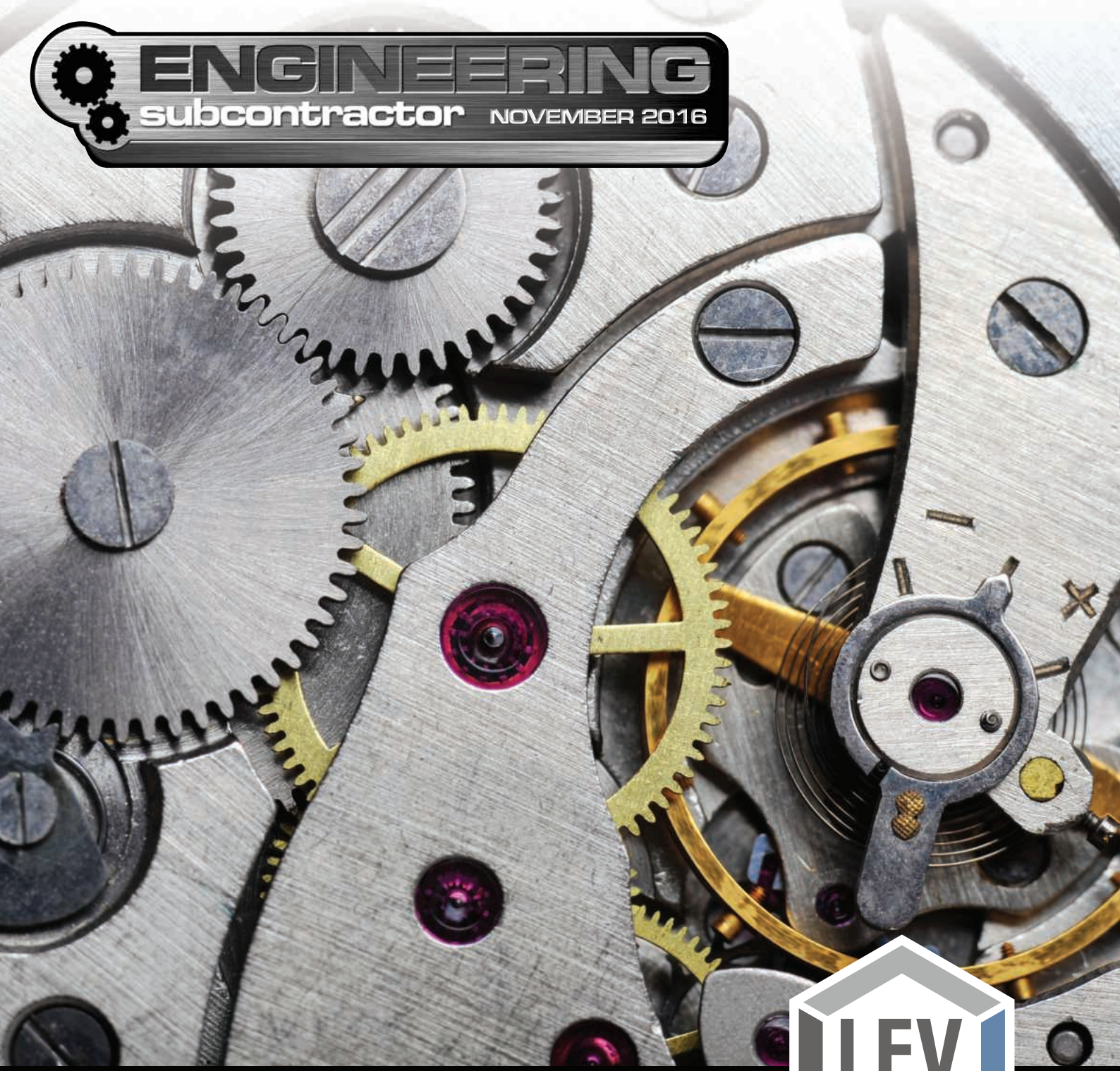
ENGINEERING subcontractor NOVEMBER 2016



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CONTENTS

NEXT ISSUE - JANUARY 2017

MOTORSPORT REPORT
AUTOMATION
DUST & FUME EXTRACTION
METAL MARKING
WATERJET MACHINING

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Citizen can initiate programmable chip control through LFV

A totally new level of cutting technology has been developed by Citizen, which is able to increase machine performance, levels of surface finish and significantly improve chip control. The system is fully programmable for application during turning, facing, deep hole drilling and even thread cutting and micro-machining operations.

Indeed, such is the flexibility of the patented Low Frequency Vibration cutting (LFV) process that it can be applied as and when required during the machining cycle. While in programmed non-LFV mode, it enables the machine to be used exactly as the standard version which does not have the technology installed.

Cutting trials have already demonstrated significant improvements to cutting efficiency and tool life, not only on exotic materials but also, on 'difficult-to-chip' ferrous and non-ferrous materials which include plastics and copper. In certain cases the need for integrated high pressure coolant systems and fume extraction has been reduced or replaced, thus creating additional savings from reduced power consumption and improved setup times.

The Citizen L20-VIII used to demonstrate LFV high technology cutting

LFV finely fragments the swarf generated into small chips which eliminates the possibility of in-cut interference from stringy material and especially when 'birds-nesting' occurs and the normal solution is to investigate the tooling and cutting data. LFV technology also enables an increase in depth-of-cut to be applied and can improve surface quality even on very small diameters or very thin-walled components.

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Low frequency vibration cutting technology

A totally new level of cutting technology was introduced by Citizen at its Open House last month, that is able to increase the performance levels of surface finish and significantly improve chip control. This breakthrough in machining development was demonstrated on the latest Citizen Cincom L20-VIII CNC sliding head turn-mill centre, is fully programmable, and can be applied to processes including turning, facing, drilling and even thread cutting operations.

The patented process of Low Frequency Vibration cutting (LFV) took some three years to develop and was amongst the latest concepts unveiled and demonstrated to the 3,000 visitors from around the world at last year's CFA85 Innovative Manufacturing Event staged at Citizen's Japanese headquarters. This technology was also demonstrated this autumn by Citizen at the European exhibitions of AMB in Stuttgart and BiMU in Milan, where high levels of interest in the potential for its application were shown by visitors.

Cutting trials both in Japan and Europe have already demonstrated significant improvements to cutting efficiency, not only on exotic materials but also on 'difficult to chip' ferrous and non-ferrous materials. In certain cases, the need for integrated high pressure coolant systems and fume extraction has been reduced or even replaced, thus creating additional savings from reduced power consumption and improved setup times.

When LFV has been applied, it has led to forecasts that productivity can be revolutionised when machining malleable materials, for instance, and especially plastics and copper which pose machinists with a constant challenge to maintain effective chip control.

LFV creates the advantage of aiding the production of small chips by finely

fragmenting the swarf generated and eliminating the possibility of in-cut interference from stringy materials, especially when 'birds-nesting' is occurring. LFV technology also enables an increase in depth-of-cut and can improve surface quality even on very small diameters or very thin-walled components.

While LFV can be applied to longitudinal turning, facing, taper or eccentric turning and drilling, which also includes small diameter and deep hole operations and especially when high peripheral speed is required, it can even be used to support and improve the thread cutting process. Indeed, it can be applied to most turning processes where a normal continuous contact is maintained between the cutting tool and the material which can have a dramatic influence on improving tool life and increase spindle uptime.

The LFV process is activated through a G-code in the CNC program, enabling an on-demand initiation anywhere in the cutting cycle. The servo axes of the drive system are 'vibrated' in the direction of feed in phases involving tens of microns which are synchronised to the rotation of the machine spindle.

As a result, regular 'air-cutting' is introduced to the cycle which breaks swarf into small chips eliminating the problems associated with 'bird-nesting'. It also reduces the tendency for built-up edge on the tool tip, extends in-cut life, helps reduce thermal effects in the cutting zone and can be an important factor in difficult to control processes such as deep hole drilling and even fine surface micro-machining.

Most importantly, the LFV operation is fully programmable. This means that the machine will perform as a standard Citizen L20-VIII when in non-LFV mode.

At the launch events, LFV was demonstrated on the latest Citizen Cincom L20-VIII in machining sequences at both the main and secondary spindles. For the Open House, customers were invited to bring along their 'problem' workpieces to see how LFV technology could help provide an effective and more economical solution.

Citizen Machinery UK Ltd, based in Bushey, is a CNC machine tool specialist supplying the latest CNC turning technology to UK industry. Following a merger in January 2011, the company incorporated staff and resources from the UK machine tool operations of both Citizen (Citizen Machinery UK Ltd, formerly NC Engineering Ltd) and Miyano (Miyano Machinery UK Ltd, formerly Macro Machine Tools Ltd).

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Aberlink 'coordinates' post Brexit sales success

As many others did, the owners of Aberlink Ltd, the largest UK owned Coordinate Measuring Machine (CMM) manufacturer, worried about the outcome of June's EU referendum and were concerned about the potential implications for future business.

However, since the Brexit vote was taken, the Gloucestershire-based company has experienced a significant increase in domestic demand for its CMMs and has also witnessed an even larger rise in its export levels, including a 15 percent increase in sales into Europe.

Aberlink's extremely positive post Brexit experience reflects the recent encouraging news emanating from the UK manufacturing sector. Statistics indicate that exports are rising at their fastest rate in more than two years and that demand for British manufactured goods has just seen its best month in more than a quarter of a century. Several respected UK manufacturing indices also reflect the current positive mood.

"Earlier this year, we heard several stories about providers of capital equipment to the UK manufacturing sector experiencing a significant decline in business in the run-up to the Brexit vote. The successful April launch and early sales success of our revolutionary Xtreme CMM helped to insulate us from the worse effects of that period of uncertainty and enabled us to actually increase our year-on-year sales," enthuses Chris Davies, Aberlink business development manager.

"The post Brexit decline in the value of the pound has given a boost to Aberlink CMM sales on all fronts. As our CMMs are now considerably cheaper in the majority of our overseas markets, we are currently enjoying a welcome export boom. Also, as many UK manufacturers are experiencing continuing domestic and flourishing export demands, many are now purchasing Aberlink CMMs to help ensure the quality of their increasing output.

"Although the current value of the pound can cause problems for UK companies who import many elements of their manufactured products, in the current situation Aberlink's high level of autonomy helps our profitability. For example, not only do we manufacture the vast majority of the components for our CMMs in-house, we also write all of our own software.

"From our reading of the current situation and informed by projections made by our overseas distributors, we expect our present positive export sales trend to continue for the remainder of this calendar year. As a result, we anticipate our export figures to be in excess of 75 percent of total sales for this financial year.

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Taking it to the next level

Sliding head specialist opens new facility

As well as European directors of the leading sliding head manufacturer, an impressive number of leading UK subcontractors were in attendance at the official opening of Star Micronics GB's impressive new facility in Raynesbury, Derby, adjacent to the Rolls-Royce site.

According to managing director, Steve Totty, this reflects the fact that the majority of Star's customers in the UK come from this important sector. He was quick to point out the role that teamwork had played in making the new premises fit for purpose in a single weekend:

"We are taking it to the next level. This place didn't build itself and would not exist were it not for the vision of Adam and Alec, the support of our customers and of course Star Japan." Addressing the customers in attendance, he said: "We do what we do because you invest in us."

Hiroshi Tanaka, managing director of Machinery Business, Star Micronics Co Ltd officially opened the 16,000 ft. premises that include, as well as an impressive showroom and warehouse facilities, a training area for existing and would be customers. Dedicated demonstrations are offered, with three days training at Star and three days on site, reinforcing the company's reputation of

offering a complete customer service, rather than just machine sales. In addition to supplying its parent company's multi-axis, sliding-headstock mill-turn centres, it is also the sole UK agent for the entire range of FMB automatic bar feeders and JBS compensating guide bush systems from Germany.

Star Micronics GB is the wholly owned UK and Eire subsidiary of Star Micronics Co Ltd, which produces sliding headstock lathes at its state-of-the-art Kikugawa plant in Japan, with its headquarters in Shizuoka.

Star's range of sliding head lathes provide the right platform for precision engineers to machine high volume component batches, accurately, quickly and with minimal manual/operator intervention.

Star GB supplies a whole range of lathes, starting at 10 mm bar capacity up to 38 mm.

Star attraction

The new SR-32JII Type B sliding head machine was one of the highlights of the Star GB Open House with a range of new features that add to the capabilities of the previous highly successful model.

These include eight instead of four tools for independent back working operations with the addition of a second Y-axis.Front working capability has also been upgraded from 5-off ER16 cross working power tools to 5-off ER20 with the lower two positions remaining modular. An additional front working static position is also added, further increasing the number of mountable tools.

The SR32JII also has the capability of operating as a guide bush machine for conventional sliding head components, or as a non-guide bush machine for shorter

fixed head type components with minimal changeover. Higher horsepower needs extra stability and this comes in the form of hydraulic clamping that offers an extra 40 percent clamping force. It also incorporates a more stable dovetail slide. Eight axes in total enable the machining of more complex parts on one machine. A FANUC control is standard on all Star machines.

The SR-32J sliding head lathe is the ideal solution for medium complex parts in the 32 mm class while the optional oversize F40 kit enables the machine to manufacture components up to 35 mm in diameter. The rigid slant type guideway structure allows stable heavy duty machining on tough materials.

Numerous cartridge units such as angular drilling, thread whirling, front off-centre drilling, deep-hole drilling and thread rolling attachments are available to increase the versatility of this SR model.

The independent sub spindle has a fully programmable C-axis. Polar coordinate control is also included as standard, allowing profiles such as hexagons and squares to be machined in overlap.

The JBS flexible guide bush system is the ideal solution for running inconsistent bar stock on a sliding head lathe. Such material would normally seize in a traditional guide bush but the JBS system with its automatic adjustment allows inconsistent material to pass through without problems. The clamping is controlled via M-codes from the CNC program, with the clamping force easily adjusted via pneumatic valves. The unit suits all manner of materials and provides maximum stability for both turning and milling applications.

Current customers can upgrade to the new machine with a refurbishment of their existing model.

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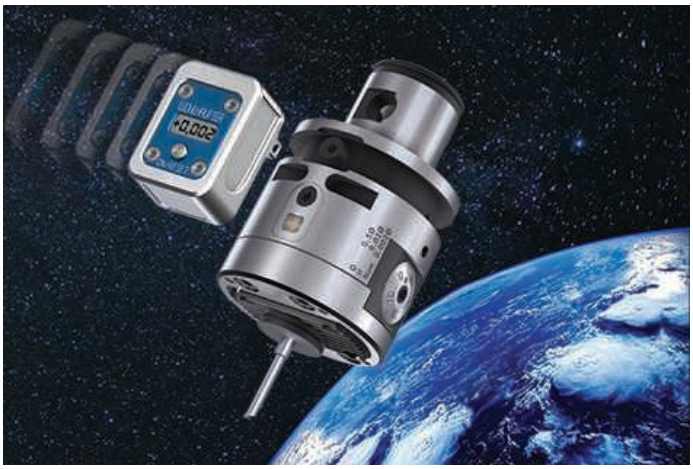
Allied Machine announces acquisition of Wohlhaupter GmbH

Allied Machine & Engineering Corporation, Dover OH, announced at the recent AMB exhibition in Stuttgart that it has acquired a majority of the shares of Wohlhaupter GmbH of Frickenhausen, Germany, Wohlhaupter USA, and Wohlhaupter India.

Wohlhaupter is known all over the world as a manufacturer of innovative, modular tool systems for machining centres and mill-turns, facing and boring heads, grooving heads, clamping tools and customised solutions for boring operations. With one innovation after another, it has continually reinforced its reputation as a world leader in digital boring tools.

"Allied Machine is a perfect fit with Wohlhaupter," says Bill Stokey, president/CEO of Allied Machine & Engineering. "Both are family-owned companies, whose foundations are built upon excellent quality, flexibility, and ability to customise products and services, as well as a preference for building strong partnerships with our customers. These commonalities will produce a seamless integration of our philosophies and services."

"By acquiring Wohlhaupter, Allied has added the world's widest range of precision boring tools to our already vast array of available products," adds Eric Tope, vice president of marketing & sales.



"Equally important is the fact that Allied now has a manufacturing presence in Europe and an additional 30 field sales engineers throughout the USA, Germany and India."

The integration of Wohlhaupter will be seamless and Allied has plans to make additional investments, wherever needed, that will see Wohlhaupter grow even stronger than it is today.

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DMG MORI offers a complete package to its customers

At AMB 2016, in Stuttgart, DMG MORI showcased its impressive range of machines and advanced technology. Visitors to the show were treated to world premieres of two brand new machines, the 2nd generation DMC 210 U and the DMC 160 U duoBLOCK, as well as a host of innovations including the Robo2Go automation solution.

DMG MORI president Dr Masahiko Mori and chairman of the executive board Christian Thomes were in attendance and both were keen to emphasis the company's customer focused philosophy. Speaking at the technical press conference Christian Thones said: We are changing the structure of our services. Priority number one is our customers. We are offering a complete package and we want to offer attractive prices and solutions to our customers. It is important that we continue to listen to them. Dr Masahiko Mori added: ''We want to be the number one machine tool supplier for each customer''.

Customer first - maximum service quality at fair prices and with best-price guarantee

From best prices for spare parts and spindle repairs to full-service offers, DMG MORI underscores its customer focus with five service promises.

Innovative and efficient machine tools are just as important in the manufacturing sector as the absolute reliability of production technology. And that is exactly what the DMG MORI manufacturer service guarantees with its extensive offer. With its maximum service quality and fair prices, the machine tool manufacturer puts the customer first.

For DMG MORI the technological evolution of its product portfolio goes hand-in-hand with the continuous optimisation of its service offer. Regular feedback from customers, which the machine supplier has taken onboard and responded to, plays a key role here. Dr Maurice Eschweiler, member of the board of industrial services for DMG MORI Aktiengesellschaft explains: "We wish to satisfy the high demands on service quality at fair prices with five service promises. A tough claim to measure up to."

Best-price guarantee for OEM spare parts

In accordance with its strong customer commitment DMG MORI is as of now, offering an exclusive best-price guarantee. If a customer finds a spare or wear part somewhere else that is at least 20 percent cheaper, DMG MORI will reimburse the price difference to 100 percent. Dr Maurice Eschweiler says: "This means we can ensure our customers get OEM spare parts at fair prices. A customer can also save additional costs: Shipping is free of charge for orders placed in the online shop."

Spindle service at best prices directly from the manufacturer

DMG MORI continues to offer maximum manufacturer expertise where the spindle service is concerned. What is new here is the pricing structure, which allows customers to benefit from attractive conditions. The 18,000 SK-40 OEM spindle is one example where DMG MORI guarantees the best price. The offer of the spindle service ranges from professional spindle repair at a fixed price to the replacement spindle service. In this case, either a new or generally overhauled replacement spindle is installed. Dr Maurice Eschweiler confirms: "We have over 1,000 spindles in stock that are available immediately for our customers."

Significantly reduced service costs thanks to new job flat rate

The company has introduced a transparent job flat rate. This flat rate is a one-off charge per service order and technician. There are no longer any additional charges for travelling time, kilometres travelled or any flat charges for expenses and small parts. This adds up to service prices with an up to 50 percent price saving.

All-round carefree with full-service agreements

The DMG MORI full-service agreement is also available for customers who purchase a new machine. All service and spare part costs are covered by a monthly flat rate charge with this all-round carefree package. Even a potential crash is covered up to 100 percent thanks to machinery breakdown insurance. The lifecycle costs with this offer amount to less than two percent a year. Dr Maurice Eschweiler adds: "Aside from that, all services will be performed with the usual manufacturer quality.'' Financing of the DMG MORI full-service within the framework of a leasing contract is also possible. Another plus point is that three services are included in a three-year agreement.

Overhaul results in 100 percent restoration of performance capacity

One offer in the DMG MORI manufacturer service portfolio that has stood the test of time is the overhaul of DMG MORI machines and components. Dr Maurice Eschweiler says: "It is an optimal way for customers to secure established production processes. After all, the performance capacity of the machines is restored to 100 percent. Where applicable an overhaul also includes software updates and retrofit options, so that users can continue their high-level of production."

Evolution to CLX / CMX

As part of a strategic product evolution within the DMG MORI group, the ECOLINE is gradually changing from being a classic machine offering to becoming a customer-orientated basis for holistic manufacturing solutions. The machines now come with more possibilities, technology and options at attractive prices, and a new branding. The series is divided into the CLX series of basic universal turning centres, the CMX V series of basic vertical machining centres and the basic universal milling machines of the CMX U generation.

Whereas the fundamental performance criteria of a machine used to be the key issues for an investment decision, the overall performance of a machining solution is more important for the users of today. This applies worldwide and independently of the performance class of a machine or the industry segment of the customer. That is why DMG MORI is now consistently changing its basic machine program from a product to a solution offer in an evolutionary process. This means a new portfolio of technology, software solutions and applications that, as part of a time and development schedule, will gradually be expanded to a comprehensive modular building block system offering a multitude of possibilities.

As a result DMG MORI's entire range of technological performance will be opened up for the users of CLX and CMX machines. This applies, among other things, to the extensive optional diversity of equipment in the field of spindle technology, for example. The evolutionary character of the new basic machines is, however, also evident in the optional Y-axis with its 60 mm travel path for milling operations on the CLX 450 turning centres, the optional NC rotary table for efficient four sided machining in the case of the CMX V. It is also evident in the accelerated rapid traverse, and the tool magazine, with virtually double the former capacity in the case of the CMX U in the new design.

It also applies to the multitude of 3D control options including access to the exclusive DMG MORI technology cycles as well as other revolutionary software options. This makes DMG MORI the only manufacturer in the world that equips its machines with the leading 3D control systems from SIEMENS, HEIDENHAIN, FANUC and MITSUBISHI. The CMX V series particularly benefits due to it now also be equipped with a HEIDENHAIN control. In addition, a completely new dimension in automation ability is to be realised. Plus, customers from all over the world will be given access to the extensive training and advanced training programmes of the DMG MORI Academy.

Thanks to its integration in the overall portfolio, the basic sector will gain greatly in importance within the framework of the DMG MORI global innovation strategy. This will of course ensure there are no restrictions for previous ECOLINE users. On the contrary, the new training and advance training programs of the DMG MORI Academy will apply 1:1 for existing ECOLINE machines in addition to the already familiar services and renowned high quality and availability of spare parts.

DMU 90 P duoBLOCK® - heavy-duty machining with an attractive package price

With a high-performance motor spindle and 60 SK50 tools in its standard version, the DMU 90 P duoBLOCK from DMG MORI constitutes the ideal entry into tool and mould making and general mechanical engineering.

5-axis machining of the highest standard is also the trademark of the fourth generation of the successful duoBLOCKseries. Outstanding features include the highly stable design of the universal machines, long-term accuracy and highest precision with up to 4 µm positioning accuracy even in the standard version. With its DMU 90 P duoBLOCK, DMG MORI now presents a machining centre that will continue the triumphal march of the series. This latest model is designed as a package machine with a high-performance motor spindle, space for 60 SK50 tools and IKZ coolant unit and guarantees an economical entry into heavy-duty machining.

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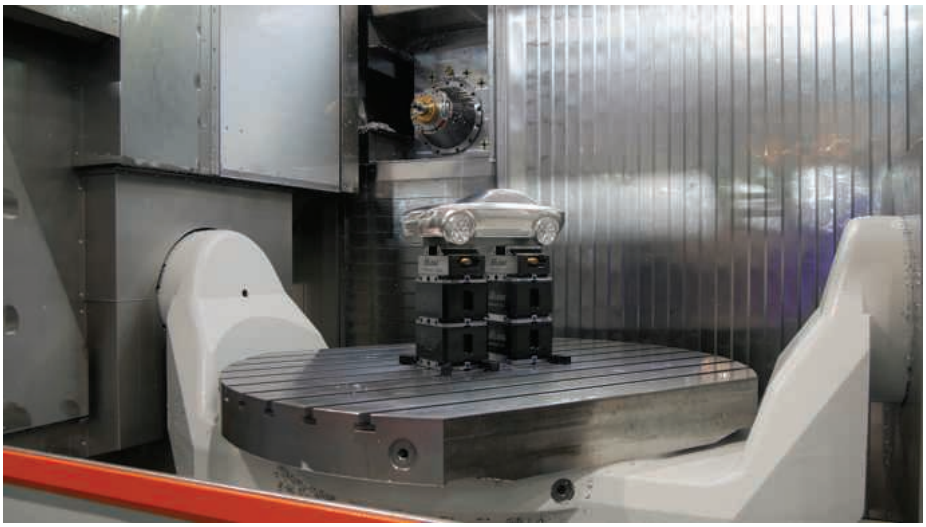
One week, two successful leading trade fairs for Handtmann

The exhibitions IMTS in Chicago and AMB in Stuttgart, which both took place in September this year, are viewed as two of the leading trade fairs in the fields of mechanical engineering and metal machining. At both events, German machine manufacturer Handtmann A Punkt Automation GmbH was able to present its diverse range of 5-axis HSC/HPC machining centres, comprising of numerous HBZ horizontal machining centres, PBZ profile machining centres, GANTRY high moving portal machining centres and UBZ universal machining centres.

The 5-axis HBZ Trunnion 160 horizontal machining centre was the focal point of the Handtmann stand at AMB



The 5-axis PBZ HD profile machining centre provides heavy duty machining for workpieces up to maximum 30,000 mm in length

Demanding profile machining at IMTS

The PBZ HD 600 profile machining centre was the central focus at IMTS in Chicago. On the machine with axis travels of 7,250/1,500/1,000 mm and travel speeds of 70/40/40 m/min on the linear axes, aluminium floor beam sections for the aerospace industry were machined live at the trade fair. The high spindle power of maximum 58 kW and the maximum speed of 30,000 rpm, together with the intrinsically rigid machine design and the afore-mentioned performance data, ensure precise and efficient aluminium machining with chip removal rates of up to 6.5 l/min when machining profiles and solid material. The PBZ HD can be configured up to a profile length of 30,000 mm and is also providing significant advantages with respect to application specific clamping technology.

High speed cutting at AMB

At AMB in Stuttgart however, the HBZ Trunnion 160 horizontal machining centre was the central feature of the stand. The HBZ Trunnion 160 is the largest machine in the HBZ Trunnion series and, with its NC rotary swivel table with a diameter of 1,600 mm, it is suitable for 5-axis complete machining of complex workpieces with a maximum diameter of 1,700 mm and 1,000 mm in height. The machine can be used for the machining of a wide variety of materials, such as aluminium, steel, titanium and other common light and heavy-duty cutting materials. The topic of "high speed cutting in aluminium" was the primary focal point at AMB. Therefore the machine was fitted with a high-power spindle (max. 30,000 rpm and 81 kW).

Precision and high performance were equally demonstrated by machining an aluminium car live on the HBZ Trunnion 160. The presentation of a wide range of sample applications for the other Handtmann machines gave visitors insight into the company's extremely diverse product portfolio: from the smallest parts with a diameter of 200 mm to large structural parts, such as the wing panel, boasting 6,300 mm in length.

Handtmann enjoyed a total of eleven successful days at the two trade fairs. At both fairs, good results were achieved in terms of the quantity of the visitors and above all the quality of the dialogues. AMB in Stuttgart has developed into an established international trade fair, something that is becoming more and more evident from year to year.

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Innovative solutions for increasing productivity

At AMB, the KOMET GROUP presented a growing range of milling cutters which also makes use of additive manufacturing processes. New PCD milling and thread milling cutters are also being presented in the form of standard versions that can be particularly productive when used in applications involving lightweight construction materials. With its new products, KOMET is also focusing on tools with ultra-hard cutting materials. For example, more than 900 new items were presented in the indexable insert range with diamond and CBN cutting materials. KOMET has also extended its leading position in bore machining as a result of a consistent further development of its product range. With the design of the KOMET KUB Pentron® 6 x D Productivity PLUS solid drill bit, KOMET is unveiling a completely new variant that can be tailored to key account and industrial segment requirements. Other attractions include the numerous innovations in mechatronic tools.

The KOMET® BRINKHAUS subsidiary provides high-performance, high-end technology in assistance systems for machining in the form of the ToolScope system. "Digitalisation is increasingly becoming a key issue," states Dr Christof Bönsch, managing director of the KOMET Group.

The KOMET GROUP can report high growth rates in assistance systems on a national and international level. ToolScope offers a wide range of applications from which users can select the solutions they require, from tool monitoring to an automatic tool change log through to adaptive feed control.

As part of its expansion of in-house carbide production, KOMET is increasing the production capacity of its subsidiary in Poland. An additional production area spanning around 2500 m² was created following 11 months of construction. In future, KOMET Urpol Sp.z.o.o. will focus primarily on producing the latest indexable insert range with diamond and CBN cutting materials. The KOMET GROUP is thereby strengthening its leading position in carbide production and increasing its focus on

customers in Central and Eastern Europe. The KOMET GROUP is one of the leading single-source suppliers of precision tools and has been at the forefront of innovation in the sector for nearly 100 years.

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Eliminating run on errors

Gewefa majored on its significant hydraulic toolholding capability at AMB, while taking the opportunity to introduce its latest development, the Grindtec hydraulic chuck with zero radial adjustment capability.

Gewefa offers a wide range of standard and special purpose hydraulic toolholders with the Grindtec hydro chuck introduction extending the range into applications for bespoke tool grinding machines.

A key feature is an adjustment mechanism that enables compensation of the run out at the tip of the clamped cutter to zero tolerance, eliminating run out errors between the tool tip and the spindle. This is achieved by adjusting three screws located in a ring fitted around the toolholder body. The cutter shank is therefore slightly fine-tuned to achieve zero accuracy of its position at a distance 100 mm from the ring.

Also featured was the recently introduced Gewefa 'HydroPin' single point boring bar toolholder. This Gewefa invented toolholder utilises the proven tool grip features of a hydraulic chuck with the added advantage of guaranteeing fixed orientation when positioning the bar. Shell mill adaptors with a hydraulic spigot location were also featured alongside Gewefa's VDI hydraulic chuck range which feature a unique clamping tool holding system and are suited to both turning and boring applications offering the user a range of machining advantages.

The key to the clamping system's success is its high level of stability with anti-vibration features inherent within the hydraulic clamping mechanism producing not only quieter cutting performance and improved finish but also enabling significant increases in speeds and feeds to shorten machining times.

Insert life is significantly improved with 50 percent savings on inserts regularly achieved, resulting not just in cost savings but in reduced machine downtime.

Finally the Gewefa 'Securlok' toolholder was shown. This is a hydraulic chuck that, with the addition of a failsafe second mechanical side clamping mechanism, provides 100 percent tool shank and process security.

For general and heavy duty milling operations in titanium, composites and ISO S rated materials often used in airframe manufacture, Securlok withstands radial and axial forces on the cutting tool: forces that are likely to create conditions with the potential for the cutter to slip or pull out. It also offers guaranteed concentricity within 0.003 mm TIR maximum, while anti-vibration dampening ensures longer cutter life and is completely sealed to prevent swarf or coolant ingress.

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A wealth of innovations from GROB

The highlights of the GROB stand at AMB in Stuttgart included the GROB-WERKE G350 - Generation 2 5-axis universal machining centre with Heidenhain control system (16,000 min-1 spindle) and a new GROB-Pilot4M control panel, as well as a 5-axis G550 - Generation 1 universal machining centre with a Siemens control system (16,000 min-1 spindle), in addition to the GROB PSS-R10 rotary pallet storage system.

The G350 performed high-performance cutting of 16MnCrS5 steel, while the G550 was demonstrated interlinked and in automatic operation with the GROB pallet storage system. Its storage system includes workpieces from various industries. GROB also introduced its advanced GROB-NET4Industry software technology as an independent product in Stuttgart.

The latest developmental stage of the G-module series is the second generation of universal machines, featuring significantly improved dynamics, reduced idle and chip-to-chip time, as well as a new machine design and expanded tool magazine capacity. The trade fair also featured GROB's rotary pallet storage system for small and medium pallet systems, which expands the company's already extensive universal machine portfolio. This in-house development, with its compact construction, can be flexibly employed and is attractive due to its high practicality and functionality.

The new TM200 supplementary tool magazine is equally flexible. It can be used with both the G350 as well as the G550 for complex machining tasks and expands the tool capacity of the G350 - Generation 2 to a total of 311 tools. The TM200 works with an independent machine control system; tool management is taken over by the machining center itself. Since the mechanical, hydraulic and electrical interfaces are standard equipment on the machine, it is also possible to install the TM200 on-site as a retrofit to increase tool capacity.

"On the whole, AMB is the ideal platform for presenting new technologies and applications of GROB-WERKE", states GROB sales and marketing director Jochen Nahl. "With every trade show appearance, GROB-WERKE repeatedly demonstrates that it is more than ready to meet the extraordinary challenges of new technologies".

Additional GROB machines could be seen at GROB partner LMT Tools, namely the G350 – Generation 1, with Siemens control system and a 16,000 min-1 spindle as well as at SolidCAM GmbH, in this case the G350 - Generation 2 with Siemens control system and a 16,000 min-1 spindle.

90 Years of GROB-WERKE and GROB do Brazil

This year GROB-WERKE celebrates two major anniversaries: ninety years ago in May GROB-WERKE was founded in Munich, and sixty years ago GROB's first foreign plant was established in São Paulo, Brazil.

In 1926, Ernst Grob founded the Ernst Grob Werkzeug und Maschinenfabrik. Ernst Grob, a passionate pioneer in the field of mechanical engineering, led the enterprise for the next 26 years, until in 1952 his son Burkhart assumed sole managerial responsibility for the company that was still suffering from the effects of the war. To date GROB-WERKE remains a family-owned company, currently managed by the third generation of family members.

Dr Burkhart Grob set the course for successful growth of his company. In 1956 he opened the first foreign plant in São Paulo, Brazil, followed in 1968 by what became the parent plant in Mindelheim. 1991 saw the founding of the American plant in Bluffton, Ohio, and finally in 2012, production started in the plant in Dalian, China. Under the leadership of Dr. Burkhart Grob, the company grew to be one of the leading global providers of manufacturing lines for the automotive industry and their suppliers in the powertrain area, becoming a market leader in the engine/transmission machining segment.

In recent years, the company has especially experienced a unique growth phase. At the headquarters in Mindelheim alone 3,600 employees are at work. Since 2007 the plant site has practically doubled in size. Floor space was expanded by about 80,000 sqm. Construction is already underway for an additional hall with 38,000 sq m floor space. This summer, the new administrative building will be finished. In the past four years the company has made investments in excess of 300 million euros worldwide in its four production facilities and ten sales and service branches, with the majority of the funds going to Mindelheim.

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Pratt Burnerd 5-jaw chucking provides the answer for Gamet Bearings

When Gamet Bearings recently had a manufacturing headache, it automatically turned to its 600 Group sister company, Pratt Burnerd International, that designs and manufactures a wide range of manual and power chucking systems at its Heckmondwike, UK factory. Pratt Burnerd not only supplies standard products, but its huge knowledge and unrivalled expertise, developed from over 150 years workholding experience, comes into its own with highly specialised chucking solutions.

Gamet has been manufacturing super precision tapered roller bearings in Colchester, Essex for 60 years, which range in size from 25 mm to over 500 mm I/D, in single and double row configurations, to radial run-out tolerances as low as 0.5 microns (0.0005 mm).

Within Gamet's range of ultra-high precision bearings, there are a number of 'Thin Section' components that are prone to distortion when being held in place by conventional 3-jaw power chucking systems.

After consulting with Alan Jenkin, product manager at Pratt Burnerd International, a new special 5-jaw, 305 mm High Speed Quick Change Gripfast chuck was developed specifically for Gamet to eradicate this problem on these components.

This 5-jaw Gripfast chuck provides a significantly greater support area than a conventional 3-jaw chuck, being designed specifically to wrap-around a component far more effectively. In addition, the design ensures the non-opposing jaws on the 5-jaw model provide a more even pressure on the manufactured components' surface area than is possible with a 3-jaw alternative.

Alan Jenkin explains "Traditionally, chuck manufacturers supplied 6-jaw chucks to handle thin walled components, which technically gives over a 20 times better 'out-of-roundness' measurement, when compared to equivalent 3-jaw chucks. Pratt Burnerd, with the 5-jaw design have further developed this idea, as by having no opposing jaws, we have significantly improved this 'out-of-roundness' measurement, over and above even the 6 jaw alternative.

This concept has been fully proven as, since the chucks installation, Gamet have

benefited from greatly reduced distortion on thin section rings up to 330 mm diameter. Tony Tankard, Gamet's manufacturing director, explains "This has improved our production efficiency significantly by reducing material allowances for subsequent operations, reducing scrap and overall manufacturing costs, which ultimately improves the overall quality of the Gamet product. Naturally, being part of the 600 Group has given us access to specific expertise that has helped us operationally."

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New 5-axis machining centre from Hermle

Dynamic CNC machining centre for entry into 5-axis / 5-sided machining

Within the Hermle range of models, the C 250 is an entry-level model into the world of 5-axis and 5-sided machining. However, the "large" models are in no way inferior. Thanks to the large swivelling range of the workpieces in the working area, the utilisation of the complete traverse range and the large collision circle between the table side walls, the C 250 offers the largest working area relative to the installation area.

The C 250 is designed for daily use with maximum user-friendliness, thanks to pivotable control panel and minimum table distance from the operator and optimum loading height with option offloading by crane. When loading by crane, the spindle moves into the magazine and there is completely free access to the working area. This can be loaded without restriction from above to over the centre of the table.

5-axis milling thanks to the latest drive technology

Maximum precision is thanks to the Hermle

swivelling rotary table concept. The machining table has a large worm drive. On the A-axis you can directly access the gearwheel on the table housing. This enables quick and above all high-precision positioning of the workpieces without shaft torsion on the machining table. The table variants of the C 250 therefore stand for the highest quality and optimum use of material, from the cast housing to the installed gear motors.

High-tech tool spindles with collision protection

Like the swivelling rotary tables, the tool spindles are also completely manufactured in-house at the company's Gosheim site. The slimline tool spindles are constructed in two parts and can be replaced easily and quickly during servicing. Thanks to low interfering edges and collision protection bycompression sleeves, safety is given primary importance by maximum collision avoidance. Damage can be prevented in 50 percent of collisions.

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Increased speed and efficiency

30-taper machine slashes cycle times by up to 50 percent using the same speeds and feeds

Ilfracombe subcontract machinist, Richmond CNC has installed its first 30-taper vertical machining centre (VMC) to cope with a steep increase in medical and aerospace work. It is a twin-pallet Speedio R650X1, built by Brother in Japan, and has transformed the speed and efficiency with which parts are manufactured, according to the subcontractor's managing director, Gary Rich.

Supplied in May 2016 through sole UK agent Whitehouse Machine Tools, the machine joined three other VMCs and two horizontal machining centres (HMCs) on the shop floor, all 40-taper machines.

Gary Rich says: "As its name implies, the Speedio is billed as a fast machine. It executes 50 m/min rapid movements at the same time as automatic tool change and pallet change, so it is ready to cut the next component immediately it arrives in the machining area.

Gary Rich setting up the Brother Speedio R650X1 to produce a new batch of components

"I was expecting it to be faster than our existing plant, probably by around 20 percent, but we were flabbergasted by its speed when we put on the first job.

"It was a batch of 1,200 aluminium winch components. Each part came off the machine in half the time that it took the second fastest machine on our shop floor, a 40-taper, 14,000 rpm, twin-pallet HMC on which we multi-loaded the parts on a tombstone."

The R650X1 on the shop floor at Richmond CNC

The aspect that most surprised him was that, with a little tweaking, the same program was used in the Brother control, including identical spindle speeds and feed rates. The large cycle time saving was therefore entirely down to a reduction in idle times due to all machine movements being so much faster.

Another early job put onto the R650X1 was a stainless steel hydraulic manifold that is produced in 41 seconds, rather than 90 seconds on the HMC, representing a 54 percent saving.

However, the main reason for purchasing the 30-taper machine was a big increase in the number of aluminium components Richmond CNC was machining for a customer in the medical sector. There are around 50 part numbers and the components have been produced for the past five years at the Ilfracombe factory by multi-loading them on HMCs. Again, there is a big saving on the Brother machine, which has reduced cycle times by an average of one-third.

It is a similar story during manufacture of a range of components used in hydraulic oil and cabin air filtration systems for the aerospace industry, which accounts for around half of the subcontractor's turnover.

Gary Rich confirms: "These components are also produced between 30 and 40 percent faster on the Brother, despite more,

The machining area of the R650X1, showing the use of multiple fixtures so that one part comes off the machine complete per pallet change

shallower cuts being taken than on the HMC. It is all down to agility of the cutter around the machining area.

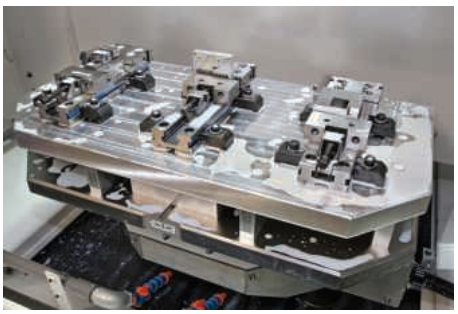
"The 30-taper machine is not only fast but accurate as well. For example, we regularly produce rails for a medical microscope to within ± 10 µm on some dimensions and 0.1 Ra surface finish.

"We just about got away with it on the HMC, producing around seven good parts out of 10. However, every component off the Brother machine is more accurate and well within tolerance."

Richmond CNC is a family-run, 15-employee business, established in 1977 by Jim Rich. It is now run by his son Gary Rich, who has been with the company for 35 years, and his wife Cindy. Their son Kai operates VMCs on the shop floor and daughter Cassandra works in the office.

Purchase of capital plant is meticulously researched. Gary Rich first considered whether a 30-taper machine would have enough power and rigidity to produce components efficiently, bearing in mind that much of the subcontractor's work involves steels, stainless steels and nickel alloys.

Having satisfied himself that modern machine tools in this category are strong



The second pallet ready to swing into the machining area

enough, he considered models from four potential suppliers. The Brother machine was selected, as it was deemed to be the most productive and best value for money. It was ordered with a 16,000 rpm spindle, 22-tool magazine, swarf conveyor and air filtration unit.

Unlike with other VMCs reviewed, the Brother twin pallet change system was supplied as standard. It is the manufacturer's proven Quick Table, which effectively provides two pallets in one by rotating about its centre. There is no pallet lift, speeding 180 degree swivelling to 3.4 seconds and sealing the structure against swarf and coolant. Other notable features of the R650X1 include linear axis travels of 650 x 400 x 305 mm with up to 30 m/min cutting feed in each, 200 kg maximum load per pallet, 150 milliseconds spindle start-up and stop, and 0.9 second tool-to-tool ATC. If Mr Gary Rich decides in the future to retrofit 4th-axis indexing units on the pallets, they will also position themselves along with the linear axes during simultaneous ATC and pallet change. Control is by Brother's own CNC-C00 with 12" colour LCD screen.

As a postscript, Gary Rich points out that his company's one OEM product is a super-high-quality chess set, comprising machined and polished stainless steel and bronze pieces plus a board made out of the same materials (think Harrods and Mappin & Webb). All pieces visit a CNC lathe as well as a machining centre and the Brother VMC will be ideal for efficiently carrying out the large amount of metal removal required on the complex pieces.

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Increased precision and efficiency

Renishaw neuromate® robot and neuroinspire™ software installation at King's College Hospital, London

Renishaw has announced that a neuromate stereotactic robot system and neuroinspire surgical planning software have been installed at one of London's largest and busiest teaching hospitals, King's College Hospital.

Mr Richard Selway and Mr Irfan Malik, consultant neurosurgeons at King's College Hospital, have already successfully used the systems for several stereoelectro-encephalography (stereo EEG) cases for epilepsy, since the installation in January 2016.

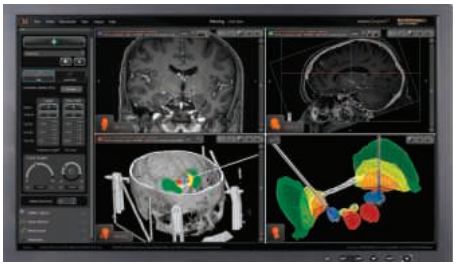
Richard Selway says: "We are delighted to be able to offer robot-assisted brain surgery to our patients at King's. The increased precision and efficiency of the machine allows fantastic accuracy when targeting the most sensitive areas of the brain. It is likely to revolutionise certain aspects of surgery, particularly for children with severe epilepsy or in the surgery of brain tumours."

Irfan Malik adds: "In the short time we have been using the robot we have seen

Renishaw neuromate® robot with neurolocate™ module

marked improvements in accuracy; something which is of course crucial in the field of brain surgery. This will allow safer surgery with quicker recovery for our patients."

Stuart Campbell, clinical sales and development manager for Renishaw's neurological products says: "We are very excited to have installed a neuromate system at one of the UK's largest teaching hospitals with a focus on neurosciences. The



neuroinspire™ surgical planning software

neuromate system will contribute greatly to the epilepsy programme, and Renishaw looks forward to working with King's College Hospital as it develops their procedures and services around the robot."

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Scheduling is the top function for Newmont's medical components

"If we were asked what is the most important part of our investment in the Javelin production control system, it would be to improve our scheduling, which is absolutely vital for us."

Those are the words of Ken Garwood, quality manager at precision gear specialist Newmont Engineering, which manufactures components for medical industry assemblies.

Listing lead screws, motor mountings, assembly clamps and calibration units amongst their wide range of medical components, he went on to explain that "Javelin allows us to capture information and report on everything we produce. This provides full traceability, which is an essential feature for the medical industry."

"It also gives all the information we need for capturing the manufacturing times of components, while providing KPIs to measure our business. It shows we're in control and allows Newmont to be highly competitive in the market place."

However, it regards the software's scheduling function as the most important for the company's manufacturing process.

"Everything revolves around it, so it's key to our business," explains Ken Garwood. "We generate a Crystal Report with pick lists from that module, which shows all timescales. Each process has between 10 and 30 operations, and everything is scheduled within the required timescale. Scheduling is the bane of any subcontractor's life, if it's not right nothing would get out of the door on time. But Javelin manages our complex scheduling, and thus minimises the conflict of priorities and production deadlines."

Newmont upgraded to Javelin from the software's Jobshop predecessor in 2015 and has been running Shop Floor Data Capture since January 2016. This cuts down considerably on administrative time, and keeps track of time recorded against every job. Tablets with barcode scanners have been installed in five of the main sections on the shopfloor: turning, milling, grinding, gear cutting and deburring.

"All the Works Orders now hold barcodes and shopfloor workers simply scan the barcode," continues Ken Garwood. He says the WO contains the sequence and layout of all work required to turn the raw material into a saleable component: "All routines and operations, along with the operations narrative describing exactly what needs to be done, are stored here."

Newmont is one of the few companies in the UK manufacturing precision gears to tight tolerances and is looking to Javelin and CADCAM system Alphacam to offer a more professional and controlled manufacturing service to the medical industry. With Alphacam driving a number of CNC machines, including a new Haas vertical mill, an Okuma milling machine, various Fadals, plus Okuma and Haas lathes, the company has been able to speed up both programming and cycle times.

CADCAM programmer Owen Lambert says: "We get a pack with the drawing and specification, then generate a drawing in Alphacam. From there we pick the specific cutting tools and create toolpaths, before simulating it to ensure the component can be cut accurately from the billet with no collisions."

Alphacam programs the gear blanks on the mills and lathes before specialist machines carry out the gear cutting process. It also frequently generates cycle times from Alphacam to assist with producing accurate quotations, which Ken Garwood says fits in seamlessly with Javelin:

"We use Javelin's Estimating and Quotations function for quick estimates to get a rough ballpark figure along with full formal quotations. With the history of our parts being stored in Javelin we can see how long it takes to make both that specific component, and previous similar parts. Coupling this with Alphacam showing us programming and cycle times helps us produce an accurate figure for the customer."

This also ties in at a later stage of the process with Javelin's Costing function, which he says is particularly valuable, as costing is one of their most difficult aspects to capture. This is because they don't have individual 'machine minders.'

"Our shopfloor workers move from one machine to another, even from one section to another. If a cycle takes five minutes the operator will move on to do something on another machine, so the task of getting an accurate overall total cost of a job, taking manpower and workcentre costs into account, is a real challenge and would be impossible without Javelin.

"If the cost is too high we won't get the job, and if it's too low we'll make a loss. Javelin ensures each job is accurately costed."

Both Javelin and Alphacam are provided by Vero Software and Newmont managing director, Rob Davies says they had reached a stage where the number of Jobshop licences was inadequate for the staff who needed to use it. They looked at a number of ERP/MRP systems before deciding to upgrade to Javelin.

"Many systems on the market just don't have the flexibility to do what we need. A customer can give us a blanket order for 150

items but wants ten of them each month. At the other end of the scale we can get a gear-cutting-only job, but it's needed tomorrow. Javelin handles all that, right through the entire process from quotations to shipping the product, and billing."

To further demonstrate its flexibility, he cites a customer in the medical industry that requires components to be dispatched to two locations, one in the UK and one overseas: "We don't manufacture the complete medical device, we make individual components in the ISO 9001 certification category. For one customer we send certain components that have the same part number with different prices in two different currencies, to two different locations, for the final assembly of the finished product."

Overall, he says flexibility means they can continue to compete in their niche market while looking to expand and diversify. The company, which began in 1955, invested £2 m in 2013 with a move to a 12,000 sq.ft premises in Isleworth, London, and currently operates with a total of 32 staff.

Headquartered in England, Vero Software designs, develops, and supplies CADCAM and CAE software radically enhancing the

From left to right: Rob Davies, Ken Garwood and Owen Lambert

efficiency of design and manufacturing processes, providing its customers with exceptional value through high productivity gains and significantly reducing time to market. The company's world-renowned brands include Alphacam, Cabinet Vision, Edgecam, Machining STRATEGIST, PEPS, Radan, SMIRT, SURFCAM, WorkNC and VISI, along with the production control MRP system Javelin. 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 in which they are deployed.

Vero has direct offices in the UK, Germany, Italy, France, Japan, USA, Brazil, Netherlands, China, South Korea, Spain and India supplying products to more than 45 countries through its wholly owned subsidiaries and reseller network.

Vero is part of Hexagon, a leading global provider of information technologies that drive quality and productivity across geospatial and industrial enterprise applications.

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Volumetric adhesive dispensing helps ensure integrity of life-saving medical device

BPR Medical, based in Mansfield, Notts, is a perfect example of a small British company which combines expertise, creativity and entrepreneurialism to design, develop and manufacture world-beating products for export worldwide and use in the United Kingdom, for which it was rewarded in 2012 with a Queen's Award for Enterprise: Innovation. As with any manufacturing company, the success of its products depends to a considerable degree on assembly methods.

The company's latest success story is the Bidirectional Firesafe™ Cannula Valve, used for in-home medical oxygen supplies to extinguish fires which can occur in the line between the concentrator and the user's mask or nasal cannula. Such fires can occur if the line comes into contact with ambient flame, such as a candle, or more commonly if the patient is a smoker.

BPR's unique inline Bidirectional Firesafe Cannula Valve extinguishes the fire by cutting off the oxygen supply. It is a development of an existing, unidirectional design and acts as a thermal fuse whereby the oxygen supply is cut off when a fusible component softens as a result of the heat from an approaching fire in the oxygen delivery tube. Integrity of operation is vital and could literally represent the difference between life and death.

When BPR had chosen a two-part epoxy to bond both halves of the valve's body, the next task was to find a dispensing solution that would assure deposition of a precise, repeatable volume of the adhesive, metered and mixed in the correct ratio, on to a cylindrical assembly. The resulting bond integrity would help ensure conformance for CE marking under European Medical Device Directive, as well as BPR's unerring commitment to quality.

Having determined that volumetric technology would provide the best solution, BPR contacted Intertronics and two other vendors to arrange equipment demonstrations. Trials using the selected epoxy were conducted in a wide ambient temperature range, and rigorous pull, flexural and other testing of the assembled valve, revealed that the preeflow eco-DUO precision metering, mixing and dispensing system suggested by Intertronics was the correct solution. It offers ±1percent dosing accuracy, >99 percent repeatability and can dispense volume flows of 0.2 to 32 ml per minute, with a minimum volume of 0.01 ml. The preeflow positive displacement technology means that the volume dispensed is not affected by viscosity changes in the material.

For further information please see application specific video at **https://youtube/_xkT2DNxCAo**

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5-axis machining slashes production time by 75 percent

Toolmaking and subcontract CNC machining specialist DSM-NE, Newton Aycliffe, has increased its stock of Hurco machining centres to seven, including a large 3-axis model and an even bigger 5-axis machine, the company's first, which was installed in October last year.

One job in particular has benefited enormously from its arrival. A tool steel (P20) die nest, part of a progression moulding machine, initially took 75 hours to machine in six separate set-ups on a Hurco 3-axis machining centre. According to DSM-NE's technical director, Andrew Wilson, the cycle would have reduced to 50 hours after process optimisation. However, the same job is completed on the Hurco VMX60SRTi 5-axis machine in two operations, taking five hours and eight hours respectively. This is around one-quarter of the best possible time on a 3-axis machine and has turned what was originally a loss-making contract into profit.

Andrew Wilson explains: "We looked first at fitting a 2-axis compound rotary table to a 3-axis machine because nobody here had experience of operating a full 5-axis machining centre.

"However, we saw the VMX60SRTi demonstrated at a Hurco open house in High Wycombe last year and were impressed at how easy it is to program.

"We were familiar with the 2D programming capability of Hurco's WinMAX conversational CNC system, but it can also create quite complex 3D / 5-axis routines involving two positional axes, which takes only a few days to master."

For fully interpolative 5-axis cycles, DSM-NE employs two seats of Delcam's Powermill, which are also used for producing more complex 3-axis routines. However, half of all programs at Newton Aycliffe are generated on the shop floor at the Hurco WinMAX controls.

They allow intuitive, menu-driven data input via a touch screen, with a second screen on the 5-axis machine for simultaneously displaying a graphic of the part as it is built up. All controls accept DXF drawing files directly from the subcontractor's CAD system, lightening the load on the CAM department. WinMAX can easily take over programming of mould plates, for example. Andrew Wilson points out that with most other control systems, this would not be possible. DSM-NE's business is divided into three parts: subcontract CNC machining; manufacture and repair of plastic injection moulds and compression moulds, particularly for the automotive industry; injection moulding of plastic parts mainly for the automotive, medical and agricultural sectors.

The subcontract milling, turning and wire erosion side of the business has grown steadily since 2011 to account for one-third of turnover. This is largely down to the success of one of the subcontractor's OEM customers specialising in LED lighting, for which DSM-NE is sole supplier of machined aluminium housings and heat sinks. Other contract machining on site involves producing ancillary parts for customers' moulding machines. Offshore work normally accounts for a reasonable proportion of turnover, although that sector is subdued at present.

The broad base of the firm's current activities stems from the outflow of toolmaking mainly to the Far East during the last decade. It is true that significant income was retained by correcting poorly made imported tools, work that sometimes cost half as much as the originals, but it was clear that this could not be relied upon long-term.

Shortly after the company moved into its current premises on the Aycliffe Business Park 20 years ago, the first Hurco vertical machining centre (VMC) was purchased, a VM1, which replaced a manual-tool-change milling machine from the same manufacturer. A larger BMC 4020 VMC followed quickly.

The latter machine ran reliably for 22 years and was eventually replaced by a VM2 during 2008. In the same year, a Hurco TM8 turning machine was installed, the first CNC lathe on site, to streamline the manufacture of parts for compression moulds and also to open up general subcontract machining opportunities. Subsequently, in the run-up to purchasing the two big VMX machines, DSM-NE added three Hurco VM20s in as many years to cope with increasing volumes of LED lighting components.

Looking to the future, Andrew Wilson sees growth opportunities in full 5-axis machining. The VMX60SRTi has already taken over three-axis work from other vertical machining centres, which it completes more economically using 3+1 and 3+2-axis cycles in fewer set-ups.

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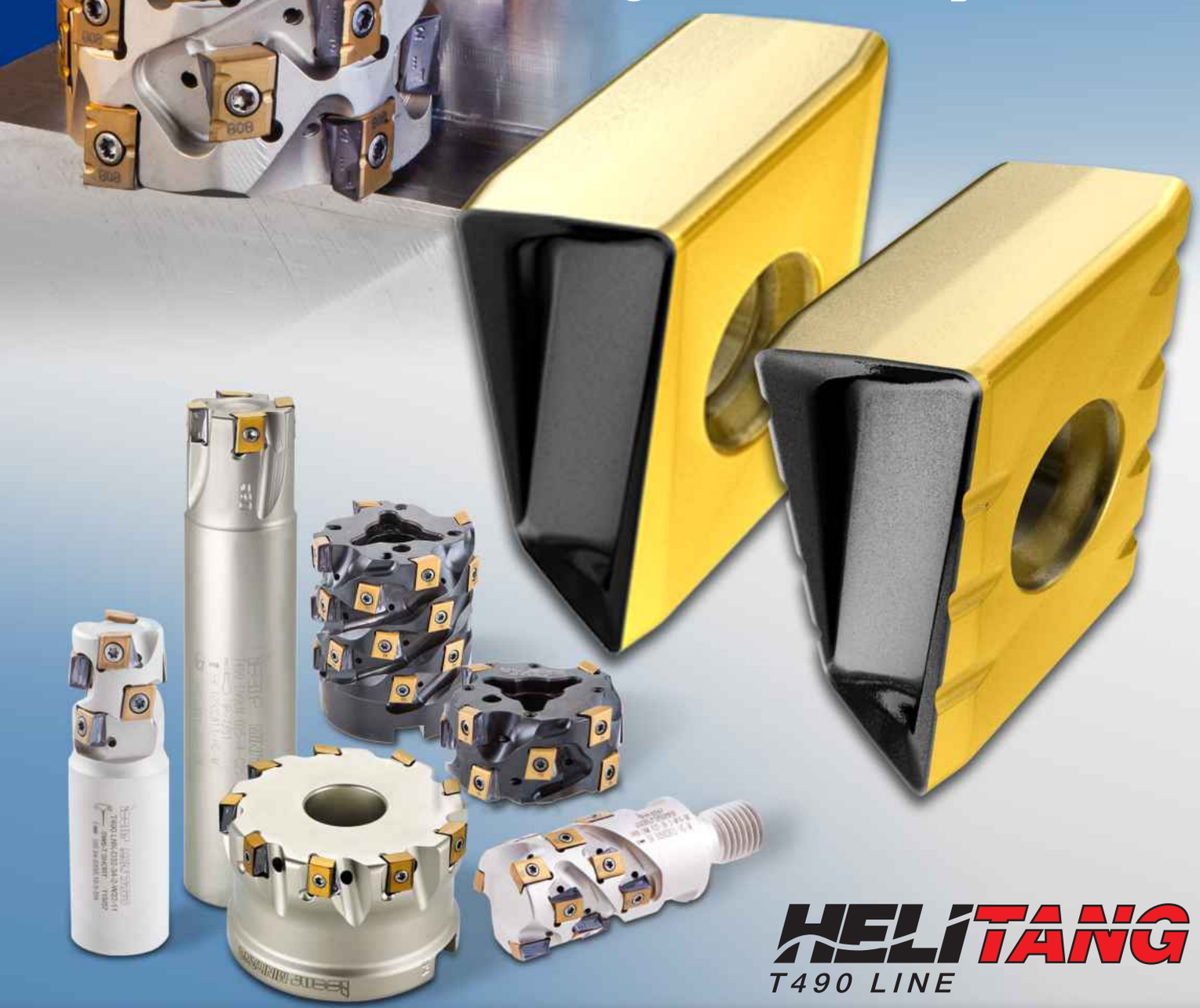

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14-edge face mill boosts output and reduces part costs

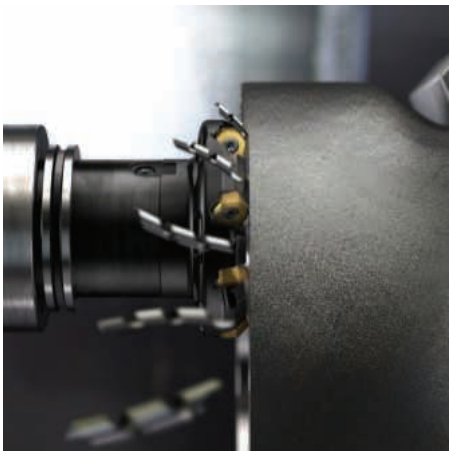
There are many trends arising in large batch machining that present production engineers, in sectors such as automotive, with numerous opportunities to make competitive gains, including greater demand for near-net-shape forged components and flexible machines replacing dedicated transfer lines. To help maximise the yield from these shifts in approach, as well as satisfy the need to reduce component costs, new milling cutter innovations are pivotal. With this in mind, Sandvik Coromant has introduced its first double-sided, multi-edged face mill to offer cutter a positive cutting action.

With a total of 14 true cutting edges, CoroMill® 745 is set to offer a good solution in applications where productive face milling, low cutting forces and low cost per component are prerequisites. Among the many advanced features of this innovative cutter is its unconventional insert inclination angle, which is designed to provide a large positive angle on the main cutting edge, leading to excellent chip formation, a smooth, soft sound and low cutting forces.

Think positive

Of course, double-sided inserts have been around for a while, but their concept often produces higher cutting forces than single-sided alternatives. As a result, Sandvik Coromant has set about developing a double-sided, multi-edge cutter that is able to offer both light cutting forces and favourable chip formation.

Advantages are also obtained when used on flexible transfer lines or when maximum tool utilisation is important. Here, this productive and versatile face milling cutter is likely to be heavily utilised thanks to its ability to offer increased tool life at a lower cost per component. What's more, it is set to boost the options for engineers requiring lower cutting forces in the machining process, perhaps when using low-powered machines, for example, or where the setup is not particularly robust.



Better cost per component

CoroMill 745 has been developed for roughing to semi-finishing operations on steel and cast iron workpieces (ISO P and ISO K materials). The upshot of deploying this double-sided, multi-edge cutter is that production economy and cost-per-component can be improved considerably. In essence, the positive cutting action mirrors that of a single-sided concept face mill, but with the new cutter there are cutting edges on both sides of the insert. With 14 cutting edges available, and face milling operations up to 5.2 mm, maximum depth of cut is expected to benefit.

Although the general engineering segment will benefit from the high productivity, reliable performance, and low cost per component introduced by the innovative cutting action and strong inserts, manufacturers in industries where automated production is more prevalent can also anticipate significant advantages. For example, those relying on unmanned production will be able to leverage the cutter's high security and predictable performance.

CoroMill 745 is able to offer process and cost improvements on familiar automotive parts that include engine blocks, connection rods, universal joints, gearboxes and rear axles, for both on- and off-highway vehicles. This is because reliability was a central issue at the heart of the cutter's development. Secure insert positioning, for example, is a prerequisite for many machine shops that demand trouble-free, dependable machining. Furthermore, CoroMill 745 inserts are purposely thick and secure with strong, sharp edges for high precision and a robust cutting process, while the precision-ground geometries are designed to avoid workpiece frittering in cast iron, which can often occur at the cutter exit side of the component.

Heptagonal inserts

The insert position and heptagonal (seven-cornered) insert shape make for easy replacement and indexing in line with modern timesaving and 'green light' machining demands. Indexing, in fact, can be performed without operators having to remove their gloves. When replacing inserts, operators are able to keep them in the pocket when mounting due to the insert design and its position in the tip seat. In effect, the insert position can be secured before tightening the large M7 screw (deployed for extra process reliability). As a further benefit, due to the large screw hole, less powder is used in the insert manufacturing process at Sandvik Coromant, thus benefiting the environment.

Another useful feature for production engineers is the availability of a unique differential pitch (MD pitch) up to 160 mm (6") diameter for roughing operations where reduced vibration is essential. This medium pitch MD design was developed using advanced genetic algorithms to reduce vibration when machining components that are sensitive to resonance or reverberation. Here, the insert position is compensated radially for an even chip load. Sandvik Coromant specifically designed MD as a problem solver to the issue of vibration, thus providing a good alternative to pitches such as M for general applications and the close H pitch for higher productivity.

In terms of insert geometries, Sandvik Coromant is initially introducing the E-M30 and E-M50 types for CoroMill 745, where E-M30 is first choice for steel and cast iron workpieces, as well as in vibration-sensitive operations and when less power consumption is required. Conversely, E-M50 is a tougher geometry for more demanding operations or when higher productivity is needed. E-M50 should also be selected for grey cast iron (GCI) workpieces found commonly in numerous automotive applications, as well as in nodular cast iron (NCI) machining. Ultimately these precision geometries, in combination with the tool's inherent light cutting action, can help lower power consumption and reduce noise for the operator, thus promoting a better working environment.

Company-wide benefits

Available as a standard stocked cutter, CoroMill 745 is set to transform the landscape of face milling for the benefit of the entire company. Arbor, Coromant Capto® and CIS arbor coupling variants can be selected, with through-coolant in cutters up to 160 mm (6") diameter. All CoroMill 745 milling cutter bodies offer an entering angle of 42°, although among future planned additions to the range is a high-feed variant featuring a 25° lead angle, which will offer feed rates of up to 0.7 mm/tooth (0.028"/tooth).

Part of global industrial engineering group Sandvik, Sandvik Coromant is at the forefront of manufacturing tools, machining solutions and knowledge that drive industry standards and innovations demanded by the metalworking industry now and into the next industrial era. Educational support, extensive R&D investment and strong customer partnerships ensure the development of machining technologies that change, lead and drive the future of manufacturing. Sandvik Coromant owns over 3,100 patents worldwide, employs over 8,500 staff, and is represented in 150 countries.

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Stepping down

Kennametal's successful line of Mill 4 indexable milling cutters gains an important new member

The issue with many square shoulder indexable milling cutters is the stair-step effect they leave on workpiece walls. Two years ago, Kennametal introduced a double-sided 90° milling platform that eliminates this issue while providing manufacturers a cost-effective machining solution to boot. The Mill 4™ series of indexable shoulder mills is now a proven performer, offering high metal removal rates, excellent tool life, and surface finish that frequently eliminates semi-finishing operations, and in some cases, can even be used as a finishing cutter, reducing reliance on expensive solid carbide end mills.

Kennametal is expanding its game-changing Mill 4 family with a new cutting tool, the Mill 4-11. Designed for smaller machining centres, the Mill 4-11 accommodates 40-taper CAT and BT, HSK50, and similarly-sized spindles. Due to its free-cutting capabilities, it is ideal for successful metal removal in less-than-rigid setups and on light-duty machine tools, multitaskers and live-tool lathes.

With a unique insert geometry and extremely accurate pocket positioning, the Mill 4-11 offers the free cutting action of a single-sided insert at the low cost per edge of a double-sided. The Mill 4-11 is also available in a variety of mounting options, with cutter diameters ranging from 16 mm (0.625 in) to 80 mm (3.000 in).

The Mill 4-11 enjoys the same strong insert design as its larger cousin, the Mill 4-15, but is 24 percent shorter and 34 percent narrower. With an 11 mm (0.433 in) maximum cut length, this addresses the needs of those job shops and manufacturers producing smaller parts and part features while still offering high metal removal rates and excellent tool life.

Tim Marshall, senior global product manager for indexable milling, says: "What's unique about it is the step down. Because of the insert design and precision, there's very little mismatch between passes, for example, using a 63 mm diameter tool (2.48 in) and our SGE geometry, we were able to achieve less than 8 µm (0.00003 in) deviation between successive 6 mm (0.236 in) deep passes. One of our largest automotive customers completely eliminated a finishing operation on a steel alloy housing because of it, saving them many thousands of dollars annually."

Scott Etling, director of global product management for indexable milling, says: "KCPM40 is our go-to grade for most steel applications and our newest KCSM40 is our first choice in aerospace and medical machining. Of course we have cast iron and aluminum grades, and a variety of edge preps and corner radii up to 1.6 mm (0.062 in) as well. We're very proud of this new offering."

The Mill 4-11 is also easy to use. Each insert is securely locked in place with a single M3 screw, and marked with a series of dimples to indicate geometry and insert style. It is recommended that customers keep the tool clean and the screws lubricated with a small amount of grease, and it's a good idea to mount all of the inserts with the dimples or markings facing the same direction.

Tim Marshall says: "This improves accuracy during indexing, no matter whose cutting tools you're using."

The cutter has uneven pocket spacing designed to break up machine harmonics and reduce chatter. Because of its complex insert geometry and positive placement in the pocket, it has an effective radial rake angle between 1° to 11°, depending on the cutter diameter, and an axial rake angle of 3°, this despite the Mill 4-11's double-sided design.

When taking cuts up to approximately 6.5 mm (0.255 in) axial engagement, the cutter is essentially "stepless", although Tim Marshall believes cuts up to 11 mm deep (0.433 in) are possible while still maintaining square, smooth walls. Best of all, it removes material quickly.

Tim Marshall concludes: "We've performed extensive testing. Time and again we beat the competition, in some cases by 35 percent greater metal removal rates and 40 percent or longer tool life. It's quite simply a great addition to our portfolio."

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MEGA Perfect Grip milling chuck eliminates pullout for manufacturers

As the new UK reseller of the KAISER Precision Tooling product range, Industrial Tooling Corporation (ITC) has now announced the arrival of the new MEGA Perfect Grip. This heavy duty milling chuck for heat resistant super alloys from KAISER, eliminates the cutting tool pullout effect when machining under heavy torque loads.

For manufacturers using milling chucks in high speed and high feed machining applications with heat resistant alloys, pullout is a major issue. For manufacturers in the aerospace, medical, oil & gas and motorsport sectors there is a need for guaranteed security against pullout. ITC delivers this with the new MEGA Perfect Grip that ensures there is no costly damage to parts or delays in the manufacturing processes.

The new KAISER MEGA Perfect Grip combines the cutting performance of heavy-duty milling chucks with the security against pullout of solid side lock tool holders. It provides high accuracy and fully concentric clamping. A unique lock mechanism developed by KAISER uses a key grip to prevent slip and pullout of the tool, even during heavy cutting. The key grip engages in the chuck body's groove and a spring maintains constant axial preload between the cutter and the internal groove. The key grip remains fixed so there is no slip even under high torque.

The key grip accepts standard Weldon flat milling cutters and no special grinding of the milling cutter is required. The grip grooves provide channels for high volume coolant to reach the cutter, which is required when milling heat resistant alloys to dissipate heat and to remove chips efficiently. Whatever the application, KAISER's MEGA Perfect Grip is simple to handle, and provides secure clamping with rigidity close to that of an integral cutter.

ITC's managing director, Peter Graves says: "This new range of milling chucks is the perfect complement to the ITC line of high performance cutting tools. If customers implement this new system, there is little doubt that the rigidity, performance and elimination of 'pullout' will enable our cutting tools to exceed their existing performance levels for our end users."

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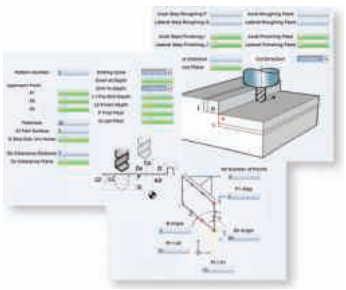
Advanced CNC solution for precision milling machines

NUM has launched an advanced control solution for CNC milling machines that features a highly intuitive conversational style user interface. Known as NUMmill, the CNC hardware and software provides a fully scalable control system and is supplied as a complete off-the-shelf package.

NUMmill is designed specifically for CNC milling machine manufacturers and control retrofitters. It offers an extensive suite of canned cycles, ranging from simple centre drilling, boring and threading to pocket cycles and complex profile milling cycles. All with 3D simulation for pre-process verification. The package is suitable for a wide range of precision milling applications in markets as diverse as metal cutting, woodworking, plastic, and high precision machining.

Based on NUM's Flexium+ modular CNC platform, NUMmill is typically configured with three or four linear axes and a single rotary axis, though it easily scales to suit any size and type of milling machine application. All motorised axes are equipped with high performance brushless servo motors,



controlled by NUM's latest-generation NUMDrive X digital servo drives. The NUMmill software features an exceptionally easy to understand graphical user interface which employs an interactive, conversational style dialogue to radically simplify machine operation. In fact, it is so simple to use that end-users can operate machines without any prior knowledge of ISO code programming techniques.

NUMmill Windows®-based software provides graphical shop floor programming screens that depict the tool, the workpiece and all associated set up data in a concise and unambiguous manner. The operator is prompted to fill in the appropriate data fields presented by the human-machine interface (HMI), after which the machine control program is generated entirely automatically and then stored, ready for execution. online help files and step-by-step video tutorials are included for ease of operation. This conversational style programming helps to save considerable development time, as well as significantly reducing the learning curve for new operators.

NUMmill is supplied as a complete, ready-to-run package that includes the Flexium+ CNC system, software, and a 19-inch touch-sensitive machine control panel, together with all necessary drives and motors. The system is also equipped with NUM's MTConnect interface, which simplifies the integration of CNC machine tools with third party manufacturing software.

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Fourth generation takes on new challenges

French & Son is a household name in Heathfield, Sussex. For over three generations it has served the local community with garage and taxi services. While these businesses continue to thrive, fourth generation Charlie French is looking in a different direction to keep the family business expanding, making full use of his motorsport connections.

Charlie's involvement with motorsport, including assisting in the pits as a mechanic for some Rally Cross teams, as well as racing his own bright green Ford Escort MK2 at track days led him away from the family businesses to work for engine builder and British Rallycross champion Julian Godfrey, whose engineering company is just up the road from French & Son Engineering. After eight years with Julian, Charlie had become familiar with the operation of the XYZ machines used so, with the support of his father Stuart, decided to set up his own manufacturing business.

Initially focussing on supplying aftermarket parts for car and motorcycle enthusiasts, French & Son Engineering took space in a local industrial unit and invested in an XYZ 710 VMC vertical machining centre. That was in February 2016. Since then the reputation of Charlie French and his ability to problem solve and add value to existing components, has brought him to the attention of several businesses who are putting work his way. Evidence of this is the work in progress board in the office, which is looking busy. Stuart French says: "We saw an opportunity through Charlie's racing

activities to create a small business based around motorsport where we could provide a fast response to people who needed parts after a race weekend. This quickly developed as word spread and we are now not only producing one-off replacement parts, but also manufacturing batch quantities for customers, one of which has committed to a sole machining agreement with us."

The choice of XYZ Machine Tools for French & Son's move into machining was influenced by Charlie's experience with Julian Godfrey. In terms of experience Charlie is virtually self-taught in both CADCAM and machine operation. Up until purchasing the XYZ 710 VMC he had received no formal training and even now has only taken two of his allocated training days from XYZ on the new machine. The XYZ VMC is central to the XYZ VMC range and provides impressive capability at a very competitive price. As standard it is equipped with a 20 hp, 8,000 revs/min, BT40 spindle axis travels of 710 x 450 x 500 mm, with performance enhanced through use of a 4,000 kg solid ribbed casting in its construction.

Stuart French says: "We knew we had to hit the ground running when we set up this business, so the choice to go with XYZ was an obvious one due to my familiarity with the machine and control system and their ease of use. To start with we had looked into buying a used machine, but the cost difference between what was on offer and a new machine that would come with warranty and the support of XYZ made the choice to buy new an obvious one to take.''

Buying a new machine has had its benefits, with Charlie calling on the expertise of XYZ's applications team as he pushes the limits of the machine's capabilities, he has already machined parts for a prestigious automotive customer that are larger than the machine envelope through ingenious engineering. Only six months into the new enterprise the future looks good for the next generation of French & Son, with talk already turning to a relocation to larger premises, employing an additional machine setter operator and plans afoot for investment in more machining capacity in the form of an XYZ lathe and the retrofitting of a fourth axis capability to the XYZ 710 VMC.

Charlie French concludes: "We know we have a long way to go, but our plans are to achieve more in the next 12 to 18 months in order to allow us to carry out our expansion plan. In addition, we hope to develop our own product range by enhancing existing aftermarket motorsport parts, developing them to improve their performance and longevity for customers."

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Major machining centre introductions from Hardinge

The AMB exhibition saw the European debuts of two major new product ranges from Hardinge Inc., both of which feature significant design and manufacturing innovations.

The new developments are the Talent P high performance turning centres and the Bridgeport XT travelling beam 5-axis and five face vertical machining centres.

Both ranges have been developed by Hardinge using the Global Engineering footprint which extends across all continents accessing years of design experience and the manufacturing ability to produce industry leading products. This philosophy, combined with the Six Sigma program within the Hardinge Group, ensures the latest complex products are produced to the same high quality across all of its operations, worldwide.

The Hardinge Talent 42 with conveyor

The Talent series machines currently offer two structures (for short and standard lengths) built on a robust one-piece cast iron base with heavy duty roller linear guideways and ball screws. As standard the machines are supplied with ANSI configured collet ready spindles available in a choice of 42 or 51 mm capacities. There is also a collet ready sub-spindle with a 42 mm through hole capacity.

Other standard features of Talent machines include through tool and headwall air/coolant for both main interfaces and a chip conveyor and bar feed interface. The standard controls are Fanuc OiTF and Siemens 828D.

The Bridgeport XT is the first milling product realised through global engineering and fully complies with the latest ISO Standard 16090-Pt.1 with Functional Safety and the design adopts a travelling beam structure resulting in exceptional geometric accuracy. This design incorporates the three linear axes with the cutting tool combined with the rotary and tilt axis table supporting the workpiece.

The innovative travelling beam design represents the first of a new generation of 5-axis machining centres from Hardinge. A large capacity Ø 630mm trunnion table with capacity of 350 kg, coupled with 900 mm swing diameter extends the range of Bridgeport 5-axis solutions. The design and use of twin drive tilt axis maximises the drive stiffness and resulting in high precision.

Thermal distortion effects are minimised by chilled spindles, cooling of ball nuts and end bearings in all linear axes, optimising machining accuracy. Heidenhain TNC640FS and Siemens 840Dsl SI controls with 19" operator screens provide highly optimised 5 axis motion and for 5 face operation both Heidenhain TNC620 and Siemens 828D are incorporated.

John McTernan, managing director, European sales & marketing for Hardinge Inc. comments: "These are genuinely ground breaking machines which exemplify our commitment to producing the highest quality machines for worldwide markets which are in the tradition of Hardinge and Bridgeport.

The Hardinge XT 5-axis

"Hardinge has assembled a global design team based in the USA, the UK and Taiwan and they has addressed many fundamental aspects of design criteria to create these new machine ranges. The result will be families of machines making use of the economies of scale by standardising elements of the construction to create highly competent performance alongside competitive pricing."

Both machines are now fully operational at the Engineering Technology Group Permanent Trade Show at Southam, Warwickshire.

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The SMART choice

Mills CNC's SMART options warranties on Doosan high-performance, multi-tasking machines provide customers with five years' trouble-free machining and additional peace of mind.

Mills CNC, the exclusive distributor of Doosan machine tools in the UK and Ireland, has announced that, from October 2016, any customer investing in a new SMX-series mill-turn machine and/or a new VCF850 5AX 5-axis machining centre, will have their new machine automatically covered by a Mills CNC SMART options five year warranty.

The SMART options five year warranty provides manufacturers with trouble-free machining and extra confidence about the machine's current and future performance.

Kevin Gilbert, Mills CNC's managing director explains: "SMART options warranties on new Doosan SMX-series and VCF850 machining centres make these machines even more attractive to manufacturers, and help lower the cost of ownership.

"All Doosan multi-tasking machines have been designed with style and substance in mind – and are tested to the highest standards of quality, reliability and durability. So, although you're covered by our five year SMART options warranty, it's more than likely that you'll never have to use it."

The new SMART warranties are comprehensive and include: breakdown cover including parts and labour costs; damage caused by programming errors and collisions; machine tool faults that may develop over the five year SMART option warranty period.

Furthermore, any warranty work undertaken during the five years will be carried out by Mills CNC's highly-qualified service engineers, and any replacement parts required will be a guaranteed, genuine OE parts supplied from Mills' parts operation in Leamington.

Kevin Gilbert concludes: "Underpinning the SMART options warranties on new SMX and VCF machines is a Mills CNC five year service plan which guarantees one machine tool service per year as well as the supply of a five year spare parts service kit that is replaced or replenished every year.''

Mills CNC is highly-regarded and respected in the machine tool market and across all the manufacturing sectors it serves, such as aerospace and defence power generation, motorsport, oil & gas, medical, automotive and general precision component manufacture, to name but a few.

Its reputation is built on the quality, reliability and performance of the Doosan machine tools it sells. These machines include the iconic Puma and Lynx lathe brands, the equally popular and successful DNM and Mynx vertical machining centres, and DBC horizontal borers.

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New range of wire EDM machines

Now available from its exclusive UK and Eire agent, Warwick Machine Tools, the new range of ONA AV wire EDM machines is part of the Spanish company's strategic plan to improve current product competitiveness with the introduction of high performance 'Premium' machines that was initially established with the recent launch of the highly capable QX die sink CNC EDM range.

A comprehensive range of ONA AV models are available. Two are compact machines: the ONA AV25 model with axis travels of 400 x 300 x 250 mm in X, Y and Z respectively, and the larger ONA AV35 model with travels of 600 mm in X, and 400 mm in Y and Z. Both models have U-V travels of 120 by 120 mm. Designed to be extraordinarily compact the new machine layout reduced installed floorspace by around 20 percent compared to existing models of similar dimensions.

Using a modular design concept, the large-scale AV machines are designed for wire cutting bulky components. The range starts with the impressively quick ONA AV60, with cutting speeds up to 450 mm²/min. It has axis travels of 800 mm in X and 600 mm in Y, while the Z-axis can be specified as 500, 600, 700 or 800 mm to accommodate the workpiece that can weigh up to an impressive 5,000 kg. Next up is the AV80, able to take the same weight on the worktable it extends the axes to 1,000 mm in X, 600, 800 or 1,000 mm in Y with the same Z-axis range options as the AV60.

Both the AV100 and AV130 can accept loads up to 10,000 kg on the worktable and can be specified in a wide range of configurations. The AV100 has travels of 1,500 mm in X, 1,000 or 1,300 mm in Y and 600, 700 or 800 mm in Z. Extending the X-axis to 2,000 mm the other two axes of the AV130 are available with the same optional travels as the AV100. All four large machine tools feature U and V axis travels of 500 by 500 mm and a maximum 30° taper cut capability.

For ease of operation, ONA has developed a new CNC with CADCAM for the AV range that exceeds the demands of the most advanced programmer and at the same time offers an extremely simple, user-friendly interface. The CNC makes it possible to control up to eight axes simultaneously, has CADCAM incorporated and boasts a 23 in touchscreen monitor. A 3D viewer graphically displays the workpiece, the cutting position and wire path, while 3D setup with optional touch probing is also supported.

A new digital generator that monitors and uses digital technology to tightly control the discharge process can deliver cutting performance and surface finish benefits for the new AV range. In single pass precision cutting the enhancements in performance of AV machines compared to previous ONA and other wire EDM machines sees an increase of cutting speed up to 40 percent while improving precision by 20 percent, a vertical precision of 10 µm per side is achieved even at elevated cutting speeds.

A new superfine-finishing module achieves extremely fine finishing in the order of 0.1 µm Ra in hard metals and 0.12 µm Ra in carbon steel. So, for many applications the previous methodology of roughing and final trim cutting can be combined to achieve geometric tolerance and finish, thereby increasing efficiency.

Improved precision and safety levels are offered as the AV range incorporates new corner and profile control systems, linear rulers with a resolution of 0.1 µm and an exclusive protection system able to detect impacts of just 0.8 kg (8 N).

AV machines feature a new design wire threading system with enhanced functions, such as rethreading while submerged in a cut gap on a workpiece up to 150 mm thick. Hole search during the threading operation is another key function. The machine searches, where necessary, up to 10 successive threading attempts on a circular trajectory around a predetermined point. Automated wire threading with thin wires of just 0.07 mm diameter can be achieved.

Environmental considerations are also prominent factors for customers considering investment in high performance manufacturing equipment. ONA has a

longstanding history in this field, including the designing and fitting of the first 100 percent ecological filter for wire EDM machines (patented in 1993) and the implementation of an ISO14001-certified environmental management system in 2001. The new AV machines continue this tradition with a new advanced energy-management system that reduces consumption by up to 30 percent during the cutting process, as well as reduced wire consumption thanks to new EcoCutting technologies.

Established in 1978, Warwick Machine Tools Ltd is the exclusive distributor of ONA EDM products in the UK and Ireland. A range of ONA wire-cut and die sink EDM machines are on display at its facilities in Kenilworth.

In October 2012, Warwick Machine Tools became the UK and Ireland agent for an exciting new range of EDM Wire Cut machine manufactured by Excetek Technologies. With demonstration machines available at the recently refurbished facilities.

The company seeks to create partnerships with clients to provide a bespoke tailored Wire and Die Sink EDM technology solution which best suits their needs.

This is also backed by a cost of ownership model that provides increased performance, productivity and maximising production capability while reducing operating costs. Warwick Machine Tools also offers a full after sales service and support programme which is backed by its own factory trained engineers and a comprehensive range of genuine consumables that ensures that your EDM machine maintains its accuracy and quality of finish during its working life.

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Complete machine guarding service

All manufacturing and fabrication of Procter machine guards is carried out at its factory in South Wales using a highly experienced and highly skilled workforce.

Investment over many years has ensured the use of state-of-the-art equipment, which includes CNC punching and folding machinery to ensure that fabrications are produced with consistently fine tolerances.

Procter Machine Guarding provides a comprehensive range of services to complement its guarding products. Procter Machine Guarding products are designed and manufactured in accordance with the latest health and safety requirements and standards. This service is accredited to BS EN ISO 9001:2008. The company's products and services reflect its commitment to deliver the highest possible quality standards.

Where a guarding requirement needs a bespoke approach, Procter always looks to the optimum solution and the best design and materials for the job. These materials include steel mesh, sheet metal, stainless steel, aluminium and polycarbonate, with factors determining the material including strength, visibility, durability hygiene and cost-effectiveness.

Procter's vast machine safety experience spans all major sectors and industries within them. The following list shows examples of the sectors it serves: manufacturing; paper, board & packaging; construction materials; automotive; aerospace; engineering (including college and school workshops); cable manufacturing; consumer white goods manufacturing; timber processing; printing; quarrying; brick, tile, cement, plasterboard; waste processing; energy and utilities; machinery manufacturers; power stations; wind turbines; nuclear facilities; water authorities; robotic and automation integrators; machine tool manufacturers; material and baggage handling / conveyors; automated warehouses; pharmaceutical; food and drink; ports and vessels; chemical works; oil & gas work; mining; military and MOD; weapons and ammunition.

Proctor has even supplied the leisure sector, having designed, manufactured and installed safety equipment at bowling alleys to prevent access to the mechanism which lifts and repositions skittles. In addition, it has also supplied the transport sector where it designed, manufactured and installed guarding equipment to allow engineers to safety work on escalators located within the London underground system. Outside of the wide commercial sectors, Procter guards are fitted in workshops in schools and colleges across the UK.

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New safety switch from Pilz

Pilz has added PSENmlock to its range of safety switches. PSENmlock offers safety gate monitoring (also known as interlocking) and safe guard locking for the protection of personnel and processes to the highest levels up to PL e (of EN ISO 13849) in one device. It fully satisfies the requirements of the latest interlocking standard EN ISO 14119. The slimline yet robust design and the many different installation options make PSENmlock both flexible to use and easy to install.

PSENmlock is a reliable door guard switch both for small or large, light or heavy, swinging or sliding doors, gates, covers and flaps. Above and beyond these possible applications the flexibly mounted actuator ensures high tolerance compensation and unrestricted functionality even with sagging gates. Thanks to a bi-stable solenoid, the currentless guard locking system reduces the energy consumption of the safety gate system. Diagnostic data is easily identifiable in many installation positions: LEDs on three sides of the housing support user-friendly diagnostics whatever the installation situation.

With a holding force of 7500 N and the integrated latching force of 30 N, the safety gate system prevents the guard from opening inadvertently. This makes PSENmlock particularly suitable for machines with a hazardous overrun that makes guard locking up to PL d or PL e absolutely essential, such as rotating knives, flywheels or robots. In addition, an integrated mechanical restart interlock prevents the guard locking system from being activated inadvertently, without the need for separate accessories. Not only does the restart interlock make operating the machine safer, it also prevents an inadvertent restart during maintenance operations!

The integration of RFID into the tongue actuator means that, in the unlikely event that it breaks off in the switch, such a failure is detected and a safe state is preserved. The outputs of the switch are cross-monitored semi-conductor types with short-circuit detection built in.

Three levels of coding are available, and a high level of protection against manipulation is assured. Mounting plates and brackets are available for 40 mm profile structural systems.

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Fast and flexible

WIDIA's modular end mills removes more metal in less time than comparable cutting tool systems

With a 60-year history of carbide cutting tool experience, Hanita's VariMill technology brings exciting advancements to WIDIA's replaceable tip system, including a range of helix and cutting geometries, an asymmetrical flute design, and wear-resistant AlTiN coatings for productive use in titanium and nickel-based super alloys.

If your shop has been searching for the flexibility, simplicity, and cost-effectiveness of modular end mills but needs the cutting performance of solid carbide, look no further than the replaceable tip end mill solution from WIDIA Products Group, featuring the DUO-LOCK™ connection from WIDIA and Haimer.

That's because it's the only tool available that can predictably take full-width slotting cuts in stainless steel and aerospace alloys at 1 x D deep, and 50 percent cut widths at 1.5 x D.

Marketing portfolio director, Avishay Zohar says: "In apples to apples cutting tests against competitors' tools, the DUO-LOCK connection was the only one that didn't break. It is easily the most robust modular solution on the market today."

The unmatched metal removal rate is due to a double-taper, face-contact mount and intelligent thread design. This provides runout accuracy better than 5 µm (.0002 in), axial repeatability of 10 µm (.0004 in) or better, and up to 25 percent higher torque

and chip load capabilities than others in this market.

This also makes the WIDIA system a budget-friendly alternative to solid carbide end mills for shops of all sizes. Avishay Zohar says "Yes, we compete very well at the Tier I and Tier II levels in the aerospace, energy, and automotive industries, but it's also a great solution for their suppliers, the smaller job shops with a handful of vertical machining centres that cut Inconel one day and 4,140 steel alloy the next. These shops stand to benefit the most from our system's flexibility and competitive price point, because it reduces the need for expensive solid carbide end mills, and special order tools that may take weeks to arrive."

Mark White, marketing portfolio manager at WIDIA, agrees: "The DUO-LOCK connection was originally designed for heavy roughing and semi-finishing applications in difficult materials, but the platform has evolved since then. When coupled with the wide array of carbide, coatings, and geometries from our sister company Hanita, WIDIA provides manufacturers with a modular alternative to solid carbide end mills in 80 percent of their machining operations."

Examples include the WIDIA-Hanita brand VariMill III, a 7-flute centre-cutting end mill with a 38° helix for high-feed machining of titanium and nickel-based superalloys, and the VariMill I, with a conical core and asymmetrical 4-flute design that eliminates chatter in extreme roughing and deep slotting applications. Both are available in WIDIA's Victory WS15PE and WP15PE AlTiN-coated grades, known throughout the industry for superior wear and heat-resistance.

Hanita brings over 60 years of carbide excellence to the table. WIDIA's partnership with Haimer® GmbH adds decades of toolholding excellence as well. All of WIDIA's modular cutting tools and adapters are available with the company's Safe-Lock™ technology, which assures zero pullout in titanium and other "grabby" materials.

For those shops that prefer a simpler toolholding approach, WIDIA offers a variety of integral shank taper, lobed, and HSK-style toolholders, as well as straight shank "cut to size" adapters 10 - 32 mm (0.39 - 1.25 in.) in diameter.

WIDIA is also offering a complete range of cutter geometries, from high-performance "corn cob" style roughers to ball-nose and chamfering cutters. Many of these are available in 20° and 45° helix angles, with custom grinds and edge preps possible in a few weeks or less.

Mark White concludes: "Our replaceable tip system decreases tooling inventory, machine downtime, and operator headaches. A single toolholder or adapter accommodates any number of cutting heads. Unscrew one, thread on another, torque it down and you're ready to go, with no worries over tool runout or Z-axis offset changes. Together with the excellent cutting performance and superior tool life of VariMill, we feel it's the most flexible, cost-effective modular solution available. I encourage shops of all sizes to give it a try."

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Cutting production times and improving quality

Destec Engineering Ltd is saving time and money by using Walter Titex XD deep hole drills to produce a series of 5 mm to 20 mm diameter holes (autoclave ports) to depths of 250 mm in a range of materials including carbon steel and super alloys.

In one case, producing holes of 5 mm diameter by 240 mm deep, the solid carbide drills have reduced cycle times by seven hours and have also increased hole quality.

Introduced two years ago by Walter GB, the Titex drills have not only cut hole production times from 30 minutes per hole down to just five minutes, but they have also eliminated the problems formerly encountered with frequent tool breakage and tool wander, as well as insufficient swarf clearance.

Destec's machining supervisor John Mullenger says: "Ports are machined to high accuracy for metal-to-metal sealing applications and are integral features of the autoclave 'hubs' that are used to join pipes with drilling heads. We produce a wide range of hubs, up to three feet in diameter, and in the past would machine the holes, usually two to five holes per hub, using a pecking sequence with HSS drills of multiple lengths (on a Mazak VTC 800/30 SP vertical machining centre).

"But these drills did not have through coolant and were constantly letting us down through wander and breakages.

"Then, our tooling distributor introduced us to tooling expert, Walter GB, and it was immediately apparent that use of the XD drills in combination with Walter's deep hole machining strategies would be of benefit."

Using Walter Titex XD drills, Destec now successfully and consistently generates the holes by first producing an initial pilot, followed by a 12 times diameter hole then a 50 times diameter hole depth.

The Titex XD range, available in the diameter range of 3 mm to 12 mm, feature four lands for optimum hole quality, especially in workpieces with inclined hole exits and cross holes, and boast a tip coating of TTP, specifically designed for deep hole applications, giving excellent hot hardness to counter generated cutting temperatures, high oxidation resistance and outstanding frictional properties.

The range extends to producing holes with a 70 times length diameter ratio and, compared to conventional gun drills, Titex drills can be applied at much higher feed rates and generate longer tool life. In one instance, using a 7 mm diameter drill to produce a series of 450 mm deep holes in a St 52-3 steel piston rods, the XD drill is applied at 478 mm/min rather than 95 mm/min and it can drill 50 piston rods compared to 12.

The success of the drills has led to the introduction of other Walter tooling at the Lincoln-based company including B4035 boring bars.

John Mullenger concludes: "It's fair to say that all boring bars are technically very similar, but the one major difference with the Walter B4035 is that it is digital, which means we don't have to worry about compensating for backlash, the tool does it itself.''

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Floyd hits open season with new product lines

At the Star Micronics, Citizen and Tornos Open Houses last month, UK manufacturers took the opportunity to take a look at the next generation of Applitec PRO-Line sliding head tools as well as a multitude of new turning innovations from Floyd Automatic Tooling.

With a supporting presence at all three of these prestigious events, Floyd Automatic introduced the new PRO-line, which incorporates the benefits of both the high performance, diverse and best-selling TOP-Line and ECO-Line programs for cost-effective turning solutions.

With the PRO-Line, Applitec have re-engineered the twin screw insert program to generate unsurpassed rigidity and performance at lower prices with a new patented insert clamping system. The PRO-Line program consists of two series of holders and inserts that include the 630/640 series for shorter and wider inserts for grooving and turning. Whilst the 650/660 series provides a thinner, longer insert for parting off up to Ø20 mm with a 2 mm wide insert with new geometries.

Alongside the new PRO-Line was an important addition to the ISO-Line program. The new Cermet range of inserts has been launched to offer excellent surface finishes, extended tool life and heat resistance when machining at high speeds. The FN-X8°and ENP-KX ground inserts offer excellent results for finishing, whilst the EN-KM range of sintered inserts deliver high performance on heavy duty cutting. This new ISO-Line of Cermet inserts can be used in conjunction with Applitec's JET-Line HP through coolant holders.

Also on show at the Open House events was the new 'back working' tools that are now commonplace on many sliding head machines. The impressive FLO-Tool range of easy setting, height adjustable tools has now been further enhanced with insert

holders for the ECO-Line and TOP-Line inserts from Applitec. These holders give increased capability and machining solutions for back end working.

Of course, the full range of PRO-Line inserts and holders line was on show at all of the Open House events alongside all of Floyd Automatic Tooling's renowned brands and product lines. With no fewer than six new Crazy Drill products from Mikron Tool, an enhanced range of HIRT-Line of stainless steel coolant hoses, the new SDK Adaptive Guide Bushes, and much more, there was plenty on show for visitors to get excited about.

Since the company was first formed in 1990, innovation has been the driving force behind Floyd Automatic Tooling Ltd. Not only because it creates the means for customers to run some of the most creative and inspirational production companies in the UK, but also, from the very beginning, Floyd has sought to provide a value added technical service to make the company what it is today, a leading supplier of specialist tools.

Its aim is to build long-term relationships with suppliers, end user customers and distributors based on value and knowledge. The result is a team of people that continue to grow their experience in the field of tooling for precision component machining.

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Iscar gives aerospace manufacturing the cutting edge

To ensure that the most efficient, cost-effective cutting tools are designed and made available to the global aerospace manufacturing industry, Iscar's aerospace industry manager remains in constant communication with all of the major sub-sectors involved. Continual technical liaison allows Iscar's R&D department to remain aware of all relevant aerospace manufacturing trends in areas such as material developments and machine tool advancements.

This high-level contact and cooperation has supported the development and launch of a wide range of high-quality Iscar cutting tools that have boosted the global aerospace manufacturing sector's productivity and assisted in assuring product quality across many machining disciplines.

Typical of the challenges shared with Iscar were those related to the difficulties encountered when machining Ni based and titanium alloys that feature very high hardness values (40-47 HRC).

The answer to the problems experienced when machining these materials that are used, on for instance the latest generation jet engine parts, can now be found in Iscar's recently launched IC804 grade and the extension of the company's selection of uncoated IC4 items.

As the continuing trend is towards ever harder parts, IC804 and IC4 provide users with substantial improvements regarding tool life and the application of higher cutting speeds, they also provide advantages when machining more conventional Ni based and titanium alloys at stable machining conditions.

IC804 features a hard submicron substrate, IC4 with an AlTiN PVD coating and a special post-coating treatment that provides substantially improved tool life and excellent levels of reliability.

In addition, uncoated IC4 standard items are ideal for the efficient machining of titanium alloys and aluminium alloys with high silicon content. Both IC4 and IC804 feature high hardness, especially suited for hard nickel base and titanium alloys.

Shared features include, outstanding flaking and chipping resistance, continuous

turning of nickel base super alloys at stable conditions and reliable and repeatable results.

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Guhring's grooving systems

With its new grooving systems, Guhring is expanding its product portfolio of stationary tools for turning operations. In addition to the most comprehensive programme of rotary cutting tools worldwide the company is complementing the turning and grooving tool sector with the type 104/106 systems for internal and face grooving in small holes as well as the type 305 system for external/internal and face grooving for standard and form grooving up to a grooving depth of 5 mm.

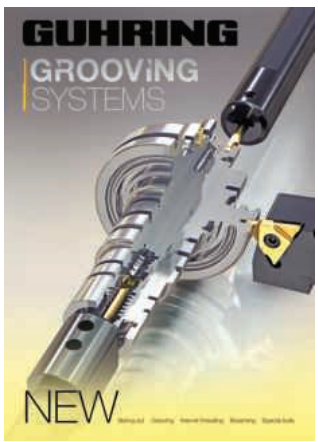
Consequently, Guhring is in a position to provide complete system solutions in the field of bore machining for turning operations in the small diameter segment. With the expansion of the grooving system machining operations such as boring, profiling, grooving, threading and broaching are now possible in addition to the existing core applications of drilling, countersinking, reaming and milling. These machining operations generally follow a drilling process and Guhring is once more positioning itself as a complete supplier in the field of metal cutting.

Alongside a very comprehensive standard range of clamping holders, cutting inserts and indexable inserts it is of utmost importance to analyse customer requirements and implement flexible as well as economically efficient special solutions.

With the grooving systems Guhring has further expanded its position as a complete supplier primarily in the automotive industry, general mechanical engineering, contract manufacturing, and in the hydraulics, pneumatics, control and regulating technology industries.

Guhring's grooving systems are unique. Whether it's for small and medium batch sizes, or for customer specific special solutions in volume production, a high level of in-house manufacture from carbide production to in-house coating, own development and production as well as a product specialist customer service, Guhring has the answer.

With the Powermill range Guhring is introducing a full range of universal milling cutters to the market promising optimal performance at first-class prices.



The range consists of different tool types in every dimension for various machining focal points.

What they have in common is the universal material suitability that distinguishes the range. As well as Alu-milling cutters in two- and three-fluted design, multi-tooth end mills and copy milling cutters for finish machining, roughing and HPC milling cutters are also available.

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Latest CBN tooling developments set productivity advances and cost-per-part savings

There is an ever-growing need to improve productivity, reduce lead times in production and an ability to respond to increased demands for savings when machining fully hardened steels, hard powder and sintered metals and heat resisting super alloys. Here, the latest advances in cubic boron nitride (CBN) tooling are introducing special compounds, high efficiency coatings and new geometries to withstand heat, further improve surface finish and accommodate greater mechanical shocks such as those generated in interrupted cuts.

For instance, Sumitomo Electric Hardmetal is introducing a 'hybrid' series of CBN hard turning inserts, new chipbreaker designs and a new range of micro-boring bars for holes as small as 2.5 mm diameter. The new product launches add to its highly successful SumiBoron range of CBN tooling that now covers milling and end milling cutters, plus tools used for turning, grooving, threading and boring.

Both the SumiBoron hybrids, BNC2010 high precision grade and more general purpose BNC2020 feature multi-layered, heat and wear resistant micro-structured coatings on sintered CBN powder blanks with a substrate that incorporates a carbonitride binder. As a result, these inserts demonstrate high orders of positive application advantages.

To further improve performance and application of the new grade inserts, the company has also developed a totally new series of 'Break Master' chipbreakers, N-FV, N-LV for finishing hardened steel and N-SV for improved chip control when removing a carburised layer. In addition, 'One-Use' wiper edge inserts, Type WG for low feed turning and WH for higher feed rate applications are now available.

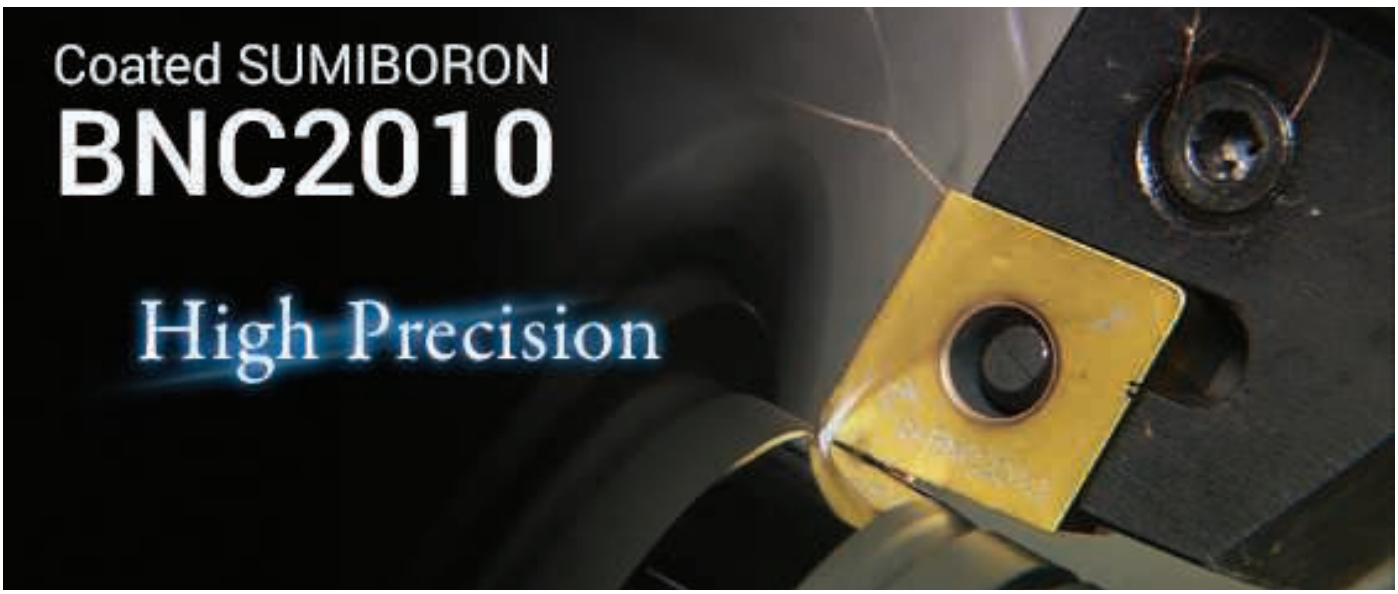
By extending CBN to micro-boring bars, the BSME and SEXC series are designed for ultra-small holes as fine as 2.5 mm diameter in hardened materials which can be finished bored. On recent trials, using SumiBoron BSME micro-boring bars on HRC 60 material, tool life was increased from 400 to 3,600 parts on CNC sliding head turn-mill centres and when producing 7.1 mm diameter holes in hardened automotive components, the switch to Sumitomo's SEXC bore bar recorded the number of parts produced per insert corner increased by over 400 percent.

Trials against more conventional coated CBN inserts, used for hard turning of transmission shafts, and BC2010 inserts were able to improve tool life by 230 percent and when BC2020 was applied for turning automotive constant velocity joints, which featured interrupted cutting in the machining cycle, tool life was increased by 150 percent.

CBN has excellent hot hardness characteristics second only to diamond allowing it to be used at very high cutting speeds. The SumiBoron material has substantial levels of toughness, resistance to the effects of thermal shock as well as chemicals. Now with Sumitomo firmly entrenched in the second generation of CBN, the material is used to not only machine ferrous materials, but also grey cast irons, challenging heat resisting super alloys and hard powdered metals containing tungsten and titanium carbide where diamond would be unsuitable. Indeed, on cast iron, the latest CBN gives distinct advantages in cutting life efficiency with a superior finishing capability than could be achieved with the likes of carbide, cermets or ceramics.

As a result, users are now able to play the higher productivity advantage of single operational strategies on materials over 45 HRC and thus eliminate grinding and EDM processes, hand polishing and other time consuming, highly skill-dependent and difficult to control finishing processes. Indeed, above HRC 55, CBN is the only cutting tool that can effectively replace the traditional grinding process. As a result, single cycle finish machining aids the reduction of lead times, helps control important geometric relationships on a component, lessens the need for tool change interruptions due to the extensions to in-cut life, reduces work handling, and aids costly environmental issues such as disposal of grinding fluids and sludge.

The hybrid, physical vapour deposition coated (PVD) SumiBoron BNC2010 high



precision turning grade incorporates no fewer than seven layers of coating. Three are highly secret developments and each is sandwiched between layers of TiCN in order to create high orders of integrity to the cutting edge and resist flank wear of the insert. Finally, in order to help create the superior surface finish, the insert is topped with a layer of TiN.

To differentiate the use of BNC2020, the insert is ideal for more general applications of continuous cutting, light as well as heavier impact type cuts where a higher resistance to chipping around the edge of the insert is needed such as when interrupted cutting. The insert incorporates an adhesive layer to bond its tough CBN substrate to the outer TiAlN layer.

The addition of the newly developed Break Master N-FV, N-LV and N-SV chipbreakers enable chip control to be improved in hardened material production cycles with N-FV ideal for finishing with up to 0.2 mm depth-of-cut. N-LV delivers better performance when depths-of-cut are up to 0.3 mm and N-SV is targeted at the removal of carbonised layers on hardened as well as non-hardened parts.

SumiBoron 'One-Use' Type WG and WH wiper inserts are primarily for continuous cutting cycles on hardened steel where comparable finishes to grinding can be achieved. WG is used on low-feed rate turning applications and WH for higher speed continuous cutting conditions.

The move to use CBN on micro-boring tasks opens new opportunities bringing consistency of finish and increased tool life on ultra-small hole machining which can be as fine as 2.5 mm diameter in hardened materials. The same tool can be used to finish bore and face maximising the advantage of the tool material. The BSME tool has a brazed CBN cutting edge on a carbide tool shank, which adds stiffness, for bore sizes between 2.5 mm diameter by up to 5.3 mm deep up to 5 mm by 20.3 mm deep.

Meanwhile, the SEXC version utilises a two-corner, indexable CBN insert able to machine bores from 4 mm diameter by 8 mm in depth, to 6 mm diameter by 18 mm deep. For this insert there are two grades of CBN available, BN2000 and BN7000, each with a 0.2 mm nose radii. BN2000 has a honed preparation to the insert's sharp edge while BN7000 maintains a normal sharp edge.

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Custom step drills - you configure, WNT delivers

Drilling and countersinking are relatively straightforward procedures that in the past have required two tools to achieve or an out and out special tool. Now, with the development of its configurable solid carbide step drill system, WNT has simplified the process, eliminated the need for extra tool changes, reduced cycle times while giving customers almost infinite choice in their tool selection with competitive pricing and short lead times.

Taking its Type UNI and VA solid carbide drills as the base tool, WNT has created a straightforward system that allows customers to configure a drill and countersink in a single tool, eliminating the need for separate drill and countersink and the tool change that would be required. Customers can specify a variety of dimensions from diameter of the pilot drill (anywhere from 2.5 mm to 16 mm), length of pilot, and angle of countersink (between 60 and 120 degrees), the large diameter of the countersink is determined by the original drill diameter specified by the customer. The drills are available in two lengths of 3x diameter and 5 x diameter based on the original drill size before modification and with a choice of shanks, these being plain, whistle notch or Weldon and with or without through coolant.

With the Type UNI and VA drills being part of the WNT standard range they are guaranteed to be in stock, so lead time for the modification to a step drill is kept short, for what is a special tool, with drills being delivered within 19 days of receipt of order. Cost is also controlled with WNT creating a standard price list for what is a tailor-made tool making costing for jobs straightforward for the customer. These step drills are subject to a minimum order quantity of two-off, and the price list reflects any increase in volume from four-off upwards with significant discounts available.

By using the Type UNI and Type VA drills as the starting point, these step drills can be used on virtually any material with UNI being a universal carbide grade and VA best for corrosion and acid resistant steels and aluminium. The drills can be configured using the online order form found at **http://www.wnt.com/uk/configurable-solid-carbide**

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SCHUNK introduces transparent tool management for Industry 4.0

Transparent tool management is the key issue in the development towards networked production for Industry 4.0. SCHUNK, a leading company for clamping technology and gripping systems, intends to push the development with the capability of unique toolholder identification by means of a data matrix code.

Individual laser coding of all SCHUNK toolholders is already possible but as part of its Industry 4.0 initiative, SCHUNK also offers the data matrix code free of charge with TRIBOS polygonal clamping components and many TENDO hydraulic expansion tool holders.

SCHUNK intends to pave the way for the digitisation of tool management by 'replacing paper labels with high technology.' In the future, toolholders will be uniquely identified by a code and then assigned exactly in connection with corresponding database systems of different suppliers. In combination with data from the higher level cloud, users can then obtain precise information on locations, tools used and their tool life, the machining parameters and the overall life cycle of the toolholder in order to assess the efficiency of the single components.

This significantly increases transparency in comparison to conventional solutions. The advantages of unique ID are convincing. It eliminates the possibility of lost or mixed-up paper labels containing tool settings. It also reduces the time spent at the machine and the tool pre-setting device.

At the SCHUNK tech-centre in Lauffen, SCHUNK demonstrates the process in combination with a tool management system that is already widely available on the market. The data matrix code of the SCHUNK toolholder is scanned by the tool pre-setting device and the toolholder is coupled both physically and virtually with a tool. This generates a digital twin in the database, for storage of all related data during the course of its use. The toolholder is scanned whenever it is mounted or removed from a machine. The employee proceeds in the same manner for tool presetting. During the scanning process, the essential tool data for machining is automatically sent by the tool pre-setting device to the database and from the central database to the machine. Manual input of tool data is completely eliminated.

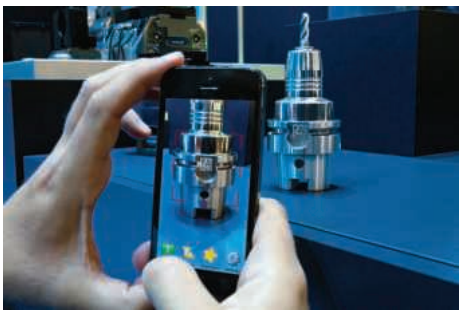
Advantages over RFID solutions

The data matrix code in combination with a database offers significant advantages over tool identification by means of an RFID chip. For example, RFID chips can become damaged, resulting in loss of data. In pilot applications with the data matrix code, it has been shown that even in constant, large-scale use, reliable scanning of the data is ensured.

The scanning process is also faster and less trouble-prone. Much is to be said for the data matrix code also with regard to costs. Although machines and pre-setting devices first have to be connected with the database system, any additional costs for the toolholders are minimal or non-existent. Equipping a toolholder with an RFID chip can result in additional cost of 10 percent to 20 percent. RFID scanners likewise involve relatively high investment costs.

Industry 4.0 initiative at SCHUNK

SCHUNK is a pioneer in clamping technology and gripping system components for Industry 4.0. In an Industry 4.0 assembly cell the company demonstrated how pick and place units, 3-axis gantries, robots and mobile platforms can cooperate autonomously during assembly, inspection, packaging and transport to allow a smart production process. Each single process step is then monitored in detail by the sensors and signaled to the higher level handling system, or even to the master control system and the ERP. With the smart networking of clamping devices SCHUNK is now transferring this know-how to the area of clamping technology. In addition to the data matrix code on toolholders, it also includes networked chucks, clamping blocks, magnetic clamping plates and pallet-loading systems, as well as fully automated quick-change solutions for versatile production.



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Heavy duty machining with Haimer

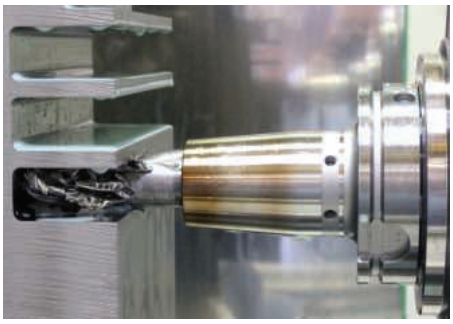
The importance of the tool holder is still understated, especially when it comes to roughing and heavy duty machining. Metal removal rates in these types of processes are absolutely crucial for the productivity of the machining operation. By using special shrink fit chucks with drive pins and spiral grooves in the tool shank it is now possible to perform high-feed full slotting of up to 2 x D (50 mm) or more indifficult to machine materials. Application studies conducted by the machine tool manufacturer Heller have proven the effect of the Haimer Safe-Lock™ system.

Especially within the aerospace, energy and mechanical engineering sector, production managers have to bridge the gap between economic efficiency and high process reliability when working with materials that are difficult to machine. Fortunately, there is peace of mind in knowing that the machine technology innovations continue to develop to meet the ongoing demands of manufacturing. Heller machine tools is known as a source of inspiration for these kinds of innovations.

The company, located in Nuertingen, Germany, is known for its high quality 4- and 5-axis CNC machining centres, CNC mill/turning centres, CNC machines for crankshaft and camshaft machining as well as flexible manufacturing systems. Customers value its availability of products and its competency in managing special processing demands. Both qualities stem from Heller's in-house manufacturing, which relies on closer collaboration with customers, suppliers and research institutes to remain at the forefront of innovation.

Roughing is a highly promising process

Werner Kirsten, who works in the technology development department at Heller, explains: "Our service includes



optimising the machining processes together with our customers and suppliers. To support such services with practical trials, our technology centre is equipped with a variety of machines". In most cases the aim is to increase the productivity without compromising the process reliability. Technologist Werner Kirsten adds: "We often achieve this aim with an optimised roughing operation which ultimately results in a reduced finishing process. By maintaining the same technological values, but shortening the finishing depth of cut by 50 percent, the overall machining time is reduced to half. However, this requires process reliable and controllable systems during roughing."

In this regard, all machining components in the process chain have to be considered in order to improve productivity. The machine tool is the most evident component of the machining process, however the tool, the tool holding system, the coolant supply and other elements are also essential for a successful operation.

Werner Kirsten says: "In the end the weakest link of the process chain limits the success. Many of the trials which we carried out during the last few years have proven this point. We realised that the tool holder has an incredible influence on the machining process. In the case of reinforced shrink fit chucks, for example, the vibration node is closer to the bearing point (due to the larger mass). The result is a smoother machining process with less vibration and a better surface finish quality while using the same tool, machine, process parameters and fixturing technology."

An important factor for productivity

By selecting the right tool holder, you can even achieve good productivity and surface quality results using basic standard cutting tools. Werner Kirsten refers to comparative tests with basic four-edge cutting tools without an inner coolant supply. As an alternative to a standard shrink fit chuck he selected a HAIMER Power Shrink Chuck with Cool Flash which ensures that the coolant is transported directly to the cutting edges. Werner Kirsten says: "Compared to using a normal shrink fit chuck and external coolant, we were able to achieve significantly better results."

When a group of representatives from the aerospace industry, the Technical University of Dortmund and Technical University of Hamburg-Harburg visited Heller, an especially extensive milling application study was conducted in Titanium Ti-6Al-4V.

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Compact sliding clamps

Roemheld has introduced a range of compact, hydraulic sliding clamps designed for clamping in tight spaces on systems, press beds and rams. The new "compact" version provides the same clamping force as the "classic" sliding clamp, but both the size and the weight have been reduced. A new ergonomic design with recessed grips and rounded edges for simple insertion into the T-slots has made handling safer and installation easier. The new Roemheld compact sliding clamp is ideally suited for retrofitting without the need for standardisation of the width and depth of the dies.

The compact sliding clamp consists of a clamping block and a T-slot adapter which is used to manually position the clamp in the T-slots on the press bed or ram. Various versions are available for the DIN widths of 14, 18, 22 and 28 mm. When used on other systems, the clamping blocks can also be mounted directly without the adapter, for example onto fixed spacer bars.

Clamping takes place by applying a maximum of 400 bar to the piston, achieving clamping forces between 19.6 and 78 kN depending on the version. The piston is released by means of spring force. Depending on the element, the overall stroke is 8 or 12 mm. The anti-corrosion surface protection enables the clamp to be used in demanding conditions with temperatures up to 120°C.

To allow use in particularly narrow construction spaces, the front of the clamping element has been redesigned: Both the clamping block and the insertion edges on the adapter have been ergonomically rounded, allowing smoother insertion of the element. A special recess on the block ensures a better grip on the clamping element and thus facilitates changing of the die.

To enable quick and simple setup, ROEMHELD also offers an angular rotary coupling as an accessory part as well as a parking station which accommodates the clamp during the die change.

The Roemheld app for tablets provides

comprehensive and descriptive information about products and solutions for die clamping and changing systems in sheet metal forming. It contains the entire product catalogue with over 1,500 articles and variants, features many product videos, some animated 3D illustrations, application pictures and technical data sheets, showing a variety of application areas on presses and die-cutters. The app can be found at **http://www.roemheld-gruppe.de/app**

To find out more about quick die change or view Roemheld's full range of workholding and materials handling solutions, contact:

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RPI supplies four rotary tables to leading CMM manufacturers

Rotary Precision Instruments UK Ltd (RPI), the specialist developer and manufacturer of precision positioning devices for high accuracy rotary and angular inspection systems, has successfully supplied four top of the range rotary tables to coordinate measuring machine manufacturer Nikon Metrology and another major CMM manufacturer.

Castle Donnington-based Nikon Metrology took delivery of two RPI rotary tables measuring ø 400 mm and ø 600 mm, whilst the other major CMM manufacturer received two ø 400 mm rotary tables.

RPI's rotary tables will now be integrated into both companies' CMM machines, in order to help measure symmetrical/ prismatic components such as rotor discs.

As well as significantly improving overall measurement accuracy and reducing uncertainty in CMM machines, rotary tables also greatly increase a CMM machine's available measuring volume thereby providing greater flexibility in what can be measured.

Jim Palmer, sales manager at RPI, says: "We are delighted we've successfully supplied CMM rotary tables to two of the world's leading CMM manufacturers. RPI's rotary tables bring significant benefits to CMM machines and will help end users save money, time and resources by reducing setup and process times, thereby greatly improving productivity."

RPI has been supplying Nikon Metrology with rotary tables since 1982 and has sold the company more than 245 rotary tables.

Matt Brady at Nikon Metrology UK Ltd, says: "We've been fitting RPI's rotary tables to our CMM machines for decades and as far as we are concerned, RPI deliver a fantastic product with excellent back up. If you want precision and accuracy, they're the ones to go to."

RPI's rotary tables have been specifically designed as a fourth axis for all types of precision CMM machines and they are accurate to +/- 0.5 arcs seconds. This is equivalent to hitting a golf ball at a hole more than 22 km away and scoring a hole in one every time.

Bath-based RPI has a very large share of

the market in CMMs which use rotary tables and can boast more than 500 successful installations worldwide.

RPI grew out of acquisitions from Optical Measuring Tools, Airmatic, Horstmannn and Eimeldingen. Since the 1950s, it has been one of the world's largest designers and manufacturers of precision rotary tables and a leading supplier of rotary tables to the aerospace, automotive, power generation, machine tool, scientific and general engineering industries.

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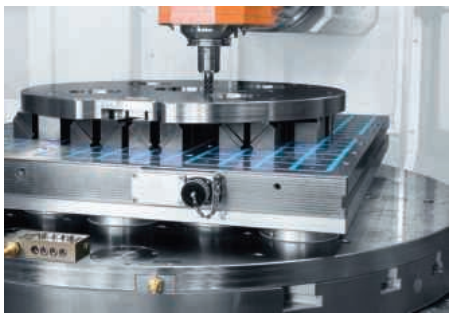
Pneumatic, magnetic, mechanical innovative workpiece clamping

When manufacturing companies are looking for productivity gains to remain competitive their first options are often to review machine tool and cutting tool optimisation, this ignores the gains that can be made through the potential that workpiece clamping technology provides. Workholding is an area that WNT has focussed its attention, with an expanded range of extremely effective clamping systems. Targeted use of WNT's new magnetic and pneumatic clamping systems can deliver drastically reduced setup times while increasing machine capacity considerably.

One key area to good workholding is the reduction in setup times that can be achieved through selection of the correct system, especially on difficult-to-clamp workpieces. For example, WNT's new magnetic clamping technology, which is system-neutral and can be used with all conventional machining centres, allows fast location and clamping of components, greatly reducing set-up times and increasing production capacity thanks to its fast clamping and changeover process, and more effective workpiece machining. Components can be machined on five sides in one setup. This has a positive effect on very large, complex and difficult-to-clamp workpieces in particular, as readjustment or further clamping is often no longer required.

The WNT magnetic chucks are operated at the push of a button, with power supplied and grip activated within seconds, after which the machining process can be performed without any additional energy supply. For reassurance the system status, which is not power dependent, is displayed so that the operator can see at a glance whether the magnetic chuck is activated, reducing any risk of workplace accidents due to unclamped workpieces.

For even greater component access the system can be complemented with three-point fixed pole extensions. The magnetic force from the clamping plate is transferred effectively through the poles to provide maximum clamping force. In addition, flexible pole extensions with axial compensation are able to clamp rough and uneven surfaces, allowing un-machined



WNT's new magnetic workholding system provides efficient and secure clamping with access to five sides of a component

parts to be clamped. The ability to place multiple pole extensions to support the workpiece minimises vibration, improves surface quality and also enhances tool life.

"Often overlooked, magnetic clamping technology is an attractive clamping solution for innovative manufacturing companies that have an eye on cost-efficiency. These systems provide a valuable addition to our range of existing mechanical clamping devices. Operators benefit from the user-friendliness and high reliability of the WNT system, while production managers and managing directors appreciate the extremely high efficiency levels and improved machine utilisation. Since an increase of up to 50 percent in machine capacities is not uncommon with the magnetic clamping solution, this soon puts the cost of investing in the system into perspective," says Tony Pennington, managing director, WNT (UK).

In addition to the magnetic system, WNT has also extended and developed its pneumatic zero point clamping system. Companies whose work involves long setup times, combined with short cycle times, are well-placed to benefit from investing in WNT's Pneumatic Zero Point system as it can reduce setup times to a minimum, ensure maximum precision and process security and at the same time maximise machine capacity, all of which lead to greater productivity. Another benefit is the systems longevity with all the components, such as base plates, clamping bolts and clamping slides, are made from hardened stainless steel, therefore completely corrosion-resistant. In addition, the clamping module is hermetically sealed to create a maintenance-free unit that cannot be adversely affected by swarf or coolant ingress.

The WNT pneumatic system's maximum process security is thanks to its precise short taper centring and self-locking mechanism. This guarantees a level of repeatability of <0.005 mm. The clamping slides are initially closed by spring force and lock the clamping bolt via 15° angled surfaces, then the pneumatic power function supplies the piston surfaces with compressed air, increasing the clamping force by up to 300 percent. The result of this 25 kN clamping force is the ability to utilise considerably higher cutting data to help further reduce the machining process and increase productivity. Once the mechanical locking system engages via the spring assembly it is self-locking and form-fitting, meaning a compressed air supply is not required during machining. To release the clamping pressure compressed air applied at a maximum pressure of six bar is sufficient to open the clamping modules.

"Workholding offers many opportunities to improve both workflow and productivity. With the wide choices available WNT is well placed to provide the solution best suited to an individual company's needs and our team of applications specialists are on-hand to ensure the correct investment decisions are made to deliver long-term benefits," says Tony Pennington.

The WNT applications and technical sales engineers have extensive knowledge of not just the WNT range, but also their application. In order to tap into their experience simply call the free WNT service line on 0800 073 2 073 to arrange an appointment. Further information on the clamping systems as well as a product video can be found on the WNT website at **www.wnt.com**

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World first from HIRSCHMANN

HIRSCHMANN has introduced a patented solution with conductive microfibre rings instead of carbon brushes for EDM machining.

The company's engineers have developed a process, in which the current in rotating indexing spindles is transmitted directly to the shaft and along to the workpiece using hundreds of thousands of conductive microfibres. As result of reconstruction, the current supply can be integrated into the housing of the rotary indexing tables. HIRSCHMANN presented this innovation for the first time at AMB in Stüttgart.

Essential advantages of this innovation are significantly improved process reliability, for example, no maintenance for life of power transmitting contacts, no contamination and no friction. HIRSCHMANN has already delivered the first rotary indexing tables and rotating indexing spindles with the new technology, and in many future products this innovation will be fitted as standard.

The usual practice in wire erosion is power transmission by carbon brushes made of copper alloy as close as possible at the workpiece, but abrasion caused by rotation brings dirt into the water bath. This means that used carbon brushes must be changed regularly and that causes unnecessary service times and costs.

With the new innovation, problems like abrasion of the contact surface are resolved permanently. With power transmission with microbrush technology there is practically no wear, even at high speed and cleaning and service efforts for the operator are significantly reduced. The current supply sitting inside the sealed shaft housing guarantees maintenance free use for life. Based on performed tests, fibre wear length is calculated for an expected life of 200.000 operating hours, so the brushes last for the whole life of axis motor.

Because of minimum fibre pressure, friction loss is no problem in the new technology. Current is transferred to the whole shaft and not only punctually at two contact surfaces.

In the new development of rotary indexing tables, the required assembling space to integrate the power transmitting rings is already included. Even for mini spindles with restricted space, a solution could be found. However, it is not only the buyers of new machines that can benefit from the advantages of the world's first innovation. In certain cases a refitting of already existing products is possible without larger effort. For this upgrade HIRSCHMANN offers its support, either in its factory or direct at the customer's premises. For machines in the field, this obviously improves additionally process reliability.

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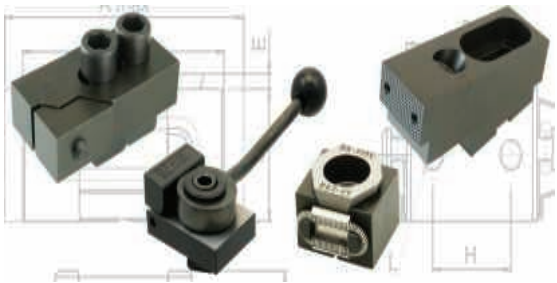
New WDS edge clamps deliver flexibility and ease of adjustment

Modern milling, cutting and shaping machines rely on flexible fixturing solutions to enable fast and efficient operation. WDS Component Parts Ltd is a leading manufacturer of workholding components for machining and industrial applications. The latest addition to its impressive portfolio is an extended range of cam operated edge clamps with serrated jaws, mini edge clamps, double edge clamps and toe edge clamps.

The latest WDS edge clamps provide a high quality range of solutions designed to ensure the highest levels of productivity and efficiency in workholding applications. The range includes both fixed edge clamps and adjustable edge clamps. Key products in the range include cam operated clamps with a lever that pushes the serrated jaw forward at a slight downward angle to secure the workpiece between the jig surface and the edge rail. The lever and cam operation makes these edge clamps quick and easy to fit, adjust and remove.

Of course the prime requirement for a clamp is to hold the workpiece firmly in place and prevent accidental slippage, but the ease with which the fixturing system can be applied and adjusted can have a significant impact on the overall productivity of the machining system. The easier it is to position and hold the workpiece, the lower the idle time of the spindle and thus fewer man-hours are required. Production efficiency and output are both increased as a result.



The new WDS products sit alongside the MiteeBite modular work holding system and the OK Vise range of double edge clamps, for which WDS is UK distributor. The MiteeBite range includes standard and machinable fixture clamps, edge clamps, expansion clamps and toe clamps. The OK Vise range of double edge clamps includes pull down, soft jaw, tapped jaw and ball bearing gripper types.

Cam lever edge clamps are available with standard serrated jaws or vee serrated jaws, in left and right hand versions, with or without T-bolt fitting.

WDS is a manufacturer of standard parts for use in machine build components, standard parts, jigs & fixtures, and consumer products. The range of products available from WDS grows daily and so has the methods available to designers and engineers for identifying, specifying and purchasing any of the 20,000+ parts currently held in stock.

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Dassault Systèmes introduces SOLIDWORKS 2017

Enhanced productivity, collaboration and product data management help more than three million users harness the emotive power of design to create powerful experiences

Dassault Systèmes has launched SOLIDWORKS 2017. From small startups to global organisations, more than 3.1 million users can create multi-sensory experiences through innovative product design, with access to easy 3D design and development applications anytime, anywhere and on any device.

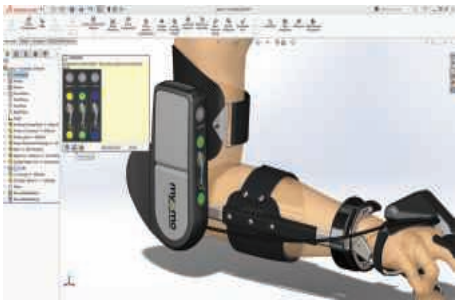
Powered by Dassault Systèmes' 3DEXPERIENCE platform, SOLIDWORKS 2017 helps innovators design, validate, collaborate, build and manage their product development processes with integrated applications. SOLIDWORKS 2017 features more core power and performance, as well as new capabilities to address paperless manufacturing through the support of Model Based Definition, and printed circuit board (PCB) design. Both new and experienced users can improve productivity with simulation to analyse, solve, visualise and verify functionality of designs, before any prototype is created. New tools unlock any 3D model for better collaboration with vendors and customers, and dynamic product data management (PDM) from concept through to manufacturing allows for stronger support of multi-site and remote teams.

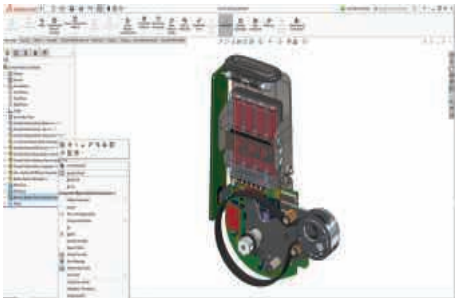
The following are some of the top user-requested features, new capabilities and enhancements included in the SOLIDWORKS 2017 portfolio:

SOLIDWORKS PCB - seamlessly synchronise electronic and mechanical design on demand with a combination of electronics design expertise from Altium and ease of use from SOLIDWORKS.

User-friendly interface - a unified environment for schematic and layout tools to select the best routing options based on design constraints with Interactive Routing, AutoRoute, Multi-Track, and Differential Pair, locate and select new components for informed decisions with real-time supplier data, and incorporate SOLIDWORKS models within the PCB design environment and verify electro-mechanical design intent.

Modelling power - speed up the design process with new tools for Chamfer, Fillet,





and Advanced Hole Specification that create multiple variable chamfers in one simple operation, switch any pre-existing Chamfer to a Fillet and vice versa to apply design changes in seconds, capture and access previous hole definitions and apply pre-saved specifications in an instant, and construct stepped holes faster with one operation.

Surfacing - remove obstacles to creating complex 3D geometry, save time and avoid complex workarounds with new surfacing features such as wrap, drag and drop, emboss, deboss, or 3D Curve.

Magnetic mates - work with large, challenging assemblies by easily organising equipment and space, publishing parts and assemblies as assets with appropriate connection points for easy drag and drop mating, and easy repositioning of models.

Simulation static study - input parameters to automatically make logical decisions.

Stress hot spots - quickly identify these to investigate a model or setup further simulation and verify results.

Single-click conversion - instantly convert studies from linear static to non-linear or dynamic.

RealView - display simulation results to clearly communicate analysis.

3D Interconnect - work with both neutral and native CAD data, such as updating part and assembly files as design changes take place with the Update Model feature, directly opening imported files and treating them like Base Parts, or unlocking workflows from various sources to collaborate with customers and vendors.

eDrawings - visualise all types of product design data for simple and accurate collaboration, from native CAD formats to 3D reality with Google Cardboard. You can access product data anywhere with mobile apps for both Android and iOS devices.

SOLIDWORKS PDM - improve the way teams manage and collaborate on design by controlling design data and ensuring access to the right version. Enhance support for SOLIDWORKS MBD (model based definition) with auto-generated 3D PDFs, list native CAD files in the SOLIDWORKS PDM Vault check-in structure, and keep track of where they are used and overwrite versions to minimise clutter.

SOLIDWORKS MBD - quickly and accurately communicate critical product information throughout downstream manufacturing operations with features such as basic dimensions and fully automated Polar Dimensioning Schemes, direct referencing of edges, easy creation of intersection geometry between drafted surfaces, and 3D PDF publishing at different accuracy levels for control over file size and quality.

For more information about SOLIDWORKS 2017, including product demonstrations and upcoming reseller events, visit: **solidworks.com/launch/index.htm?scid=SW2017_SWCOM_Innovate**

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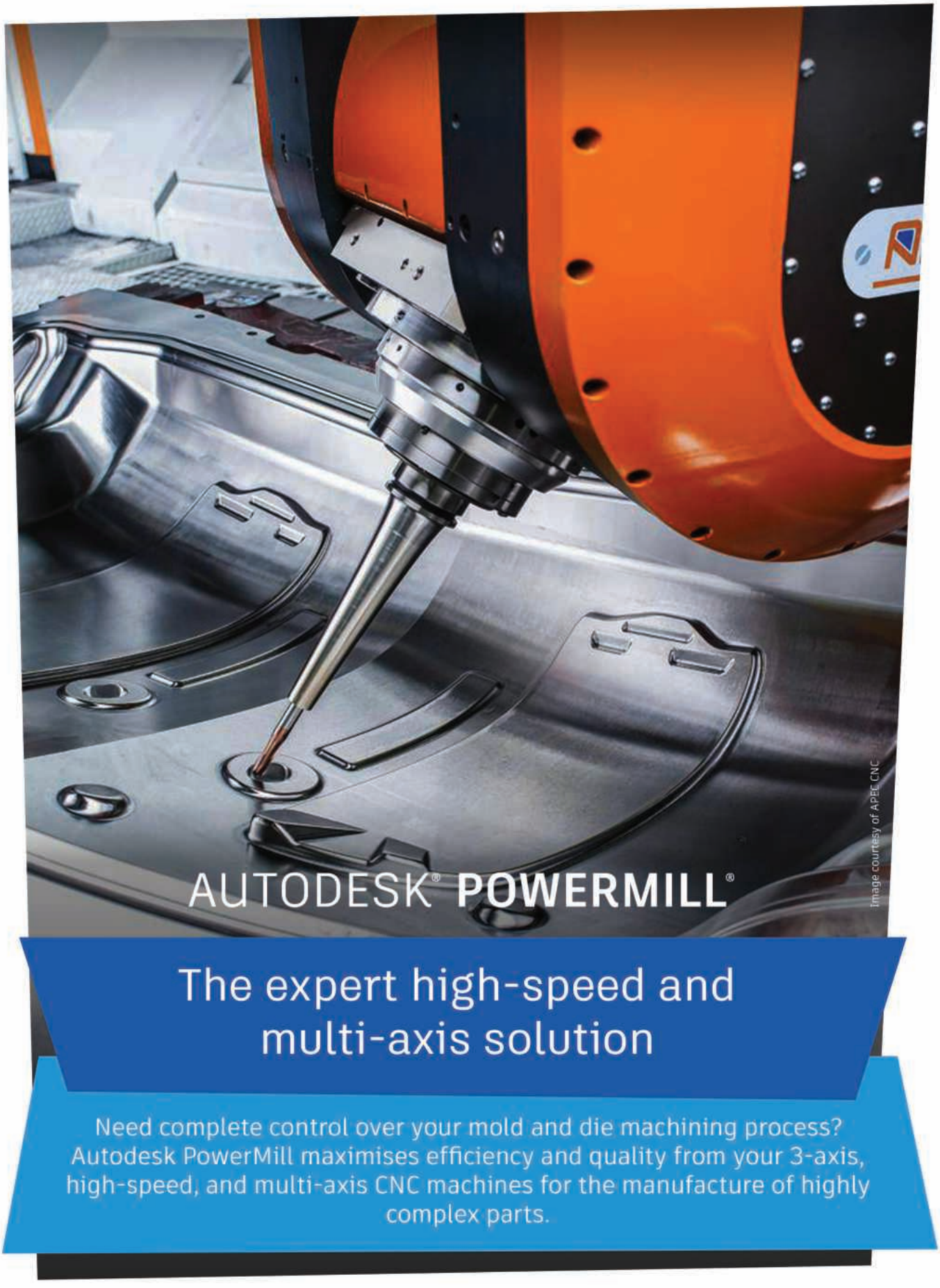

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Autodesk introduces portfolio for the future of manufacturing

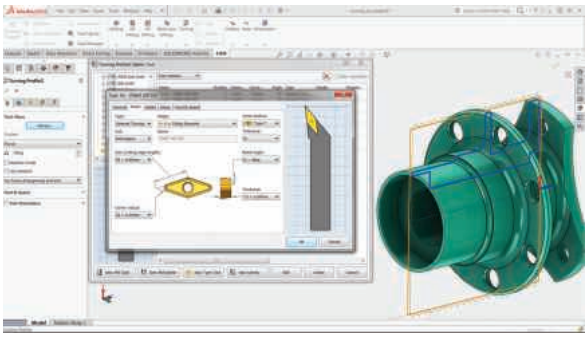
With the world of manufacturing undergoing major disruptions brought on by new market forces and technologies, Autodesk (NASDAQ: ADSK) has unveiled its portfolio of solutions for additive and subtractive manufacturing. The portfolio lets manufacturers take advantage of technology disruptions and improve competitiveness by creating higher quality products in less time with lower costs.

The new solution brings together leading products historically offered from Autodesk, Delcam, Netfabb, Pan Computing and Magestic Systems, including HSMWorks, Inventor HSM, Fusion 360, FeatureCAM, PowerMill, PartMaker (now included in FeatureCAM), PowerShape, PowerInspect and Netfabb, into one complete set of hybrid manufacturing solutions.

Amar Hanspal, senior vice president of products at Autodesk says: "Autodesk has long been a leader and innovator in 3D design, engineering and the technologies that expand the applications of industrial 3D printing, but we appreciate that no product is really complete until it's realised through physical manufacture.

"We've also become a leader in technologies that expand the applications of industrial 3D printing. Now, we're truly integrating the design, make and use phases of product development. This new set of solutions goes big on the 'make' component, equipping manufacturers with all the software they need to go from digital design to real-world product."

Unveiled at the recent IMTS exhibition in Chicago, the portfolio spans computer aided manufacturing (CAM), additive manufacturing, composites, robotics fabrication, factory layout, inspection and modelling. It enables customers to solve complex manufacturing challenges and seamlessly connect design to machining.



Within the portfolio offerings are cloud-connected capabilities designed to help users experience the benefits of a more cohesive manufacturing workflow and invest more time in product development. Cloud-capabilities give customers improved support for global manufacturing operations with universal access to software and data, and the cloud also enables fast and frequent software upgrades.

What's in the Autodesk manufacturing portfolio?

Autodesk HSMWorks is a fully integrated CAM solution for SOLIDWORKS, allowing users to get up to speed and become productive within minutes using familiar tools and workflows.

Autodesk Inventor HSM helps CNC programmers, designers and engineers rapidly produce machined parts designed in virtually any CAD system.

Autodesk 2017 CAM Products offers a multitude of advanced manufacturing applications. These new products combine the heritage of industry leadership in CAM software from Delcam with Autodesk's 3D design and manufacturing prowess. Solutions include: FeatureCAM for automating CNC programming; PartMaker for precision part manufacturing with Swiss-type lathes; PowerMill for programming the most complex moulds, dies and other components; PowerShape for preparing complex models for manufacture; PowerInspect for inspection in every environment.

Autodesk Netfabb provides all the software you need to reduce costs, increase efficiency and improve part performance in additive manufacturing and 3D printing.

Fusion 360 is the centrepiece of Autodesk's cloud-based product innovation platform and Fusion 360 combines CAD, CAM and CAE in a single package. It allows users to take their designs all the way to production with included 3D printing capabilities as well as HSM powered toolpath technology for 2 through 5 axis milling machines, turning centres and waterjets.

Dan Ko, strategic initiatives lead at Shapeways says: "Not only is the Netfabb bundle easy to use, it also does much of the heavy lifting in preparing models for 3D printing. The software streamlines the process of fixing common 3D print file problems and if we didn't have it to automate a large portion of file preparation process, each build would be substantially more time consuming and labour intensive.

Amar Hanspal says: "This new integrated portfolio from Autodesk brings together technology Autodesk has been growing and investing in across the full manufacturing spectrum. This combination of solutions makes modular and scalable manufacturing solutions available to manufacturers of all sizes."

Autodesk makes software for people who make things. If you've ever driven a high-performance car, admired a towering skyscraper, used a smartphone, or watched a great film, chances are you've experienced what millions of Autodesk customers are doing with our software. Autodesk gives you the power to make anything.

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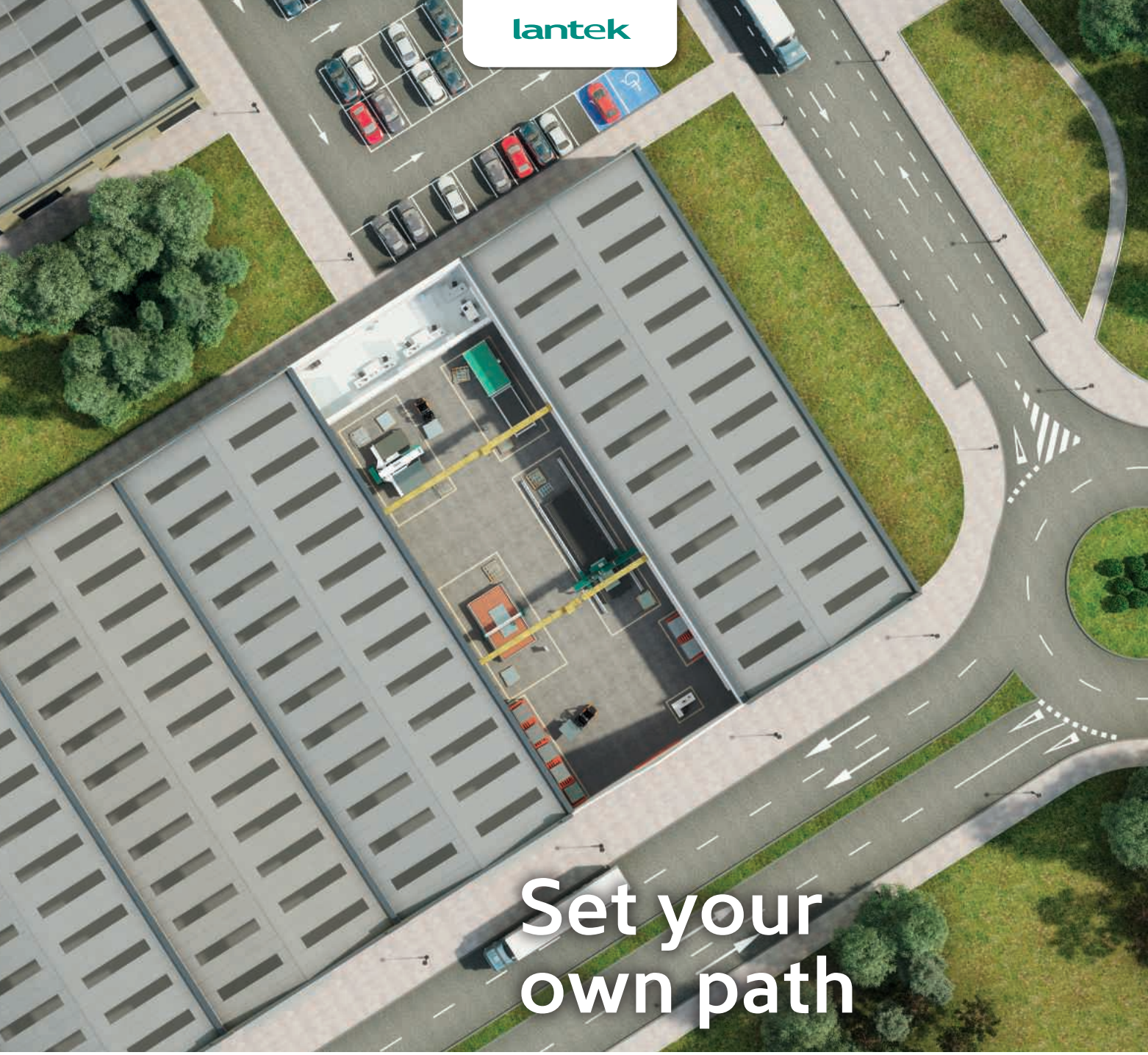

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METAL inspired SOFTWARE

Mazak certifies CNC Software as newest VIP partner

Mazak has certified CNC Software, Inc. as the newest member of its Value Inspired Partners (VIP) technology program. CNC Software established its well-known reputation with the development of Mastercam CADCAM software that continues to provide designers, NC programmers, and engineers as well as machinists on the shop floor with powerful programming capabilities.

Meghan West, president of CNC Software, Inc. says: "We are proud to be a certified Mazak VIP. Such partnerships are critical to making sure that customers get the most from their machine and software investments. The closer we work together, the better we can ensure that our advances in technology take full advantage of Mazak's machine innovations. We are very excited to be working so closely with a company that truly embraces a leadership role in technology."

Stemming from Mazak's commitment to provide more comprehensive solutions to manufacturers, the VIP program brings together producers of complementary technologies to create more innovative products and turnkey processes. Collaborating on R&D and integration efforts, the VIP program fosters a high level of cooperation and technological integration that moves well beyond individual pieces of equipment. The program also fuels development of comprehensive training solutions for manufacturers across all market segments.

As a VIP, CNC Software brings to Mazak customers programming solutions for milling, turning, multitasking, and lasers, along with 3D design. From one-person shops to large manufacturing corporations, Mastercam users gain faster, easier part programming and enhanced machining for overall increased productivity all from an affordable CADCAM package.

Brian Papke, president of Mazak Corporation says: "Like Mazak, CNC Software has, from its start, continued a steadfast dedication to always provide state-of-the-art manufacturing technologies tailored specifically to customer needs and backed by exceptional service and support. We are pleased to welcome them as the newest member of our VIP program."

Founded in 1983, CNC Software is one of the oldest companies in the PC-based CADCAM industry. The company was among the first to introduce CADCAM software designed for both the machinist and the engineer, providing a practical solution to both markets. While the original version of Mastercam focused on two-dimensional (2D) CAM, it was also one of the first micro-based CAM packages to include CAD capabilities.

Members of the VIP program work with Mazak in product development and the creation of training events and seminars spanning a broad range of topics. For more information on the Mazak VIP program and CNC Software, please visit **www.mazakUSA.com/VIP**

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Mastercam announces new post processor for Sinumerik controllers

CNC Software, Inc, producers of Mastercam CADCAM software has announced a 3-axis milling post processor that will unleash the highest productivity on Sinumerik-controlled machine tools. The new post processor was developed utilising the technical expertise of Siemens CNC engineers.

This post processor includes support for Sinumerik 840D sl and 828D CNCs from Siemens and a number of new and exciting features.

Pedro Sanchez Jr post department manager of CNC Software Inc, says: "We've been collaborating with Siemens in this

development for the release of Mastercam 2017, and are proud to announce the 3-axis milling post processor as the initial launch of strengthening our relationship for future posts that will benefit mutual customers,"

It is cooperation like this that provides Mastercam users the opportunity to truly complement their CAM investment and give their shops the best chance at a more efficient manufacturing solution, from design to part.

Chris Pollack, East Coast dealer and importer regional account manager, concludes: "By educating Mastercam on the key advanced functions of the Sinumerik control, Mastercam has been able to create a post-processor that provides the most value to our mutual customers." Siemens looks forward to continuing to help Mastercam create more advanced post-processors in the future."

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Edgecam slashes lathe roughing cycles from 24 minutes to eight

Machining trials carried out by Seco Tools using Edgecam's new waveform turning roughing strategy slashed a Welsh subcontractor's roughing cycle for a diesel generator fan spacer by two-thirds, prompting it to invest in the CADCAM software.

Turning specialist Printing Components Ltd (PCL) had previously relied on paper drawings and online programming at their lathes.

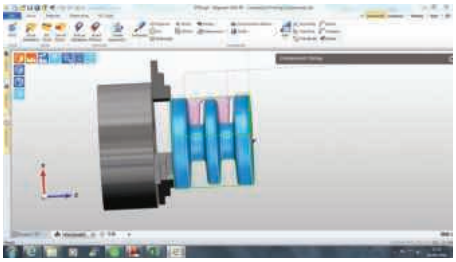
Managing director Paul Davies takes up the story: "We went to the launch of Seco's Duratomic insert and saw a demonstration of waveform turning on a component very similar to one of ours. Seco's CET engineer Joe Gooding and local area business manager Daren Thomas later ran some trials and set up a program for us. We decided that was the way forward, so we invested fully in Edgecam."

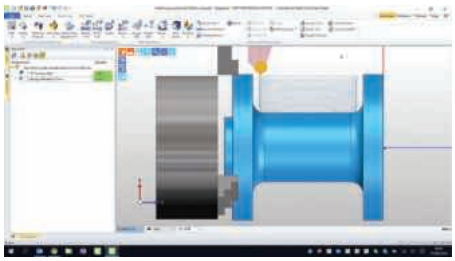
Edgecam now drives two of the company's Doosan lathes, a Puma 2600 Y and Lynx 300, along with a Doosan DNM 500 mill.

Edgecam, from Vero Software, brought out its waveform roughing strategy for turning following the success of waveform roughing for milling and Paul Davies says they also benefit from that: "We have a milling job that used to take around three hours to program. Now it takes 15 minutes."

But as the vast majority of their work is turning, that is where PCL finds the waveform roughing strategy to be most valuable. Before investing in Edgecam it used standard tooling for roughing the fan spacer, which is 200 mm long with a 180 mm diameter and a wide undercut.

"The tool went in one way at an angle, then backwards in a copy turning process to generate the slot, which was a very long-winded way of programming and machining, and we needed two tools, but it was the only way we could do it," explains Paul Davies.



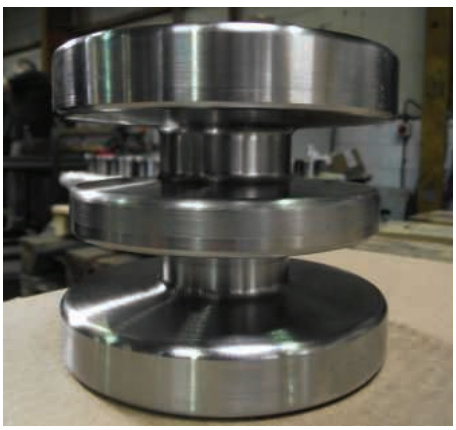


Now, with the waveform turning roughing strategy, a 16 mm button tool is used with Seco's Duratomic insert for the full process with a feed rate that has increased from 0.3 to 0.8 per rev.

"At first we were nervous about ramping up feeds and speeds for, what to us was, a completely new way of working. But I'd seen it in operation during the demonstration at Seco Tools so I knew what it was capable of."

He says waveform turning has fully justified the Edgecam investment, as it is not only used for external grooving but also for face grooving.

While the company still manufacturers printing rollers and other components for the print industry, diversification means it has added fragile camera components and parts such as pins, idler wheels and sprockets for earth moving equipment to its portfolio, along with undertaking work for agricultural companies and general engineering jobs. Having started in business seven years ago, the company moved to its current 9,000 square foot premises in Aberdare in 2013 and currently operates with 16 employees.



Waveform turning is now used extensively during their manufacture of rollers which are sited between the front and back of mini diggers, holding the track; grooved top and bottom rollers; and the end face of idler wheels which take up the slack on mini digger tracks.

"Edgecam's waveform roughing is now our standard turning strategy of choice, especially where the customer supplies us with a STEP file," adds Paul Davies.

The waveform roughing strategy for milling means that it has been able to take on jobs which Paul Davies says would have been impossible without it, jobs such drive sprockets for mini diggers.

"Keeping the cost of making our products down is always our biggest challenge, but Edgecam overcomes this by saving time in both programming and machining, which is improving our turnaround time by getting the piece parts out of the door quicker, making us more competitive and winning us more business."

As Printing Components Ltd mainly uses Seco cutting tools, the partnership between Seco and Edgecam is proving to be a particularly useful one-stop solution for getting the best out of the company's Doosan machine tools.

Other than the waveform roughing strategy for both turning and milling, he says the whole concept of importing a STEP file, generating a program and taking it to the CNC machine on a USB key, has elevated their business to the next level.

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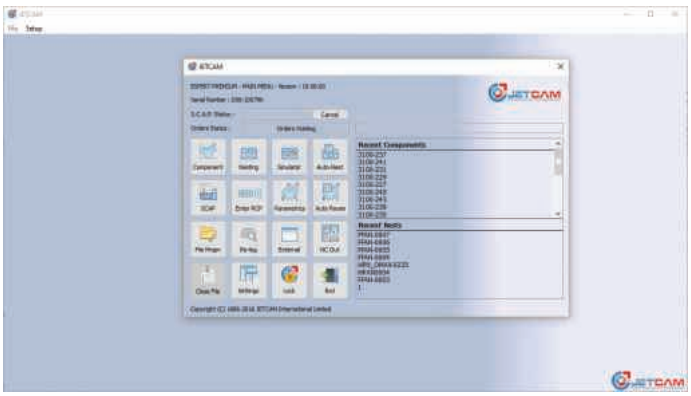
Latest version of JETCAM Expert released

JETCAM has announced the launch of version 19.08 of its award-winning Expert CADCAM and nesting software, featuring several major new features, interface enhancements across the software along with several new and updated postprocessors. Significant improvements and configuration options have been added to JETCAM's Right Angle Shear (RAS) logic, resulting in higher quality parts when repositions are required. RAS sorting buffer logic has been added to allow parts to be unloaded in a predefined sorting bin list. The exit direction of special tools such as forming tools can now be specified to prevent collisions. Automatic Turret Nesting (which prevents the creation of nests with more tools than the capacity of the turret) has been enhanced, along with various improvements to JETCAM's High Performance Nesting. JETCAM's new interface benefits from dozens of tweaks, including a new main menu which now features recently opened components and nests, and improved nest searching capabilities.

Martin Bailey, general manager for JETCAM International s.a.r.l says: "This second v19 release, just five months after the initial v19 release, demonstrates our commitment to getting the very latest functionality into the hands of our users as soon as it's ready. We've still got some exciting developments up our sleeves, but wanted to ensure that our customers can immediately reap the benefits of these new features."



V19.08 is available free of charge and for immediate download from jetcam.com for all customers with a current maintenance contract.

JETCAM International has been developing and distributing its JETCAM Expert range of CADCAM software since 1986. In use in over 80 countries worldwide, JETCAM Expert software supports virtually every CNC punching, laser, plasma, routing, waterjet and flatbed cutting machine available today, allowing users to program any combination of CNC machines with a single CAM system. The software has received various accolades and awards due to its high level of automation and fast return on investment.

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Rigibore's precision vision decision

Rigibore is a renowned manufacturer of precision boring bars and advanced boring systems, that uses sophisticated in-house software to design and manufacture special tooling solutions that are specific to customers' applications.

Extensive experience in the specialist area of boring tool technologies and boring strategies has enabled Rigibore to become a leading company in the design and manufacture of highly productive boring tools. The company's expertise and growing global reach was recognised by the award of the Queen's Award for Enterprise in International Trade in 2013.

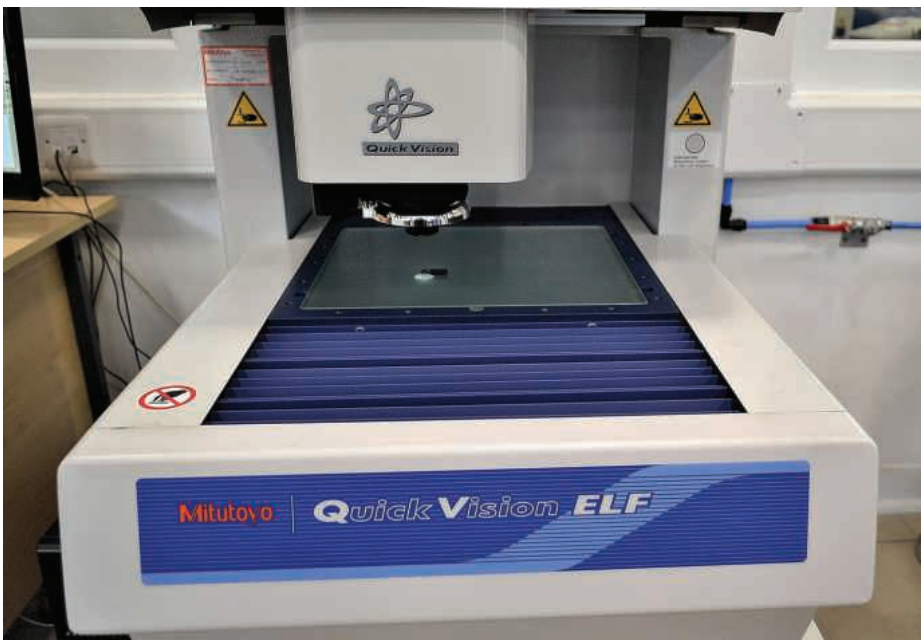
In addition to other demanding sectors, Rigibore boring bars are used throughout the world within the automotive, aerospace, marine, agricultural and heavy plant manufacturing industries. As well as being a trusted supplier to many major international manufacturers, Rigibore also works closely with a number of leading international machine tool builders.

The efficiency and accuracy of Rigibore products, such as the company's Smartbore and ActiveEdge products, is largely due to their high precision, Rigibore's use of advanced manufacturing techniques and the company's strict quality culture.

Rigibore's Smartbore system is designed to enable an operator to quickly and easily make manual, micron-accurate adjustments to the cutting edges of a fine boring tool while it is located in the machine spindle.

The Smartbore design needs no clamping or unclamping in adjustment, eliminating vibrations that can occur whilst in operation.

Another of Rigibore's flagship products is ActiveEdge which is an automatically compensating boring solution. This innovative system uses wireless technology to hold a close tolerance bored diameter without the need for operator intervention.



The ActiveEdge system can be partnered with a gauging or probing device, allowing CNC programs to monitor bore sizes and adjust accordingly as part of a closed loop manufacturing process.

To ensure that Rigibore remains at the forefront of its chosen field, the company pursues a Continuous Improvement Program (CIP) across all of its activities.

As well as further improving Rigibore's already high quality standards, a major aim of the company's CIP is to increase levels of efficiency in order to ensure that its products remain commercially competitive. A recent review of a vital, time consuming inspection tasks identified it as an area where both precision standards could be improved and major time savings could be achieved.

Greg Cocks, Rigibore engineering director explains. "To confirm the accuracy of the pockets in our holders that house our customers' carbide inserts, our quality staff would load an insert into each individual holder's pocket, then make the relevant measurements. Although this 100 percent inspection technique guaranteed the required pocket accuracy, it was extremely laborious for the operators concerned and also very time consuming.

"Having searched for an answer to

speeding-up this important task and a solution to making further accuracy gains, our local Mitutoyo sales engineer suggested the use of a high-precision, high-speed CNC vision measuring system. Mindful of the large volumes of carbide insert holders we produce and our demanding accuracy specifications, a demonstration of the suggested Mitutoyo, Quick Vision Elf Pro model, measuring our parts, was organised,

"As the machine proved ideal and given the urgency of our requirement, it was quickly purchased and installed. Our quality staff now simply load multiple holders on to the Quick Vision Elf Pro's bed, recall the relevant part program and instigate a rapid, fully automatic CNC measuring routine. As the complex geometry and dimensions of each pocket is now measured with a greater degree of precision and detail, we are able to guarantee the accuracy of the fit without the need to pre-load carbide inserts.

"The speed, accuracy and repeatability of our new Mitutoyo CNC vision measuring system means that we have achieved and surpassed all of the aims of the CIP project's original remit. We have slashed our measuring times and improved our accuracy capability. Also, as the inspection of our holders' pockets take place so soon after their production, we are now able to provide rapid feed-back to production related to any component parameters that are drifting from their nominal conditions."

Mitutoyo offers a wide range of high-quality 3D CNC vision measuring systems, from lightweight, space-saving design that offer a very high performance/cost ratio, through to a machine that measures workpieces while they are moving by using a high-intensity LED stroboscopic image-capturing technique.

The Mitutoyo Quick Vision Elf Pro, as used by Rigibore, is an advanced 3D CNC vision measuring system with a measuring range of X 250, Y 200 mm and Z 200 mm. The Quick Vision Elf Pro has a resolution of 0.1 µm and provides accuracy in the 2.3 µm class, when measuring up to 100 mm.

In addition to its impressive accuracy specification the Quick Vision Elf Pro is regarded as a highly efficient, time saving 3D CNC vision measuring system due to its impressive X/Y/Z axes drive speed of 200 mm/s.

Programmable ring lighting provides flexibility in lighting direction, angle and intensity regardless of the inclination of the workpiece surface. This feature enables maximum surface contrast to be achieved, and by extension best imaging resolution and accuracy to be realised.

Fine control of obliquity and direction provides optimal illumination for measurement. Obliquity can be arbitrarily set in the range from 30° to 80°. This type of illumination is most effective for enhancing the edge of inclined surfaces or very small steps. Illumination can be controlled independently in every direction, back and forth, right and left.

The Mitutoyo Quick Vision Elf Pro's programmable Power Turret (PPT) offers a three tube lens selection to provide three magnifications with the same objective lens. Replacement of objective lenses allows a wide magnification range to support a wide variety of measurements.

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Carlin Motorsport keeps a level head

Bowers Group has supplied Carlin, a professional motor racing team, with several WYLER Clinotronic PLUS Digital Inclinometers. The inclinometers are used in the workshop, garage, and at the track, making them a key tool in the setup and maintenance of Carlin's motorsport cars.

Surrey-based Carlin is one of the largest teams outside Formula 1, with race experience in a variety of championships including British F3, Porsche Supercup, World Series by Nissan, Formula Renault 3.5, A1GP, FIA Formula 3 European Championship, GP3 Series and GP2 Series. Some of today's most successful drivers have passed through the doors of Carlin, with famous names including F1 drivers Sebastian Vettel, Daniel Ricciardo, Kevin Magnussen and Daniil Kvyat.

The WYLER Clinotronic PLUS is a robust shop-floor proof digital inclinometer with four machined faces, permitting the measurement of angles through 360°. Its three button operation and high visibility display allows easy access to operating modes including absolute and relative modes. Carlin engineers regularly use WYLER Clinotronic PLUS inclinometers at racetracks in locations across the world, and up to 30 minutes before the cars go out on track. The inclinometers are used in the workshop on a daily basis for setting up surface tables. In this instance, the inclinometer is used in its absolute function to check that the surface table is level before work on the car commences. It is then used on various parts of the vehicle whist the car is mounted on the surface table.

Several important criteria are measured using the inclinometer. Machined areas on the chassis are used as a reference point, where the inclinometer is set to its relative function in order to act as a guide for relative measurements. The relative function is also used to set the angles of the wings in relation to the chassis. The steering is checked, Carlin engineers set the inclinometer relative to the chassis and then place it on top of the steering wheel to set the angle to zero. The camber and caster of the wheels are also checked, ensuring the correct wheel alignment of the vehicles.

Carlin engineers use the Clinotronic inclinometer at the race track to establish a level patch for any adjustments and maintenance to vehicles as required. In this instance, it is used in its absolute function to ensure that the patch is completely flat. If a car crashes, or if a driver is struggling with a setup issue and the car needs to be adjusted, the patch can be used as a level base to ensure all measurements are accurate.

Carlin also uses a Clinotronic inclinometer to setup scale versions of cars in their offsite wind tunnel, allowing engineers to measure the downforce and drag of the car in a controlled environment.

F3 chief mechanic Ian Grant says: "The Clinotronic is very versatile; we use it in a variety of ways both in the setup garage and out on the circuit. For such a small piece of kit it is actually very important. It's obviously absolutely vital that the guys have the cars setup perfectly. Any discrepancies with regard to angles on various parts of the car can affect speed and the efficiency of the braking system, so the inclinometer is an incredibly important tool for us. We rely heavily on it and place our trust in it.

"The WYLER is used a bit more on F3 vehicles than other teams. This is because a lot of the other teams have a fixed wing angle requirement, as well as various standard measurements that need to be met. F3, on the other hand, is a championship where we have the flexibility to make more of our own components. For example, we are allowed to set our own angles for the front wheel blanks and the rear wings. Over a race weekend, the inclinometer is used to check that these have remained at a consistent level."

F3 engineer at Carlin, Jimmy Goodwin concludes: "The Clinotronic PLUS is very accurate. We've been using it since 2000; it's been used on every car that has won a race that we've competed in; which includes, to date; 329 wins and 814 podiums."

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Laser radar is faster and more convenient for large scale metrology

Two new systems for large scale, automated, non-contact measurement have been introduced by Nikon Metrology. The Laser Radar MV331 and MV351 units easily perform repetitive procedures and complex inspection tasks while reducing labour requirements with a host of new features and enhancements. Inspection time is significantly reduced compared to traditional measurement and the systems can be used in a wide variety of applications including aerospace, automotive and renewable energy.

High-speed vision scans enable faster measurement of complex features, sections and surfaces. New usability features such as an integrated robot mount and removable air filters makes the system even better suited to robotic inspection on the shop floor. In addition to the new, external air filters, positive air pressurisation can be used to keep dust and other airborne particles out when working in harsh manufacturing environments.

Laser Radar delivers true single-person use and supports off-line programming for automated and unattended operation, reducing operating costs. Patented technology enables direct surface and feature measurements at high data rates. As a result, Laser Radar eliminates the need for photogrammetry targets, spherically mounted retro-reflectors (SMRs) and handheld probes. The MV331 also slashes inspection times with high speed vision scans that capture up to 2,000 points per second, making the unit ideal for scanning complex features and section analysis.

For fully automated, inline or line-side inspections, the Laser Radar can be easily installed on a standard 6-axis robot arm using the built-in robot mounting interface. It is used to position the device automatically so areas can be inspected that are otherwise hidden from the line of sight. Laser Radar automatically measures alignment points after every move, guaranteeing all measurements are collected in a common coordinate system and ensuring that measurement accuracy is completely independent of the robot.

Users can choose from an array of large scale metrology software solutions, such as Polyworks, Metrolog and Spatial Analyser.

Flexibility to use third party software allows customers to use the package of their choice and benefit from the advantages of Laser Radar without having to retrain staff to use new software.

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SICK develops easy-fit, all-in-one measuring wheel solution

SICK has developed the DBV50 measuring wheel for precision measurement of continuous and sheet fed materials in conveying applications. Suitable for a wide range of industries from logistics to textiles, paper and card, and timber materials, the measuring wheel is an easy-mount, plug-and-play unit.

In a competitively-priced all-in-one unit, the DBV50 comprises a SICK encoder, measuring wheel and patented spring assembly for measuring the passage of a moving material to resolutions of better than 0.1 mm. It can be integrated simply with printing, registration, cut-to-length and inspection systems and is easy to retrofit to existing production lines.

Encoder technology specialists at SICK value-engineered the DBV50's combination of wheel, encoder, arm and mount for a leading logistics integrator. The DBV50 has already undergone hundreds of hours of in-use trialling to ensure its robustness and performance.

The key is the patented, spring-loading mechanism that adjusts the spring to the correct 15 N tension for the degree of vertical travel every time. It can easily be reset for different material thicknesses.

Darren Pratt, SICK UK's encoder product manager explains: "Setting up an encoder mounted on a separate spring-loaded friction-wheel with the correct degree of vertical travel poses many difficulties for the plant engineer that the DBV50 now completely avoids.

"With separate components, selecting the right balance of encoder, spring and moving arm can be a matter of trial and error. Then it can be difficult to achieve the right force on the wheel for non-slip contact; it's all too easy to over-weight it so that the encoder bearing is overloaded and soon burns out.

"Over-tensioning of the spring to achieve down force, or poor arm travel adjustment, soon weakens the spring so it needs replacement. The DBV50 overcomes all that in a precision-engineered package."

The SICK DBV50 is a compact measuring wheel system with 63.5 mm centre distance and a 200 mm circumference wheel. The

encoder and wheel have a resolution of down to 0.08 mm and, for convenience and ease in mounting, the encoder can be mounted in 300 steps, on both sides, with the wheel located top or bottom.

The maximum spring travel is 14 mm, with integrated limits to prevent over stretching, and the patented adjustable pre-tensioning mechanism ensures quick adjustment to the optimum 15 N load/10 mm travel.

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New multisensor CMMs

Additions to Optiv Performance line broaden application potential with larger measurement range

Metrology and manufacturing solutions provider Hexagon Manufacturing Intelligence has launched its latest multisensor Coordinate Measuring Machines (CMMs), the new Optiv Performance 663 and 664 Dual Z.

The multisensor concept of the Optiv Performance line enables a variety of sensor configurations for tactile and contactless measuring and scanning tasks in a single system. Different workpiece features can be inspected by the appropriate sensors without reclamping, saving valuable measuring time.

Based on the same technology as the highly-successful Optiv Performance 443, the new CMMs feature low-vibration granite construction, precise mechanical linear guides on all axes, backlash-free precision drives, and integrated temperature compensation, resulting in a level of structural quality that means the machines can be used close to production. With the Optiv Performance 663 boasting a measurement range of 610 x 610 x 305 mm and the Optiv Performance 664 taking the Z-direction range up to 405 mm, the new CMMs further increase the range of parts that can be inspected.

To ensure optimal use of the entire measurement volume, the new Optiv Performance models can be equipped with Hexagon's Optiv Dual Z option, giving them two independent vertical axes for the optical and tactile sensors. This prevents the inactive sensor from impeding machine movement, so features deep within the workpiece remain accessible for easier part programming and the risk of collisions is minimal. Optiv Dual Z technology also enables the use of a motorised indexable probe head as a carrier for the tactile sensor.

The Optiv Performance 663 and 664 Dual Z also offer a simple and quick solution for measuring tasks involving rotationally symmetrical workpieces. Features distributed around the circumference of the part are made accessible by clamping in the workpiece using the CNC rotary axis. This Optiv Dual Rotary option allows the entire rotary axis to swivel on an additional axis.

Wolfram Fröhlich, commercial product manager at Hexagon Manufacturing Intelligence, says: "Our customers are increasingly asking for versatile equipment and the new Optiv Performance 663 and 664 Dual Z models were created to fulfil this exact need. It is a futureproof measuring system capable of handling a variety of different measuring and testing tasks. The innovative Optiv Dual Z and Optiv Dual Rotary options help CMM users to find the ideal positioning of sensors and the workpiece for measurement performance beyond current limits."

Also available as an option on the Optiv Performance 663 and 664 Dual Z is Hexagon's CMM monitoring system MMS PULSE. Using a network of sensors to monitor temperature, vibrations, humidity and machine status, MMS PULSE provides machine operators with a more complete picture of the environment when results are obtained.

The Optiv Performance 663 and 664 Dual Z CMMs are available worldwide from today. More information is available through local Hexagon commercial operations and dealers.

In 2015, Hexagon Metrology became Hexagon Manufacturing Intelligence. This change was not simply about having a new identity. Hexagon Manufacturing Intelligence represents the evolution of the brand and the culmination of a number of changes which have taken place over the last few years and the embodiment of a continuing vision to realise truly data-driven manufacturing.

As Hexagon Metrology, the company's core competence was dimensional metrology. But now, its customers want more. Customers need to work in smarter ways and are looking for partners to help develop better products more efficiently and more cost-effectively. Customers need to get products to market faster and to be more competitive.

To meet these changing customer demands, the company has developed its skillset to include expertise in new areas like statistical process control and CADCAM software. Although closely linked to metrology, these new capabilities go beyond quality checking. They are about actively improving manufacturing and enabling customers to work in smarter ways. They are about driving productivity. They are about manufacturing intelligence.

This ability to inform and effect change is the key difference between the value proposition of Hexagon Metrology and the value proposition of Hexagon Manufacturing Intelligence. The rebrand reflects growing expertise, ability to offer integrated industrial manufacturing solutions, and the ambition to continue innovating.

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Investment in new inspection capability seals the deal for Brandauer and KSR

One of the UK's leading pressworkers has joined forces with its Tier 2 automotive customer to deliver a critical component for use in power steering control systems. Brandauer, which employs 60 people at its base in Birmingham, has secured a £1 m order to supply a bi-metal lead frame to KSR International and, in order to satisfy exacting accuracy and quality, has invested £200,000 into state-of-the-art non-contact measurement capabilities.

This involved the recent installation of two OGP SmartScope Vantage 300s, which through their multi-sensor technology provide the ability to measure and report geometric dimension and tolerancing (GD&T) and guarantee repeatable precision in high volumes.

"Our customers choose us because we supply complex components to micron tolerances and OGP's technology gives us a real competitive advantage," explains Rowan Crozier, CEO of Brandauer.

"The KSR International contract is a fantastic example of two businesses working together to deliver a solution to one of the world's largest carmakers. Both parties have a clear understanding of what is expected and this led to the joint decision to house the Vantage 300s at our site in Birmingham.

"It gives everyone in the supply chain complete peace of mind that the manufacturing process will be right first time and able to sustain volumes that could eventually lead into the hundreds of thousands."

Established in 1946, KSR International is an industry leader in the design, engineering and manufacture of products for the automotive sector, including sensors, electronic throttle controls and steering control units.

"Brandauer, on our behalf, purchased two OGP Vantage machines to ensure product precision was consistent. It was critical that we had a non-contact optical system that would integrate all of the measurement requirements necessary of a Tier 2 automotive manufacturer," adds Gareth Stevens, quality manager at KSR.

OGP UK helped Brandauer and KSR throughout the installation process and provided dedicated on-site training, support and programming to ensure full implementation was achieved in the shortest time possible. This enabled both businesses to seamlessly replace existing contact measuring methods quickly and efficiently with significant efficiency improvements and long-term cost savings.

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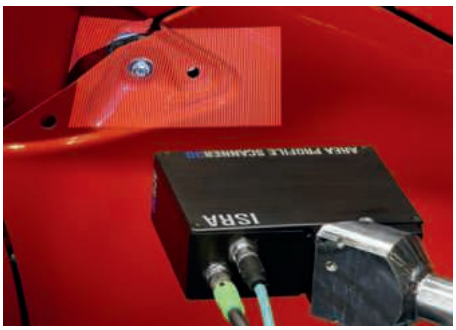
Capturing the position of workpieces through 3D free forms



The main task of robot-guided sensors is to determine target coordinates. A 3D sensor now captures contours and objects in space rapidly and quickly which enables completion of the required process steps simultaneously without having to perform an additional check of the target coordinates. Thanks to its high-precision measuring capabilities for freeform surfaces, the system captures entire objects and their features. This creates the perfect conditions for time-efficient robot guidance, in-line-measurement at short cycle times.

The innovative APS3D technology combines 3D robot guidance and Inline-measurement in a trend-setting sensor. The smart, high-resolution sensor brings stereometry and triangulation methods together with phase-shifting lighting. Surface information is captured quickly and reliably. By automatically generating 3D data from point clouds, the APS3D both enables fast data meshing and final comparison with CAD data. Using the "golden sample" from the CAD data the sensor detects the object and its position extremely accurately. All relative spatial relationships of the relevant features are determined, allowing the necessary steps to be conducted without further measurement.

The measurement of shapes and contours replaces the usual detection of features resulting in a shape-based robot guidance. As a result, hole dimensions can be determined and gap and flushness measured without any disruptions. The integrated high-performance processor takes the sensor's range of applications far beyond shape measurement and geometric inline measurement. The APS3D offers both phase-shifting and random pattern lighting as illumination options. Therefore, the variety of possible applications stretches from on-the-fly (single shot) to high-precision, profile-based scans.

As part of the touch & automate platform, the 3D multi-sensor is able to reload software modules and fulfil applications intelligently. When multiple sensors work together in a network, each sensor completes a different task so that the object can be fully captured in all three dimensions. Alternatively, multiple sensors scan the same surface area, producing a level of data redundancy that is essential for maximum precision. Even larger and particularly complex surfaces can be captured reliably this way. Its networking capabilities and versatility make the sensor an ideal element for modern smart factory and Industry 4.0 concepts.

The APS3D is available in different versions also supporting large measuring fields. The sensor features an intuitive user interface and can be easily integrated into robot-guided automation processes. It is pre-calibrated for instant use and installed as a standalone solution or on a robot.

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Laser cutting at warp speed

In time for the EuroBLECH trade fair, Bystronic enhanced the ByStar Fiber laser cutting system with new features. A brand new 10 kW laser accelerates the cutting process to breathtaking speeds. This is like laser cutting on a high speed trip.

What is faster than 4, 6, and 8 kilowatts? It's simple: warp speed. These are good news for everyone who wants to be at the forefront of fiber laser cutting. The ByStar Fiber with 10 kW laser primarily provides users with one benefit: speed, speed, and even more speed. Suppliers that are fast lead the race for the best conditions for cutting jobs. This is how competition in the laser cutting business works: be as fast as possible and deliver high quality.

The enhanced 10 kW laser takes the ByStar Fiber to the next performance level, with the high-end system offering the highest level of laser power in Bystronic's portfolio.

The technological leap from the previously available 4 and 6 kW systems to the new 10 kW level is tremendous. Bystronic's laser specialists call it "warp speed", because there simply isn't a more suitable word for the new speeds with which the ByStar Fiber now cuts sheet metal. How can one describe something that is even faster that what was already lightning fast?

The new laser essentially provides the ByStar Fiber with the equivalent of a turbo ignition stage. Compared with the industry standard 4 kW fibre lasers, the 10 kW version increases the cutting speeds on the ByStar Fiber by as much as a factor of four. This enables users to cut four times the number of sheet metal parts in the same time as most of their competitors. The greatest speed benefits can be achieved in material thicknesses between 3 and 12 mm. However, the 10 kW fibre laser also achieves incredible speeds in sheet thicknesses up to 30 mm. This is interesting for all those users who rely on fibre laser technology for their cutting processes, and for those who want to set themselves clearly apart from the competition thanks to fast cutting speeds.

New features for limitless speed: Bystronic is launching the next performance level on the ByStar Fiber laser cutting system

Speed and consistent quality: The new cutting head adapts the laser beam with high precision, depending on the material and sheet thickness

New cutting head with Spot Control

Fast cutting speeds alone, however, do not accomplish the objective. Users know this and Bystronic does too. The powerful laser output must be optimally integrated into the cutting process, because speed without consistent quality is worthless. This is why Bystronic sent another innovation to the EuroBLECH trade fair.

In addition to the 10 kW laser, the ByStar Fiber is also being equipped with a new cutting head. Bystronic developed and designed this cutting head in-house. This sets the new cutting technology apart from what many other suppliers on the market can offer. It has Swiss know-how inside.

The cutting head is a key element that ensures high-quality fibre laser cutting with the ByStar Fiber. The relevance of the cutting head increases with the higher laser power and the broader spectrum of applications this opens up. The ByStar Fiber cuts stainless steel, aluminum, non-ferrous metals, mild steel, and all this from the thin to thick range of materials. In order to consistently achieve the best cutting quality with this broad material mix, the cutting head must flexibly adapt the cutting process to changing materials and their characteristics. This is carried out automatically, without requiring operator interventions. In order to achieve this, Bystronic has equipped the cutting head with the Spot Control function.

This newly developed function shapes the laser beam. Depending on the sheet thickness and material, Spot Control adapts the focal point with high precision. This enables the ByStar Fiber to consistently achieve the optimal processing quality in

spite of varying sheet thicknesses and materials, and all this at warp speed.

ByTrans Extended and ByTrans Cross

Highest process speeds and a cutting head for a broad material mix. Does this leave anything to be desired? Only one important factor remains: automation. Users who cut at high speeds must also be able to quickly load the required raw materials and subsequently unload the machine. A 10 kW ByStar Fiber really goes through vast amounts of material. The laser system's speed simply screams for an automation solution.

Hence, upon request, Bystronic can upgrade the ByStar Fiber with suitable automation solutions. Users have the choice between the ByTrans Extended and the ByTrans Cross loading and unloading systems.

At the EuroBLECH exhibition, Bystronic showed a possible combination with the ByTrans Extended as a stand-alone solution. In this configuration, the ByTrans Extended handles the entire loading and unloading of materials, loading blank sheets and removing the finished parts and residual sheets after the cutting process. Moreover, the automation solution offers diverse material handling possibilities. The ByTrans Extended is equipped with two cassettes. These not only ensure the flow of raw material, but can also store the processed cut parts. Overall, this offers plenty of scope for automated laser cutting.

The second automation system, the ByTrans Cross, functions similarly to the ByTrans Extended. However, in addition to the supply of material, it also offers more flexible possibilities for the unloading of parts and residual sheets. In contrast to the ByTrans Extended, the ByTrans Cross is positioned on the side of the laser cutting system's shuttle table. This setup and various upgrade options increase the functionality of the unloading process.

Upon request, Bystronic upgrades the ByStar Fiber with loading and unloading solutions. The new ByTrans Cross opens up a great deal of scope for automated material handling

It is possible, for example, to deposit the cut parts and residual sheets onto an additional unloading position next to the laser cutting system. This allows mobile material carts at these unloading positions, which are also available as an upgrade option for the ByTrans Cross, to be loaded with the cut parts. While the parts are then sorted manually, the ByTrans Cross can continue to operate and already load new blank sheets for the ByStar Fiber to cut.

4020 large-format cutting

Bystronic also presented another feature that allows the full potential of the fibre laser technology on the ByStar Fiber to be exploited. The ByStar Fiber is now also available in the 4020 large format. This enables users to cut metal sheets up to 4 by 2 m, opening up plenty of space. On the one hand, this allows more parts to be cut from a single metal sheet. This increases the productive phase during the cutting process. On the other, it also enables large cut parts to be manufactured, which would not fit on standard-sized metal sheets of 3 by 1.5 m. This allows users to expand their range of products. This in turn is an important aspect of achieving a competitive edge.

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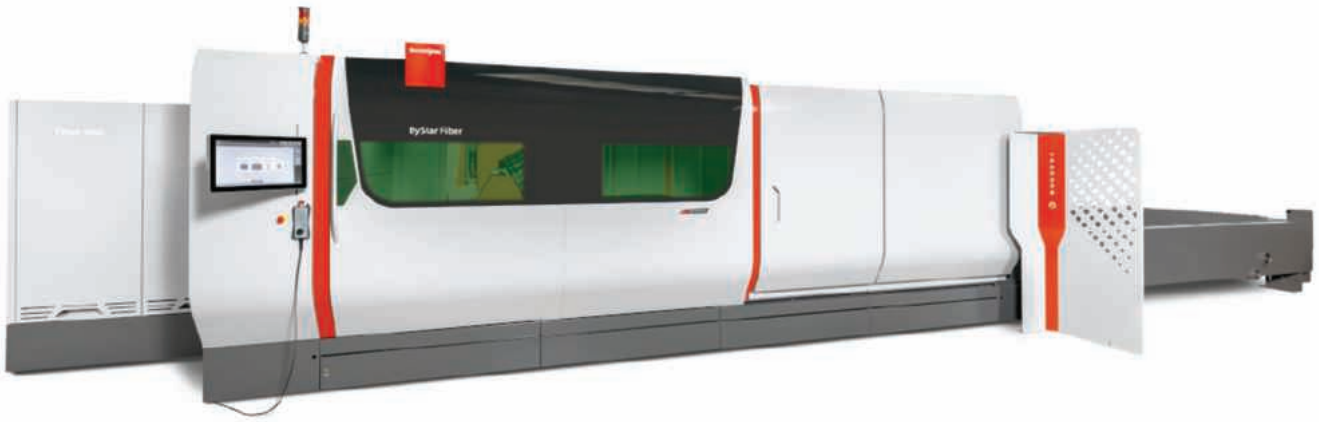

Large-format laser cutting: The ByStar Fiber is now also available in the 4020 format, for more space, more parts and more versatility

Even better price to performance

The TruLaser 3030 continues to prove a reliable and flexible workhorse for many UK manufacturers and, in its latest version, this flatbed laser cutting machine introduces new functionality. Indeed, it has been upgraded both inside and out to provide even greater operational ease and optimal cutting results. Also new is the TRUMPF Fusion Cut Performance Package that preserves edge quality when cutting at speed.

The single cutting head system that characterises this and other TruLaser machines now includes optional nozzle changer and automatic beam alignment. This means that not only does the machine process the entire range of sheet thicknesses with the same cutting head but also with minimum unproductive time. New linear drive technology also optimises productivity.

When equipped with a 5 kW laser, sheets up to 25 mm can be processed and this diversity can be further enhanced with BrightLine fiber. Thanks to this technology, which has again been upgraded, users achieve excellent edge quality when cutting thick material, such as stainless steel. So they can quickly change from highly productive thin to high quality thick sheet processing on just one machine.

The clean lines, ergonomic construction and super-simple operating concept of the TruLaser 3030 has already earned it an iF Design Award and TRUMPF has since built on this achievement. The latest model is even more compact and includes an integrated pallet changer for sheet exchange in seconds, a conveyor for the removal of slag and small parts to reduce idle time; various other modular automation options are also available.

Another notable addition is the Drop & Cut function which helps to make repeat jobs more cost-effective and allows the easy use of residual sheets. Using Drop & Cut, operators are presented with a live image of the machine interior on the control unit, via which they can virtually drag the programmed contour onto the sheet.

Also new is the dot matrix code function on the TruLaser 3030 which allows parts to be effectively marked with a standardised industrial code.

Performance package

Often, cutting speed has to be compromised for the sake of edge quality and vice versa, but with the new Fusion Cut Performance Package manufacturers can have the best of both worlds.

Users of either TruLaser 3000 and 5000 Series solid state flatbed laser machines can now take a quality leap and extract more productivity in thin and medium sheet thicknesses with this introduction.

The package provides all the hardware and software necessary to create smaller holes, complex shapes and sharper edges at higher speed. A significant advantage of fusion cutting is cut edges are oxide free and do not require any rework.

Trulaser 3030 fiber at the heart of Alpha's automated storage system

Alpha Manufacturing, a 100+ employee precision sheet metal fabricator, has ordered a TRUMPF TruLaser 3030 fiber CNC laser profiling centre to form a pivotal workstation in the company's new £1 million STOPA automated material handling and storage system. Due for installation later this year, the investment in TRUMPF laser cutting technology marks a shift away from

Paul Clews, operations director at Alpha Manufacturing

Alpha's existing supplier.

For over three decades, STOPA and TRUMPF have been working together globally as partners. Due to this long-term cooperation the organisational processes between the two companies as well as the technical interfaces between STOPA storage systems and the TRUMPF machines are perfectly matched.

The STOPA storage system offers fully automated material handling and material flow with full integration into the processing machines. Raw material is loaded into the STOPA and then picked by a longitudinal moving crane and delivered to the processing machines as required. Minimum material reorder levels can be set and automatically replenished as required making manual inventory checks a thing of the past.

At Alpha Manufacturing, the STOPA system will feed sheets to the new TruLaser 3030 fiber and existing TRUMPF TruMatic 6000 punch laser combination machine to help facilitate lean manufacturing, boost production capacity and promote lights-out operations.

This landmark investment at Alpha Manufacturing, which is accredited to both ISO9001 and ISO14001, is the first phase of a five-year plan to double the company's turnover by the end of 2020. The next phase will see investment in another laser and two more punching machines from TRUMPF.

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Prima Power gives 'cutting edge' to Young & Woods

Essex-based Young & Woods is a leading provider of high-quality, cost-effective sheet metal solutions to a wide variety of industries. The company's experienced workforce has access to a comprehensive range of modern manufacturing plant and is thus able to provide an all-embracing range of sheet metal related service. Projects can be undertaken from small batch work to the large volume manufacture of metal component and fabrications.

Since the company's formation in 1946, Young & Woods has pursued a progressive policy of investing in highly efficient, accurate metal processing machinery and employing highly skilled staff. Over the past 70 years these guiding principles have helped to guarantee the consistent quality of Young & Woods' output and have enabled the company to continually quote extremely competitive prices.

Young & Woods' reputation for delivering high-quality, cost-effective work has resulted in an ever growing customer base and an expansion of the sectors it serves. This growth has supported a rolling program of regular investments in cutting-edge CNC metal processing plant.

Young & Woods director, Alan Lee explains: "We consider that investing in the best available machinery pays major dividends in terms of equipment reliability and both the quality and volume of our output. To ensure maximum benefit we work in partnership with our machine suppliers and remain loyal to those that provide us with the quality of machines and the levels of service we require."

An example of Young & Woods' affiliations with its suppliers is the company's enduring relationship with Prima Power UK.

"Some years ago, we invested in what was then the world's fastest laser profiling machine, the Prima Power Syncrono. The speed of the machine helped us to keep pace with the ever increasing demand for our services," enthuses Alan Lee. "In fact, the Syncono's ability to cut holes in excess of 1,000 per minute and its automatic load/unload capabilities enabled us to introduce 24 hour unmanned operation.

"This considerably improved our productivity and this allowed us to reduce the price of our components and to lower manufacturing lead-times. In addition, the outstanding precision of the Syncrono laser profiling machine has helped us to preserve our reputation for the quality of our work.

"Our excellent experience with the Syncrono and the outstanding levels of service provided by Prima Power UK led us to favour the company when the need recently arose for another laser profile machine and a turret punch press. However, to ensure value for money, we benchmarked the latest Prima Power offerings against those of other leading manufacturers.

"Having examined several alternative laser profile machines and turret punch presses, we decided that the Platino 2.0 Fiber laser and the Punch Genius from Prima Power best suited our needs.

"In addition to being extremely efficient and flexible, our new Platino 2.0 Fiber laser 2.0 laser profile machine is very easy to use. Following its installation and operator training, the highly efficient machine was soon fully operational and providing the levels of productivity we need. Also, compared to our older Prima Power machine, we have been very impressed by the wide range of materials the Platino Fiber laser 2.0 is able to cut. In fact, machine's ability to handle a much wider range of material has opened up several new markets to us."

The new 2.0 version of the Platino Fiber laser machine has been developed to maximise customer's competitiveness according to their applications. A series of option suites are therefore dedicated to different production needs.

SMART Cut allows fast cutting of thin sheets (up to 5 mm) and delivers reductions in cycle times of up to 30 percent.

MAX Cut, is perfect for the fast cutting of medium-thick gauge sheets, delivering reductions in processing times of up to 40 percent.

NIGHT Cut, is designed for intensive production, with higher piercing and cutting process safety.

The Platino 2.0 Fiber benefits from a compact, ergonomic machine design that offers excellent accessibility, in addition a synthetic granite frame provides outstanding thermal stability and vibration damping. A new focusing head with a single, universal lens allows the efficient cutting of

all materials and thicknesses, whilst the optical chain is totally sealed and protected from contamination.

Platino 2.0 Fiber is available with high brilliance, energy efficient fibre lasers from 2 to 6 kW. Platino 2.0 Fiber is supplied with a single lens suitable for all applications. Features such as the machine's advanced sensors and optional automatic nozzle changer ensure that the Platino 2.0 Fiber's accuracy, versatility and efficiency and make it the ideal laser profile machine for 24/7 non-stop production.

Advanced on-board systems include SIPS, a Safe Impact Protection System that protects the machine's head in case of crash, and a quick alignment system (OPC).

The machine is delivered with a user-friendly P30L CNC with 17" LCD touch screen and trackball. Fast and easy off-line programming is achieved with the use of MAESTRO-Libellula® and NC Express e3 CAD/CAM systems.

A wide range of modules allowing the automatic loading/unloading and storage of material are available, In addition, optional modules make possible integration with flexible manufacturing systems (FMSs).

More punch

Purchased to increase the company's punch press capacity, Young & Woods' new Prima Power Punch Genius is an innovative, new generation turret punch press that uses numerically-controlled, servo-electric axes. Reflecting Young & Woods' strategy of acquiring the latest, state-of-the-art machinery, the company's newly installed turret punch press is the first model of the recently launched Punch Genius range installed in the UK.

The cornerstones of the Punch Genius' impressive productivity include a large tool capacity, the wide range of tools available and easy and fast setups. Forming, other auxiliary work stages and ease-of-use are further factors that reduce the manufacturing cost per component, rendering Prima Power's Punch Genius' a highly productive and competitive manufacturing solution.

The new Genius series features models with two complementary performance levels. 'Pure' meets all the targets set for an attractively priced, yet efficient production machine, whilst 'Dynamic' provides class leading productivity and performance. Both models come with the latest features and can be equipped with the whole range of options.

A new series option is an intelligent rotating ram head. This innovation shortens tool change time and increases the availability of in turret tools, especially index tools. Up to 300 kN servo-electric punching force can be selected for the ram, whilst automatic overload protection and automatic central lubrication ensure dependable machine operation.

Another beneficial new feature is the inclusion of moving brushes, in front of and inside of the turret, to prevent the scratching of sensitive materials. The brushes' movement is activated by the program when needed and a special scratch free punching mode is available.

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Laser firm eyes further growth with UK-first machine investment

Sheffield-based specialist laser machinist, the Laser Cutting Company has announced a significant investment in its machining capabilities which will allow the company to meet growing customer demand for larger and more complex work pieces.

The company, which employs 30 people, has purchased a new Yamazaki Mazak 3D FABRI GEAR 400 tube laser cutting machine, the first machine of its kind to be sold into the UK.

Supplying customers in the automotive, construction, defence and off-shore industries for over 35 years, the Laser Cutting Company provides a variety of services, including the cutting of steel, stainless steel and aluminium, as well as the delivery of tubular, structural sections, beams, pipes and both flat and bent metal components up to 790 kg to customers throughout the UK.

The 3D FABRI GEAR 400 is the second Mazak laser cutting machine bought by the company and gives it the capacity to now cut regular and irregular 3D structured sections, including H, I and L beams, as well as square and round pipes and tubes up to 8,000 mm in length and 406 mm in diameter. Crucially, the new purchase has already helped speed up production times by 30 percent.

Jon Day, managing director of the Laser Cutting Company, comments: "Purchasing the FABRI GEAR 400 was the next logical step for the business and we are delighted to be the first company in the UK to offer such a high level of precision laser cutting.

"Our first Mazak, a FABRI GEAR 300 laser cutting machine, had served us very well, but were increasingly finding that the market was demanding the capability to machine larger, more complex work, along with bevelling and tapping, which is quite a specialist area to be operating in. The increased capacity and speed of the FABRI GEAR 400 has allowed us to meet the complex level of machining our customers were looking for, and ensure that we remain one of the UK's leading businesses when it comes to specialist laser cutting."

Ian White, general sales manager, Laser at Yamazaki Mazak UK, adds: "The 3D FABRI GEAR is one of our largest laser machines and is truly capable of providing a "done-in-one" solution for the fast yet highly precise cutting of exceptionally large and complex 3D workpieces. The Laser Cutting Company is one of the leading forces in the UK's subcontract laser machining market and it will be well placed to furnish the growing demands of an expanding customer base going forward."

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LVD adds two new models to Phoenix series of fibre lasers

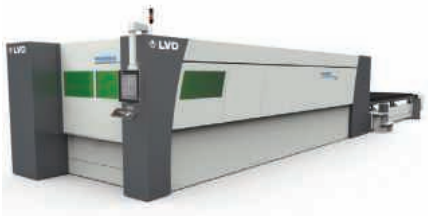
LVD Company is expanding its fibre laser portfolio with the Phoenix FL 4020 and Phoenix FL 6020, two new laser cutting machines designed to handle sheet dimensions of 4,000 x 2,000 mm and 6,000 x 2,000 mm respectively.

Shown for the first time at EuroBLECH in Hannover, the new Phoenix models offer high versatility as all-round machines able to deliver first-class cut quality in both thin and thick materials in standard steels as well as non-ferrous materials and process large sheets quickly and economically. Available in 3, 4 and 6 kW versions, Phoenix Series machines provide the highest energy efficiency and productivity benefits of fibre laser technology.

Phoenix FL machines achieve superior cut quality through an advanced cutting head design that allows automated adjustment of focus position and focus diameter, known as "zoom focus." To achieve the highest possible speed in every material thickness, focus position and diameter are automatically controlled and adjusted by the CNC controller. This advanced technology makes the Phoenix FL the most flexible fibre laser cutting machine, able to cut different sheet thicknesses with high productivity and excellent cut quality.

Phoenix 4020 and 6020 models feature uprated drive systems to achieve the same dynamic performance as 3015 models allowing fast processing of large format sheets. Phoenix lasers provide high dynamic processing and fast cutting speeds thanks to the extended fibre wave length. Acceleration and overall accuracy is further supported by the machine's rigid welded steel frame construction. An integrated control and drive system ensure the highest reproduction of programmed contours at fast processing speeds.

Phoenix machines keep uptime high with an integrated automatic shuttle table system that allows one table to be loaded while the machine is cutting on the other table. A touchscreen control and LVD's TOUCH-L user interface make the Phoenix easy to use and operate, further increasing machine uptime. The 19-inch touch screen and icon-driven user interface guide the



user through all necessary man-machine interactions. TOUCH-L also incorporates a part programming and nesting feature so users can import drawings directly into the control, applying cutting technology and nesting sheets at the machine.

Productivity-enhancing options include a 10-station automatic nozzle changer and CADMAN-L programming software. CADMAN-L allows automatic or interactive determination of cutting sequences, nesting, full cutting path simulation, as well as other powerful features to simplify programming.

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Salvagnini L5 High Dynamic Fiber laser – the evolution continues

Salvagnini is renowned for flexible automation and innovation in sheet metal. The latest innovation from the company that was the first to introduce fibre lasers to the market place back in 2008, is a patented lens cooling system on its flagship L5 model laser.

The machine's proprietary cutting head is enriched by a new Dry Cooling feature, an innovative system that cools the optics without gas. This active refrigeration system monitors and controls the temperature of the focusing lens, extracting, only when necessary, the heat required to maintain a stable temperature.

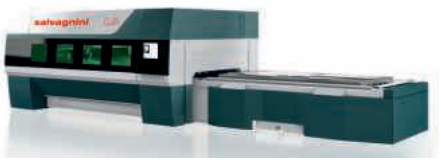
L5 Fiber laser cutting head featuring new Dry Cooling

Dry cooling actually allows a further reduction of the operating costs of fibre laser systems: it reduces the consumption of nitrogen (the cost of which, depending on the country of installation, can be significant) and the cost of consumables, thanks to the increased service life of the optics.

In addition, this cost reduction is accompanied by an improvement in cutting reliability.

The new Salvagnini L5 laser, installed at the Falcon Foodservice factory in Stirling is 60 percent faster than system that it previously used to build equipment and uses 70 percent less power, according to the Scottish company.

Falcon says the reduction in energy usage will not only help to minimise the lifetime carbon footprint of its products, but will also ultimately allow for increased savings to be passed on to customers. It expects the investment to "dramatically" increase the speed of manufacture of its product line, as well as enhancing the cut quality, design flexibility and overall responsiveness to customers. The Salvagnini L5 is a computer-controlled fibre laser, using



special optical fibre to carry the beam. It allows for a more compact design and reduces the regular maintenance that traditional CO_2 lasers require.

The L5 can process a wider range of materials, including brass and copper, which will allow Falcon to be even more responsive to customer's requirements.

"The speed and flexibility of the new laser, coupled with handling automation, will bring direct benefits to both Falcon and our customers," says operations director Kevin Campbell. "The L5 will increase our production capacity and gives us an extra competitive edge in the market."

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All fibre line up for laser cutting firm

Sheet metal subcontractor Accurate Laser Cutting is set to further improve its processing capabilities by adding a second fibre laser to its plant. The company is on the verge of replacing its existing CO_2 cutting equipment with a brand new fibre laser, creating an all fibre line up at its West Midlands based manufacturing facility.

Company director Steve Morgan says: "Following the success of our investment in a 4 m x 2 m fibre laser last year, the decision to upgrade our CO_2 equipment was an obvious move. Fibre cutting technology has advanced so quickly for us to find ourselves investing for the second time in just 18 months. In such a fast-paced competitive market, it is vital to stay ahead of the game to ensure our customer demands are efficiently met."

This second investment is set to provide an additional boost to capacity and a significant increase in cut quality across the entire thickness range. The requirement for secondary operations is also minimised due to the use of assisted nitrogen gases, achieving a much cleaner cut on parts and no oxidation. For example, they will soon be capable of clean cutting mild steel up to 12 mm thick which is a significant improvement when compared against 6 mm on a CO_2 system.

Director Jon Till says: "In my opinion, fibre laser technology represents the future of the laser cutting industry. Not only does it offer greater accuracy on parts, it also offers massive energy saving benefits due to its minimal power requirements and zero lasing gas consumption rates. Additionally, shorter lead times are another advantage. We can pass all of these efficiencies onto our customers.''

Accurate Laser Cutting Ltd is a UK specialist in laser cutting and pressbrake services.

Using the very latest equipment, technologies and bespoke CADCAM software, Accurate Laser Cutting is capable of engineering, cutting, folding and bending a wide range of materials to any

specification, offering customers unparalleled levels of accuracy, precision and speed.

Multi-site locations ensure the company is ideally placed to service the whole of the mainland UK's manufacturing industry with a wide range of laser cutting and folding requirements.

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KASTO celebrates 25th anniversary of second factory

John Barber reports from Schalkau, Germany

25 years is a long time in business. For KASTO, the specialists in sawing and storage technology, it represents a small portion of its long and successful history. With more than 170 years in business, it is one of the oldest family-owned businesses in Europe. Armin Stolzer has been the head of company for nearly 30 years. He is the fifth generation of his family leading the company and, only a few years ago, was joined by the sixth. Under his management, KASTO has grown to become a leading company for metal sawing machines, semi-automatic and fully automatic storage systems, as well as automated handling equipment. Its success is based on more than 160 patents and is impressively underlined by more than 140,000 sawing machines shipped and more than 1,7000 automatic storage systems installed.

Armin Stolzer, KASTO's president & CEO, is the fifth generation of his family to manage the company

In late September, KASTO invited customers and European journalists to celebrate the 25th anniversary of its second factory in Schalkau. Visitors were treated to a tour of the factory, assembly plant and a presentation of the new high-performance band sawing machine, the KASTOwin pro AC 5.6, which is notable for its short cutting times, long tool life and intuitive operation.

Speaking at the celebration, CEO Armin Stolzer said: ''We started the company in 1844 and it is one of the oldest family businesses in Europe. We are proud to offer more. When customers buy KASTO they buy more. We are very happy that in the UK, we are recognised as a quality manufacturer.''

Not content to rest on its laurels, KASTO is constantly innovating and developing. Armin Stolzer said: ''Growth is a part of our business. We had a second expansion in 2006 to give us more storage capacity. 11,500 machines have been built here and 800 storage systems. We have a worldwide known brand and new products planned for 2017. We want to further develop this factory and to keep ahead of new technologies and innovations.''

The company is also keen to ensure it maintains high levels of energy savings at its Schalkau factory. Speaking at the event Matthias Eigbrecht, head of electrical design at KASTO, said: ''It is important that we manage energy efficiency. Ultimately we want to save money. We have achieved 40 percent energy savings which is a massive amount in today's environment.''

KASTOwin pro AC 5.6

The KASTOwin pro AC 5.6 is designed for a wide range of applications and delivers top performance with both carbide and bimetallic saw blades. An important feature is its innovative feed system, which is controlled by means of two ball screw spindles, each with a servo drive for precise, infinitely variable control. The KASTOwin pro also has a retraction unit on each side for lifting the band from the surface when the saw head moves back. This makes for particularly efficient, exact sawing with minimal tool wear. Depending on the type of blade, cutting times can be reduced by 50 percent and more.

The KASTOwin pro AC 5.6 is driven by an 11 kW frequency-controlled motor, which provides plenty of capacity for use with carbide blades. The cutting range is 560 mm and the smallest dimension to be cut is 25 x 25 mm.

Introducing the KASTOwin pro AC 5.6 in Schalkau was Sonke Krebber, member of the board of management at KASTO, who said: ''The other machines have only 5 kW motor power, so we now have a lot more power. We have the capacity to machine even the most difficult materials. The

biggest killer of blades performance is vibration. Once you manage vibration correctly, you can control speed and performance. We have doubled the output with the new machine and halved the cutting time.''

KASTOmicut 2.6

Officialy unveiled at the 25th anniversary celebrations, the KASTOmicut 2.6 features impressive performance options across the machines in the range. The entry level version is the KASTOmicut P 2.6 which features: adjustable saw feed by weight of saw head; cutting rail as material support; manual material clamping; infinitely adjustable cutting speed; mitre angle on both sides from +60 degrees to -45 degrees. The KASTOmicut E 2.6 is known as the all-rounder in the range. It features: hydraulically controlled saw feed; rotary table as material support; manual material clamping; infinitely adjustable cutting speed; mitre angle on both sides from +60 degrees to -45 degrees. Finally, the KASTOmicut A 2.6 is the fully-automated version of the machine. Its features include: hydraulically controlled saw feed; rotary table as material support; hydraulic material clamping; infinitely adjustable cutting speed; mitre angle on both sides from +60 degrees up to -45 degrees.

Speaking at the unveiling Alexander Krapp, sales, said: ''We have tried to combine six machines in one in order to fulfil the requirements of six machines. We can use common components to keep the cost down. This has allowed us to increase the profit.

The new machines from KASTO feature impressive levels of functionality with again the focus being efficiency and safety. Alexander Krapp explained: ''We have now created more functionality. We are able to cut faster and without deviation. It is always a challenge to ensure the machine is completely safe without reducing the access to it. We are very pleased to have come up with this concept which is 100 percent produced in Germany.

A MARK of success

MARKS GmbH is a true family business with five family members working in the company. MARKS is 24 years old and celebrates its 28th anniversary next year.

The company was formed in November 1992 by Lothar Marks. He started the business from his own apartment amidst the backdrop of an uncertain economic climate.

Lothar Marks says: ''It was a difficult time with the change from East to West Germany'' He wanted to focus his business model on being able to deliver faster than anyone else. The company achieved a high level of success relatively quickly. In 1994 they moved into a bigger building and employed more staff. The same year they purchased their first KASTO machine.

MARKS GmbH has no field sales staff and they do not attend exhibitions, such is the success of their website. The company receives on average 300 enquiries and orders a day. As Lothar Marks confirms: ''We are unbeatable. No one else has as many products available throughout Germany. 70,000 items are available in online stock.' No sales staff, no exhibitions, it is all done from our HQ.'' With just 15 employees, in 2015, the annual turnover was 15 million euros.

A key factor in the success of MARKS

GmbH has been its ongoing relationship with KASTO. The company has invested in 11 KASTO machines since 2001 and there are currently ten KASTO sawing machines at the premises. Lothar Marks has been impressed by the level of performance of the machines and the high levels of customer service provided.

Lothar Marks enthuses: ''Thank goodness we found KASTO. Price and performance with KASTO is the best. If something goes wrong, then service is key. We can always rely on KASTO if anything goes wrong. We sell service as a company and therefore we rely on service from our providers. If any issues arise, most of these are resolved over the phone with just one call. Only once in the last year has a KASTO engineer had to come out. You will find lots of KASTO products within our company, just look for the orange colours.''

MARKS GmbH offers next day delivery all across Germany, on in stock items, and they use external freight companies to deliver. Lothar Marks confirms: ''If you order today you can have it tomorrow. Everything is delivered next day.''

The company is open five days a week only and exports within the EU, but not outside of this. 99 percent of its customers are based in Germany.

KASTO always has a solution

KASTO is a family owned company that enjoys long-lasting, trust based relations with its customers and business partners, with the goal of ensuring mutual success always in mind. It is the clear that the future is both bright and most certainly orange.

Alexander Krapp concludes: We always have a solution. That is what KASTO are known for and what KASTO needs to be known for.''

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A story of success – the HBM 540A

Behringer presents a fully enclosed, flexible high-performance bandsawing machine

Based on its only recently fully re-engineered automatic HBM440A, Behringer is now presenting an addition to this high-performance machine series. The model addresses the most stringent requirements in terms of its appealing modern design and also of its superbly engineered functional characteristics. The band saw is ideally suited for the economical and precision cutting of a wide ranging variety of solid materials, pipes or profiles made of metal. In a cutting range of 540 mm in round material and 630 x 540 for squares, the HBM540A saws effortlessly and at high speed and can be used with either bimetal or carbide saw blades.

The consistently modular structure of the HBM540A guarantees a permanently high standard of quality in all the components as the sawing unit, material clamping unit and feed unit are pre-assembled separately as part of a flow assembly sequence.

An interesting feature of this machine, for example, is the facility to tilt the saw frame towards the operator, which considerably simplifies saw blade changeover. An additional benefit for all those needing to saw an increasing amount of square or sectional material is the fact that the modular structure of the machine permits considerably simpler implementation of a saw blade incline up to 4° for the manufacturer. The machine designers attached particular importance to reducing not only cutting times but also cycle times. The result of these and other improvements are higher quality cutting results in a substantially shorter time.

The feed gripper ensures trouble-free transportation of the material to be cut, even when working with uneven stock, bundled material or heavy forgings, as the fixed gripper jaw is also moved by the material on the return stroke of the feed carriage. The material is always ideally clamped, as the clamping jaws are able to move in accordance with the material width. A standard feed gripper length of 500 mm is provided, although this can be optionally extended to 1500 and 3000 mm.

The feed gripper can be moved close up to the saw blade, allowing cut off lengths to be reduced by around 50 percent. The gripper is mounted on linear guides and positioned by means of a frequency-controlled drive system. A vertical clamping unit can be optionally mounted. This is mounted in front of the gripper jaws and covers the entire cutting area. This offers a particular benefit when sawing layers or bundles.

The machine is equipped with generously dimensioned hinged doors which afford simple access for cleaning or maintenance work. This represents a particular benefit when changing the saw blade. The sawing unit of the HBM540A is also manufactured from a single cast frame, meaning that the machine is extremely torsion resistant even under the most extreme blade tensioning forces. Two self-adjusting chip brushes on either side of the saw blade clean it of adhering chips during the machining process.

The overall machine concept of the HBM540A was designed for trouble-free carbide capability, meaning that not only the drive system but all the relevant components have been adjusted for the use of carbide blades. Carbide saw blades offer an interesting alternative to bimetal, in particular when considering the time factor as part of the sawing process. The cutting output is many times higher, which makes a major difference to the machining times. The higher chip volume produced when working with carbide saw blades is directed into a generously dimensioned chip conveyor.

The HBM540A shows itself to be a true specialist when it comes to the sawing of aluminium. High drive output levels and cutting speeds ensure outstanding results in terms of performance, precision and surface quality. In addition, special rollers designed to cope with high speed levels guides are integrated right from the design stage to guide the saw blade for aluminium sawing. A number of supplementary functions in the machine's electrical control system, for example the reduced speed at the start of machining on first penetration into the material, ensure perfect cutting results with aluminium every time.

A self-explanatory, graphic-supported control system paves the way for convenient and at the same time easily understandable sawing machine operation.

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Lowering the barriers to band saw access

Starrett opens band saw demonstration zone in Gloucestershire

Saw blade specialist Starrett is bringing its expertise in band saw machines and blades to a new demonstration zone in Tewkesbury, Gloucestershire. Based on the Newton Trading Estate, within the facility of long established engineering distributor Tewkesbury Saw Ltd, the showroom will exhibit Starrett's extensive range of band saw machines. The area will be open to the public six days a week, from November 23, 2016.

Starrett's UK manufacturing headquarters is the company's 200,000 sq. ft. site in Jedburgh, Scotland. The Scottish base forms the epicentre of the company's UK and European operations and currently supplies products to over 50 countries through Starrett's well-established network of agents and distributors. The new demonstration zone in Tewkesbury will be a more central and easily accessed venue to offer existing and potential customers in the South of England and the Midlands the opportunity to view the band saw machines in action.

Starrett's bandsaw range includes bench top, gravitational, manual and semi-automatic machines, all designed for a variety of specialised applications. The bench top machines, for example, are ideal for maintenance workshops and metalworking and Starrett has recently added a new bench top machine to this range, the S1105. The new model is considerably lighter than other bench top saws in Starrett's portfolio and as a result, is ideal for use by subcontractors and hobbyists alike.

In contrast, Starrett's collection of semi-automatic band saw machines are much larger in scale and are more suited to heavy duty applications. Like all of Starrett's band saw range, the semi-automatic machines comply with all of the required CE safety standards.

"Tewkesbury Saws has been a Starrett customer for many years," explains John Cove, marketing manager at Starrett. "The new showroom, which will be housed on the second floor of the Tewkesbury Saws facility, will provide potential customers with easy access to the machines.

"We've got a long history of excellence in the band saw sector, and this isn't just a result of strong design and manufacturing. We work closely with our customers to help them find the best machine for their needs, and opening this new showroom will help us expand our capabilities in this regard. The showroom will be staffed by experts trained by our team of specialists, so they will be able to answer any questions customers may have regarding our machines."

Starrett manufactures and supplies a wide variety of band saw blades for every cutting application, including carbide and diamond, bi-metal, carbon, woodcutting and more. Starrett saws and hand tools are designed with strict quality control procedures to ensure that the company's range of tools continues to be the most accurate, robust and durable on the market.

There is no appointment necessary to visit the new Tewkesbury demonstration area, which will be open to the public from Monday to Friday, 8am to 5pm, and Saturday mornings. However, if you would like to find out more about Starrett and its band saw range before visiting, contact:

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Multi-process welding system

ESAB has introduced the Rebel EMP 215ic, a 120V-230V, CC/CV welding system that offers true multi-process arc performance, location flexibility, lightweight portability and a ground-breaking operator interface. A unique sMIG ("smart MIG") function enables users to begin MIG welding, with an extremely stable arc, just by setting metal thickness and wire diameter. Unlike competitive units, there is no need to enter information for shielding gas mix.

The Rebel provides an industrial quality arc for MIG, flux-cored, Lift TIG and Stick welding, including excellent performance with difficult-to-weld E6010 electrodes. In fact, ESAB encourages side-by-side weld test comparisons and believes that the Rebel will provide a superior experience for welders of all skill levels.

The Rebel has two operating modes, basic and advanced, that make welding easy for beginners or lets those with more experience fine tune parameters. Operators interact with the Rebel using a unique control that combines traditional weld parameter adjustments with the functionality of a smart phone (in fact, the 4.3-inch colour display uses the same thin-film transistor (TFT) LCD technology found in smart phones). No other welder combines this level of simplicity, performance and control.

The Rebel accepts 100 and 200 mm diameter wire spools, runs 0.6 to 1.0 mm diameter wires and enables users to run on 230V to 120V primary power. The Rebel weighs 18 kg., measures 584 x 229 x 406 mm and features a five-handle roll cage and unibody construction that integrates the front, back and top panels to provide superior durability for protecting internal components.

When connected to 230V primary, the unit provides a MIG output of 20 to 220 amps, a stick output of 30 to 180 amps and a TIG output of 5 to 240 amps. Applications include auto repair and restoration, maintenance and repair, mechanical contractors, light construction, farm and agricultural, training facilities and sheet metal/HVAC.

The unit comes ready-to-weld for MIG and TIG welding processes. ESAB includes a professional-grade MXL 200 MIG torch, electrode holder and return cable kits 3 m, a 4.5 m gas hose with quick connection to the machine, 200 mm Aristorod 12.50 0.8 mm wire spool and contact tips and drive rolls for wires between 0.6 and 1.0 mm wire.

Martin Freibergs, product business manager of arc equipment at ESAB Europe, says: "The Rebel EMP 215ic is the most incredible go-anywhere, weld-anything machine on the market. Users have to experience this machine to believe just how good it is. The Rebel offers outstanding all-process arc performance because we enhanced the control algorithms from our industrial systems such as the Warrior™ and Aristo®, gathered input from real world welders and then incorporated that knowledge into the Rebel design."

The smartest control system

Available on the European market, the Rebel's interface can be set for 22 different languages. The control display incorporates a built-in user manual with graphics and text to help with weld process set up, such as for connecting the work and ground leads to the correct terminals, as well as for ordering parts. The display lets users select the welding mode, as well as set and control all functions.

With the Rebel's sMIG ("smart MIG") function, users begin MIG welding by setting metal thickness and selecting wire diameter. The Rebel will automatically adapt to any popular steel, stainless, chrome-moly or aluminium filler metal/gas combination and provide a stable MIG arc. The sMIG mode enables users to weld thicker or thinner metal by increasing or decreasing wire feed speed, as well as to raise or flatten the bead profile ("crown") by increasing or decreasing voltage ("trim"). Welders can also adjust inductance to fine tune arc stability and control spatter. As users adjust one parameter, sMIG automatically adjusts others to keep the MIG arc stable.

Using an exclusive, built-in algorithm, sMIG monitors the operator's technique and continuously adapts the MIG output to provide a stable arc and superior, repeatable welds.

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Fronius expands the range of functions of its Virtual Welding simulator

Practise TIG welding safely and economically

The Austrian welding technology specialist Fronius has further developed its Virtual Welding simulation platform. TIG welding processes can now also be learned in a virtual environment, without safety risks or the use of consumables. As well as getting to grips with the welding torch, users can also learn how to handle a filler metal. The function package is available for new Virtual Welding systems as standard and can be ordered as an upgrade kit for existing devices.

Virtual Welding provides the perfect environment in which to gain your first experiences with welding equipment. It consists of a terminal with a screen and a shelf on which the user places a plastic workpiece. A faithful replica of a real welding torch is then used to draw a virtual weld seam, which is reproduced in real time as a graphic on the screen. 3D glasses held in place by a headband give the user a realistic view of their work. As of now, the existing training functions for MIG/MAG, robot and manual metal arc processes have been joined by a Virtual Welding solution for TIG welding processes.

The new package contains a special TIG welding torch and a separate sensor, which helps teach the user to apply the optimum amount of filler metal. A total of ten training

and simulation tasks are available, which can be performed on a variety of different workpieces. Here too Fronius has expanded the range of possibilities: joining the existing models for the execution of fillet welds, single-V butt welds, pipe-pipe and pipe-plate joints and melt runs comes the ability to perform three-millimetre thick square butt welds.

Significant advantages for welder training

Virtual Welding offers a whole host of major benefits for training and educational establishments. Beginners can learn about the welding systems and complete their basic training without any safety risks whatsoever. Furthermore, this is achieved without an expensive outlay on consumables such as metal, wire or gas. A mature didactic learning system comprising training and simulation sequences ensures a high level of motivation and enables rapid progress. Welding results are recorded and can be subsequently analysed and evaluated either directly on the terminal or on a PC if a network connection is available. The function package for TIG welding is available for new Virtual Welding systems as standard. Existing models can be upgraded using an upgrade kit from Fronius, which customers can use to quickly and easily install the software themselves. An optional welding helmet with integrated 3D glasses can be ordered for the simulator, which is also available as a compact case for portable use.

Fronius perfect welding division under new management

Harald Scherleitner is the new head of the perfect welding division. He is taking up the position vacated by Wolfgang Lattne who, in 2017, plans to retire after 41 years at the company.

In Scherleitner, the division is gaining a leader with a familiar face. The 37-year-old has been a member of the Fronius team since 1994 and has spent the last eight years as head of the perfect charging division. He began his career as an area sales manager for welding technology, covering Europe and Latin America. It was in this role that he oversaw the establishment of Fronius Mexico and Fronius Brazil.

The future of the division is safe in the hands of a man who knows the industry and company inside out and who has set himself a clear aim. Harald Scherleitner says: "I want to continue to expand our global position. Customers and their needs have to be at the heart of everything we do. Every activity and development we make has one primary goal and that is to save our customers money,"

His successor at the perfect charging division, Patrick Gojer, was formerly the head of Fronius UK.

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Pipe welding becomes easier

New devices for welding stainless, duplex, chrome steels and titanium has been launched by Huntingdon Fusion Techniques HFT®.

Typically for closure welds, tight bends, T-piece joints and dome end connections where a conventional tandem weld purging system cannot be used, a range of low cost, single ended inflatable weld purge dams is available for pipe diameters from 6 to 96 in (150 mm up to 2,440 mm). These lightweight systems are easy to inflate and are heat resistant up to 90°C (194°F).

Ron Sewell, chairman at Huntingdon Fusion Techniques HFT, says: "Even today, many companies are still allowing their technicians to spend many hours fabricating dams made of foam, cardboard, adhesive tape, wood and so on. Like paper, these materials contain a high percentage of water, which is very undesirable to have in the presence of a weld.

"As these old fashioned, poor quality dams and materials are warmed by the welding operation, they start to outgas their water vapour, which starts to circulate around the weld joint and combine with the weld pool to cause porosity and oxidation, leading to metallurgical defects."

Each of these new design HFT dams are made of low vapour pressure materials, specially selected for optimum weld purging results, to provide the lowest quality oxygen reading in the fastest possible time with the minimum use of expensive argon gas.

The dams are fitted with a dual inflation and purge hose, an additional purge gas hose and an exhaust which can be connected to weld purge monitors. The additional purge gas hose is suitable for introducing extra purge gas into the weld zone at any time to cool welds, to meet interpass specifications or to provide more inert gas in the event of titanium, zirconium or special stainless applications needing a guaranteed zero colour weld.

Once the dam is inflated, using the purge gas and seals all around the internal circumference of the pipe, the excess inert purge gas spills out and purges the space around the weld joint. The air (oxygen) is then released out and into the pipe length through a series of venting exhausts on the dam.

Four pull tags are located around the circumference of the weld purge dam, so rope, pull wires or slings can be attached for retrieval of the deflated system, if required.

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New unified welding management software

The unified WeldEye software dramatically decreases the time spent on documentation and gives everyone involved in welding processes unprecedented insight into the work being done. Gone are the days of manually compiled documentation in binders or Excel sheets, with WeldEye all the information you need is available at the push of a button.

The new unified WeldEye software has been developed by Weldindustry and Kemppi. This integration of two welding management softwares, Kemppi's Kemppi ARC System 3 (KAS3) and Weldindustry's Weldeye, marks the beginning of a new chapter in the WeldEye story. It combines the international welding technology expertise of Kemppi and the cutting-edge welding management IT solution of Weldindustry under one software known as WeldEye.

The software has the widest coverage of different welding-related processes in the market and has proven its performance across industries, like shipbuilding, oil & gas, automotive, construction, and machine manufacturing. WeldEye is the premium choice for digital welding management solutions, regardless of industry.

From months of documentation to minutes

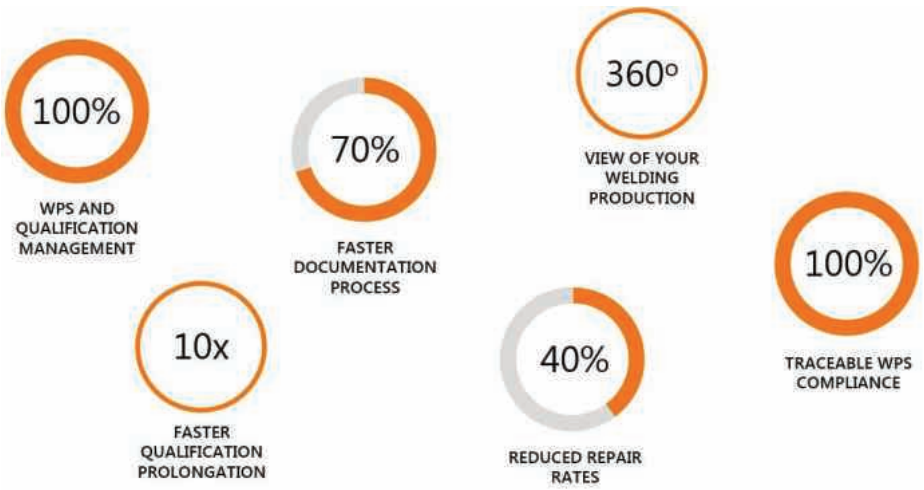
Jarle Mortensen, chief operating officer at Weldindustry, says: "Several industries are now facing severe cost challenges and are looking at how to simplify documentation. WeldEye is built for this exact purpose. To help everyone in the welding value chain document the work being carried out and to simplify end project documentation."

WeldEye gives you real-time insight into the performance of welders and the progress of your projects, as well as 100 percent traceable compliance with welding procedures, regardless of which welding equipment is being used. This makes it easier to reduce costs, improve performance and conduct quality controls. It manages welding procedures and test results as well as cuts overhead costs due to less manual work, giving 70 percent faster documentation processes. At the end of a project, the time spent on creating documentation is cut by weeks or months.

Improves quality

WeldEye is available as an online cloud service, accessible from computers or smartphones without the need for any software installation, making it easy to enter information during the execution of a project. For the first time ever, the welding operator can also get real and constant feedback from his or her activities.

In addition to providing full traceability, the software effectively works as a quality controller and constantly keeps track of compliance with international welding standards. The added transparency also means a defect is possibly spotted earlier and can be fixed immediately. By using WeldEye, end users have seen a 40 percent reduction in repair rates.



Tuomas Kivisaari, software product manager at Kemppi Oy, says: "If a batch of filler is faulty, WeldEye knows exactly which welds are done with that filler batch. At the end of the day, this boosts your efficiency by reducing the need for repair work. More information allows project managers to make quicker and better decisions and simplifies the documentation process."

Flexible solution

WeldEye solution is future-proof and automatically updated with new standards, thereby ensuring that the work is always compliant with current demands and standards, like EN ISO 3834, EN ISO 9606, ASME IX, AWS, NORSOK, and others.

Being a universal solution, the software works with all welding equipment brands. WeldEye is available globally, is location independent and supports a multitude of different languages. WeldEye is easily integrated into existing IT solutions, such as HR and ERP systems.

More information about the WeldEye software can be found at **www.weldeye.com**

Kemppi is the pioneering company within the welding industry. It is our role to develop solutions that make you win business. Headquartered in Lahti, Finland, Kemppi employs over 600 welding experts in 17 countries and has a revenue of more than 110 MEUR. Our offering includes welding solutions - intelligent equipment, welding management software and expert services - for both demanding industrial applications and ready-to-weld needs. Local expertise is available via our global partner network covering over 60 countries.

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Blocking filter prevents damage to thermal imager in laser welding processes

Micro-Epsilon's thermoIMAGER TIM M1 thermal imager for temperature measurement of metals is now available with an integrated notch filter, which prevents damage to the detector when the camera is exposed to lasers used in welding processes. This means the thermal imager can now be used in a range of laser processing applications such as laser welding, laser additive machining and brazing.

Due to its short-wave spectral range of 1 µm, the TIM M1 is ideal for temperature measurement applications in metal processing, including the temperature monitoring of metal hardening and forming processes. In the range 0.92 µm to 1.1 µm, metals are subject to a significantly higher emissivity than in other wavelength ranges.

Lasers used in welding and laser machining also have a wavelength in the centre of the TIM M1's wavelength range and, if left unfiltered, would cause damage to the thermal imager's CMOS detector. The integrated notch filter on the TIM M1 blocks these lasers at 1,064 Nm, preventing the detector from being destroyed.

In addition to the integrated notch filter, the TIM M1 has another new feature, a high speed (1kHz) linescanning mode, which allows the detection of extremely small material defects, including cracks on fast-moving metal objects such as steel bars, slabs, pipes and rails. The scanning line can be freely positioned inside the image array.

The TIM M1 is a compact, robust (IP67) short wavelength infrared thermal imaging camera, which is specifically designed to measure the surface temperature of hot metals, as well as ceramics and graphite. The camera offers a significant cost advantage, with a selling price that is similar to currently available short wavelength spot pyrometers.

The thermoIMAGER TIM M1 has a high resolution CMOS detector with 764 x 480 pixels, a temperature measuring range of 450°C to 1,800°C. It is very compact at just 46 x 56 x 90 mm, yet for harsh environments, can be supplied with a large stainless steel air or water-cooled housing that can operate in 315°C ambient temperatures.

The M1 is supplied with the licence-free TIMConnect operating and analysis

software as standard, which includes a variety of process control features, including an 'image merging' function. This smart feature allows the user to view multiple cameras on a single screen and process these as 'one image'. This is a very useful tool when users need to monitor a large target or area, for example, when searching for hotspots in a long production line.

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Weld monitoring devices to support quality system requirements

Amada Miyachi Europe has announced powerful high performance weld monitoring equipment ideal for process development, production monitoring, data collection and analysis to support quality system requirements. Amada Miyachi Europe weld monitoring devices can be smoothly integrated into the production process, providing precision real-time dynamic measurement of all welding variables. Available options include the MG3 digital weld monitor and the advanced data analysis monitoring (ADAM) system.

With increased emphasis on accountability, the MG3 digital weld monitor offers the tools required for process development, production monitoring, data collection, and analysis to support ISO, GMP and TQM requirements. The high-performance MG3 digital weld monitor offers all the tools required for micro resistance welding applications, including process development, production monitoring, data collection, and analysis to support ISO, GMP and TQM requirements. Featuring two independent measurement channels, the MG3 digital weld monitor offers oscilloscope functions with zoom and cursor modes, full on-screen SPC capability, and an integrated clock and date for weld reporting and traceability.

Representing the very latest technology in resistance weld monitoring, Amada Miyachi's Advanced Data Analysis Monitoring (ADAM) allows the operator to measure current, voltage, force, displacement, and cover gas flow/auxiliary input. It features a modern PC infrastructure to conveniently import and export saved data. Equipped with a large 22-inch colour widescreen monitor, ADAM allows users to view several charts conveniently. Users know what happens during the weld, as well as what happens before the weld is triggered. Sophisticated Statistical Process Control (SPC) capabilities, including an integrated database and Minitab 15® statistical software, enable customers to analyse and collect data.

Other key features include high resolution sensors; pre-and post-trigger viewing; envelope limits; and Ethernet communications capability. ADAM also supports ISO, GMP and TQM requirements.

Amada Miyachi Europe is a leading manufacturer of equipment and systems for laser welding, laser marking, laser cutting, resistance welding, hermetic sealing and hot bar reflow soldering & bonding. The company customises its products around specific micro-joining applications for all customers around the globe. Amada Miyachi Europe product markets include medical devices, battery, automotive, solar industry, electronic components and aerospace.

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The benefits of Industry 4.0

Rob Powell, commercial director of Lantek UK, talks about Industry 4.0 for sheet metal manufacturers

Industry 4.0 is the next stage on from the automation systems that many companies within the sheet metal industry are already embracing.

We have supplied many CADCAM systems and we see that manufacturers understand the need for sheet handling systems such as stacker systems for the automated loading of multiple sizes and specifications of material and the unloading, stacking and sorting of finished parts using automated handling systems such as chutes and robots. This type of equipment enables profiling and punching machines to operate without manual intervention, avoids wasted time on the machine for loading and unloading and frees up operators to do other tasks such as deburring and sorting while the machine is cutting.

With this type of automation, manufacturers are keeping their machines running for a much higher proportion of the time, maximising return on investment. Additional benefits include flexibility of manufacture, making it possible to change between one job and another without lengthy setup times. Already within the CADCAM software we can nest and mix parts according to material thickness and type, reuse remnants and link to MRP systems, so that manufacture can accurately fit in with orders and delivery schedules.

The step to Industry 4.0 looks at the whole of a manufacturer's business and incorporates intelligence and autonomous decision making into the mix to produce a 'smart factory'. By creating a virtual model of the factory, which uses information fed back from the machines, processes and sensors and by making this available from almost any location by means of the Internet of Things (IOT), factories in the future will be able to run automatically, for the most part, only flagging up issues to managers when anomalies outside the automated decision making capabilities of the system are detected.

Clearly, this is a little way off reality at the moment, but companies like ours, with our Lantek Factory concept, are making big strides to make it happen. Collaboration with machine tool manufacturers is a key part of this process. Where possible, we can already collect information from the machine tool about its status which can be fed back into our sheet metal MES system, automatically updating the manufacturing schedule and adjusting job times and costs and comparing them with the plan. The systems we are able to offer cover every type of machine and also extend into other processes such as welding, painting and assembly with our Lantek Workshop Capture web system providing live feedback of manufacturing activity, specifically designed for fabrication plants.

Currently, automated decision making includes reordering of material and the creation of manufacturing orders to produce more parts when stock levels are low in our Lantek Integra Inventory module, while information fed back after each event goes to refine the system for future manufacturing to deliver increasingly accurate quotations, cost control and hence profits. Lantek Integra, which is at the heart of the Lantek Factory concept, is already fully web-based. This makes it possible to access data and reports via IOT for remotely located factories from cloud based information. Tasks that require extensive processing like CADCAM are currently an exception to this and, at the moment, are better handled locally.

A major factor driving Industry 4.0 is the increasing importance of the supply chain integrating customers and suppliers with high levels of transparency. Not only will this demand the delivery high levels of Overall Equipment Effectiveness (OEE) which will be made possible with the implementation of Industry 4.0 principles but, for those companies that take up the challenge, will engender loyalty and significantly higher value business from their customers.

We are seeing growing interest in the principles of Industry 4.0 as manufacturers appreciate the benefits it can deliver for their whole business. At the moment we are only at the start of this revolution with a lot more development and integration to come covering every aspect of a business and the performance of its machinery and resources. As part of this process we have just agreed a global innovation partnership with world leading manufacturer Bystronic, which is planned to result in the most advanced sheet metal production facilities ever constructed.

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AFRC agrees three year partnership with German manufacturer

German-based machine tool manufacturer WF-Maschinenbau has renewed its membership agreement with the University of Strathclyde's Advanced Forming Research Centre, part of the High Value Manufacturing Catapult.

The three-year deal will lead to further collaboration on research and development between the Inchinnan-based facility and the international metal forming machine manufacturer. WF-Maschinenbau will supply an additional flow forming machine to the AFRC which will help further the work the organisation undergoes with metal forming.

The VUD600 vertical flow former is being used to expand the capabilities of the AFRC by developing smaller, more complex and a wider size-range of components. This new machine can produce an extensive variety of parts for many different sectors including automotive, aerospace and oil & gas.

The Tier 2 membership will enable WF to send engineers over to Scotland to conduct cutting-edge research. The AFRC will also have access to WF's site in Sendenhorst, Germany to carry out tests on parts which it is unable to complete within Scotland.

Lynne O'Hare, commercial team lead at the AFRC says: "WF-Maschinenbau is one of the most prestigious names in the global metals industry.

"We look forward to developing our collaborative efforts, resulting in tangible benefits for the metal manufacturing industries."

"The partnership will help us work across borders, pursuing manufacturing research and development opportunities while sharing skills to continue driving forward innovation.

WF-Maschinenbau has worked as the market leader in flow-forming technology for more than 45 years. Together with co-operation partners such as the AFRC, WF is proceeding in the development of new processes and materials to bring the advantages of flow-forming technology into new fields of application.

The AFRC also recently secured Mitsubishi Materials Group as a tier two member. It will act as a test facility for the development of new products and manufacturing processes, which will be used to produce metal components for use in a range of industries – including oil and gas, aerospace and automotive.

The Advanced Forming Research Centre (AFRC) is part of the High Value Manufacturing Catapult, with backing from its commercial members, the University of Strathclyde and funding bodies, which include Scottish Enterprise and the Innovate UK. Formed in 2009, its facility at Inchinnan, Glasgow, has eight laboratories and employs over 130 experts.

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Multi-substrate bonding for series production of composite parts

Henkel's fast-curing and reliable adhesives and matrix resins answer the increasing call from the auto industry for high performance continuous fibre-reinforced composites in integrated structural assemblies.

Adhesive bonding is replacing more conventional assembly methods involving welding, riveting and screwing. Not only is it highly effective, but it is also safer and simplifies many processes. The latest developments from Henkel now make it possible to produce assemblies cost-effectively in volumes that may exceed 10,000 parts per year.

Loctite EA 9065, for example, provides the high shear strength required for joining important roof parts. It also bonds effectively to many different substrates, including steel and aluminum, as well as fibre reinforced plastics or thermoplastic composites based on polyamides.

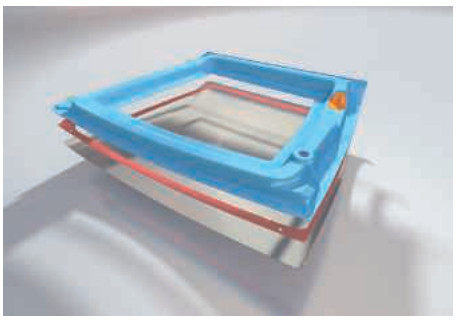
Loctite EA 9065 provides high crash durability and can be formulated for fast curing. It is therefore suitable for automated application in large automotive series.

Apart from composite adhesives that can be tailored to specific resins, Henkel also produces matrix resins for various types of fibre and textile-reinforced composites, as well as binders and release agents. It backs up its product offering with in-depth technical service that includes process know-how and engineering as well as in-house testing capabilities for composites production.

"Henkel is taking a strategic approach to large-series automotive composites production," says Frank Kerstan, global program manager, Automotive Composites.

"We position ourselves as a solution provider of composites materials for structural parts across different automotive segments and tailored adhesives for the assembly of multi-substrate components. Henkel is particularly strong when it comes to providing process and application know-how in Resin Transfer Molding, RTM."

He also highlights other strengths at Henkel, including a capability for flexible and specialised solutions for specific customer requests, access to automotive industry via its global automotive OEM/Tier 1 customer base, a global footprint through technical testing centres around the globe and a strong focus on R&D and innovation. Henkel can also call on a broad partner network covering machines, tools and engineering.



Adhesive Loctite EA 9065 used for the assembly of the frame and the roof shell of the Roding Roadster R1 sports car

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EOS introduces its biggest and fastest system for direct laser sintering

New system shatters the boundaries of manufacturing with regards to productivity, industrialisation and part quality

EOS, the global technology and quality leader for high-end additive manufacturing solutions introduced its highly innovative system for direct metal laser sintering at the recent IMTS show in Chicago. Designed for industrial applications, the ultra-fast, quad-laser system expands the previous offering by building on established EOS technology, yet taking it to the next level in terms of productivity, part quality and scalability to meet manufacturing requirements.

Andreas Graichen, group manager, Finspang Additive Manufacturing Centre of Competence, Siemens Power Generation Services states: "We chose the EOS M400-4 system to bring our AM activities to the next level, from a small scale, single laser unit to a larger scale, multiple laser unit. By using a wider building platform, with the higher productivity it provides, and pairing it with a new handling system, new thinking in gas turbine design can be brought into the industrial workshop."

"The additive manufacturing technology provides us with the speed and efficiencies needed to progress in the energy industry's fast-moving digital environment. And as such makes Siemens a unique player in the field of highly efficient power generation technologies."

Dr. Adrian Keppler, chief marketing officer at EOS adds: "Following our strategy to establish additive manufacturing technology for production in all industries, we have developed this pioneering DMLS system. The EOS M 400-4 is a perfect addition to our industrial systems portfolio. It shatters the boundaries of manufacturing as it meets the most demanding requirements of our industry partners in terms of efficiency, scalability, usability and process monitoring."

"As the system offers a modular platform designed for industrial 3D printing, it can easily be integrated into existing production environments and the customer set of future innovations."

Building on the trusted EOS metal AM benchmark

The EOS M 400-4 expands the high-performance offerings of DMLS systems. It offers a large building volume of 400 x 400 x 400 mm and is equipped with four 400 watt lasers operating independently in 250 x 250 mm squares, each including an overlap of 50 mm. The exceptional beam and power stability ensures highest DMLS part quality. The system builds on the well-established and validated process of the EOS M 290 technology. It takes innovation to the next production level as it quadruples productivity. It is therefore the perfect choice for additive manufacturing applications that need up to four times faster production of metal parts.

New EOS ClearFlow process gas management system

As part of the EOS M 400-4 system, the patented EOS ClearFlow process gas management technology ensures optimal and consistent processing conditions. It distributes the process gas in an intelligent way to avoid interference of the lasers with side products of the melting process. In addition, the integrated industrial-grade, recirculating filter system, with its long filter lifetime, significantly reduces operating times and expenses.

EOSTATE Monitoring Suite - intuitive software, improved usability

Usability and workflow on the EOS M 400-4 have been designed to meet demanding production requirements. The intuitive software offers workflow flexibility and efficiency. The system is easily operated via a touch screen and a task-based graphical user-interface. The extensive EOSTATE Monitoring Suite ensures compliance with the requirements of industrial production: it enables monitoring of the powder bed, of a variety of parameters as well as the laser power. Data Preparation and calculation is separated from the building process: the file prepared at desk is transmitted via the network. The system focuses entirely on building parts.

Material and process portfolio

Initially, the materials EOS NickelAlloy HX as well as EOS MaragingSteel MS1 will be available for the EOS M 400-4 and more materials and processes will follow soon. Parameters can be modified to meet individual application requirements using the EOS ParameterEditor.

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High productivity machining cell showcased at process control

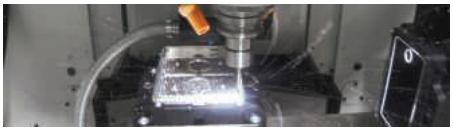
Renishaw recently exhibited its extensive range of metrology and additive manufacturing equipment at IMTS 2016 in Chicago. Visitors were also able to see the new high productivity machining cell concept. The cell demonstrates how complementary technologies can contribute, throughout the manufacturing process of a CNC machined part, to achieving high levels of productivity and manufacturing capability.

Intelligent machining processes are a critical element in advanced manufacturing technology. Widely publicised trends such as Industry 4.0, Industrial Internet Of Things, cloud computing and data mobility provide manufacturers with an unparalleled opportunity to develop processes which deliver improved productivity and process capability. Improvements in inter-connectivity between systems and easy access to automation will also be important in enabling the effective adoption of new processes and technology.

Renishaw demonstrated how the ability to monitor key process inputs, analyse data and continuously improve manufacturing processes facilitates increased productivity and higher accuracy. Simply measuring the output of a manufacturing process using 'tailgate' inspection is not enough and, more often, too late to control all the variability in a manufacturing process. It is critical that checks and measurements are also made before, during and immediately after machining to control both common-cause and special-cause variation.

Automation, measurement and feedback can deliver process control throughout the stages of manufacturing. Optimised processes monitor not only the condition of parts, but also the performance of machines, process trends, interventions and environmental effects. Renishaw's high productivity machining cell used the machining of an enclosure housing to show how measurement data and connectivity can enable highly automated accurate manufacturing with low overall labour costs to be realised.

The cell demonstrated the effects of machine tool performance on the quality of



parts produced and showed how manufacturers can monitor and control their machines to ensure they are capable of producing good parts. Renishaw also demonstrate rapid automated setting of tools and workpiece location using standard user-programmable cycles.

To integrate off-machine gauging the cell uses robot handling and data connectivity. It provides automatic tool offset control and point-of-manufacture quality assurance, keeping the machining process centred and giving confidence in the quality of parts before they progress to the next process. When all machining and finishing processes are complete, CMM inspection is used to verify the final parts meet specifications.

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Move to DEFORM helps Dawson Shanahan cut lead times

Precision engineering and cold forming specialist Dawson Shanahan Ltd has strengthened its tool making and design facilities still further with a new investment in the latest DEFORM™ engineering software. This investment has enabled the company to optimise its tool designs by eliminating the need for iterative tool room processes, whilst potentially reducing the costs customers pay for tooling.

Managing director of Dawson Shanahan, Les Reeves explains: "Although we already had relatively fast and efficient procedures for producing our tooling for both CNC machining and precision cold forming, the latest investment in DEFORM will allow us to improve this process still further."

In addition to reducing the time required to produce tooling, Les Reeves also believes that the adoption of DEFORM will help to reduce tooling costs: "We work closely with customers to engineer cost out of all projects, while maintaining or improving the quality, finish and functionality of machined and cold formed components. By minimising development times, and eliminating several stages in the tooling design process, we expect our tooling costs to become even more competitive."

DEFORM has been developed by the Scientific Forming Technologies Corporation. The software is used by companies around the world, to provide state-of-the-art simulation capabilities for deformation and die stress analysis in many different sectors of industry.

With over 70 years' experience, Dawson Shanahan Ltd is a leading global specialist in cold forming and machining of high precision, customer specified copper, aluminium, ferrous and assembled components. Dawson Shanahan offers a complete solution, with everything from prototype to production, being designed and manufactured in house to reduce both manufacturing lead time and costs for its customers.

With over 80 percent of its business being exported, the company's products meet the demands of a wide range of sectors including aerospace, automotive, electronics, laser, medical, packaging, plasma, power distribution, telecoms and welding.

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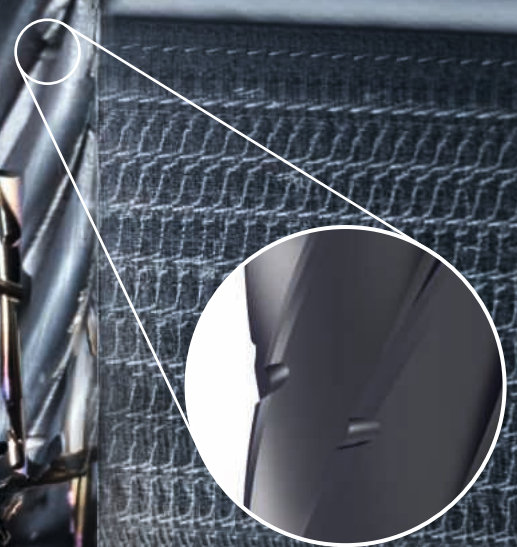

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