the next project calling on the combined knowledge of CERATIZIT's technical and applications teams in the UK and CERATIZIT's technical centre in Germany. The challenge was to reduce milling times on mould cavities.

Graham Alford says: "The assistance provided by Iain and Vinny has been invaluable and has opened our eyes to the potential of modern cutting tools and techniques. This latest project is a case in point, making use of the latest tooling from WNT."

As a result of this cooperation the existing

cycle time for these TMB Pattern mould cavities was dramatically reduced from the original five hours, using conventional milling techniques, down to 50 minutes. These parts will be machined on the GROB G750 making use of the full 5-axis interpolation provided by the three linear, 1,000 by 1,100 by 1,170 mm in X, Y and Z, with a swivel range of 230 degrees in the A-axis and 360 degrees in the B-axis, which is ideal for this machining strategy.

Tony Pennington, managing director of CERATIZIT UK & Ireland, concludes: "This partnership with TMB Patterns is typical of what we can provide to customers undertaking new machining projects or looking to develop their machining capability. Our investment in a team of applications sales engineers, who have the time to work alongside the existing CERATIZIT technical sales engineers, is fully justified when you see the results that they can deliver for customers such as TMB Patterns."

For over 95 years, CERATIZIT has been a pioneer developing exceptional hard material products for cutting tools and wear protection. The privately owned company, based in Mamer, Luxembourg, develops and manufactures highly specialised carbide

cutting tools, inserts and rods made of hard materials as well as wear parts. The CERATIZIT Group is a leader in several wear part application areas, and successfully develops new types of carbide, cermet and ceramic grades which are used for instance in the wood and stone working industry.

With over 9,000 employees at 34 production sites and a sales network of over 70 branch offices, CERATIZIT is a global player in the carbide industry. As a leader in materials technology, CERATIZIT continuously invests in research and development and holds over 1,000 patents.

Innovative carbide solutions from CERATIZIT are used in mechanical engineering, and tool construction, and many other industries including the automotive, aerospace, oil and medical sectors. The internationally active CERATIZIT Group unites the four competence brands of Cutting Solutions by CERATIZIT, Hard Material Solutions by CERATIZIT, Tool Solutions by CERATIZIT and Toolmaker Solutions by CERATIZIT.

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# ITC's new indexable holemaking platform from WIDIA

The new Top Cut 4 indexable drilling platform from WIDIA is targeted at end users that machine a broad assortment of products and material types. Now available in the UK from Tamworth cutting tool specialist Industrial Tooling Corporation (ITC), the Top Cut 4 ultimately gives manufacturers reduced inventory by providing a single drill for a variety of drilling applications and workpiece materials.

Expanded capabilities and improved performance combine for outstanding results in the new Top Cut 4 indexable holemaking platform from WIDIA. A true multi-problem-solver, the Top Cut 4 has a breadth of application capabilities that include through and cross-holes, inclined entry and exit holes, 45° corner, half-cylindrical, concave and chain drilling operations. With four true cutting edges, that combine with WIDIA-grade technology,

notably higher speeds, feeds and consequently higher metal-removal rates can be achieved. Furthermore, the new Top Cut 4 available from ITC will extend tool life to generate lower cost per edge for the end user.

WIDIA product manager Vivian Pavlov says: "Process stability is a significant challenge and the driver behind Top Cut 4 and its development. What process stability simply means is the ability to quickly select and successfully apply a tool even in an unfamiliar or unstable condition. Users need one drill that can be applied in a variety of drilling operations and workpiece materials. The Top Cut 4 addresses this challenge with cutting performance at higher speeds that makes it the proven choice for achieving the lowest possible cost per edge."

The Top Cut 4 periphery and centre inserts each feature proprietary cutting

profiles for excellent centring capability and workpiece penetration. The inner and outer, centre and periphery, inserts are clearly differentiated to eliminate operator confusion and the inserts are available in grades for high-speed applications, tough material demands and high metal-removal machining. Specific geometries are available with reinforced cutting edges and a steep chipbreaker for steel, cast iron, and short-chipping materials. Additionally, ITC can offer inserts with an optimised chip groove for stainless steel, long-chipping steels and machining applications where low power consumption is required.

The new Top Cut 4 from ITC features extremely stable tool shanks in lengths of 2XD, 3XD, 4XD and 5XD in both metric and imperial dimensions with diameter ranges from 12 to 68 mm. There are eight insert sizes that cover the complete diameter range. The robust cutter bodies incorporate high helix angled flutes for efficient chip evacuation even at 5XD. Furthermore, large coolant holes mean efficient coolant delivery and extended insert life with exceptional swarf evacuation.

Moreover, the Top Cut 4 is available through WIDIA's NOVO digital process knowledge application. With powerful process knowledge available on digital smart devices, NOVO provides far more useful process knowledge than any online catalogue alone.

### ITC shows new ranges at Southern Manufacturing 2019

At the Five Farnborough Southern Manufacturing exhibition, ITC will be introducing the latest UK manufactured cutting tool innovations alongside industry



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On its stand, the company will be demonstrating its latest line-up of solid carbide micro-tools and thread mills that are manufactured on the company's state-of-the-art grinding technology. Significant investments in the latest technology enables ITC to precision manufacture micro cutting tools from 0.2 mm to 2.0 mm with concentricity tolerances below 0.001 mm. At present, the micro product extensions have been made available to the most popular product lines and this includes the market leading 2001, 2022, 2152, 2161, 2162, 2171, 2072, 3051, 3081, 3091, 4032, 4072, 4081 and 4121 Series of ITC tools.



Alongside the exciting micro-tooling portfolio will be the impressive new thread-mill line. This latest extension to the range of UK manufactured solid carbide products includes metric, metric fine, UNC, UNF, BSP, NPT and also a selection of mini thread-mills. Manufactured with through coolant, helical flutes and TiAlN coatings for rapid chip evacuation and extended tool life and performance, the new thread-milling series is available with a variety of shank diameters, lengths, flute numbers and thread pitches. As well as showing these innovative lines, ITC will be showing its extensive line of solid carbide tooling.



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# Difficult milling made easier

Dormer Pramet's family of solid carbide milling cutters for difficult to machine materials offers a variety of options from roughing through to finishing.

The S2 assortment includes a range of neck options for deep milling and multi-flute designs to support numerous applications in tough steels, titanium and nickel.

Its differential pitch cutters, S260, S262, S264, for example, reduce chatter and offer fewer tool offset adjustments, providing effective chip removal at high feed rates.

The trio of cutters, available in diameters from 3 mm-20 mm, feature an optimised cutting-edge to reduce chipping and prolong tool life. All have an AlCrN coating for improved wear and oxidation resistance.

In addition, the S264 milling cutter has a robust corner chamfer on the end teeth to further reduce chipping and a roughing profile for greater removal rates. Also, the S262's corner radius provides a more precise finish and optimizes performance, especially in ramping operations.

Meanwhile, Dormer Pramet's six to eight-flute cutters, S225, S226, S227, feature a high helix angle to keep the cutting edges constantly engaged with the workpiece. This results in clean, efficient machining and a high-quality surface finish.

Several neck options are available to support pocket milling, up to 8.8xD, by preventing contact between the shank and workpiece, eliminating the risk of vibration and scouring.

To support general milling applications, the company's range of four-flute cutters, S216, S217, S218, S219, offer a reach up to 9xD. This range also features an optimised cutting-edge design and an AlTiN coating for high hot hardness and oxidation resistance. A special edge treatment provides a smooth and quiet machining process, further prolonging tool life.

Finally, an assortment of ball nose cutters,



S229, S231, S233, are available in 1.5 mm-16 mm diameters, offering up to 8.3xD. As well as a special edge treatment to support smooth machining, its TiSiN coating provides improved wear and oxidation resistance in extreme cutting conditions.

To find out more about the solid carbide milling cutters please visit [www.dormerpramet.com](http://www.dormerpramet.com) or contact your local Dormer Pramet sales office.

Dormer Pramet is a global manufacturer and supplier of tools for the metal cutting industry. Its comprehensive product program encompasses both rotary and indexable drilling, milling, threading and turning tools for use in a wide variety of production environments. An extensive sales and technical support service operates from 30 offices, serving more than 100 markets worldwide. These are assisted by dedicated production facilities in Europe and South America and a highly developed distribution and logistics network.

Dormer Pramet is the result of a merger in

2014 between rotary tooling manufacturer Dormer and indexable specialist Pramet.

The strengths of each company were combined to create a single platform, providing customers with access to a wide range of high quality, fit-for-purpose products including hole-making, milling, turning and threading tools.

The company passionately believes in building long-term partnerships, sharing our expertise and being honest and available at all times. These qualities are deeply rooted in the fabric of the company and every Dormer Pramet employee is charged with upholding and promoting them with pride.

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## New grooving system for prismatic parts

A new range of Speed-Forming tools has been introduced by Horn for machining deep, narrow grooves into prismatic metal workpieces very productively. Initially, the tools are offered in widths from 1.5 mm to 4 mm and from 12 mm to 35 mm long. Tool and mould makers generally use milling cutters with a large length-to-diameter ratio to produce ribs, for example, but due to the risk of breakage it is necessary to program a relatively low feed rate. Now such grooves can be machined to a depth of up to 20 mm more quickly and cost-effectively using Horn's Speed-Forming technique.

The carbide tools are based on the German manufacturer's Supermini 105 system. As with broaching, the cutter has a fixed orientation in the spindle as it travels along a programmed path. Maximum infeed per stroke is 0.3 mm with a rapid feed rate of up to 60 m/min. The cycle can even include curves and undulations in the groove, making it an efficient solution for creating cooling fins or reinforcing ribs in a casing.

When used on rigid machines, the tools achieve short processing times as the shape

of the Supermini tool is able to withstand high loads. Toolholders are available with an HSK 63 interface or as a round shank with a diameter of 25 mm. All versions feature internal coolant supply.

### New side milling cutter

A new, tangential milling system launched by Horn at AMB is the first ever side mill to deploy six effective cutting inserts. The patented system offers positive cutting and axial rake angles for a particularly soft cut.

The precision-ground, indexable inserts ensure a high level of accuracy and surface quality. An additional, free-form surface chamfer on the cutting edge creates a stable wedge. In turn, this results in smooth milling and helps extend tool life. The surface treatment applied to the milling cutter body provides it with hardness and strength, ensuring long-term protection against abrasive chips.



The side milling cutter is based on Horn's M610 system and is offered in two versions. The first has a diameter of 100 mm and five effective inserts in cut, requiring 10 inserts screwed onto the periphery on either side of the body. The other version is of 125 mm diameter and uses 12 inserts to provide six effective cutting edges.

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## Floyd increases flexibility with extended interchangeable tooling line

The impressive series of W&F Micro interchangeable tooling from Floyd Automatic has now been extended with the arrival of new quick-change insert holders and innovative new collet holders. The impressive tooling system provides a versatile, quick change solution that retains precision to 0.002 mm.

The W&F Micro Series utilises 'Face & Taper' contact technology to guarantee precision repeatability of 0.002 mm while giving the end user a remarkably fast tool change, which is ideal for pre-set tooling systems. The toolholder of the W&F Micro range remains in the machine while the head can be rapidly removed with a single screw that enables the operator to change inserts outside the machine if desired. For more spacious machine tool work envelopes, the inserts can be changed quickly with a single screw that requires no further adjustments.

This impressive technology has now been extended to allow the end user to rapidly interchange circular shank tools such as drills and end mills. With a single screw that locates the interchangeable head in the

toolholder, the W&F Micro system has an innovative design that delivers the highest possible stiffness, rigidity and precision. This is guaranteed by a patented cylindrical stabiliser design that permits precise insert changes with speed and confidence.

This ensures that the interchangeable heads that are available with a wide variety of head types including: general turning, facing, profiling, parting, internal profiling and boring operations, now offer even greater possibilities. W&F Micro has also added two cylindrical turning tool collet holders, ER11 with the ER16 version to follow in 2019, to ensure the fast interchange and repeatability demands of small diameter cutting tool users are fully met.

The extension of the W&F Micro turning line satisfies the desire of end-users to achieve a completely flexible and interchangeable system that can reduce tooling inventory and the associated costs



while maximising the potential of tool positions in machine tools with limited capacity. Furthermore, the W&F Micro reduces non-cutting times and therefore increases productivity by enabling the operator to pre-set tools outside of the machine tool environment.

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## Leader Chuck says “stick with it”

As a renowned workholding specialist offering its customers manufacturing productivity and efficiency gains, Leader Chuck International is always striving to provide solutions for demanding applications. Announcing a partnership with European distributor, NCMT, Leader demonstrated Blue Photon at this year’s Advanced Engineering show. An innovative, patented, photo-activated adhesive method of workpiece clamping, Blue Photon offers engineers the opportunity to look again at challenging applications.

A workholding system conceived in the laboratory and tested in manufacturing applications all over the world, Blue Photon photo-activated adhesive workholding is the answer to engineering businesses’ quest for a workholding system developed to hold delicate, complex shaped or near-net shaped parts during manufacturing operations. From turning to grinding and EDM to additive manufacturing, Blue Photon also has the capacity to hold parts with exceptional 5-axis machine tool access. The Blue Photon system holds a workpiece securely and freely, allowing five- and even six-sided part access. It allows for heavy milling or high-performance machining strategies of many materials including titanium and superalloys.

Managing director, Mark Jones explains: “The concept of using Ultra Violet (blue) light to activate and achieve a high-performance adhesive reaction is not new, the dental industry has successfully used it for many years. However, its application within the manufacturing industry sectors does offer a number of key advantages for each manufacturing technology.

“The adhesive workholding technology is the perfect solution for holding delicate



workpieces that are prone to distortion in the turning process. Parts such as large, thin rings are easily held in place with Blue Photon without the distortion that is caused with many other workholding methods while turning. Eliminating the need to reposition clamps or relying on operators to ‘gently’ clamp the part can be eliminated.”

Blue Photon is the ideal workholding solution for creep and surfacing grinding applications. One of the unique benefits of the BlueGrip adhesive is its vibrational dampening quality. The adhesive can actually absorb some of the vibration that is common in grinding, thereby reducing chatter, helping achieve tight tolerances and enhance surface finishes. When coupled with a zero-point workholding system automated part load becomes simple. Another benefit of Blue Photon, that makes it ideal for grinding, is its ability to allow fixtures to be designed and built for excellent coolant placement. This is especially important in the grinding industry, where coolant placement can be critical.

Adhesive workholding can aid part clamping in EDM and eliminate cumbersome fixtures with moving parts that can get ‘gummed-up’ in the EDM machine. While it is estimated that approximately three quarters of all 3D printed parts require some type of post process machining. Finding a workholding method that can accommodate these net shaped parts can be a serious engineering challenge. Blue Photon’s advanced workholding technology is ideal for these often-complex net shaped parts. Inexpensive fixtures can be designed and built quickly, avoiding the need to print clamping lugs, bases and so on.

For the aggressive milling of materials such as titanium, stainless steel or superalloys, or finishing cuts on a complex part, Blue Photon is an ideal workholding solution.

Mark Jones continues: “Thousands of parts have been successfully milled using Blue Photon’s workholding technology, confirming its ability to withstand heavy milling forces while simplifying the



workholding element. Reduced labour, time, and scrap are often realised and Blue Photon can be used with virtually all materials that are found in the manufacturing industry today, including metals, ceramics, composites and plastics. With the Blue Photon system, clamping induced distortion from over-tightening clamps is totally eliminated."

This workholding solution also allows workshops to reap the full benefits of a multi-axis machine tool. For example, most traditional workholding systems used with net shaped parts will have tool interference issues when used on a 5-axis machine. With Blue Photon's workholding adhesive solution, engineers can configure the grippers in a location that will maintain the necessary clearances around the workpiece, allowing for five- and even six-sided access to the part. When used with billet material, dovetails and edge clamping can be eliminated.

Mark Jones says: "The application of Blue Photon is straightforward; the adhesive is applied to the sapphire crystal face of the UV curing/holding units that are fed by a high intensity light source. The raw material or workpiece rests in the fixture with an

adhesive gap of between 0.5 and 3 mm between the optical curing unit and the surface of the workpiece and in under two minutes, the activated adhesive cures to securely hold the part ready for subsequent machining operations.

"Once all machining operations are complete the adhesive bond is broken by a shearing force applied to the unit using a hex socket and wrench. Any residual adhesive is removed with a high temperature cleaner typically above 65°C and the units are ready to be dried and used again."

Based in Tamworth and Co. Dublin, Leader Chuck International has an enviable reputation for the in-house design and production of Leader chucking, stationary clamping, gripping and workholding products. A respected brand name for high quality equipment with more than 65 years' experience, the company also stocks products from the very best suppliers, such as AMCC, AutoGrip, Blue Photon, Balance Systems, Bison, CARVEsmart, Cucchi Giovanni, Exact Machinery, Gamet,



HAINBUCH, Hewa, Homge, Iram, Jato, Lexair, Llambrich, Maprox, MicroCentric, Omil, Orange Vise, Panzeri, PiranhaClamp, Posistop, Rotomors, RotoRi, Walmag Magnetics, ZeroClamp and Zweifel. Able to provide the right chuck or gripping solution, productivity and efficiency enhancement for any application, Leader Chuck offers quality, precision, and reliability at competitive prices with reliable expert advice and a commitment to customer service.

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## HAINBUCH set to grip the crowds at Southern Manufacturing

At Southern Manufacturing 2019, workholding innovators HAINBUCH will be introducing a host of exciting technologies to show visitors at the Farnborough event. With flexibility, minimal interference contour and precision levels all being key factors for the modern workholding solution, HAINBUCH will be demonstrating these attributes in its new range of TOPlus and SPANNTOP mini chucks.

Making an appearance at the show will be new modular mini chucks that will bring a new era of compatibility and flexibility for customers. The leading workholding specialist has also developed the SPANNTOP mini chuck to make it compatible with an adapter ring in order to use the new modular system. The MANDO Adapt mandrel and the corresponding jaw module already work perfectly with the new SPANNTOP mini, meaning complete autonomy for your small component clamping needs.

Unlike the SPANNTOP mini chuck, the configuration for the TOPlus system is a little different. Whereas the SPANNTOP uses an

adaptor ring, the TOPlus system has a ring of attachment holes to secure the market leading jaw module. At the show, HAINBUCH will be demonstrating the innovative new MANDO Adapt series of adapters that will also work in harmony with the popular TOPlus system.

Additional innovations on show will include the Manok and Hydrok hydraulically actuated stationary chuck. The choice product for 5-axis machining or efficient multiple clamping, the Hydrok Intelligent modular system offers greater possibilities than ever before. Depending on size, the Hydrok can be used with all clamping device adaptations, such as the MANDO Adapt mandrel-in-clamping device or with the jaw module. Thus, in the future, you can also rely completely on the intelligent HAINBUCH modular system, even for your stationary clamping device.

The Hydrok incorporates typical HAINBUCH features such as user-friendly setup, parallel clamping, optimal power conversion, extreme rigidity and superior holding power. With a repeatability of less



than 0.01 mm possible, the Hydrok is ideal for 5-sided machining as well as flexible clamping scenarios such as mandrel clamping or jaw clamping thanks to the modular system.

Another key innovation that will be of interest to visitors will be the impressive new TestIT clamping force gauge system that has been developed in conjunction with Siemens. The new software system is available on a data carrier for installation on Siemens CNC controllers.

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# Joint venture company promotes high-temperature magnetic clamping

Applications extended from plastic injection moulding and rubber pressing to electromobility, wind farms, 3D printing, robotics and Industry 4.0

The Hilma division of German workholding specialist, Roemheld, has entered into a 50:50 joint venture (JV) with long-term cooperation partner, Rivi Magnetics, Sassuolo, Italy. The JV company, Roemheld Rivi GmbH based in Hilchenbach, Germany, intends to leverage both partners' expertise to develop new applications for magnetic clamping technology and penetrate global markets more comprehensively.

Dual leadership of Roemheld Rivi is in the hands of Hans-Joachim Molka from the Roemheld management team, responsible for commercial matters and Davide Rivi, owner of Rivi Magnetics Srl, who is responsible for research and development.

Hans-Joachim Molka says: "We see a number of new opportunities in specific sectors in the coming years: drives for electromobility, 3D printing applications, locking mechanisms for rotors in wind turbines, plus robotic assembly and handling. Magnetic clamping is aimed at customers working in the supply chains to these sectors, as well as at those looking for a partner for the implementation of Industry 4.0."

Davide Rivi adds: "Magnetic clamping technology, with its many advantages in terms of setup time optimisation, offers a huge market potential that we want to exploit even more. In addition to intensifying sales activities, Roemheld Rivi GmbH intends to launch a development initiative that will significantly broaden the product portfolio."

Hilma M-TECS standard and customised magnetic clamping products are manufactured by Rivi Magnetics, the various models being capable of withstanding maximum temperatures of 80°C, 120°C or 240°C. There has been a noticeable increase in demand for quick mould clamping at the upper end of this temperature range. Systems can be either factory fitted by the machine manufacturer or retrofitted to existing machines within a few hours.

Designed according to customer requirements with respect to weight, up to several tonnes, complexity of geometry and



A joint venture company, Roemheld Rivi GmbH, has been formed to expand the cooperation partners' magnetic clamping product range as well as the world markets into which they are sold

required clamping force, the systems are widely used in injection moulding and the rubber industry as well as in forming presses and stamping plants. The JV is still the only supplier of high-temperature magnetic clamping plates that can process both rubber and thermoplastics such as polyetheretheretherketone (PEEK) or polyphenylene sulfone (PPSU).

Mains current flow for just a few seconds is sufficient to ensure that nearly all moulds made of ferromagnetic materials are clamped over their entire surface. Without any further power drawn, uniform distribution of the clamping force ensures low wear. The moulds are subsequently released by a further short current pulse. The magnetic field generated by permanent magnets penetrates only a few millimetres into the mould and brings the two halves together precisely in terms of position and parallelity.

M-TECS products meet EN 201 and EN 289 standards for injection moulding machines and rubber presses. Requirements

for feedback of magnetisation, power supply, mould monitoring and emergency stop are met and safety signals as well as error messages appear on the operating panel, all consistent with Industry 4.0 requirements.

Roemheld (UK) Ltd 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.

It 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.

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## Kurt expands DoveLock Dovetail 5-axis vice line

The expanded lineup for Kurt DoveLock™ Dovetail vices includes one standard jaw model DT20 with clamping range of 1.18-1.68, two reversible jaw vices including the model DTR20 with a jaw opening of 1.09-1.65 and DTR10 model with a jaw opening of 0.52-0.80. A full line of optional riser bases, adapter plates and pallet options are available with pre-configured mounting hole patterns to provide compatibility with a wide range CNC machines and pallet systems, rotary tables and tombstones.

A new BP8 adaptor plate works with the DT20 and DTR20 DoveLock vice models and provides a mounting platform that works with virtually all CNC machines. This adaptor can act as a receiver plate for the DoveLock vices and once mounted and located, provides for easy swopping of vice for different jobs without the need to relocate the setup.

Kurt DoveLock Dovetail vices are designed for aggressive 4- and 5-axis machining and are built from pre-hardened 4140 steel. They incorporate anti-deflection

and alignment control through the moveable jaw being seated and guided inside the stationary jaw. Clamping screw is strategically positioned at the top of the clamping envelope providing additional anti-deflection control and maintains part rigidity and minimises deflection and clamp creep.

The two unique models with reversible jaws provide for a wider clamping range of the dovetail widths. This allows the machinist to use the optimum sized dovetail strip best suited for the part size and configuration from one setup to the next.

The new DoveLock Dovetail vices have a lifetime iron clad warranty and are part of a complete family of 5-axis workholding products from Kurt.

### Kurt DX6 CrossOver vice

The DX6® CrossOver® vice features strategically located holes for through the body mounting to achieve closer positioning of multiple vices with no need for space consuming toe clamps. The vice also uses sine keys which can be inserted quickly into



pre-drilled dowel holes in the vise base for positioning onto t-slots, machine tables, grid plates, sub-plates, fixture plates and tombstones.

DX6 CrossOver vice comes standard with a Groove Lock® jaw plate and Groove Lock workstop for accurate part locating within the clamping area. The workstop uses a single bolt design for adjusting and slides across the full length of the jaw to accommodate for a variety of parts sizes and does not interfere with the part or spindle.

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## Clamping soft plastic injection-moulded parts accurately for measuring process

Soft and delicate plastic lids for detergent bottles must be measured during their manufacturing process. Experience shows that repeatable clamping of these flexible plastic parts is not easy. All kinds of clamping force can act on the components causing them to bend and thus jeopardise the actual measuring process. Any kind of



selective clamping pressure, which would ultimately lead to deformation of these sensitive thin-walled injection moulded parts, must be avoided.

Therefore, a clamping concept is required by which the least possible pressure on workpieces is exerted. All mechanical clamping methods are subject to the risk of deformation, therefore using vacuum is the optimal choice.

The reproducibility of clamping force, while maintaining three-dimensional part geometry, is very important and during the design phase this was given the highest attention.

A combination of suction cups, vacuum areas, stops and a positioning aid enable simultaneous clamping of 12 workpieces. Workpiece deformation is excluded.

Loading of components is done by hand and for the actual measuring process the complete outer contours of the parts are accessible.

### Vacuum clamping fixture for testing SD cards

An essential prerequisite for checking

conventional SD memory cards is the accessibility of these sensitive workpieces from at least five sides.

What could be better than a gentle and at the same time repeatable process using a special vacuum clamping device for multiple parts.

32 SD cards are positioned and aligned on a special passepartout. The passepartout is then guided to the correct position by means of two fixed stops, so that the SD cards are accurately placed on matching clamping surfaces.

During measuring, to avoid disturbing contours, the passepartout is simply lowered to the base of the fixture.

By activating one valve, all SD cards are now precisely and securely fixed for the measuring process. After measuring is completed, the passepartout together with the SD cards is removed again.

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## Fastening and assembly – first or last on your list?

A surprising number of projects stall when the fastening and joining stage is reached in the design process but, for those who are prepared to look and ask questions, there are some interesting solutions to seemingly insurmountable problems out there

It is a fact that there has never been more choice available in the field of fastening and bonding for manufacturing applications. In addition to the introduction of new joining methods, the appearance of new and different types of fastening products within them has also multiplied the options. It is true to say that nowadays there are more fastening solutions than many engineers could shake a stick at. These new products, methods and solutions, together with a greatly expanded portfolio of materials from which the fasteners themselves are made, have combined to deliver a sometimes bewildering level of choice. Furthermore, many of today's fastening and joining options offer designers the opportunity to achieve much more than simply joining things together.

For example, it wasn't so long ago that, when metal parts were to be joined, the limited choices often fell between using nuts and bolts, welding, maybe rivets or perhaps clinching. Even before alternatives to these options arrived, specialist suppliers in the fastening arena had been busy improving what they already had. Self-pierce riveting is one notable instance. Whereas it had previously been necessary to first drill a hole in the host material and then insert the rivet, leading fastening suppliers developed new designs to offer rivets that don't need pre-drilled holes. They are just driven direct into the material and thus an entire, drilling,



Bollhoff's latest additions to the Helicoil range bring new opportunities for design engineers, coupled with significant cost savings on the shop floor

process is disposed of, with commensurate cost-savings instantly available.

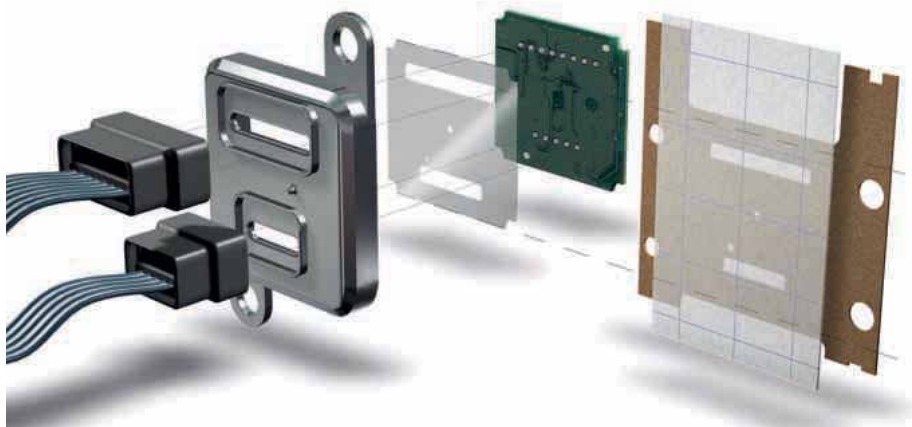
Other 'mature' fasteners, like nuts and bolts and the threaded inserts which are widely used across manufacturing, have also been the subject of ongoing development. Thus, there are nuts, bolts and inserts that can now be specified with a variety of inbuilt features that bring real advantages to both design and production engineers. These developments have brought significant cost

savings, as outlined below. Clinching has evolved, too, with machines and processes now available that aren't just quicker, cleaner and more efficient: they can also provide gas-tight seals that are proven and certificated as such.

Despite these ongoing developments with mature fastening methods and products, much of the excitement and enhanced capability in fastening and joining has come as the result of the emergence of new, lightweight engineering materials suitable for mass production. This has brought with it a need for new ways of fastening and joining, which has spurred accelerated investment in R&D by some leading manufacturers to invent, refine and bring to market new products and processes.

### Fascinating fastening

Take the Helicoil threaded insert products from Bollhoff Fastenings: in response to customer demands for cost reduction, a new addition to the range, Helicoil plus, now allows users to completely do away with the need for the pre-winding of inserts prior to installation. This elimination of an entire



Structural bonding tapes from Lohmann Technologies are being used to mount magnets and cooling elements inside electric motors

process brings substantial time and cost-savings. The insert achieves this while delivering an improvement in pull-out strength. It can be used in composites as well as metals. A further innovation, Screwlock, means that Helicoil inserts can also now be specified with a built-in mechanical locking function, obviating the need for additional fastener security measures such as threadlocking compounds or washers in many applications: another cost-saving advantage.

With the increased use of lightweight materials, a typical example has emerged of a manufacturer developing a product specifically for fastening into them, or onto them, as the case may be. In this example, Bollhoffs' RIVKLE blind rivet nuts have been used to mount hand- and foot-holds on a polyester/glassfibre climbing wall. The application called for a dependable high strength solution capable of firmly attaching the holds, but one which would also allow for them to be removed, or reinstalled in alternative locations, swiftly when the need arose. Essentially a rivet nut set into a special elastomer or thermoplastic material, the RIVKLE blind rivet nut is inserted into a drilled hole in the host material and held in place by unique clamping nodules until the threaded fastener, in this case those attaching the climbing handles, is torqued up, as required.

Since the metal part of the nut is only joined to the elastomer in the lower area of the fastener, as the threaded fastener is tightened a bulge forms at the head of the RIVKLE against the inner face of the host material. This feature helps to provide the load distribution and pull-out resistance required by the OEM. These are just two of many products to have emerged from Bollhoff's extensive research facility in Bielefeld, Germany.

### Brilliant bonding

Despite these and so many other developments in mechanical fastening and joining, some would argue that the innovations seen in bonding technology have been just as pivotal and perhaps more so in selected application environments. Although bonding has been around in some form or another for centuries, the evidence is that some of the most noteworthy innovations for OEMs have come about inside the last 20 years. One of the companies driving the increased use of bonding and particularly adhesive tapes has been Lohmann Technologies, based in



Lohmann bonding tapes are also used in the production of large numbers of automotive sensors

Milton Keynes, but benefiting from an extensive R&D facility at its technology centre in Neuwied, Germany. Although the company has more than 160 years of history in the manufacture of adhesive tapes for the medical sector, a market in which it remains a leading player, it has been a driving force behind some interesting developments in structural bonding for the manufacturing sector. Structural adhesives have been available for a while in liquid form, but not in the sometimes more economical and precision format of a tape. These have helped OEMs embrace some of the biggest advances in new materials technology, and also allowed them to maximise the advantages they bring to both the engineering design office and the shop floor.

Two interesting examples of the use of precision die-cut adhesive tapes from Lohmann's DuploCOLL HCR (Heat and Chemical Resistant) range have emerged recently. One of these saw the bonding of a printed circuit board directly onto the aluminium casing of an emissions sensor widely used across the automotive industry, while another saw the tape used for the bonding of cooling elements onto the interior of an AC electric motor casting. In each application, the customer was provided with pre-prepared die-cuts that arrived on the factory floor ready to apply. In the case of the electric motor cooling element fixings, these were centre-punched circular die-cuts providing washer-shaped adhesive mounts, with an OD of precisely 7.5 mm and an ID of 3 mm, produced in thousands with repeatable accuracy. The tape also passed a demanding thermal

shock test with flying colours when the manufacturer concerned heated the complete motor assembly to a stable 140°C and then dropped it into a five percent saline solution at 0°C.

Although the various applications mentioned in this article were disparate and the designers involved completely unconnected with each other, they shared a common element between them. During the design stage, each of the teams concerned identified the need for some specialist advice and guidance on the subject of fastening and 'went outside' to selected experts at key suppliers for technical assistance. This was rewarded in many ways, not least by securing the best possible technical solution and perhaps just as importantly being able to use expert



It may look like a humble fastener, but Bollhoffs' RIVKLE range is the result of extensive R&D for applications where a lightweight fastener with strength and high pull-out resistance is required in plastics, composites and other thin-wall materials

knowledge to get them to that solution far more quickly than they would have done, if they had continued to 'go it alone'. So, one way of avoiding design challenges or possible bottlenecks in a project involving fastening is to simply pick up the phone and talk to someone who has made the subject their calling.

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# World's leading exhibition for the fastener and fixing industry with record exhibition space

## Positive economic outlook offers potential for growth

Fastener Fair Stuttgart 2019, the world's leading exhibition for the fastener and fixing industry, will take place from 19th-21st March 2019 in halls 1, 3 and 5 at the Stuttgart Exhibition Grounds in Germany. Due to a further expansion of the exhibition space this year, offering a total space of 22,000 net sq m, the exhibition has already exceeded the total stand space of the previous event in 2017. More than 97 percent of the total available stand space has been booked so far.

Around 900 companies from 40 countries will be present at the 8th International exhibition for the fastener and fixing industry. Germany, Italy, Spain, the United Kingdom, the Netherlands and France are the major European exhibitor countries. Asian exhibitors mainly come from Turkey, China, India and Taiwan.

Liljana Goszdziewski, exhibition director of Fastener Fair Stuttgart, on behalf of the organisers Mack Brooks Exhibitions, says: "The fastener and fixing industry is expecting a positive economic development in the upcoming years. Based on evolving global industry sectors like e-mobility, the aerospace and construction industries, a growing demand for fasteners and fixings is currently anticipated." "The market has developed dynamically over the last couple of years, with new technologies and fields of application as well as the use of various new materials. In addition, hybrid fasteners have been well established in the industry.

Therefore, fasteners and fixings are more frequently applied as flexible and highly functional solutions which are used in lightweight engineering as well as various other areas."

The Fastener Fair Stuttgart exhibition covers all areas of the fastener and fixing industry: industrial fasteners and fixings, construction fixings, assembly and installation systems as well as fastener manufacturing technology. The show targets distributors, suppliers, engineers and other industry professionals and is therefore the meeting place for the whole industry.

### New visitor brochure available

The new Fastener Fair Stuttgart visitor brochure is now available. It contains important information about the show, including travel & accommodation, ticket prices and services for visitors. The brochure can be requested via the show website [www.fastenerfair.com/stuttgart](http://www.fastenerfair.com/stuttgart) and is available in English, German and Italian.

The exhibitor list, available on the website, is regularly updated and provides plenty of information on exhibiting companies, such as exhibitor profiles, online press boxes, company videos and contact details. The newsletter, which is sent out monthly ahead of the show, offers the latest news about the show, the exhibitors and the industry sector. The subscription form for Fastener Fair News is also available on the



website. Fastener Fair Stuttgart can be followed on Facebook, Twitter, LinkedIn and YouTube. The official hashtag is #fastenerfairstuttgart.

The opening times are on Tuesday 19th March and Wednesday 20th March 2019 from 9am to 6pm and on Thursday 21st March from 9am to 3pm. Entrance tickets will be available from January via the exhibition website. The exhibition grounds in Stuttgart are located directly next to the airport and are easily accessible by car and public transport as well.

### Special area for bonding and adhesive technologies

For the first time, as part of Fastener Fair Stuttgart, there will be a special area for bonding and adhesive technologies. The focus of the "Bonding and Adhesive Technology Area" especially lies on solutions which are growing in importance in modern manufacturing. They provide an excellent addition to traditional fasteners and, thus, have become a vital choice in lightweight construction, for example in the automotive and electronics industries.

Due to their unique characteristics, they offer a cost-effective solution for a range of challenges throughout a variety of industry sectors. Bonding and adhesive technologies allow the material to retain its properties, enable the use of thinner and lighter materials and are perfectly suited for composite systems.

Companies still interested in exhibiting at Fastener Fair Stuttgart 2019 are advised to contact the organisers Mack Brooks Exhibitions as soon as possible, as there is a limited number of stands available.

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## Telsonic showcase latest ultrasonic technology



Telsonic UK Ltd, recognised as one of the UK's leading providers of ultrasonic technology for welding, joining, sieving and cleaning applications, demonstrated its latest technology at Advanced Engineering UK 2018.

The company featured a comprehensive selection of sample parts, produced using the extensive range of ultrasonic systems and modules offered by the company. Representatives were also on hand to discuss advanced ultrasonic processing in plastic welding, metal welding, cutting, sealing, cut 'n' seal, food cutting, packaging, sieving, and cleaning applications.

Telsonic UK also designs and manufactures bespoke sonotrodes and tooling as well as bench top and floor standing semi-automatic machines within its Poole facility. It offers a comprehensive range of ultrasonic modules and systems for a variety of plastic welding, metal welding, cutting, sealing, cut 'n' seal, food cutting, packaging, sieving, and cleaning applications within a wide range of industries.

Telsonic AG is an international enterprise in the field of industrial ultrasonic technology and one of the global market leaders. The company, which was founded 52 years ago and is based in Bronschhofen, Switzerland, employs approximately 250 staff worldwide, and has subsidiaries in the UK, Germany, Italy, the U.S., Canada, Serbia, China and Korea, as well as representations in many other countries. Telsonic handles the entire product development and manufacturing itself with professional expertise and completes projects according to individual customer requirements. Its reliable on-site technical service rounds out its offer.

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# Technifast provides innovative fixings to Team Britannia

Technifast is manufacturing fixings and inserts to secure Team Britannia's massive inflatable tubes to the outside of its boat on the team's round the world record attempt. The fixings and inserts, from industry leaders Technifast, have been specifically developed to allow the fitting of the two white tubes, which each weigh around 250 kg, to the side of boat without large numbers of people working on either side of the hull.

This is important as should either tube be damaged during the 23,000 nautical mile record attempt, the crew need to be able to replace the tubes without putting the vessel into a dry-dock.

The announcement was made at the Aluminium Boatbuilding Company on Hayling Island, where the 80 ft RIB is being built, by ocean racing legend and Team Britannia's skipper Alan Priddy and Technifast's senior engineer, John Garner.

Alan Priddy explains: "We encountered an issue attaching our two huge inflatable tubes to the port and starboard sides of the boat. The hull of the boat is constructed from 6 mm aluminium plate and the fixing plates for the tubes required M10 bolts to be used.

"Tapping directly into the aluminium hull with M10 bolts would not be strong enough as the softness of the aluminium material, coupled with the constant slamming of the boat, would pose a risk of the bolts stripping the threaded aluminium and pulling out.

"If that was not enough, we needed a fitting that would allow the crew to remove and replace the tubes without having to take the boat out of the water."

Following conversations between Alan Priddy and John Garner, a design was finalised for an insert which would increase



the holding strength in the aluminium, but still allow the M10 fixings to be used to hold the two tubes in place. Crucially, it will give the option to release the tubes quickly in an emergency and for easy replacement.

John Garner explains: "As soon as it became clear what Team Britannia were attempting to do, we were delighted to offer our services and support as a partner to this record attempt.

"The new design uses a larger metric external thread to give more surface area and better grip. We also removed all undercuts and extended the exterior thread length to ensure that every available millimetre of the insert will provide hold to the relatively thin and light hull of the boat.

"The increased strength also means that the inserts only need to be installed at 750 mm intervals over the length of the boat, along the top of the hull with the holding plate bolted on. The tubes can then be attached and removed with relative ease."

Team Britannia is using a boat designed by Hampshire based Professor Bob Cripps, former technical director of VT Halmatic. It will slice the waves, rather than surfing them,

with its super-efficient design, a variant of the "fast displacement hull." This reduces fuel consumption by up to 30 percent and should make the 23,000 nautical mile trip smoother.

Construction of the 80 ft RIB started in 2015 on Hayling Island, near Portsmouth, at the Aluminium Boatbuilding Company. The hull was completed and turned in December 2016 allowing the completion of over 2,000 closing brackets. The installation of the final bulkhead and six massive fuel tanks is under way but needs to be completed. Once fitted, the next job will be to install the engines and jets, before the wheelhouse is craned into place.

Then the fixing and inserts from Technifast will be installed at 750 mm intervals over the length of the boat, along the top of the hull with the holding plate bolted on. The tubes can then be attached to complete the distinctive look.

Alan Priddy continues: "The bespoke solution developed by Technifast is beautifully simple, practical and most importantly effective. Yet again we are pushing the boundaries to ensure we have a boat that is both light and incredibly touch. I am delighted to be working with another Great British company."

John Garner concludes: "We look forward to following their progress and wish them every success in breaking the World Record."

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## Keeping current with EV fastening needs

Today's EV engineers are driven by consumer demand and focusing more on range and durability than outright speed. As EVs have evolved for public consumption, a new phrase has entered the conversation and it is said to reflect the biggest reason why the buying public continues to resist the current crop of extremely competent EV offerings. 'Range anxiety' is still proving a difficult challenge to overcome for manufacturers and a genuine ongoing concern.

With battery technology sometimes said to be holding back the rest of the EV package, attention has been focused on maximising the power available in other ways to improve the range and battery duration. Weight reduction has emerged as a key aspect in the quest for more miles and smiles per amp. So, advanced materials, including plastics, composites and lightweight alloys, have been at the forefront of EV development.

But as new materials and methods of forming them have been trialled and either improved, approved or discounted for EV

use, engineers have become increasingly aware that the process of putting them all together, or attaching necessary parts to them, has become more challenging.

Fitsco Industries has been busy developing a new range of compression limiters for use with threaded fasteners in plastics and composites, with some of the products already being tested by EV manufacturers. The compression limiter is a non-threaded device fitted between the head of the fastener being tightened down and the top surface of the host material that the fastener is being put into. Installing a compression limiter helps to prevent cracking and creeping in the host material as the fastener is torqued down and thus assists in maintaining the integrity not just of the individual joint itself, but the overall integrity of the complete part.

Sensibly, compression limiters can be installed either pre- or post-moulding and Fitsco can also provide users with a 'Poka Yoke' solution to help speed up assembly times on the shop floor. In the EV environment, Fitsco states that its



compression limiters are proving ideal for use in both body and chassis applications. For applications in firmer plastics and composites, such as structural members, it encourages manufacturers to opt for the 'standard' compression limiters.

However, for the many non-structural applications that involve fastening into softer materials, the innovative Fitsco 'Headed' compression limiters are said to be better suited.

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## Process control tool for precision manufacturing and cost-effectiveness

Advancements in materials and Industry 4.0 are challenging the joining technology of various industries. Requirements are the control of the setting processes and the full automation and integration of the technology in the OEM operations.

For more than 20 years, GESIPA® has been able to monitor setting processes that are carried out on safety critical components. Over the years, the company has developed technology to such an extent that it is now able to guarantee that the right blind rivet, rivet nut and nut studs are placed in the right place and in the right quantity for vital applications.

If an irregularity is detected, the process is immediately stopped. It is only after the customer has acknowledged the malfunction that the process can continue, making human error more or less impossible.

Setting process monitoring already plays a major part in many industrial production processes, especially in the automotive sector. The production and installation of airbags, belt restraint systems and child seats have been monitored successfully and

efficiently for years. GESIPA points out that setting process monitoring is a good investment for the future. Decreasing sorting, liability insurance and return costs clearly demonstrate cost-efficiency of the process control mechanism. To add to that, any errors relating to quality are completely prevented.

GESIPA's systems can be tailored as per customer needs and application in terms of size and function. Plus, they can either be used separately or be integrated into an already existing production line.

Many GESIPA setting tools including GAV, TAURUS® and FireFox® series are available with setting process monitoring. This helps to guarantee precision and safety from the very first production step to the finished product.

GESIPA's process control tooling for setting blind rivets, rivet nuts and rivet nut studs is now advanced with new three-window measuring technology that helps operators monitor the setting process at three evaluation windows. GESIPA TAURUS C and FireFox C WinTech, the pneumatic hydraulic blind riveting, rivet nut



and nut stud setting tools, help operators monitor the setting process on production lines. This gives the operator the confidence to not have to visually check every blind rivet or rivet nut set. By using new three-window measuring technology, the user can define three evaluation windows by means of special software.

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# Hexagon announces new flagship absolute arm range

Eight years after the launch of the first ROMER Absolute Arm, Hexagon's Manufacturing Intelligence division has unveiled its new Absolute Arm range. A ground-up redesign has seen one of the world's most recognisable portable measuring arms modernised to meet the needs of today's metrology users, with a key focus on improved usability and versatility without compromising on speed and accuracy.

A standout feature of the new Absolute Arm is its modular wrist design. This allows both the RS5 Laser Scanner and the pistol grip to be completely removed, facilitating easy probing in tight spaces. When reattached for laser scanning applications, a variety of grip sizes are available to ensure a perfect fit for every user. The new wrist also now features a display screen that allows for measurement result oversight, profile switching and calibration right at the point of measurement, reducing time spent switching attention between the arm and its control computer.

Anthony Vianna, product manager for the Absolute Arm range, says: "Over the last eight years we've received a lot of positive and constructive customer feedback and hopefully people will see how this has informed our design. Many customers told us they needed to measure in smaller and smaller spaces, like cavities or inside



complex fixtures and it was that sort of direct-from-the-user intelligence that drove us to create the most compact scanning configuration on the market today.

"We examined everything about the arm: how people were using it; how users measure different parts; how they move their arm around their facility; how the arm communicates with them; how to make the arm more serviceable. That process is what brought us to where we are today, with a new arm that offers improvements in every single area, across accuracy, speed, efficiency, weight, serviceability and versatility."

This new Absolute Arm range retains all the features that made the previous generation of ROMER Absolute Arm systems so successful. These include the proprietary Absolute Encoders that eliminate referencing, warm-up times and diagnostic reporting, as well as low-friction rotating grips and a unique counterweight system that facilitate easy movement and measurement. Also, notably still present is the capacity to measure at full speed without a reduction in accuracy.

The new Absolute Arm models are also available in a 6-axis version designed for dedicated probing applications.

### New tube and wire solution

A new approach to tube and wire measurement has been introduced by Hexagon Manufacturing Intelligence. An updated version of the popular AICON BendingStudio software platform now allows for the integration of an Absolute Arm with Integrated Scanner that can quickly determine complex tube and wire geometries using 3D laser scanning technology at almost any point in the production process.

From tube and wire inspection to manufacturing and reverse engineering applications, BendingStudio with Absolute

Arm is a full-featured solution built on well-established technologies. The system will benefit from the ability to connect directly to a CNC bending machine, allowing for the simple and immediate correction of production errors.

With this new version, BendingStudio will retain all its previous capabilities, allowing users to combine use of the Absolute Arm with Integrated Scanner with a complementary AICON TubeInspect. With these two measurement hardware endpoints operating on the same software platform, users will benefit from increased efficiency within a toolkit covering every need in tube and wire design and manufacturing.



BendingStudio with Absolute Arm is available immediately from Hexagon sales offices and distributors, both as a standalone software package for current Absolute Arm with Integrated Scanner owners and as a full product package including both the BendingStudio software and an Absolute Arm with Integrated Scanner. Current owners of BendingStudio who wish to add a highly portable measuring solution to their existing toolkit will be able to simply upgrade their existing software package alongside the purchase of an Absolute Arm with Integrated Scanner.

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## GOM welcome new addition to ATOS family

The fifth generation of ATOS sensors for fast 3D scanning over large measuring areas

ATOS 5 and ATOS 5X are the latest high-speed systems of the ATOS family. The robust sensors are fast and precise following the introduction of new features and developments. The Blue Light Equalizer has been especially developed for the light source in the ATOS 5 to make the systems independent of ambient light conditions, while the ATOS 5X takes this a step further with the introduction of a laser light compressor to generate ultra-bright light for the scanning process. More speed and light in the cameras allow for a shorter exposure time, with scan times down to 0.2 seconds per measurement and 100 frames per second, ATOS 5X gives optimal high-speed high precision data capture.

Andrew Cuffley, managing director at GOM UK, says: "enjoying an owner-manager-development unit in control of both software and hardware means that our technology can be released when it is absolutely ready and not just when it suits the shareholders. The speed and

overall performance of these latest sensors is allowing us to deliver great data for the most challenging applications."

As a result of this new technology, both systems achieve high-precision data for a diverse range of manual and automated applications, from tools and moulds to plastic and metal parts. With the ability to scan small scale items, such as aerofoil components, up to full car body inspection, the ATOS 5 is flexible and capable over multiple applications. At the same time, fixture design can be simplified as a larger surface is captured and fewer reference points are required. During the measuring procedure, acquisition times of down to 0.2 seconds are reached.

The trend for automated measuring is supported by installing the ATOS system inside an ATOS Scanbox. This option combines all the functions in one automated measuring machine. By utilising the Virtual Measuring Room software, the measurement environment is represented in



a virtual simulation. All robot movements are simulated and checked for safety before being performed in the actual environment.

Five technology leaps were made before the latest generation of ATOS sensors were developed. Process application and increased process reliability are paramount for the latest and future applications.

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## TVM Field of View instant measurement system

### Fast, flexible video measurement of larger components on the shop floor

Vision Engineering has announced the general availability of its brand-new class of TVM Field of View (FOV) video measurement systems. TVM combines a small footprint, with larger system performance and ease-of-use. Time-saving instant FOV measurements and a moving stage allow larger components to be measured quickly and easily.

The TVM series includes TVM20 and TVM35, with FOV sizes of 20 mm and 35 mm respectively. Both systems are designed to meet rigorous quality assurance applications in electronics, automotive, aerospace, medical and plastics manufacturing: offering rapid, accurate noncontact measurement. Components can be instantly measured within the field of view with the click of a mouse.

Cylindrical, flat, or square components can be instantly measured on the shop floor, offering instant go/no go evaluation. TVM's small footprint also saves space in the workshop or QC laboratory. Its exceptional

ease-of-use saves on training time and eliminates operator error, making TVM a versatile tool for a range of quality assurance applications.

As with other measurement and inspection systems from Vision Engineering, the TVM systems can be configured to suit specific applications. The fixed stage FOV system enables instant, accurate measurements of small pressed metal components, turned parts, injection moulded plastics, tubes and cables, while the addition of a manually-controlled stage extends measurement for larger components up to 200 mm x 100 mm.

The combination of TVM's flat field telecentric lens and collimated sub-stage lighting, featuring a new quadrant LED ring light, creates a sharp image of components on the HD monitor and significantly improves video edge detection of complex parts such as threads and valves. TVM works in combination with new software features for instant measurement of wire insulation and screw threads.

TVM's comprehensive, user-friendly



software supports a broad range of applications, delivering the precision and clarity that would be expected from expensive high-end video measurement systems. The rich suite of features includes simple data import/export, image stitching and reporting facilities.

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# FARO introduces new 6DoF Laser Tracker Platform

High performance 3D metrology, value-accessible to all industries

FARO has announced the release of the next generation of FARO Laser Trackers, the 6DoF Vantage product family with 6Probe. In 2015, it disrupted the large CMM market with the powerful Super 6DoF TrackArm solution that integrated the FARO Vantage tracker and the FaroArm®. This patented, comprehensive solution is capable of measuring or scanning over tens of metres with no loss in accuracy, no line of sight issues and simultaneous measurement by many operators.

The 6Probe is a fully integrated hand-held probe for easily probing hidden, hard-to-reach features in hard-to-reach locations. Together, the TrackArm super 6DoF and the 6Probe offer the most complete solution portfolio at an unbeatable price for every measurement need, large and small. This new functionality addresses a wide range of large-scale metrology applications across a variety of manufacturing focused industries including: automotive, aerospace, construction, heavy equipment and shipbuilding.

Simon Raab PhD, CEO and early innovator in portable, adaptable 3D measurement, says: "We challenge anyone in the industry to dispute this statement of fact: the patented FARO Super 6DoF and 6Probe total solution is the most complete, most adaptable metrology platform that manufacturers will ever need. Whatever you assemble or manufacture, large or small, easy or hard to reach, complex or simple,

this platform can meet your needs with the best value combination of performance and price."

The 6DoF FARO Vantage product family includes two high performance models, the VantageE6 with an operating range of 35 metres and the VantageS6 with an operating range of 80 metres. Both are tested to rigorous International Electrotechnical Commission (IEC) standards for shock, vibration and extreme thermal conditions and are IP52 rated for dust and water resistance.

### Mass market accuracy

Based on 30+ years of FARO experience in delivering high value metrology-grade solutions, exhaustive internal testing and feedback from a cross section of tenured metrology professionals, the accuracy and dynamic measurement capability delivered by the 6Probe reliably addresses the overwhelming majority of large-volume 3D measurement challenges. In combination with the Super 6DoF, which can achieve even higher accuracies, the Vantage platform now meets every need. The high-performance value proposition of the new Vantage 6DoF platform with Super 6DOF and 6Probe will facilitate broader



adoption of laser trackers, making integrated, total quality available to all industries.

### Premium productivity

Both Vantage models include ActiveSeek™ functionality with wide-angle viewing, which allows users to confidently move from one location to the next without concern. This improves general productivity by allowing users to start the actual measurement process faster and makes sophisticated 3D measurement accessible to all.

Pete Edmonds, vice president for Factory Metrology, says: "We have a long history of a being a high-value solutions provider for large scale measurement, "Given industry frustration with questionable performance or extra premium price points, FARO has made a conscious decision to deliver a mass industrial market, cost-effective solution directed at the broader population of users and applications, which have been underserved to date. The powerful combination of 6DoF, Super 6DoF and ActiveSeek enables a new ease-of-use standard across the entire user industry."

FARO is a trusted source for 3D measurement, imaging and realisation technology. The company develops and manufactures leading edge solutions that enable high-precision 3D capture, measurement and analysis across a variety of industries including manufacturing, construction, engineering and public safety.



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## Inspekto launches S70 autonomous machine vision system

Inspekto has launched the S70, the world's first autonomous machine vision system. The S70 offers powerful quality assurance capabilities in a small, versatile and practical package. Suitable for any handling method, product type and material, the S70 is up to the job, no matter what the visual QA task.

The S70 system can be installed in 30 to 60 minutes, 1,000 times quicker than a traditional machine vision solution and at ten percent of the cost. This out-of-the-box system offers a simple, intuitive user interface designed to be installed directly by the shop-floor employee. This means that no systems integrator is required at any step of the short setup process, or at any time later. The S70's high affordability and ease of deployment enables manufacturing plants to install it at any point on a production line and even move it from one line to another, at any time in the future, within minutes.

A German company with Israeli DNA, Inspekto is supported by leading industrial businesses from across the DACH region. During beta stage, the company installed its

system in the plants of leading industrial manufacturers, in countries including Germany, Italy, France and Austria. The S70 will deliver market changing benefits to manufacturers with a yearly total available market exceeding \$30 billion.

Harel Boren, CEO and co-founder of Inspekto, says: "The S70 is a world first, defining the autonomous machine vision category and introducing the inaugural Plug and Inspect™ technology for the modern shop floor environment. Because of the S70's affordability and simplicity, the digital factory is now a reality, allowing collection of data, down to product images, meta-data and defects from the entire production process and across production tiers. It offers full archiving and traceability, protecting both the manufacturer's production process, as well as its customers, from unwanted scrap and unwanted defects."

Zohar Kantor, VP Sales of Inspekto, concludes: "The market has been waiting for the arrival of the S70. Manufacturers are



trapped into expensive contracts with systems integrators and cannot access machine vision technology themselves. Inspekto's S70 system finally puts the manufacturer at centre-stage. Our powerful, and growing numbers of world-leading customers attest to the huge impact of the S70 in responding immediately to any QA need arising on the production line."

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## GapGun helps with quality inspection of F-35 Joint Strike Fighter

A presentation on seam validation measurement at this year's Coordinate Metrology Society Conference (CMSC) in Nevada, USA, showcased how Lockheed Martin incorporates GapGun, Third Dimension's best-selling hand-held laser measurement system, into the quality inspection process of its F-35 Joint Strike Fighter.

Lockheed Martin explained how seam validation, the process of measuring the gap and mismatch between body panels, has become a networked process meaning seam types can be measured at a faster rate, repeatedly delivering significant improvements in time saving and reducing the risk of human error.

Quick and easy-to-use, GapGun takes measurements throughout Lockheed's production line, so problems can be headed off before they arise, thereby speeding up and streamlining the production process.

Using LINK SDK, Lockheed's customised seam validation management system (SVMS), check plans can be sent straight to GapGun. This is achieved via the network rather than manually downloaded. The

results are then passed straight back to SVMS.

GapGun is used by world-class manufacturers in the aerospace, automotive and energy industries. It is sold in 25 countries and has made its developer, Bristol-based, Third Dimension, a two-time winner of the prestigious Queen's Awards for Enterprise.

### Third Dimension wins regional EEF innovation award

Third Dimension, the leading supplier of handheld precision measurement solutions was recognised as the South regional winner of the Business Growth & Strategy Award.

Neal Agar and Ellie O'Hare represented the company at a gala dinner at the Beaulieu motor museum to mark this prestigious achievement.

Judged by independent industry experts and peers, the EEF Future Manufacturing Awards are the most established and respected of their kind, giving real recognition to businesses that demonstrate a commitment to the future of UK manufacturing.



This is the second time that Third Dimension has been celebrated by EEF, having won EEF's Future Manufacturing regional award in 2015 in the Outstanding Export category.

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# Marking on the fly

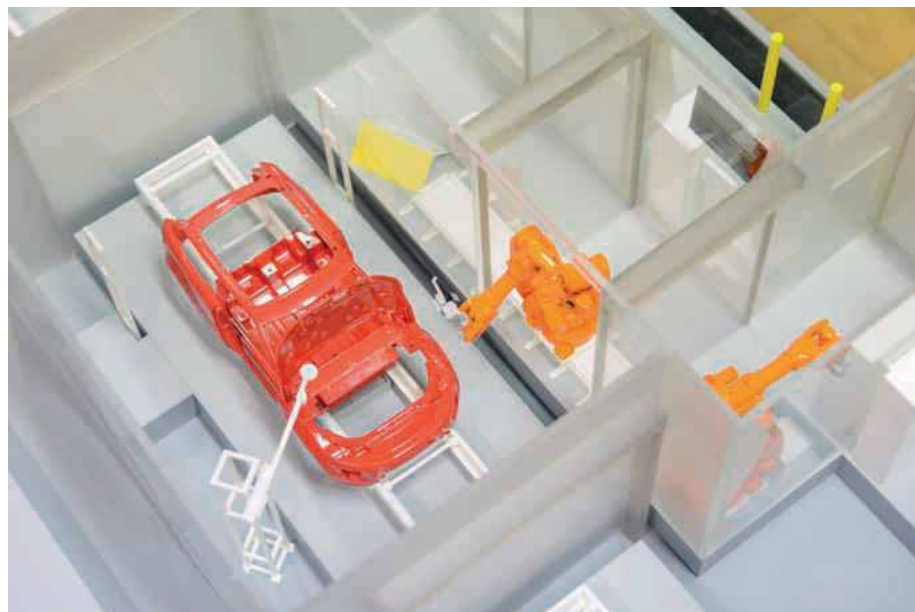
High speed production lines call for a smart approach to product marking says Andy Hales, project sales engineer at Pryor Marking Technology

Product identification is a fundamental requirement in modern manufacturing. Companies need to mark their components, assemblies and finished products for a variety of reasons. They may need to track batches or individual units through complex production flows or identify them for quality assurance purposes. They may want to include human, or machine-readable marks, to aid product identification in the field or as an anti-counterfeiting measure. Customers may require specific markings as part of their own processes or to meet regulatory requirements.

Over the years, industry has evolved a wide range of marking techniques. Commonly used approaches today include mechanical methods such as: dot peen and scribe marking, chemical or electrochemical etching and laser marking. Each of these methods has its own advantages and the optimum choice of marking technology for a given application will depend on the materials, end-user requirements and production environment involved.

## When you just can't stop

Some production environments present significant challenges for conventional marking technologies, however, for accuracy, most systems require the component to be held stationary for the time required to make the mark. Modern automated marking systems can operate



extremely rapidly, creating detailed marks such as machine readable 2D Data Matrix codes in a fraction of a second. That makes marking feasible even within the very short cycle times used in high speed, high volume production environments.

In some cases, however, the line cannot be stopped, even for a moment. This situation arises in extremely high volume component manufacturing environments, where continuous component movement is designed into the process. It is also found in continuous or semi-continuous production processes, such as the processing of strip

materials, where a manufacturer may wish to place identification marks at regular intervals along the surface of a moving strip, coil or sheet.

## Quick on the draw

At Pryor Marking Technology, we specialise in the design and deployment of permanent marking equipment for challenging industrial applications. To address the growing need to mark components moving at high velocity, we have developed a range of "on-the-fly" marking solutions.

Our on-the-fly marking systems are based on our well-proven fibre-laser marking technologies. Laser marking is the right foundation technology thanks to its speed and flexibility. A high-powered laser can create a reliable mark extremely quickly and advanced optical systems allow the beam to be directed accurately and rapidly across a large "marking window."

In an on-the-fly system, the marking equipment needs accurate, real-time data on the speed of the component or material being marked. Without this data, there is a risk that the mark will be distorted or miss-positioned in the event of any deviation in line speed. Our systems typically make use of a precision encoder installed close to the mark point. Where discrete components are being marked, this





encoder will usually be linked to the conveyor or equivalent materials handling system. In the case of continuous strip applications, it may run directly on the surface of the material itself.

Speed data from the encoder is transmitted to the embedded laser marking controller. When discrete components are being marked, additional sensors such as a fibre optic, photoelectric and lasers will be used to identify the moment that each component enters the marking area. The controller then uses that information to plan the path of the laser over the moving component and the mark is made as the surface of the component moves past the marking window.

In production applications, on-the-fly laser marking can reliably create complex Data Matrix codes, encoding large amounts of data, in as little as 0.2s. With a 100 mm marking window, that allows the accurate marking of 12,000 components an hour, or the marking of strip material moving at up to 500 mm per second.

### Unique, reliable, verified

Because the mark is fully defined in

software, on-the-fly systems can place a unique mark on each individual component, should the end-user require this. Serialisation data can be generated by the marking system software or provided to it by the factory Manufacturing Execution System (MES) or Enterprise Resource Planning (ERP) software.

In quality-critical applications, on-the-fly marking systems can also include in-line maker verification technology. These systems use carefully controlled lighting and high-speed, high-resolution cameras to check that each mark is readable, that the correct code has been marked, and that the mark conforms to appropriate industry standards. Full verification data can be stored locally or uploaded to factory-wide systems. If a mark fails verification, an automatically generated exception signal can be transmitted to the manufacturing execution system, allowing the operator to make appropriate additional checks or take corrective action as required.

The development of reliable on-the-fly marking technology means manufacturers no longer have to compromise part identification and traceability in even the



fastest moving production applications. For an increasing number of end-users that could be a game changer.

Pryor Marking Technology is a leader in the manufacture and design of both traditional and innovative marking, identification and traceability solutions.

**Pryor Marking Technology Ltd**  
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# Marking system designed for subcontractors

## Ideal for marking a wide range of components

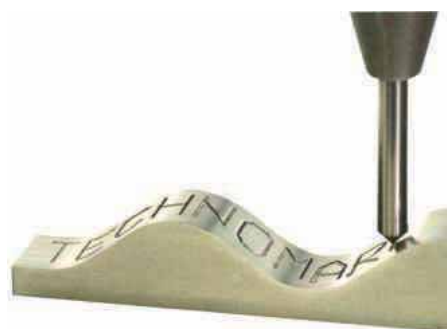
Designed with subcontractors in mind, the 2-in-1 Flexmark Combo combines both a portable and benchtop dot peen system in one, offering an extremely versatile machine with the best quality, price and performance on the market. The change from bench to handheld takes less than 10 seconds, making it quick and convenient to change between the two when needed. The Flexmark has been designed to permanently mark a wide range of components on flat, cylindrical as well as marking on uneven surfaces.



It is suited to human readable applications including: alphanumeric data, serial numbers, part numbers, timestamp, logos and text on an arc. A barcode scanner can also be used to scan and download marking data to the controller. The marking speed is determined by the dot size and density

chosen but speeds of 1.5 characters per second can be expected with 3 mm high characters using a 5 x 7 font. When in bench mode, the column can also be rotated by 180 degrees enabling large parts to be marked.

Marking on uneven surfaces is easy with the patented Intelligent Driving Impact (IDI) function where, during a marking cycle, the system will compensate up to 8 mm of positional variance ensuring consistent repeatable marks.



It is the easiest system on the market to use. The controller features a large high-resolution colour screen and a marking file can be created within a few minutes. The intuitive icon driven software is mostly single layer, so easy to access all functions for creating and editing files. The high-resolution screen gives an exact visual representation of the marking window which means that when an object is moved on the screen, the stylus moves real-time in tandem on the marking head to show the exact marking position.

The software makes it easy to import logos and to edit. Marking files can also be created on a PC if required and transferred to the controller via a USB memory stick. It has a large storage capacity capable of storing up to 10,000 marking files. The software also features crossing points and this allows marking at different locations on the part, within one marking cycle, by adding multiple destination points to manoeuvre the stylus around raised areas on the parts. The marking head uses a linear X-Y table for the stylus and this provides a better marking quality as the stylus is always perpendicular to the head and has less wearing parts compared to marking heads that use a radial movement. Parts up to

63Hrc can be marked across a range of materials.

The Flexmark is part of the Technomark family of marking products and is designed and built to the same high-quality standards. Its robust and reliable cast aluminium construction makes it a real workhorse of a machine. The marking head is ergonomic with an additional holding handle on the top for ease-of-handling. It has an anti-slip foot to give stability when marking and has a generous 120 mm x 60 mm marking window.

As an ideal machine for nameplate marking, the nameplate holder accessory is quick to position on the base and can handle different sizes and thickness of plates that are quick to fix in position with a magnet for marking. The rotary D drive comes into its own when there is a need to mark around the diameter of cylindrical objects, handling a wide variety of diameters. The bar end tool allows the end of bar stock to be marked easily too for bar ranging from  $\varnothing 20$  to  $\varnothing 200$ .

It has pretty good eco credentials with 80 percent of the materials used being recyclable, reduced energy consumption and use of local suppliers help to reduce the carbon footprint.



The Flexmark Combo is on offer from Universal Marking Systems throughout January and February at a discounted price of £3,900. The rotary D axis and nameplate holder are also on offer at a discounted price. UMS has over 55 years of experience in manufacturing and supplying marking systems and it is always on hand to offer advice.

**Universal Marking Systems Ltd**  
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**Email: sara.sawdy@ums.co.uk**  
**www.ums.co.uk**

## Laser marking tasks revolutionised with fixtureless technology

Laser marking has for some time been a well-established and valuable asset to many manufacturing processes across a diverse array of industry sectors. Historically, to get the most from the process and to ensure complete consistency in marking, accurate fixtures were needed to guarantee positional repeatability of the components. For manufacturers with multiple product variants, this could mean separate expensive fixtures for each part type, and a loss of production time when changing between variants.

TLM Laser, the UK and Ireland distributor for FOBA Laser Marking + Engraving, now offers FOBA's fixtureless marking technology. This revolutionary concept eliminates the need for fixtures, allowing accurate marking of parts placed anywhere within the marking field.

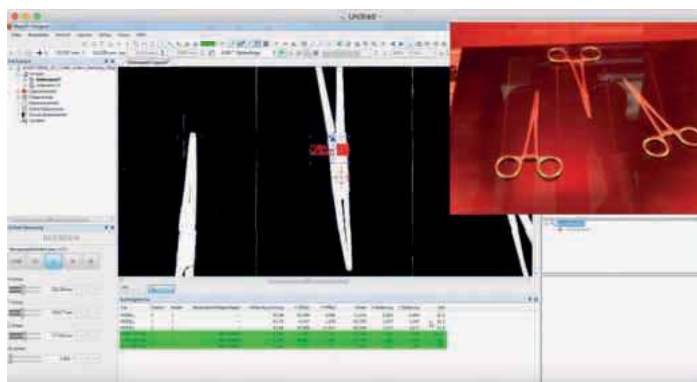
This new patent-pending software feature is a powerful step forward in vision-based laser marking. It speeds up both the component handling and laser-marking processes whilst reducing overhead costs.

FOBA's MOSAIC system uses a concept based on through-the-lens vision, combined

with a process of "tiling" the images of the part. The camera is used to capture multiple small images and then arranges them into a single large image, just like a mosaic. This image is then used for system training, job setup, part

validation, pre-mark verification and mark alignment. The natural straight-down view from inside the laser provides an imaging field as large as that of the laser marking area. The benefit of this configuration is that it eliminates the need for external cameras, which can sometimes cause inaccuracies linked to perspective.

Once the system has been trained for a particular component, using MOSAIC is extremely simple. Within a matter of seconds of the part being presented, which can be anywhere in the marking field, the images are acquired, the laser-aligned and



the laser-mark generated with the highest levels of precision. For manufacturers across all sectors, the benefits are clear. Using the system means significant cost savings in the design, manufacture and maintenance of industrial fixtures.

Other cost savings are generated through the ability to run mixed part variants at the same time.

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# Meeting demands for consistent high precision

Rofin-Sinar UK has been at the forefront of laser technology for the last 20 years and is a leading manufacturer of sealed carbon dioxide (CO<sub>2</sub>) laser sources in the range 0 to 1,000 W. Its portfolio is capable of a range of applications, from cutting, drilling and perforating to marking, engraving, scribing and welding. The lasers can be used on a wide array of materials be they textiles, plastic, polymer, acrylic, rubber, FR4, glass, wood, ceramics or metal.

Lasers are now commonplace in the manufacture of electronics. The semiconductor industry continues to reduce the size of its dies and packaged devices, which is made possible because lasers process with high precision on a minimal heat-affected zone (HAZ). Although there are several laser options, CO<sub>2</sub> lasers are often preferred due to the power/cost ratio and longer wavelengths, compared to other industrial laser types.

Rofin-Sinar UK's SR Series is targeted at customers who demand high quality, reliability and versatility from their laser. The three products within this range cater for 10.6 µm, 10.25 µm and 9.3 µm wavelengths. Applications include, but are not limited to, mobile phone covers, LCD glass processing, and microelectronics. Attention is paid to every detail of the engineering process to guarantee minimal operating costs. Throughput, economy, flexibility and reliability are the main features associated with this Series.

The IP66-rated hard sealed CO<sub>2</sub> laser source is built for longevity and trouble-free



operation. Being hermetically sealed, these lasers are ideal for harsh environments, protected against dust, humidity and water spray. Its compact, lightweight design consists of an integrated and field replaceable RF power supply, a sealed beam delivery with enhanced diagnostics, and the option of a DC power supply. It also has the option to have a feedback control option for power stability, bringing feedback for all wavelengths within ±2 percent.

CO<sub>2</sub> laser-based machine tools are well-established across many industries and have become the tool of choice for both high- and low-tech applications. Laser processing provides flexibility, with extremely accurate control of cut depth,

high repeatability and consistency without the need to change tools, unlike the mechanical alternatives.

A best seller for Rofin-Sinar UK is its OEM series laser source. It is extremely versatile, coming in three wavelengths; 10.6 µm, 10.25 µm and 9.3 µm and can be easily integrated into existing production lines, whether these are system concepts with scanners or other beam guidance components.

The OEM laser source comes with an integrated laser head, RF power supply and controller with MCU interface and the option of a DC power supply and cover. This, together with its comprehensive electronics interface and diagnostics, makes it an ideal candidate for robotic applications.

As with all products from the company, the OEM laser source has a high quality, round symmetrical beam for high processing speeds and a short optical pulse with high peak power. This improves the edge quality and minimises the heat affected zone.

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# Entry-level scan head gains even more flexibility

## New interface boosts laser-marking capabilities

As a technology leader for high-precision laser scan systems, SCANLAB GmbH has introduced an additional variant of its entry-level basiCube scan head. The new basiCube model's SL2-100 interface now allows direct control by RTC5 boards. Execution of highly elaborate laser jobs and more complex graphics is thus possible for laser marking, subsurface glass engraving or similar applications.

For years, the market has valued basiCube scan heads as compact, economical systems with high write speeds. The favourable price/performance ratio often leads to their selection as 'entry-level heads' for laser marking or 3D plastics printing. With a classic XY2-100 interface, control was limited to RTC4 boards.

To extend operational flexibility, basiCube is available as a variant with a SL2-100 interface. Thus, the RTC5 can provide its multi-million-entry list buffer to overcome the RTC4 control board's limitation of 8,000 list entries. RTC5 boards

also let the laserDESK professional laser processing software conveniently utilise these scan heads. Here, laserDESK serves both as a control centre for the scan head and as a graphical user interface for easy creation, management and automated execution of complex laser processing jobs.

SCANLAB has been developing and manufacturing galvanometer scanners and scan solutions since its founding in 1990. The company's products turn lasers into precise, highly dynamic and flexible tools that provide the basis for performing countless processing tasks.

Its highly qualified and motivated team of around 350 employees have extensive market and application experience. SCANLAB's headquarters in Germany now manufactures and globally sells more than 35,000 scan solutions annually. The SCANLAB Group employs industry and application experts around the world for the best on-site support.

The company maintains its own superbly equipped laser and measurement labs. There, it tests scan systems intensively to



ensure fulfilment of both general and application-specific requirements and to achieve continuous product improvement.

Its aim is to contribute decisively toward creating new application areas for laser tools. It intends to continue setting new standards and extending the industry standards that it has already introduced.

**SCANLAB GmbH**  
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# Epilog celebrates 30 years of laser excellence in 2018



Epilog Laser was excited to celebrate its 30th anniversary in 2018. A celebratory event was held in the Denver metro area, last August, to celebrate the company's successes since 1988.

Steve Garnier, CEO and one of Epilog's founding members, says: "As I look back on the past three decades, I am incredibly proud of what we have accomplished as a company, but also humbled by the undying support we have received from everyone who touches this business; our employees and distributors, our customers and fans, our vendors and other associates. Everyone we've met along the way has had some sort of impact. The past 30 years have been an unforgettable journey filled with triumphs and challenges, growth, and innovation. I can't wait to see what lies ahead for us."

Epilog Laser got its start in 1988 when two Georgia Tech buddies, Steve Garnier and John Doran, Epilog's vice president of engineering, combined their talents to create the industry's first small-format, computer-controlled laser engraving and cutting system.

Mike Dean, Epilog's vice president of sales and marketing, came on board not long after and the trio set out to become game-changers in the engraving space.

As the company has grown over the past 30 years, its lasers have been used in a wide variety of markets, from guitar customisation to cabinetry design to medical device marking. The combination of industrial-quality engraving speeds and quality, with an affordable price, have allowed everyone, from makers to engineers to artists, to add lasers to their businesses and find real success.

Steve Garnier says: "It has been and continues to be an amazing ride, and we're so thankful to everyone who has taken it with us."

In business since 2011, Custom Gun Rails specialises in producing rail covers that are able to mount on any Picatinny rail system, which are often found on rifles and other tactical gear. Customers can select from hundreds of pre-designed covers, or they can choose to have their own graphics laser engraved with CGR's 40-watt Epilog Mini 18.

Jennifer Limvorratre, director of operations at CGR, says: "We were complete laser novices before we got our machine. All we knew was that we needed something that was fast, precise and easy to use."

Upon the recommendation of a friend in the industry, Angel Mendez, president and CEO of CGR, and Jennifer Limvorratre decided to check out Epilog Laser.

does work with a lot of anodised aluminum, they also work with a myriad of other materials.

Jennifer Limvorratre explains: "Not only do we engrave a lot of anodised aluminum, but we also cut all kinds of materials including plastics, rubber, wood, and much more. We do a lot of the same type of projects over and over again, and the Epilog has also made it super easy to create jigs that allow for more seamless production.

"Utilising the laser to etch/engrave rail covers allows us to take our customisation services to a higher level. Customers can have a message or express themselves however they'd like without permanently altering their gear.

"Our Epilog Laser system has revolutionised the way we approach manufacturing. We can go from concept to production in no time at all."

In business since 1988, Epilog Laser has worked hard to become a leader in the laser



Jennifer Limvorratre continues: "The laser is exceptionally easy to run and we do nearly everything with this machine. In addition to the rails, we do a lot of anodised aluminum custom dog tags. In fact, we actually brought the laser into our daughter's school classroom and lasered tags for all of her classmates. The kids were fascinated by the laser and we loved providing such an interactive and educational experience for them."

She went on to explain that while CGR

engraving, cutting and marking industry. The company continues to innovate and to find solutions to problems. It is committed to designing and manufacturing the highest-quality laser systems.

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## MARKATOR presents a new generation from the FlyMarker series

The new FlyMarker® mini 120/45 hand-held marking system builds on the strengths of the proven previous models and convinces with its large marking area and high marking power, as well as its unique price performance ratio.

MARKATOR's long-term experience in the development of mobile hand-held marking systems make it possible to unite a very large marking area of 120 x 45 mm with a low weight of only 3,2 kg. In addition, this mobile dot peen marker can be optionally equipped with an extra strong magnet which enables users to create very deep markings remaining visible after subsequent processing steps such as coating. It marks from plastics to hardened steel, nearly all materials fast and reliably, even round workpieces, radial and axial. Along with marking characters, numbers, and logos, test symbols or data matrix codes can also be optionally marked.

The programming of marking files is simplified through a self-explanatory and intuitive to operate software. Marking files can be created very easily through the dirt-resistant and long-life keyboard. The

high-resolution LC colour display provides a practical preview function which helps to picture the marking file before the actual marking.

The FlyMarker mini 120/45 stands out through its compact and high-quality design. Thanks to its light weight, this marking unit can be carried around directly to the workpiece to be marked. This is of great use when big and unmovable workpieces need to be marked. The scope of supply contains two Lithium-Ion-Batteries which enable a completely mobile work and time-consuming marking tasks can be done without interruption. Tripping hazards, due to cables or accidents at work due to common stamping tools, belong to the past.

MARKATOR is an expert in durable and economic marking of industrial parts to help eliminate forgery. It has been developing and manufacturing high-quality systems for dot peen marking, scribe marking and conventional marking for over 25 years.

The company's aim is to achieve the



highest quality possible. It gives particular importance to solid consulting, customer-related development and user-friendly marking systems.

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## Successful first year spurs new laser investment for Oxfordshire company

ES Precision filed its accounts for its first trading year in September 2018 and the precision laser processing specialist shows a profitable start with turnover ahead of expectations.

Profits generated have been reinvested into the business in the form of new UV laser technology from Coherent-Rofin UK.

ES now has eight laser systems using Vanadate, Nd:YAG, Fibre and CO<sub>2</sub> sources as well as the new frequency-tripled Vanadate UV source. This keeps ES Precision at the forefront of laser marking and fine drilling/cutting; no other subcontract marking specialist offers such a broad range of laser technologies. The UV

laser in particular opens up opportunities that conventional lasers miss as the shorter wavelength is absorbed extremely well by plastics, organics and many ceramics. Pure surface absorption on many plastics usually produces a superior mark to the partial transmission of IR wavelengths from other lasers.

Further, the shorter wavelength of the frequency-tripled laser allows it to be focused down to a smaller spot size than most other technologies, resulting in finer detail or better resolution; especially valuable for ID Matrix marking.

ES Precision is happy to mark sample parts to find the best solution for any company that needs permanent product identification, decoration or functional marking/engraving/surface modification.

In October 2017, ES Precision opened its doors to offer laser processing and traditional low volume/prototype machining to industries such as medical device, Formula 1, aerospace, electronics and general engineering. Business grew rapidly and there are now seven staff busy running jobs on the eight laser workstations and



three CNC machining centres in modern premises at Kingston Business Park.

The aim of the business is to provide a personal, flexible service with reliable shipments of components. Directors Tim Millard and Andy May have over 50 years' combined experience with industrial laser processing.

Modern laser technology means that marks produced are of the highest quality. ES Precision's tool room facility can fabricate fixtures so that repeat customers are guaranteed consistent results.

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**www.esprecision.co.uk**



# Latest Alphacam focuses on 3D machining

Updated 3D machining functions top the bill for engineering companies in the latest release of Alphacam.

Users of Alphacam 2019 R1 will find two major enhancements for 3D Machining: firstly, what brand manager Hector Henry says is a much-improved Automatic Collision Detection algorithm, which avoids gouging non-machined faces and surfaces in the Select Solid Faces function.

“It also allows for full control over which faces should stay untouched. This intelligent algorithm can even automatically create 2D boundaries for the end user. Overall, this enhancement improves machining functionality and gives greater productivity through intelligent boundary creation.”

Secondly, Cylindrical-Parallel Machining has been improved to the extent that optimised toolpaths can now be created for parts under conditions which were previously impossible.

Hector Henry continues: “This update greatly enhances functionality in previous releases, by including complex geometries, opening new possibilities for 4-axis machining.”

Also, important to manufacturers; the ability to provide universal control over the stock in an Auto-Z operation means the user can set the reference level on a geometry to the top or bottom, truly allowing for complex environment and application, which Hector Henry says delivers industry-leading automation capabilities.

The User Interface includes two powerful enhancements: the first allows a selection window to be created, selecting anything it touches or includes; and users can now



resize the preview window in their NC code, to fully show the posted code, regardless of how long or complex it is.

A completely redesigned and compact nesting interface provides a streamlined way to quickly create and deploy nest projects, giving greater flexibility and productivity.

Drag-and-drop support for manually nested parts means it is easier for programmers to begin the process of manual nesting.

Henry Hector continues: “This is just one of many features throughout the latest release which provides greater control with fewer clicks. Again, it enhances productivity.”

Another process which reduces the number of steps, is the ability to automatically align a part to a neighbouring angled part on the nest. Parts are matched in this way by simply selecting which elements must be aligned.

An update to the Automation Manager

does away with the need to create a CSV file when producing assemblies, which he says is a major plus for any manufacturer. “Given a part thickness, the Auto Associate Material function automatically assigns a material from the database. It compares the thickness, solid or otherwise and selects an appropriate material within a set tolerance.”

When importing CSV files for sub-components, the main parametric job can now pass detailed information to sub-components in an assembly. This means complex and parametric objects can now be fully controlled with complete selection of parameters, static and dynamic hardware, fittings and other data.

Automation jobs now benefit from the new Tool Ordering utility. Hector Henry says: “This allows the user to completely re-assign the tool sequence in a job, giving freedom of execution, optimisation and better control.”

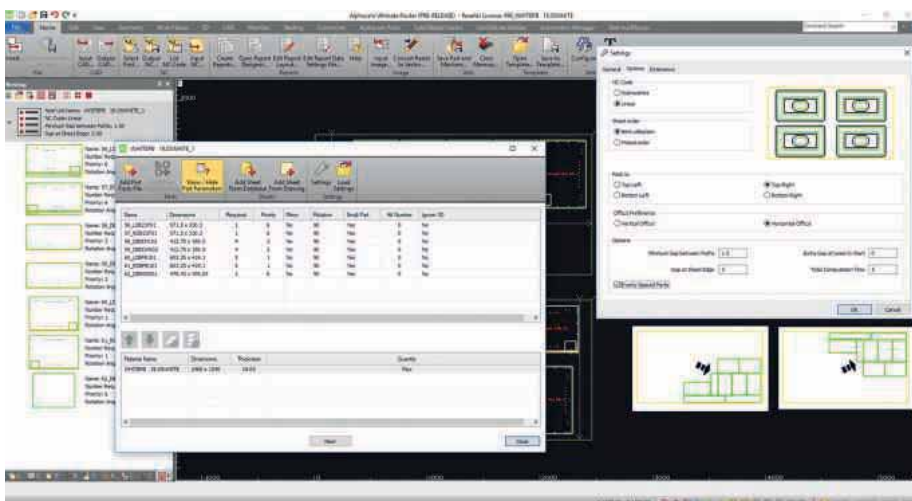
When importing a part to a job in Automation Manager, the system interrogates the geometries, including solid, to find the part sizes, X, Y, Z, which can then be used throughout the interface, leading to greater clarity, better reporting, and enhanced automation.

Reporting is enhanced with the ability to query and display additional part information.

Hector Henry continues: “This is managed by interrogating the incoming CAD file to determine parameters such as the X, Y and Z dimensions.”

Enhancing the interface in the Sawing module now allows users to efficiently select solid faces for sawing, from a solid model.

Hector Henry states: “Applying a sawing

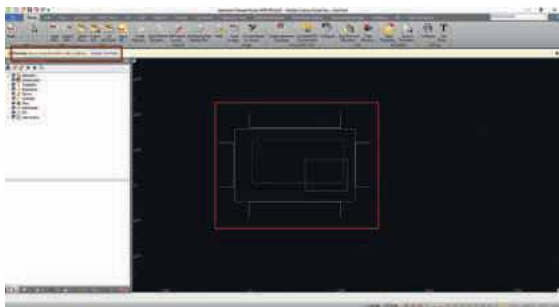


strategy directly to a solid face considerably improves productivity, with greater reliability.”

Parametric Rules now have a new ‘Else’ condition, which provides a complete ‘If...Then...Else’ structure.

He continues: “It means complex rules can be synthesised into significantly shorter statements, providing four major benefits: ease of use, ease of maintenance, reliability and productivity.”

A new, dedicated option when editing 3D workplanes considerably reduces the risk of mistakes. Users simply change all the properties of a plane with a single click,



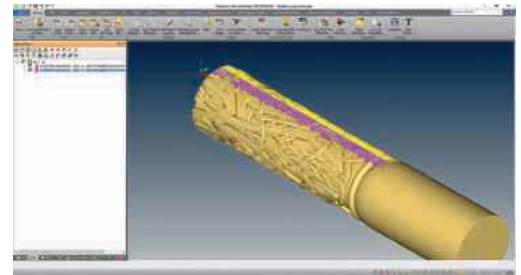
which improves productivity, and, as no toolpaths have been modified, there is no need for associativity to change.

Finally, changes to the Custom Line Width in Line Properties provides greater functionality for the presentation of drawings and prints.

Hector Henry concludes: “With Custom Line Widths now possible through the main interface and API, it allows the user to set true custom line widths both by layer and at the individual geometry level.”

Vero Software is a leader in CAD/CAM software with a proven track record of reliable product delivery. Vero develops and distributes software for aiding the design and manufacturing processes, providing solutions for the tooling, production engineering, sheet metal, metal fabrication, stone and woodworking industries.

The company's world-renowned brands include:



Alphacam, Cabinet Vision, Edgecam, Machining STRATEGIST, PEPS, Radan, SMIRT, SURFCAM, VISI, and WorkNC, along with the ERP/MRP systems Javelin and WorkPLAN. Despite the diversity of application, these solutions have one thing in common: they all address the rising challenges of achieving manufacturing efficiencies and bring huge value to the operations where they are deployed.

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## ESPRIT covers all the bases at Hi-Quality Carbide

Hi-Quality Carbide Tooling Inc., located in Ontario, Canada, specialises in small quantities and one-of-a-kind tooling, including carbide extrusion dies, carbide spring-forming tooling and stamping dies, that are used in machines to make mass-produced parts for the automotive, aerospace and medical industries.

Hi-Quality was founded in 1980 and now has 15 employees and more than 30 machines, including CNC, ID and manual grinders, wire and sinker EDM and high-speed milling machines. Hi-Quality Carbide typically deals with small-quantity orders ranging from a single piece to upwards of 20 pieces. For the past five years, the company has used ESPRIT for its wire EDM work and now the shop uses it for milling. It will be transitioning its turning department to ESPRIT in 2018.

Tim Middlehurst, who co-owns Hi-Quality Carbide with Wendy Middlehurst, says: “We want to have a uniform software across the shop; it’s too confusing switching back and forth between programs. We asked our employees which software they preferred. I myself like ESPRIT and they do too. For wire EDM, it’s very clear and simple. The way you program the software is exactly what you’d think it would be. It’s really easy to walk

yourself through the programming process, and it’s easy to modify existing programs. The post processors that are available for our Sodick and AgieCharmilles machines are extremely accurate; they don’t require any editing. We have the confidence that once we post a job and plug it in, it’s good, which means a lot.”

When Hi-Quality Carbide first implemented ESPRIT for high-speed milling, the software presented them with a challenge.

Ian Kottelenberg, the shop’s foreman, says: “There was no consistent software available, that we knew of at the time, that could do 3D compensation for high-precision complex forms on our 3D mill. That created a very lengthy re-programming process if we wanted to change the size of the part. We worked closely with ESPRIT, with a lot of back-and-forth testing.”

Hi-Quality’s ESPRIT programmer also worked with a HEIDENHAIN expert to come up with the proper math for accomplishing the offset. After re-working and testing the solution many times to ensure success, ESPRIT finally delivered Hi-Quality a solution that worked.



Wendy Middlehurst concludes: “The software is now able to communicate consistently with our machine. Success!”

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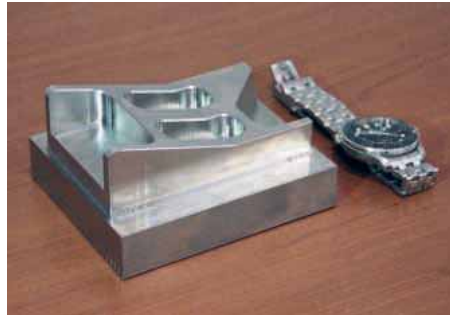
# CGTech leverages FORCE in the Netherlands with new VERICUT module

Over 20 visitors from leading advanced manufacturing and technology companies, based in the Netherlands and Belgium, recently attended CGTech's launch of the new VERICUT FORCE module, hosted by Van Hoorn Carbide at the company's HQ. VERICUT is the world's most advanced independent CNC machine tool simulation and optimisation software and VERICUT FORCE Milling is the new physics-based feed rate optimisation module.

Officially launched in the UK last year and shown for the first time in the Netherlands, CGTech's FORCE module grabbed centre stage at Van Hoorn Carbide Technical Centre in Weert. Here, live cutting demonstrations of optimised machining cycles for hard metals were run on the company's Hermle C12U machining centre to highlight the benefits of FORCE in use on the shopfloor.

FORCE is a software module within VERICUT that uses a physics-based optimisation method to determine the maximum reliable feed rate for a given cutting condition based on four factors. They are force on the cutter, spindle power, maximum chip thickness, and maximum allowable feed rate. It calculates ideal feed rates by analysing tool geometry and parameters, material properties of the stock and cutting tool, detailed cutting tool edge geometry, and of course VERICUT cut-by-cut contact conditions.

The software excels in difficult to machine materials, and especially complex multi-axis cuts such as 5-axis flank milling. Initial users of this technology are already seeing productivity improvements of up to 50 percent. FORCE represents the current apex of machining optimisation because the software uses actual data for cutting tool forces to calculate maximum chip thickness



and ideal feed rates. So, it offers a number of technical benefits for machined parts within aerospace, automotive, industrial, oil & gas and other markets that use automated machining.

With the material properties of the component and the cutting conditions also considered, FORCE determines the optimum speeds for a cutting process and makes the CNC machine cut in the most efficient, fast and reliable way. This provides significant benefits when applied to any precision machining operation where challenging materials, such as titanium, high nickel superalloys such as Hastelloy, Inconel and Waspaloy, duplex and stainless steel, and any work hardening materials.

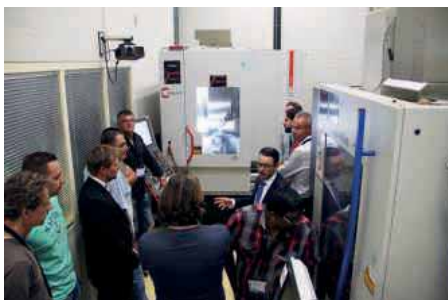
New in VERICUT 8.2 is FORCE Turning which optimises lathe turning and mill-turn operations, when combined with FORCE Milling. FORCE Turning makes it easy for anyone to create NC programs for optimal cutting of inside/outside diameters, shoulders, as well as in corners and tight spaces, without the worry of encountering excessive cutting forces or high spindle power demands.

Gerard van Kessel, Sr. application engineer at Van Hoorn Carbide, says: "At Van Hoorn Carbide we are always looking for technical ways to improve production processes and save money for our

customers. With VERICUT FORCE it is possible to improve the efficiency, speed or both of your process. We measured forces like bending moment, torsion and pulling forces and were able to significantly reduce peaks, or bending moment forces, even with a shorter cycle time."

The Hinge Bracket demonstration piece, created by CGTech's Netherlands Reseller ATS EdgeIT, reflects the typical challenges faced by Dutch manufacturing companies, with a range of machining operations such as profile milling, pocketing, 3+2 axis milling, 5-axis simultaneous flank milling and deburring from a solid blank of Stainless Steel. A selection of Van Hoorn's solid carbide tools was chosen and with guidance from Van Hoorn's application specialists, the optimal cutting rates were dialled in to give a good machining process. Then FORCE was used to reduce machining time by a further 16 percent, whilst stabilising the cutting conditions, improving surface finish and extending tool life. The machining process was audibly calmer, yet faster. The benefits of the FORCE optimisation were further underlined by the use of a Pro-micron SPIKE sensory tool holder to measure the forces at the cutter.

Lee Fowkes, country sales manager, concludes: "FORCE provides a 'purple patch' for companies using machine tools. It can increase the life expectancy of the cutting tools and improve the post-processed cutting tool path from the CAM system, leading to shorter machining cycle times."



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## Dassault Systèmes introduces SOLIDWORKS 2019

Dassault Systèmes has announced the launch of SOLIDWORKS 2019, the latest release of its portfolio of 3D design and engineering applications. SOLIDWORKS 2019 delivers enhancements and new functionalities that help millions of innovators improve the product development process to get products into production faster and create new categories of experiences for new categories of customers in today's Industry Renaissance.



Powered by Dassault Systèmes' 3DEXPERIENCE platform, SOLIDWORKS 2019 supports the design to manufacturing process with digital capabilities to solve complex design challenges and facilitate detail work in engineering. New features let product development teams better manage large amounts of data and capture a more complete digital representation of a design. SOLIDWORKS 2019 also offers new technologies and workflows that improve collaboration and enable immersive, interactive experiences during design and engineering.

Among its new features, SOLIDWORKS 2019 provides greater design flexibility to quickly interrogate or rapidly make changes to a model thanks to an enhanced Large Design Review capability. It also dramatically improves high performance view manipulation to scale with higher-end graphics hardware. In addition, SOLIDWORKS 2019 allows teams to communicate outside of the design community by adding markups to parts and assemblies directly using a touch device, storing them with the model and exporting them as a PDF.

Another key feature of SOLIDWORKS 2019 is SOLIDWORKS Extended Reality (XR), a new application for publishing CAD scene data created in SOLIDWORKS. It includes lights, cameras, materials, decals and motion study animations, while experiencing it in VR, AR and web viewers. As increasingly affordable immersive devices contribute to the growing ecosystem of technology and interactive experiences, designers and engineers can use SOLIDWORKS XR to improve collaborative internal and external design reviews, sell designs more effectively, train users how to assemble and interact with their products, and boost confidence in designs throughout the product development process.

Gian Paolo Bassi, CEO for SOLIDWORKS at Dassault Systèmes, says: This latest SOLIDWORKS release is packed with enhancements and innovations built based on insights and feedback from the SOLIDWORKS community. We continue to drive our products forward in terms of usability, quality, and productivity, and SOLIDWORKS 2019 delivers a complete design ecosystem.

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## EDGE/CAM PRODUCTION CAM SOFTWARE

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# Take the digital leap with Lantek

John Barber, editor of Engineering Subcontractor, interviews the new Lantek CEO Alberto López de Biñaspre Maurologoitia

Lantek is well known as a leader in the sheet metal and fabrication industries. It has 20 offices around the world and its CAD/CAM, MES and ERP solutions are sold in over 100 countries, where more than 21,000 customers use its products. At the recent EuroBlech exhibition in Hannover, the company launched a new concept: Lantek 360, which comprises four new Cloud based products Lantek Analytics, Lantek Control Panel, Lantek iQuoting and Lantek MetalShop.

## Alberto López de Biñaspre explains the new products:

### Lantek iQuoting

This is a Cloud-based application that allows sheet metal companies to easily use the web to get a price for a job online by themselves. Our software checks the design, validates it and uses advanced algorithms to get material costs, job timings, machine characteristics and availability, etc., so that it can deliver a quotation instantly.

### Lantek MetalShop

This is a B2B e-commerce module, a real online shop for quotation and ordering sheet metal manufacturing jobs. MetalShop uses iQuoting to validate the information the customer sends through the web and to supply the price or highlight where human intervention is required.

### Lantek Control Panel

This is a real-time visualisation app of manufacturing KPIs: machine status, workloads, shutdowns or breakdowns, new budget requests, new manufacturing orders, and any other manufacturing parameter in real time. The application is available on any smartphone or any other connected device so that a manager can make the right decisions at the right time.

### Lantek Analytics

This is the engine behind the gathering and analysis of data, extracting the business data in a useful form, updating it within seconds and analysing it in real time. In manufacturing analysis it is possible to answer questions for "bottlenecks" in



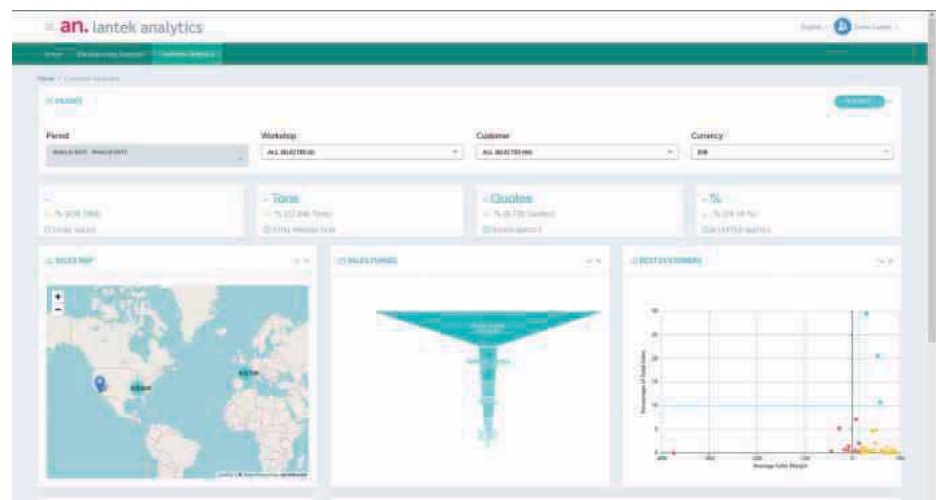
production, reject quantity and scrap levels or production patterns. Customer analysis can generate a top ten list of customers according to their sales contribution, find out their geographic distribution and also make time-filtered queries for each customer.

## John Barber asks: Why are the products Cloud-based?

**Alberto López de Biñaspre:** Digital transformation is the next big challenge for the sheet industry and companies that take

the leap early will have a huge advantage as they will be able to build much closer relationships with their customers and suppliers and achieve higher efficiencies from their existing plant and resources. With Cloud based solutions, we are making this easier to achieve and also affordable.

Using Cloud-based applications has clear advantages for companies: data security and data availability is close to 100 percent with built in redundancy for backup and recovery; special computing expertise at the manufacturer's site is unnecessary as it is





supplied by Lantek and the Cloud service provider; data can be accessed from multiple locations for maximum flexibility for multi-plant operations and mobile working; high security levels and encryption prevent data abuse and ensure that only the latest versions of the data are being used; cost of access to high value and complex computer equipment and services is low; software maintenance and updating is managed by Lantek; additional Lantek software modules can be accessed or deactivated as the needs of the company evolve.

For smaller companies, the advantages of Cloud working are even more evident as the cost of suitable computer equipment is high and, more importantly, the skills required to manage such a system are expensive and difficult to find. By moving to Cloud based digitisation manufacturers can concentrate on their core skills of manufacturing products and get all the benefits that digital transformation can bring, along with the agility that is synonymous with smaller companies.

Our aim is to introduce more Cloud-based products and this is a key focus for our future development. We are now working on a new paradigm of CAD/MES based on Cloud Platform, for all types of machines and any manufacturer, which we are convinced will revolutionise the sector. We hope to launch it next year.

**John Barber asks: In your view, how is the sheet metal industry evolving?**

**Alberto López de Biñaspres:** There is a move towards more integrated supply chains across the industry, which will require software solutions like ours to enable customers, manufacturers and suppliers to work closely together and achieve better efficiency across the whole supply chain.

Another trend is the gradual consolidation of the market, where sheet metal companies are getting reduced in number while growing in volume through acquisitions and collaboration. These new larger organisations will also require the specialised software products we offer to run their business effectively.

**John Barber asks: What are the most important issues for your customers and how do you address them?**

**Alberto López de Biñaspres:** We have identified three main challenges: Optimisation of manufacturing, improved quotation process and interconnection of factory systems and areas.



Optimisation of manufacturing means making our customer competitive and being able to increase production every day while maintaining the same number of machines, operators and/or raw material. This is our goal with our complete offering of planning tools, advanced nesting and advanced data analytics modules.

For an improved quotation process, we combine our expertise with new technologies such as advanced algorithms, Big Data, or the development of Digital Twins of the real machines to virtualise the manufacturing process of our customers so that they can accurately and easily estimate the real final costs. The closer the estimated cost is to the real cost, the more likely our customers are to achieve the desired profitability and commercial capacity maximisation levels.

Finally, interconnection and integration: without a real connected factory, which we can now offer, where data and information travels from the machine to the process, from operators to managers, from one manufacturing line to another, it will not be possible to achieve the maximum benefit in terms of productivity, efficiency and real time business intelligence.

**John Barber asks: How do you support your international customer base?**

**Alberto López de Biñaspres:** We have 20 Lantek offices and a network of Lantek dealers. 85 percent of our business is

export, so the quality of support we offer is crucial to our business. The introduction of Cloud-based applications makes support significantly easier as we can resolve and prevent a large proportion of queries without the customer having to do anything.

By having local representation for sales and service, Lantek is able to understand the special trading methods and requirements in each country and adapt how it works there to suit local businesses. In addition, support for the software is in the local language and in the local time zone carried out by technicians known to the customer.

We have a strong technical support process, with escalation teams being able to rely on our Centre of Excellence to provide additional support for final resolution, ensuring that the customer gets the best service possible.

**John Barber asks: What are Lantek's most recent successes?**

**Alberto López de Biñaspres:** Lantek is set to generate double-digit growth during 2018 and our efforts in the introduction of digital transformation solutions have hit the market at exactly the right time. Sheet metal is a specialised market so Lantek's experience in the sector and its industry leading products make it the obvious choice for companies wishing to develop their entire businesses for increased competitiveness.

A very important success for us is our strong team, which we are expanding with over 30 new highly skilled team members. Furthermore, we have opened a Centre of Excellence in Bilbao and we are investing a high proportion of our revenue in R&D.

We are also working with machine tool manufacturers in the sector such as Omax, Balliu, Bystronic, and Fagor Automation to help them achieve their Industry 4.0 goals. They recognise Lantek as the valuable and collaborative partner they need in this journey.

Lantek has been in the industry for 30 years and, in that time, it has dealt with virtually every type of CNC cutting machine on the market and is a leader in the industry through its commitment to excellence. It has years of experience working with the Cloud and it is the only company in the sector with "Machine To Cloud" capability.

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# LVD Electra fibre laser now offered in 10 kW

LVD Company nv now offers its Electra FL 3015 fibre laser cutting machine in a high-power 10 kW configuration. Electra FL 10 kW provides ultra-high-speed cutting to achieve premium cutting results, at the highest possible output, when processing ferrous and nonferrous materials, including brass and copper, in plate thicknesses up to 30 mm.

## Designed for speed

Electra FL is designed to perform reliably at high cutting speeds. The primary challenge associated with ultra-high-speed cutting is having a machine frame that can handle the high accelerations needed to reap the benefits of fibre laser cutting. Electra features a welded steel monoframe construction that provides exceptional stiffness and weighs 15,000 kg. As a result, Electra can maintain an acceleration of 2G during cutting without sacrificing part accuracy.

To achieve the full potential of high-dynamic acceleration, Electra uses a lightweight yet rigid cast aluminum gantry driven by a linear motor and two synchronised motors featuring an integrated gearbox with the lowest possible inertia. When cutting a part nest with many moves, Electra delivers a distinct productivity advantage because of its 'dynamics first' design.

## Fast, efficient nitrogen cutting

Increasingly, users that need to paint their steel parts after cutting/bending insist on using Nitrogen to avoid oxidation on the cutting edge. The 10 kW Electra can Nitrogen-cut 8 mm steel at 7,500 mm/min, twice as fast as a 6 kW fibre laser and three times faster than cutting with oxygen. High speed cutting, coupled with newly developed technology to reduce nitrogen consumption by up to 30 percent, results in a tremendous reduction in the cost per part.

## Advanced cutting head

The Electra FL is equipped with the latest fibre laser cutting head which incorporates zoom focus, a technology that adjusts the focal diameter of the beam and enables independent setting of focus diameter and magnification. Zoom focus optimises the kerf width for any given thickness of material. It also provides the ability to focus



the beam at different plate-to-nozzle distances. When piercing thicker plate, the Electra uses a higher standoff during the initial portion of the pierce to minimise the effect of spatter and extend consumables life. With zoom focus technology, users can pierce 20 mm steel in less than two seconds.

## New auto referencing system

An infra-red camera referencing system ensures fast and accurate sheet referencing. This optional feature provides automatic and non-contact sheet referencing from pre-punched holes or two adjacent plate edges. It guarantees scratch-free referencing and geometric accuracy.

## Intuitive interface

Electra is equipped with the latest generation of LVD's Touch-L control. The 19-inch touch screen features an icon-driven interface to guide the operator, ensuring Electra FL is easy to use and operate and that setups are fast and uncomplicated. The Electra FL 3015 is available in 6, 8 and 10 kW configurations with modular automation options.

## ToolCell XT press brake

ToolCell XT is the solution to today's small batch, high mix manufacturing, offering minimal changeover time, high accuracy and high productivity. The large capacity of tools housed within the press brake provides the flexibility to handle a range of bending jobs.

Built-in Easy-Form® Laser adaptive bending system ensures part accuracy.

ToolCell XT holds three rows of punches and seven rows of dies with each row containing 12 toolboxes equally spread along the entire length of the machine. With its extended tooling capacity, ToolCell XT offers the versatility to handle varying material types, organise tooling by material type, easily switch between stainless steel and mild steel applications.

The latest generation ToolCell features LVD's powerful Touch-B control. Intuitive graphical icons are used to quickly and easily manage all parameters of the machine.

## Dyna-Cell robotic bending cell

With Dyna-Cell, LVD takes electric press brake automation to a new level for high-speed bending of small- to medium-sized parts in high volumes at bending speeds up to 25 mm per second.

Dyna-Cell is built on LVD's proven Dyna-Press electric-drive platform. The cell combines the Dyna-Press Pro 40-tonne press brake with 1,500 mm working length and 5-axis backgauge with a KUKA industrial robot to offer maximum bending productivity in a small footprint of 5 m x 5 m.

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# Creating the best solution with Prima Power

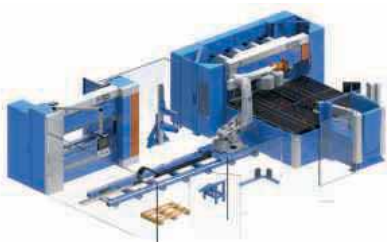
Prima Power's presence at Euroblech 2018 was perfectly in line with the official motto of the exhibition: "Step into the digital reality". All Prima Power innovations, showcased on its 1,400 m<sup>2</sup> stand, were designed for digital manufacturing and are the perfect combination of technologies and software for automated production.

The company's products can be combined in many ways to create the best solution for the specific needs of each customer. For this reason, to symbolise the great combinability and modularity of its product range, the Group has chosen the Tangram, the ancient Chinese game consisting of seven pieces generating infinite combinations of forms, from the simplest to the most complex. As in the Tangram, Prima Power standard product modules generate an infinite combination of highly specialised solutions. The connectivity between product modules and the perfect operation of the different combinations is made possible by the software. Industry 4.0 software solutions allow the communication among the parts and the efficient integration of each combination with the factory where it is inserted, in a Tangram 4.0 where the wisdom of the ancient game comes together with the most advanced digital technologies.

## New integrated robotic bending system

Prima Power presented its new integrated robotic bending system as a world premiere at Euroblech. The high effectiveness of this solution derives from the simple and fast offline programmability of machines and robot included in the cell.

The new integrated system is composed of a BCe Smart panel bender, a 7-axis anthropomorphic robot, and an eP-0520 press brake. The configuration is completed by a sheet separator unit for raw sheet stacks, a centering table, and a reverser for the sheet to be bent or the bent components to be stacked.



The operation modes of the integrated robotic bending system represent an outstanding breakthrough. They allow customers to reach the maximum benefits from the investment, as the system efficiency is granted for both small and large batch production. In fact, during the manned shift on the panel bender, the versatility of the manual mode is combined with the high productivity of the bending cell by operating in automatic mode.

Within the integrated bending system, the press brake is able to complete some components with dimensional or geometric features which are unsuitable for the panel bender and could be only partially processed by this machine. The system is therefore incredibly versatile, suitable for a wide range of components and special applications, such as bends in internal windows, or partial bends of outer edges that cannot be easily reached by the panel bender tools.

## Laser Next 2141

At the event, Prima Power also showcased its new 3D fibre laser machine Laser Next 2141. Successfully launched in April, during a dedicated international event at the Group's headquarters and Tech Centre in Turin, the machine made its debut at a trade show.

The product is designed and developed to be as universal and multipurpose as possible and to satisfy the needs of stamped-metal-parts manufacturers in diversified industrial sectors, such as job

shops, press shops, aerospace, agricultural, and automotive.

The working volume of this machine is the largest on the market in its segment. 4,140 x 2,100 x 1,020 mm with a very compact footprint and it is suitable for virtually all 3D stamped and flat sheet metal part sizes. Its technological features allow it to process both three-dimensional and two-dimensional parts and to easily switch from cutting to welding applications.

Laser Next 2141, equipped with Prima Power fibre laser from 3 to 4 kW laser, is the perfect balance of speed, accuracy, and reliability. The linear motors on the main axes, the direct drive on the focusing head and advanced control systems provide the highest dynamics in its market segment, with single axis speed of 120 m/min and trajectory speed of 208 m/min. This is combined with maximum accuracy, Pa and Ps= 0.03 mm, in a very large working envelope and with the best Overall Equipment Efficiency (OEE).

Laser Next 2141 is available in several configurations and the customer can always find his perfect combination.

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# Unique machine technologies from AMADA

At Euroblech, AMADA presented its latest highlights from the world of sheet metal processing, with a special focus on laser technologies and production benefits delivered by IoT. The Japanese manufacturer showcased unique machine technologies with live demonstrations throughout the event.

It's first focus point of this year's event was the recent developments in the company's proven ENSIS laser technology powered by in-house developed fibre oscillators. ENSIS technology uses variable beam control to provide high speed and high quality for the processing of flat sheet and tube and even for welding. New machine and automation options were presented, which provide stable material supply, part sorting and storage.

The second focus point was the next generation of AMADA's comprehensive and network-based machine surveillance concept with two new features, allowing monitoring, anytime, anywhere. My V-factory visualises the whole connected production environment at a glance. The optional new IoT-support is the second element providing a direct-response customer service concept for error prevention and immediate support. AMADA also demonstrated its broad range of other technologies, such as the combination of fibre laser cutting and punching, as well as bending. These solutions allow customers to process all types of manufacturing jobs and manage huge varieties of different lot sizes in the shortest time with the highest quality.

### Integrated production solution

With the introduction of the EML-2515AJ, AMADA is expanding its portfolio with the addition of an especially powerful punch and fibre laser cutting combination machine equipped with an energy-efficient, servo-electric drive. Featuring an AMADA 3 kW fibre laser, it has the considerable



punching capacity of 300 kN in large format and numerous integrated production processes for production around the clock.

Punching and forming, as well as thread-cutting and forming can be achieved quickly and precisely with this new high-performance combination machine. Even complicated tasks can be now implemented faster and more precisely than before. Up to 20 percent faster punching speed and up to 150 percent increased cutting speed than the previous model result in a level of productivity that sets new standards in the punch and fibre laser combination segment. With its space-saving, integrated safety cabin to prevent reflection and flying sparks, the AMADA EML-2515AJ can be set up in even tight space.

Due to its numerous useful features, the new AMADA EML-2515AJ enables an almost uninterrupted production process. The Z-Turret with 44 stations can be upgraded with up to 220 punches and 440 dies by means of an automatic tool changer



system. The maximum tool diameter is 114.3 mm. An integrated nozzle changer and a one-lens strategy mean that manual setup processes are not required.

The low-maintenance 3 kW fibre laser and automatic cutting plate cleaning, together with numerous other equipment features, are the foundation for profitable nonstop production.

### All-in-one solution for sheet-metal, pipes and profiles

With the ENSIS-3015RI in 3 kW, AMADA introduced a new laser cutting system based on the well-established ENSIS series whose strength lies in own developed beam sources and the unique Variable Beam Control for ultimate flexibility and productivity. Expanding on the AMADA FO-3015M2 RI CO<sub>2</sub> laser system, it provides



all the advantages of fibre laser processing in terms of speed, profitability and cutting quality. With its original Variable Beam Control function, the ENSIS-3015RI 3 kW has the flexibility to be able to process all imaginable types and thicknesses of material, regardless of whether the material in question stainless steel or a non-ferrous material is such as aluminum, copper, brass, or titanium. The most current generation of pipe axis units (RI) has been developed and perfectly adapted for use in the ENSIS-3015RI 3 kW. This means a further significant increase in speed and accuracy,



whereby the optimised pipe guidance ensures almost scratch-free processing.

The additionally integrated measurement sensor "Touch-Probe" enables the quick and precise reference measurement of the component. The automatic nozzle changer, as well as the option to cut all materials and material thicknesses, with a single cutting lens, reduces potential waiting and downtime significantly. Separated pipes and profiles are safely caught in a special tub. The lateral sliding doors ensure optimal access and provide reliable protection against reflection and sparks.

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## BeltFLEX enables quick and ergonomic sorting of finished parts

The high speed of modern laser cutting systems call for productivity-enhancing and, at the same time, user-friendly systems for the manual sorting of prefabricated parts. With BeltFLEX, material flow expert Remmert offers the fitting solution in its portfolio. With the integrated unloading option, finished parts can be sorted easily, quickly and in an ergonomic body posture. The component of the Remmert modular system convinces through its simple integration into existing layouts and can be used intuitively. In combination with other systems of the FLEX portfolio, ideal solutions for an agile material flow can be realised.

BeltFLEX is a conveyor belt from which the operator can manually sort finished parts. The belt height is adjustable between 765 and 875 mm, which enables back-friendly working. BeltFLEX promotes ergonomic posture on the one hand and fast manual sorting on the other. An even belt advance cycle ensures a faster unloading process than other variants of manual sorting. BeltFLEX is available in the formats 3015 and 4020 and can transport sheets up

to 12 mm thickness. The permissible total weight of the finished parts to be transported is 1,600 kg. By using BeltFLEX, the material flow is significantly improved and users achieve measurable increases in productivity.

### Modular system for efficient material flow

As a module of the FLEX family, BeltFLEX supports agile material flow. The modules of the Remmert FLEX family do not only combine simple integration into existing systems; in clean industrial design, form and function merge convincingly. For example, the integrated personal protection concept ensures maximum safety at work and LED lights visualise the device status, faults and hazardous situations. The control of the FLEX components is simple and intuitive, with the aid of self-explanatory and internationally understandable pictograms, the SMART Control system guides the user through the operation.



Frank Baudach, sales manager for DACH at Remmert, concludes: "The FLEX family is versatile, but all its components were designed with the aim of continuously improving the material flow in the respective area of application. With the LaserFLEX loading and unloading system, laser cutting systems are optimally utilised."

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## Fully integrated solutions

Hadley Group, a global leader in cold rollforming, demonstrated its capabilities at the 25th international sheet metal working technology exhibition EuroBLECH, Co-exhibiting with company subsidiary Overeem, Hadley Group presented its solutions in custom rollforming, purlins and vineposts, as well as its expertise in the automotive sector.

Visitors to its stand had the opportunity to view samples of the company's custom rolled profiles and understand how the cold rollforming process can help them solve complex challenges. Cold rollforming is at the core of Hadley Group's operations and the company's cold rollformed profiles offer a number of advantages over extrusions including significant weight savings and increased strength.

A central feature on display was the company's sheet metal work services. The manufacturer provides a range of flexible, responsive and effective services for sheet metal work that complement its cold rollforming capabilities. This includes 5-axis laser, flatbed laser cutting, press braking, and CNC punching. All of Hadley Group's

sheet metal services can be produced as one-off custom components or high-volume production, depending on customers' requirements.

Hadley Group also showcased its range of purlins and vineposts at the exhibition. UltraZed™, its purlin and side rail system, has been engineered to deliver outstanding load capacity, ease-of-use and impressive levels of sustainability. The company's vineposts set new standards in quality and performance, outperforming traditional wooden vine pickets and alternative metal vine supports on a number of levels.

Finally, samples of profiles that have been manufactured through Hadley Group's UltraBoss™ process were on display. UltraBoss is an innovative, patented technology that delivers a significant increase in the performance of rollformed profiles. By embossing the corners, strength is increased by local work hardening and stiffness is increased by pushing material away from the centre of the profile, enhancing their stability in use.

Dan Martin, European sales manager at



Hadley Group and Eric Mulder, group product director at Overeem, were on hand to offer practical insights and product advice throughout the four-day event.

Dan Martin concludes: "Our in-house technical expertise allows us to deliver a fully integrated solution and customise products to our customers' specific requirements. Euroblech was a great opportunity for us to meet international visitors who are looking to source a variety of different manufacturing solutions."

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# Investment in Kerf Optima 320 provides the solution

When engineer and innovator Alun Hobbs identified an opportunity to revolutionise butterfly valves over 12 years ago, his previous employer was reluctant to follow the opportunity. With a steely determination and belief in his design, Alun set up Hobbs Valve to serve the demands of the offshore, power generation and general industrial application sectors. Engineered to perform, the patented triple offset butterfly valves from Hobbs Valve provide a more efficient, innovative, safe and cost-effective solution that reduces downtimes and maintenance times and eliminates leaks for the end user.

Over a decade after the founding of the business, the seal designs that incorporate patented seat and seal technology to enhance reliability are the bedrock of Hobbs Valve success. This success has seen the Caerphilly entrepreneur expand the original business concept with Hobbs Valve now being part of the Great British Valve Group, which also encompasses Hobbs Precision Engineering, Cambrian Valves Ltd and HVG Techno. Founded as a subcontract machining business to primarily serve the production of valve components for Hobbs Valve, Hobbs Precision Engineering has recently invested in an Optima 320 twin head waterjet machine from Kerf Developments.

The founding of the Hobbs Precision Engineering division was borne out of the

necessity to reduce substantial subcontract machining costs for Hobbs Valves, creating an opportunity to manufacture valve components in-house. The South Wales Group has built upon its newly formed subcontract facility, adding waterjet to its machining capability with the arrival of the 3 m by 2 m Optima waterjet. With three variants in the valve range that include lugged valves, double block & bleed valves and Cryo valves, the company manufactures, assembles and supplies more than 3,000 triple offset butterfly valves every year. With more than 40 machined parts per valve and hundreds of variants, the machine shop has reduced average lead-times from 12 weeks to just 4 since it was founded. The Optima 320 twin head waterjet machine has further reduced these lead times since its recent introduction. The fast turnaround times on high-value niche market valves has won the business plaudits; with high-profile customers including leading names from industry such as Shell, BP, Ineos, ExxonMobil, Amec and Total to name a few.

Identifying why the company opted for a waterjet machine, machine shop manager, Craig Llewellyn says: "We identified that we could produce over 1,500 clamp ring parts in-house every year, something that would reduce our subcontract reliance, valve unit costs and improve overall production scheduling and lead-times. Waterjet was the

only feasible option for our components. Laser or plasma cutting would introduce heat to our components and with complete certification, traceability and standardised conformity of all constituent valve parts from the steel mill through manufacturing to delivery; heat introduction would impact the properties and conformity of our parts. We investigated the options and the Kerf Optima 320 had the best build quality, software, productivity performance and value for our business."

The clamp ring components are manufactured from aluminium bronze and a range of stainless steels that vary from 316 to super duplex with dimensions from 50 mm to 1,200 mm diameter in thicknesses from 4 mm to 12 mm.

Craig Llewellyn says: "By bringing production of clamp ring parts in-house, we have reduced our subcontracting costs by over £30,000 per year. Furthermore, we have gained greater control over our processes and quality whilst reducing our lead-time for these parts from four weeks to just one day.

By identifying £30,000 subcontract cost reductions through the Kerf Optima 320, Hobbs Precision Engineering has now applied the machine to the production of end plates for the butterfly valves. Manufactured from the same materials and quantity levels as the clamp rings, the in-house production of the 25 mm to 100 mm diameter end plates has reduced subcontracting costs by an additional £20,000 per annum.

Craig Llewellyn concludes: "The Optima 320 twin head waterjet machine from Kerf Developments has reduced our subcontracting costs by over £50,000 a year on just two component types whilst slashing our lead-times and alleviating supply chain issues. We are achieving all this, and the machine still has a long way to go before reaching capacity."

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ADVANCED WATERJET SYSTEMS

## A family business with a family of waterjets

Brothers, Steve and Jim Goldschmidt, both learned the tool grinding trade before striking out on their own. The brothers started Cincinnati Tool Sharpening. For seven years, the shop focused on manufacturing for the machine industry in and around Cincinnati, Ohio. The shop grew but hit a wall with its capabilities.

Steve Goldschmidt says: "We felt that we took tool grinding as far as we wanted. We were going to buy a CNC tool grinder, but we felt we needed to break into another market."

The brothers bought their first OMAX 55100 JetMachining Centre in 2008.

Cincinnati Tool Sharpening added a 40HP direct-drive pump and a Tilt-A-Jet with a Precision Optical Locator to its new abrasive waterjet. The OMAX 55100 is the largest of the OMAX cantilever-style machines. With a completely sealed and protected ball screw drive system, the OMAX 55100 is a robust and reliable workhorse for shops using larger stock.

Steve Goldschmidt continues: "We got our first machine to expand on our machining business and it quickly took over the lion's share." In 2014, the company bought a second OMAX 55100 to accommodate their growing waterjet business. This time they added a 600 lb abrasive hopper for extra-long cuts as well as a more powerful 50HP pump.

Steve and Jim's machine shop shifted to focus on waterjet machining. They changed the name from Cincinnati Tool Sharpening



to C.T.S.-Waterjet, LLC. Steve Goldschmidt said the change represented "is a nod to our roots but keeping our eyes on the future."

CTS is a true American family business. The brothers, Steve and Jim, own and operate the business. Laura Schmidt, Steve and Jim's sister, is the office manager and bookkeeper. Plus, Ben Goldschmidt, a waterjet operator, is Laura's son, Steve and Jim's nephew.

In 2018, C.T.S. bought a third machine. This time they went with a bigger cutting envelope and opted for an OMAX 60120. The OMAX 60120 JetMachining Center is the smallest of OMAX bridge-style waterjet machine, but it has a table big enough for larger stock, over 5' by 10'. Their third machine championed the versatility as the previous OMAX 55100s, keeping a similar configuration that C.T.S. had become known for.

Having moved beyond tool sharpening, while fully committing to the art of waterjet cutting, CTS has broken into diverse markets as well as avenues they never thought possible years ago.

Steve Goldschmidt says: "We serve all types of clients in a wide range of industries, aerospace, automotive, even food processing, you name it. We've got parts in space, in Australia, and in some animatrons."

With three machines and a high standard of waterjet machining credibility, C.T.S. has been able to make a name for themselves by making quick work of custom cutting.

Steve Goldschmidt continues: "A lot of our customers come to us because we're able to turn critical jobs around fast. Some of that has to do with being a smaller shop, but a lot of it is because the waterjet can cut quickly."

The shop primarily cuts aluminum, steel, and titanium, but also sees rubber and composites regularly. One of the major benefits of abrasive waterjet is that it can cut virtually any material and at some point, in the last 10 years, CTS has cut it all.

Ben Goldschmidt, waterjet cutting operator at C.T.S. Waterjet LLC, concludes: "We went with OMAX because of the customer support and we wanted to buy American-made."



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## A waterjet that grows with your future needs

With an ACM waterjet from Resato, you get more than just a best quality cut. With its modular design, it will make your company ready for the future. The Dutch manufacturer focuses on increasing productivity for customers while reducing operational costs as well as providing best in class support. You can now focus on growing your business and upgrading your machine with what you need, but only when you need it.



### One stop shop

Resato is one of the few waterjet manufacturers that completely owns the technology, from table to pumps and the operating software. This ensures that you get best waterjet cutting quality from a reliable partner. With more than 30 years of high pressure experience, Resato focuses on reducing the total cost of ownership with smart solutions. Extensive service packages, such as preventive maintenance, ensure the perfect back up for your machine.

### Focus on ROI

Buying a waterjet is a significant investment. However, to understand the return on investment you need to take into account the total cost of ownership over the lifetime of the machine, as this could be double your initial investment.

Resato therefore aims to give your company the best return on investment. With energy consumption and production optimisation in mind and a broad range of service contracts, it strives to match your specific needs and provide what you need.

### Reliable technology

Leading technology is great, but reliability is even better. Resato optimises the right balance between the two and provides innovative solutions to put your company ahead of your competition. These include: maintenance-free linear drives for maximum accuracy; Flex-zone allows cutting while loading and unloading the free area of the table; modular design to easily upgrade your machine when needed.

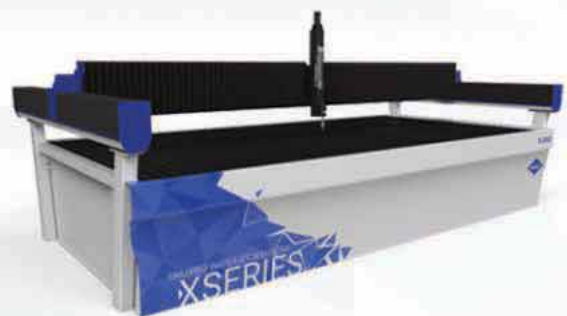
Resato is one of the few suppliers of waterjet cutting machines worldwide that has in-house development and production of the cutting tables as well as the high-pressure pumps, cutting heads, high pressure fittings and machine software. A true one-stop shop.

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# Providing tailored waterjet solutions for unique applications

Waterjet cutting systems are one of, if not the most, versatile cutting tools on the market. There are very few materials that a waterjet is unable to cut and the maximum material thickness is generally only limited by the Z-height capability of the cutting head.

Following the recent acquisition by Canada-based AXYZ International of US-based WARDJet, the primary European subsidiary, AXYZ UK, based in Telford, has now officially announced the availability of the WARDJet cutting systems in the UK. Demonstration machines are already operating in the impressive Telford showroom where technicians and application specialists are fully trained to provide local demonstrations and support to UK and European customers.

Since its inception in 1995, WARDJet has never been a "one-size-fits-all" type of company. While stock, "cookie-cutter" type machines may work well in some instances, WARDJet provides high-quality capital equipment that caters to any industry. To accomplish this goal, WARDJet developed an expansive product line comprised of highly-modular waterjet cutting systems. This product line, complemented by a large selection of aftermarket accessories, as well as a stellar service and support system, can be tailored to the exact specifications required by the customer.

One of the first machines ever built by WARDJet was a 1,800 mm x 4,000 mm, 6-headed waterjet cutting system. Designed with the ability to be upgraded down the road, this Z-613, a machine that is still in operation 20 years later, paved the way for



WARDJet's implementation of machine modularity, a now defining characteristic of the company.

The modular nature of the company's waterjets allow them to be upgraded with a number of efficiency-increasing accessories at any time. At the time of purchase, customers can outfit nearly any standard waterjet with whichever accessories their application requires. If, down the road, the customer determines that a certain accessory can help them increase throughput, productivity, or machine profitability, the accessory can be purchased and installed with no major modifications made to the waterjet itself.

While machine modularity allows customers to tailor their waterjets, there are times when a much more custom solution is needed. WARDJet's system of process development is where the company really gets to unleash its creative side. Given an application that is not supported by an existing waterjet system, WARDJet will

develop a unique cutting solution by building a completely new machine from the ground up. Engineered to order, these custom waterjet systems utilise the latest technologies and innovations in order to complete the tasks delegated by the customer.



Finding a machine that perfectly aligns with the needs of your company can be a difficult task. Many standard waterjet systems may not meet the demands of your industry. Your application is unique; shouldn't your waterjet be? Whether you require a slightly modified version of an existing system, or a bespoke cutting machine built to order, WARDJet aims to provide its customers with a solution. A provider of Tailored Waterjet Solutions™, WARDJet has cultivated a business that strives to create cutting systems that are perfectly suited to its customers.

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## Hypertherm introduces a first for the waterjet industry

Hypertherm, manufacturer of industrial cutting systems and software, has introduced the industry's first predictive maintenance waterjet pumps to substantially reduce maintenance costs and disruption caused by non-planned service.

This new generation of pumps, called HyPrecision Predictive, are equipped with features such as Hypertherm's proven Advanced Intensifier Technology and new patented technologies like closed loop proportional pressure control that adjusts for pressure and temperature, oil viscosity, and hydraulic system wear parts; along with technology that enables customers to use seals up to 40 percent longer.

In addition to technologies to increase performance and reduce system downtime, the HyPrecision Predictive pumps are designed with ease of service in mind. Features such as a colour-coded junction box, electrical cable harnesses, quick-disconnect fittings and an easy access bleed-down valve all make maintenance faster and less expensive.

HyPrecision Predictive systems are also

designed with safety in mind. A clear window cover lets the operator see the intensifier and attenuator. Optional electrical interlocks prevent unauthorised access and can automatically stop the pump when opened. Finally, Seal Maintenance Technology™ helps keep the top deck and shop floor free of oil and water.

"In engineering this system, we worked to really understand the pain points that companies using waterjet face. Without question, the number one issue was surprise system downtime," explains John Caron, waterjet product marketing manager. "Our new HyPrecision Predictive systems are engineered to eliminate that pain point, while delivering increased productivity and performance, improved serviceability and safety, and lower maintenance costs."

Hypertherm HyPrecision Predictive pumps are available now in six different models, ranging from 15 to 75 hp.

Hypertherm designs and manufactures industrial cutting products for use in a variety of industries such as shipbuilding, manufacturing, and automotive repair. Its



product line includes cutting systems, in addition to CNC motion and height controls, CAM nesting software, robotic software and consumables. Hypertherm systems are trusted for performance and reliability that result in increased productivity and profitability for hundreds of thousands of businesses. The company's reputation for cutting innovation dates back 50 years to 1968, with Hypertherm's invention of water injection plasma cutting.

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## High precision manufacture of micro components

In recent years, several machine manufacturers have launched machines under the Micro category, but, on closer inspection, it's clear the definition of Micro is actually very different between manufacturers. For many, it is simply a smaller machine whereas for Water Jet Sweden a Micro machine is primarily designed for very high precision manufacture of micro components. At the same time, there are other options if you need to process small items or make narrow cuts

### Micro machine for micro components

The Micro machine is a high precision tool cutting with narrow incision,  $\geq 0.2$  mm, to manufacture micro components. Its maximum table area is 1 x 1 m even though a smaller area often is used. The machine is based on Fine Abrasive WaterJet (FAWJ) cutting and has a number of unique design features to provide extremely high precision,  $\pm 0.01$  mm/300 mm.

Made of Mineral Casting Bearlit, a composite material that is rigid, anti-vibration and withstands temperature fluctuations, the table frame is integrated with the machine construction and motion system as one complete unit for keeping high precision.

Micro parts often require advanced fixtures so the NCM 10 Micro has a palletised cutting table, fixed into the table frame, with unique opportunities for fixture arrangements and a free standing water catcher to keep high precision.

The stainless-steel water catcher is rubber suspended to avoid vibrations and thermal influence.

X/Y motion axes are fitted with Renishaw Invar Scale, a micrometre scale with extremely low expansion coefficient and high-resolution.

The cutting head, WJS Micro Cutting Tool, is a precision tool specially designed for the FAWJ cutting process to provide the most accurate waterjet cutting in the world.



The NCM 10 Micro provides all the advantages of abrasive waterjet cutting, cold processes and covers the gap between the EDM and Micro Laser. This makes it a popular choice in industrial sectors such as electronics, medicine, biotechnology and precision engineering.

### Micro Cutting Head for narrow incisions

The Micro Cutting Head offers an incision down to 0.2 mm, compared to traditional



waterjet cutting that normally has 0.7 - 1.1 mm incision. In addition to processing of fine parts, the FAWJ technology is sometimes used when processing valuable materials such as precious metals and special alloys, since narrow incisions offers less material loss.

The Micro Cutting Head itself is also available as a cutting tool for the X-series machines (NCX) and Premium machines (NCP). The NCX and NCP both have a CNC control system and size of cutting table which offer the ability to handle the delicate software-controlled abrasive feeding of the FAWJ process with the software controlling the feed rate, sense critical levels in the abrasive buffer and quickly detects blockage.



### Small machines for small items

If just a small machine and small cutting area is required and the incisions and accuracy of traditional abrasive waterjet cutting are sufficient, there are two other machine models available: H-model (NCH) or X-series (NCX).

H-model (NCH) is an entry-level machine system and a complete workstation for all types of waterjet cutting in 2D. Compared to its predecessor, the X-series, it has less optional features but still delivers the same high-quality cutting. It is designed with similar advanced technologies and with the world patented gantry design that provides a high-quality, long life cutting performance. H-model is available in sizes 1 x 1 m, 2 x 1 m and 3 x 1.5 m.

X-series (NCX) offers more optional features and tools and is operated by the PanelOne® operator system. X-series is a high-performance water cutting machine for any kind of 2D cutting. It is available in five sizes from 1 x 1 m to 4 x 2 m.

Both the NCH and NCX are equipped with a single Z-axis. Multiple cutting heads for pure waterjet cutting (PWJ), or an extra cutting head for abrasive water jet (AWJ), can be mounted to get increased cutting capacity.

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# Stone Circle get a new i713 for 50th anniversary

Roccia Machinery Ltd, the exclusive agent for GMM products within the UK and Ireland, has recently installed the Waterjet Techni i713-G2.

Stone Circle is one of the UK's largest stone fabricators with a wide range of products from kitchen worktops through to bespoke one-off projects. The company celebrated its 50th year anniversary in 2018 and has a reputation for a high level of quality and craftsmanship.

The primary reason for purchasing the 5-axis waterjet is to accurately and reliably cut the ultra-compact materials now being supplied by a number of synthetic stone manufacturers.

Stone Circle has a long trading background with GMM, having purchased six bridge saws over the course of its history. In 2014, the company vastly expanded its production facility in Basingstoke to meet increased demand which triggered the purchase of four GMM Brio CNC saws, a water treatment system and an additional CNC work centre, all supplied by Roccia Machinery.

The company had water jet experience having purchased a basic machine some years ago. After careful consideration and research Steve Vanhinsbergh, managing director, decided on the purchase of the GMM Techni, taking into account the advantages the GMM Techni offers such as reduced running costs due to the efficient Quantum NXT ESP66-G4 electro servo pump and the easy-to-use machine interface. He also took into account Roccia's assistance with the expanded production facility and the reliability his existing GMM machinery has given Stone Circle over the years.

GMM, based in Gravellona Toce, north of Milan in Italy, purchased Techni in 2018 to expand its product range as existing customers were increasingly requesting water jet technology to cut the new materials coming onto the market. GMM has over 6,300 machines installed worldwide with one of the finest dealer and support networks in the stone world.

Ing Corrado Franzi, GMM CEO, knew of Techni as its Australian agent CDK Stone



had experience of working with Techni and saw a similar ethos of high-quality machinery and strong customer focus regarding service and support. After considerable research and consideration, GMM completed the purchase in the middle of 2018.

Steve Vanhinsbergh is looking forward to the machine becoming an integral element in Stone Circle's continued expansion and early results from the machine have more than justified his investment decision.

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## How to make money with a waterjet cutting system

Two years ago, Sergej Wart, a young entrepreneur from Gütersloh, fulfilled the dream of his own contract cutting business. After 15 years of experience in the waterjet sector, the 40-year-old wanted to go his own way, offer more and, above all, fully exploit the versatility of the technology. The company founder found the right partner in STM and really got going with his PremiumCut 3D waterjet cutting system. The result: full order books, expansion plans and a young entrepreneur who became an immediate success.



Until he decided to set up his own business, the trained electrician and carpenter first gained twelve years of experience with water jet technology in a natural stone company and then in the metal sector. He became more and more enthusiastic about waterjet cutting over 15 years and while he grew dissatisfied as an employee in the mechanical engineering company, the decision to become self-employed matured. "I knew I wanted to go my own way, do more waterjet cutting, offer more and earn my money with it," the ambitious family man says.

### The right partner

Sergej Wart did not make the decision for a waterjet cutting machine manufacturer lightly. The design of the waterjet cutting system without bellows, which can be optimally cleaned, the speed of the travel path and last but not least the concept of the modular design, which also offers flexible expansion options retrospectively, ultimately spoke in favour of STM. "The process was smooth and the setup worked great. The machine ran from day one and I was able to start cutting immediately," he explains.

### Success through versatility

To be able to cut any material without much effort is one of the points that make waterjet cutting so interesting. "At first, I didn't want



Sergej Wart has fulfilled his dream of his own contract cutting operation and really takes off with his STM PremiumCut 3D waterjet cutting system

to commit to a certain material, wanted to remain open to what was to come and the water jet is simply the ideal tool for that," he says.

He currently specialises in cutting ceramics. In addition to large tiles, washbasins and kitchen worktops, the range also includes sliding doors and steps. The possibility of 3D cutting sets him apart from the competition: "This was a good investment and nobody else can do it within a radius of 100 km."

### Almost nothing to regret

The up-and-comer has succeeded in becoming successful with an STM cutting system without much support. "It's simply fun to realise my ideas," explains Sergei. So far, the young entrepreneur has only regretted not having invested in a larger hall. The order books are full. Meanwhile, his wife helps him with the bookkeeping and cuts independently at the STM cutting machine. Two more employees would be needed to process all requests. At the same time, even more space would have to be created to be able to exhibit the products.

"The current area of 300 m<sup>2</sup> is not enough. I would need around 1,000 m<sup>2</sup>," says Sergei Wart says. "There would also be room for the desired additional STM waterjet cutting system then."

### The technology

Sergej Wart decided to start his business with an STM 2030 PremiumCut 3D and



Success with the right partner: Sergej Wart with managing director Sven Anders, Dipl.-Ing. (FH), STM Waterjet GmbH, Germany

backed the right horse. Work surface large format 2,000 x 3,000 mm, STM3D head up to 68°.

SWS Schneidtechnik is a young company which has existed since the beginning of July 2016 and has more than ten years of experience in waterjet cutting and material processing. SWS stands for fast and precise processing of materials and orders and offers the complete production from draft to end product. The service for kitchen worktops ranges from measurement to delivery. The range also includes made-to-measure washing stands and sinks made of various materials, cut-to-size block steps, chimney covers and much more.

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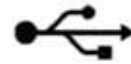
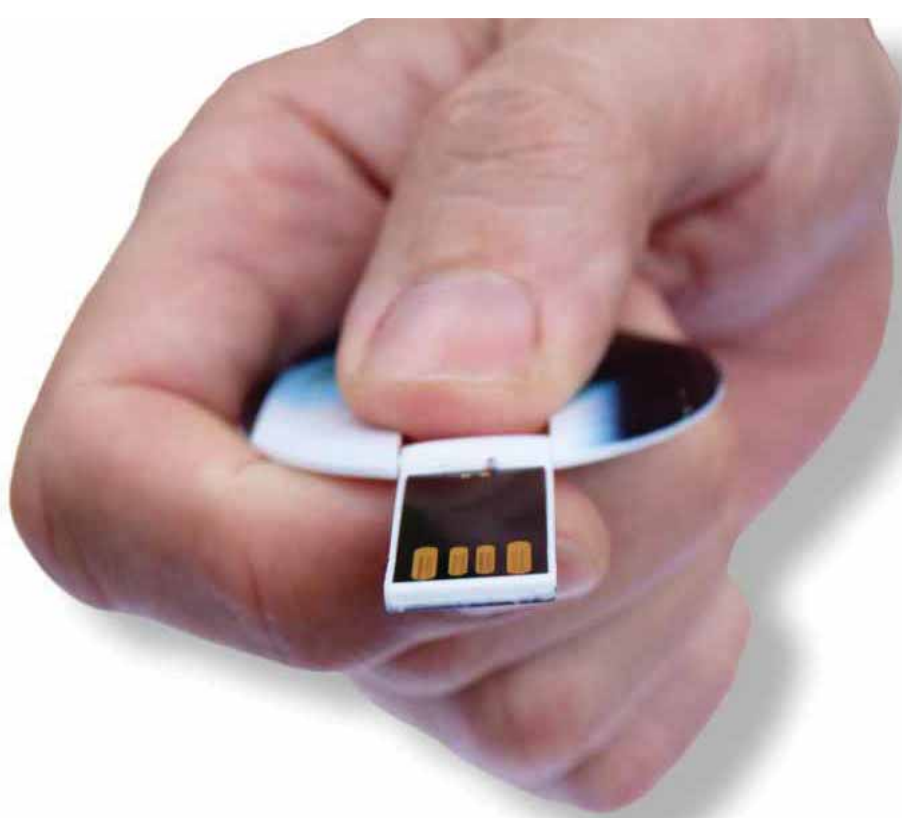
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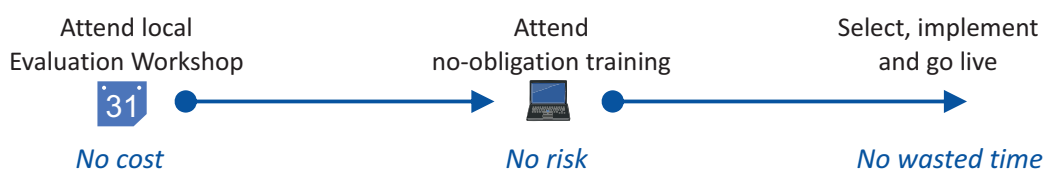
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