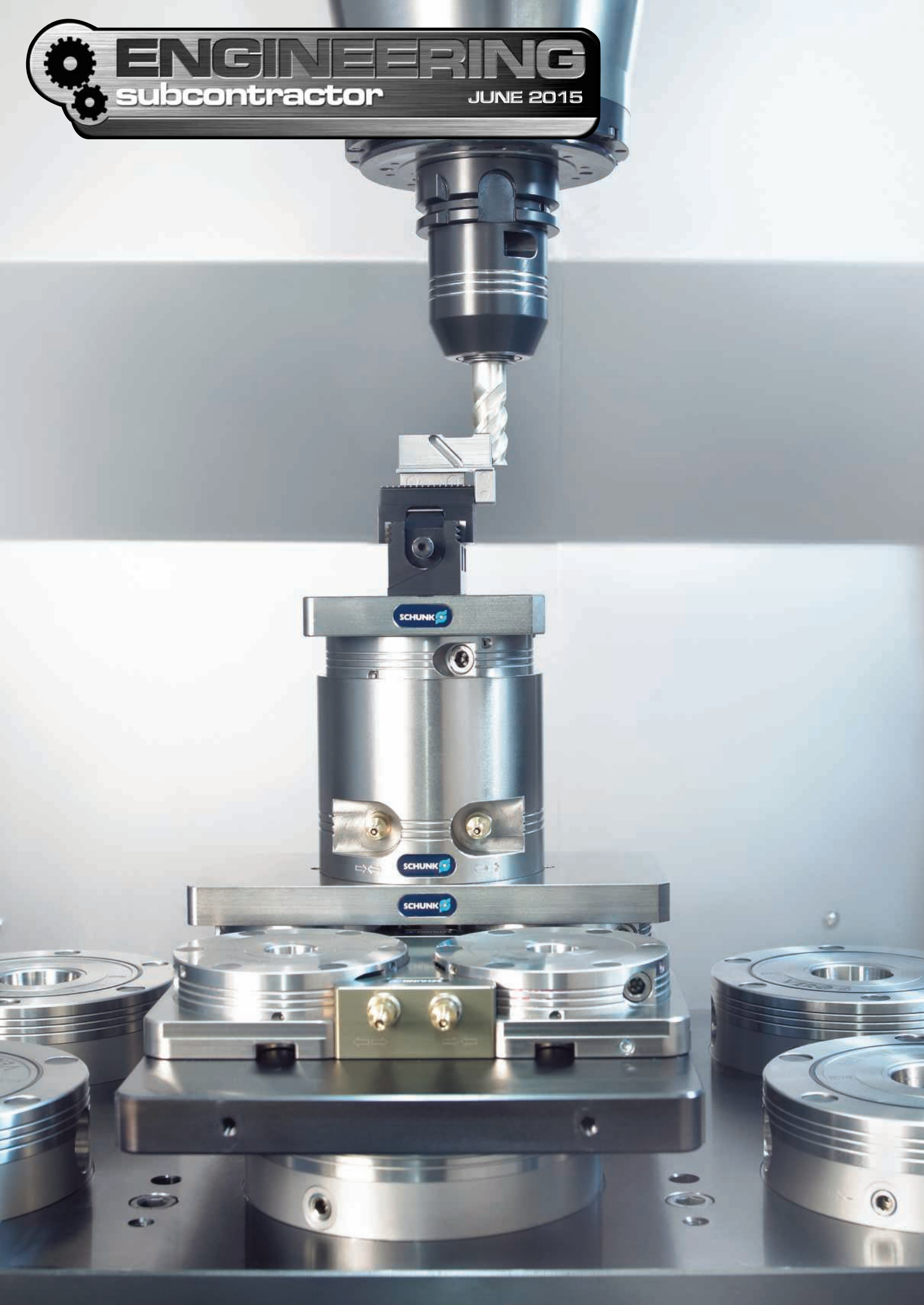
ENGINEERING subcontractor
JUNE 2015



FACT: Every 8 minutes of every working day another HAAS is sold.



Toolroom Mills
TM-1E ● 762 x 305 x 406 mm
TM-2E ● 1016 x 406 x 406mm
TM-3E ● 1016 x 508 x 406 mm
TM-1P ● 762 x 305 x 406 mm
TM-2P ● 1016 x 406 x 406mm
TM-3P ● 1016 x 508 x 406 mm

Drill & Tap
DT-1 ● 508 x 406 x 394 mm



Mini Mills
Mini Mill-1 ● 406 x 305 x 254 mm
Super MM-1 ● 406 x 305 x 254 mm
Mini Mill-2 ● 508 x 405 x 356 mm
Super MM-2 ● 508 x 405 x 356 mm

Office Mill
OM-2A ● 305 x 254 x 305 mm



VF Series VMCs 40 and 50 taper
VF-1 ● 508 x 406 x 508 mm
VF-2 ● 762 x 406 x 508 mm
VF-3 ● 1016 x 508 x 635 mm
VF-4 ● 1270 x 508 x 635 mm
VF-5 ● 1270 x 660 x 635 mm
VF-6 ● 1626 x 813 x 762 mm
VF-7 ● 2134 x 813 x 762 mm
VF-8 ● 1626 x 1016 x 762 mm
VF-9 ● 2134 x 1016 x 762 mm
VF-10 ● 3048 x 813 x 762 mm
VF-11 ● 3048 x 1016 x 762 mm
VF-12 ● 3810 x 813 x 762 mm



VF TR 5-Axis VMCs
VF-2TR ● 762 x 406 x 508 mm
VF-5TR ● 1,270 x 660 x 635 mm
VF-6TR ● 1,626 x 813 x 762 mm

Mould Maker VMCs
VM-2 ● 762 x 508 x 508 mm
VM-3 ● 1016 x 660 x 635 mm
VM-6 ● 1626 x 813 x 762 mm



Extended Travel VMCs
VF-1YT ● 508 x 508 x 508 mm
VF-2YT ● 762 x 508 x 508 mm
VF-3YT ● 1016 x 660 x 635 mm
VF-5XT ● 1524 x 660 x 635 mm

GR Series Routers
GR-510 ● 3,073 x 1,549 x 279 mm
GR-712 ● 3,683 x 2,159 x 279 mm



Super Speed VMCs
VF-2SS ● 762 x 406 x 508 mm
VF-2YT SS ● 762 x 508 x 508 mm
VF-3SS ● 1016 x 508 x 635 mm
VF-3YT SS ● 1016 x 660 x 635 mm
VF-4SS ● 1270 x 508 x 635 mm
VF-5SS ● 1270 x 660 x 635 mm
VF-6SS ● 1626 x 813 x 762 mm



Toolroom Lathes
TL-1 ● 406 x 762 mm
TL-2 ● 406 x 1,219 mm
TL-3 ● 508 x 1,524 mm
TL-3B ● 762 x 1,524 mm

Office Lathe
OL-1 ● 305 x 204 mm

Long Bed Lathes
ST-40L ● 648 x 2.032 mm
ST-45L ● 648 x 2.032 mm

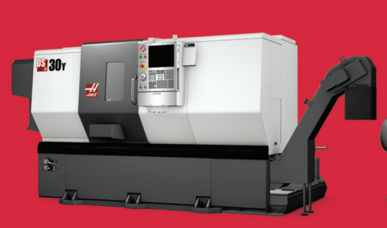


ST Series Lathes
ST-10 ● 355 x 356 mm
ST-10 Y-axis ● 305 x 356 mm
ST-20 ● 381 x 533 mm
ST-20 Y-axis ● 305 x 533 mm
ST-20SS ● 254 x 533 mm
ST-30 ● 533 x 660 mm
ST-30 Y-axis ● 457 x 584 mm
ST-30SS ● 406 x 660 mm
ST-40 ● 648 x 1,118 mm



DS Series Lathes Dual Spindle
DS-30 ● 533 x 660 mm
DS-30 Y-axis ● 457 x 584 mm
DS-30SS ● 406 x 660 mm
DS-30SS Y-axis ● 406 x 584 mm

Big Bore Lathes
ST-25 ● 381 x 533 mm
ST-25 Y-axis ● 305 x 533 mm
ST-35 ● 533 x 660 mm
ST-35 Y-axis ● 457 x 584 mm
ST-45 ● 648 x 1,118 mm



Y-Axis Lathes
ST-10 Y-axis ● 305 x 355 mm
ST-20 Y-axis ● 305 x 533 mm
ST-25 Y-axis ● 305 x 533 mm
ST-20SS Y-axis ● 254 x 533 mm
ST-30 Y-axis ● 457 x 584 mm
ST-30SS Y-axis ● 406 x 584 mm
ST-35 Y-axis ● 457 x 584 mm
DS-30 Y-axis ● 457 x 584 mm
DS-30SS Y-axis ● 406 x 584 mm



EC Series HMCs
EC-400 ● 508 x 508 x 508 mm
EC-400PP ● 508 x 508 x 508 mm
EC-500 ● 813 x 508 x 711 mm
EC-1600 ● 1,626 x 1,270 x 813 mm
EC-1600YZT ● 1,626 x 1,270 x 1016 mm



5-Axis Universal Machine
UMC-750 ● 762 x 508 x 508 mm

Super Speed 5-Axis UMC
UMC-750SS ● 762 x 508 x 508 mm



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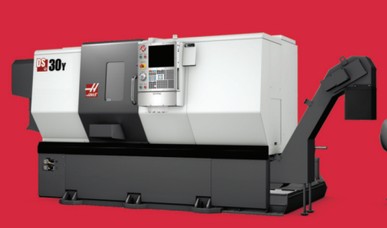


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VOLUME 12 | No.6 ISSN 1742 -5778

www.rbpublishing.co.uk

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Published by Roger Barber Publishing
Enterprise House, Foundry Lane, Horsham, West Sussex, RH13 5PX
Tel: 01403 266022 Fax: 0208 916 0033

Publisher: Roger Barber
Email: roger@rbpublishing.co.uk

Assistant editor: John Barber - 01403 242803
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Accounts: Jackie Barber - 01403 563791

Production manager: Anna Rodrigues - 01472 210712
Email: studio@rbpublishing.co.uk

Design & Production: Roger Barber Publishing
Print: Holbrooks Printers Ltd, Portsmouth, Hampshire

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Small, powerful and flexible

The Vero-S NSE Mini from SCHUNK is acknowledged as the most flat pneumatic Quick-Change Pallet module in the world. It provides ideal conditions for retrofitting existing machines, giving the end user full use of the work envelope to allow the direct clamping of small workpieces.



The VERO-S NSE mini is used for smaller applications and is the optimal complement to the largest modular system from SCHUNK. It enlarges the VERO-S program from SCHUNK with the world's flattest pneumatic quick change pallet system. The NSE mini disposes of lower pull-in forces than the NSE plus, and is particularly suitable for light cutting tasks. With the NSE mini smallest and variable gauges for bore holes can be flexibly implemented. Therefore the module is the perfect choice for direct workpiece clamping, pallet clamping and assembly handling.

At a height of 20 mm it allows for maximum use of the machine room in small machine tools and can be quickly and easily retrofitted. The special patented drive concept that converts the spring tension force into a high pull-in force is an absolute highlight. Clamping is executed safely with self-locking. Miniaturisation details: The clamping pin of the NSE mini with a diameter of 20 mm is half the size of the clamping pin of a NSE plus.

With a module diameter of 90 mm and the clamping pin diameter of only 20 mm, the NSE mini also has integrated turbo function and pull-in forces of up to 1500 N. The clamping pin is positioned via a short taper and is fixed with three clamping slides. Locking is performed mechanically via spring force and is self-locking. The large contact surfaces between clamping slide and pin minimise surface pressure when unclamped and also the wear on the module.

Since the minimum clearance between two clamping pins is 100 mm, the NSE mini has variable gauges for bore holes for workpiece and pallet clamping. It provides flexibility in the field of zero point clamping, so even small workpieces can be directly clamped and completely machined from five sides without restricting accessibility.

The clamping pins on the Quick-Change Pallet Systems are directly screwed in the workpiece. The components can be exchanged easily in the machine and are positioned, fixed, and clamped in the Quick-Change Clamping Modules at a repeat accuracy of less than 0.005 mm. The clamping height of the workpieces can be adjusted with module height extensions.

SCHUNK Intec Ltd Tel: 01908 611127
Email: info@gb.schunk.com www.gb.schunk.com

A challenge to forward thinking subcontractors

Pupils from St Georges Primary School, St. Mary's RC Primary School and St. Maxentius CE Primary School in Bolton mixed with chief executives, directors and engineers from top UK companies at the House of Lords last July to discuss the importance of engineering to them.

Guests listened to the speakers, Terry Scuoler the CEO of the Manufacturers' Organisation talk of the importance of skills to the UK and its relevance to their member companies. Archie Bethel, executive director of Babcock International spoke with regards to Babcock engineers who have engaged in the programme working with schools in Scotland. Mark Hunt, president of the Institution of Mechanical Engineers, spoke of the importance of capturing the imaginations of children as early as possible. Janet Mckinlay presented the view from the primary school, where the Institution has succeeded in grasping the interest of her pupils, a number of whom accompanied her on the day.

Chief executive and founder of Primary Engineer, Susan Scurlock rounded off the speeches by asking for companies to recognise the Institutions as a way to engage with schools, nurturing and inspiring young people's interest in engineering. She asked for companies to engage from the top down, with senior management identifying the programme, its links to engineers and the appropriate framework designed for pupils to progress and develop into the engineers for the future.

The three Bolton primary schools were the first to pilot the Institution of Primary Engineers, enabling pupils to become members of the institution by engaging with engineering as part of the curriculum, interviewing and working with the engineers. The pupils were the first to gain the post-nominal abbreviations M.IPrimEng after their names and will, over the next years in primary school, collect and evidence further engagement with engineering heading towards chartership.

Whilst the Institution of Primary Engineers and The Institution of Secondary Engineers are new programmes, they have been designed with two things in mind: to enable schools to coordinate, plan, record and evaluate their pupil's engagement with STEM and to encourage and support the engineers of the future.

Each school will have an Institution committee comprised of teachers, engineers and pupils; together they will plan the STEM activities giving engineers a role within the school and the opportunity for teachers to work with professionals from the engineering world. The official launch of the Institutions of Primary Engineers and The Institutions of Secondary Engineers last July was hosted by Baroness Wall of New Barnet at the House of Lords in London. The event was supported by the Institution of Mechanical Engineers and Primary Engineer.



The vision and key programmes

Primary Engineer is a not-for-profit organisation established in 2005. Its aim is to encourage young people to consider careers in STEM related professions.

It believes that Science, Technology, Engineering and Mathematics are key subjects in securing positive opportunities and career paths for future generations, and that this begins in primary school.

'STEM by stealth' was coined by a teacher after attending a Primary Engineer course. It summarises the work exactly: practically applying Mathematics and Science to design and make activities, leaving both children and teachers inspired. This work is supported by industry, education and the Institution of Mechanical Engineers.

The vision is that children, both girls and boys, will aspire to become designers and makers from a very early age. They are the engineers of the future.

What does Primary Engineer offer?

It offers primary schools a way to deliver practical mathematics and science to design technology activities. The class projects are aimed at each year group, mapped to the curriculum, and designed to inspire and enthuse. Programmes include teacher training, interactive and paper-based resources, and regional and national competitions. All projects are linked to practicing engineers to provide a real-world context to the project.

How you can be involved

These designers and engineers of the future need to work with you to bring their ideas into reality. They need your production expertise to make this happen. So contact Susan Scurlock now to discuss how you can be involved in this wonderful enterprise.

Primary Engineer
Tel: 01282 417333
Email: susan.scurlock@primaryengineer.com
www.primaryengineer.com

Renishaw wins Queen's Award for Enterprise

A Queen's Award for Enterprise 2015 in the Innovation category has been granted to Renishaw for the development and manufacture of its RESOLUTE™ family of non-contact, optical position feedback devices. RESOLUTE enables a step change in the performance of motion control systems used in manufacturing and other environments. The global engineering technologies company is delighted to have won its eighteenth Queen's Award in the 50th anniversary year of this prestigious awards scheme.

Suitable for the most demanding applications, RESOLUTE is the world's first single track fine-pitch optical absolute encoder. It can determine position to a resolution of one nanometre (one billionth of a metre) with motion speeds of up to 100 metres per second for linear position applications, and is capable of 32-bit resolution at up to 36,000 rpm for rotary (angle) applications. It determines position immediately at switch-on and is compatible with a range of 'open' and 'proprietary' serial protocols including Siemens DRIVE-CLiQ, BiSS®, FANUC, Mitsubishi and Panasonic.



Sir David McMurtry, Renishaw's chairman and chief executive, says: "RESOLUTE is a phenomenal product that marries our years of experience and expertise in areas such as optics, high speed image processing, system engineering and precision manufacturing. I am proud of the achievements of the many people across the Renishaw Group who have worked tirelessly to produce a globally successful encoder product that is a world-first in its field."



He continues: "We won our first Queen's Award in 1979 for Export Achievement, and, whilst we have been fortunate to have been recognised a further seventeen times over the years, to receive a Queen's Award is still very special as they continue to be regarded as the UK's most prestigious awards for recognising commercial and technological success."

RESOLUTE is employed in a diverse variety of applications including safety-critical position feedback for medical robots, the control of precision metalworking machines, the manufacture of flat panel displays and the production of semiconductors.

The Queen's Awards for Enterprise are made each year by Her Majesty The Queen, on the advice of the British Prime Minister, who is assisted by an Advisory Committee that includes representatives of Government, industry and commerce, and the trade unions. The Awards are given solely on merit and competition is fierce. The number of Awards presented each year is not pre-set and depends on the quality of the applications received.

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Fast-tracking success

Steed Webzell reports on Progressive Motorsport Ltd, where Romi machines have helped move the company to the front of the starting grid

Progressive Motorsport Ltd is an ambitious motorsport engineering, research and development company based at Brackley, in the heart of the UK's 'motorsport valley.'

The company was established six years ago by Dave Ward and Howden Haynes, both of whom have been involved in motorsport since they left full time education. Dave Ward, for example, has spent many years in top level management roles that have produced championship honours in sports car disciplines, multiple wins in formulas such as the BTCC and GP2, as well as Australian V8 Supercar success.

"Both of us realised we could offer something to the motorsport industry that no one else could provide, so we set up the company and it's been going very well. In the past year we've gone from seven employees to 17," says Dave Ward. "We're not simply a product manufacturer, we're a solutions provider. There's lots of company's out there who can manufacture products and there's lots who can take cars to race tracks, but I don't think there's many who can take a product that's already finished by a race or road car manufacturer and make it better, and that's what we focus on doing, predominantly for SuperSport cars."

In its early days, Progressive Motorsport was outsourcing its machining requirements, but came to realise that to sustain growth the business needed to establish its own CNC machining capability.

"We looked around the market for a solution that was going to be top end, quick, with a good service because we are growing very fast," says Dave Ward.

The answer arrived in the shape of a Romi D1000 CNC machining centre with Sinumerik 828D control, 10,000 rpm spindle, 30-station ATC and 30 m/min rapids; and a Romi C420 CNC turning centre, both supplied by Romi Machines UK.

"Precision and quality is vital in cars that can do around 200 mph, so it's good to have parts coming off the Romi machines exactly right," explains Dave Ward. "It's great to have in-house control too."

Rob Fisher, machinist at Progressive Motorsport, is equally impressed with the performance levels of the Romi machines.

"I've used lots of different machine tools in the past but this is my first experience of Romi and they're very good. The machines stack up very well against other brands I've come across and the Siemens control is also nice and easy to use. Furthermore, the training from Romi was excellent. We picked things up really quickly and were making parts within a week of the machines arriving. Both the machining centre and the turning centre hold tolerance and retain finish, and I'm sure they'll give us a very good service moving forward."

Installed in early 2015, the Romi machines are cutting everything from aluminium through to tool steels and titanium. Typical products manufactured at Progressive Motorsport include fuel timer systems, battery powered grid fans, gearbox heaters, wheel torque testing rigs and power hoods to name but a few.

Of course, the company provides far more than just products, offering a wide range of services on short or long term contracts that include: track side engineering; design; rapid prototyping; logistics; management; equipment production and development; race car development; driver development; race car preparation and set-ups; and race car rebuilds and restoration.

Current contracts include those for Audi UK (running and preparing the R8 LMS GT3) and Joest Racing GmbH, in addition to numerous projects for Formula One teams and engine suppliers, as well as WEC (World Endurance Championship) teams.

"Looking to the future, we're anticipating more expansion in the coming two or three years, possibly up to 30 people," concludes Dave Ward. "Also, we haven't ruled out doing a race programme. Both Hayden and I are racers, even though we're not racing any more. However, as we're developing these cars, it would be nice to do that, so there's definitely some thought being given to the potential for a race programme."



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NORTHEAST ME MANUFACTURING & ENGINEERING

Working to make a dream come true

When Dean Reynolds left his job as a service manager at a machine tool company to set up Milton Keynes-based Reynolds Engineering in 1993 as a repetition turned parts business, little did he know that it would lead to him fulfilling a dream and building the ultimate in track day motorcycles, the DR Moto.

Initially Dean used his experience of repetition turned parts adding in machining centres as the business grew, which it did thanks to a range of customers that included, at the time, the World Championship winning Formula One team Honda and before that Stewart Grand Prix.

At one point Formula One, and motorsport in general, accounted for an unhealthy 80 percent of Reynolds Engineering turnover and the demise of the Honda Formula One team brought this home to Dean Reynolds, who was forced into redundancies and selling some machine tools. However, his dogged spirit saw the business restored to rude health through the development of a more general engineering focussed customer base. The business now works for companies across many sectors, including many in the non-destructive testing and gas analysis fields.

Motorsport companies also remain on his customer list and through working with the then Kenny Roberts Moto GP team and through its chief designer Barry Ward, who now runs GPMS Technology a designer of high specification components for racing motorcycles, Reynolds Engineering began manufacturing chassis components to many of the teams competing in the World and British Superbike championships, and the blue riband Moto GP series. Dean Reynolds says: "Working with Barry rekindled an idea that I had to create my own MotoGP motorcycle and as we talked it became apparent that this dream could be realised. What we have created is the ultimate in track day bikes that is fully specified to be able to sit on the Moto GP grid without any modifications."





Central to the success of the DR Moto machine is its frame and swinging arm, which have been designed using finite element analysis to ensure optimum stiffness characteristics for short circuit racing with all areas offering adjustments for individual riders and tracks. While many similar frames are fabricated Dean Reynolds took the decision to machine from solid billets of 5083 type-0 grade aluminium, which benefits from good machinability and corrosion resistance and doesn't require heat treatment after the numerous frame and swing arm components are welded together.

The downside of machining from billet is that the original material for the frame and swingarm weighs in excess of 500 kg. Once machined the finished weight is just 15 kg, with machining time for the swingarm alone taking up to 65 hours to complete.

Machining these complex forms also brings with it the problem of requiring cutters with extended reach and specific corner radii. It was here that Reynolds Engineering turned to its long-term tooling supplier, WNT (UK) and its range of W-HPC solid carbide cutters. The W-HPC range was specifically developed for the high volume machining of aluminium, but a major advantage in this particular application was

the availability, as standard, of five different tool lengths, four of which can be combined with a variety of corner radii, from 0.2 mm through to 4 mm. Cutter diameters range from 2.7 mm through to 25 mm, although those with corner rads are only available from 3 mm diameter.

Dean Reynolds says: "The W-HPC range from WNT is perfect for this particular application as we have to machine some deep sections and the cutters are necked out to allow even better reach. The fact that we can order short, standard, long and extra-long cutters with specific corner radii and get them delivered the next morning is a fantastic service and is reflected in the fact that 90 percent of all the cutters we use now come from WNT. The other positive thing is that our WNT technical sales engineer, Warren, has worked with us for the past 10 years now and we have built up a great understanding and along with the service provided by WNT, knowing that Warren is there if we need expert advice is reassuring. That said we are confident in the accuracy of the cutting data provided in the catalogue and, once we have the machine programmed we can make minor tweaks to the cutting data if required,"

The potential of the W-HPC cutters used at Reynolds Engineering is being maximised by the use of WNT's Centro P collet system, which combines high cutter accuracy with impressive clamping forces. Cutter run-out, when using Centro P, is guaranteed to 3 micron with each chuck balanced to G 2,5 at 25000 revs/min and U ≤ 1gmm as standard.





Clamping forces with Centro P are up to 560 Nm giving the ability to maximise cutting data and metal removal rates. A further feature is the increased capacity for through tool coolant which can be supplied at 150 Bar to remove swarf from the working area extremely efficiently.

So, if high performance motorcycling is your thing the DR Moto may be the answer, but be prepared to invest a minimum of £90,000 for which you get a MotoGP specification machine with a 1000 cc Yamaha crossplane four cylinder engine delivering 200 hp at the rear wheel, controlled by a Motec M1 series engine management system with traction control, fly by wire throttle, anti-wheelie system and the option of full GPS track mapping. Gearchanges utilise a clutchless up and down system controlling the Nova Racing close ratio gearbox.



"While I live in hope that a race team will pick up on the bike and run it at Moto GP level, I believe the key market for this bike is as a track day machine. Car enthusiasts think nothing of taking a £250,000 Ferrari on a track day and, many motorcycle enthusiasts spend tens of £1000s on their track day bike, with the DR Moto, they would have the ultimate track day machine straight out of the box," concludes Dean Reynolds.

WNT (UK) Ltd
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Polishing of superbike gears reduces wear and increases power

Established in 1989, Nova Racing is one of the only companies to supply racing gearboxes to the British superbike grids. At its Partridge Green factory in West Sussex, a pair of vibratory bowl finishing machines from PDJ Vibro is employed to polish nearly all of the gears and shafts, after they have been machined and hardened, in a process referred to as superfinishing.

For the uninitiated, superbike racing employs highly modified, standard production motorcycles, as opposed to MotoGP in which purpose-built motorcycles are used. For a superbike to be eligible to race, it must maintain the same overall appearance as its road-going counterpart, so the frame cannot be modified although elements within it may be, including the gearbox.

Nova director, Sean Whittaker says: "The major production bike manufacturers have their own racing divisions for upgrading their products for road and track racing. However they tend to charge a lot, supply can be intermittent and the parts are not necessarily optimised.

"We fill an important gap in that we reliably supply top quality racing gearboxes for typically half the price of the OEM equivalent.

"We are constantly innovating and are currently introducing a dog ring-type



gearbox that meets the superbike championship regulations yet provides faster and more reliable shifting than conventional gearboxes."

There are very few gears, shafts and selector parts that are not superfinished at the Partridge Green factory, now that Nova has installed its own vibratory finishing bowls. Previously, only around 30 percent of the certified motorsport steel components underwent the treatment due to the high cost of sending them out for finishing. Raising the proportion of superfinished components to nearly 100 percent has resulted in a major improvement in the quality, appearance and reliability of the company's products.

Sean Whittaker says: "Superfinishing is becoming very popular in the motorcycle world. Oil quenching of parts during heat treatment means that the various components come a different colour, ranging from light brown to green-grey to yellowish.

"So the assembled gearbox tends to look non-uniform, which detracts from its appearance. After superfinishing, all the component parts have the same, highly polished appearance and the engraving shows up better as well.

"There is no doubt that the gearboxes last longer, as the period between our supplying a gearbox and getting it back for refurbishment has been extended. It is because there is less wear on the gear teeth and reduced friction between the bearings and the hard-turned diameters on the input and output shafts.

"Anecdotal feedback from some of our customers suggests that they experience a small increase in power when racing, although this is difficult to verify and impossible to quantify.





"A further benefit of having polished moving gearbox parts is that the time needed for running-in is shorter. Few bikers adhere to the recommended period anyway and some 'pin it' on the track immediately, so having a gearbox that requires less running-in is a big advantage."

Choice of superfinishing process

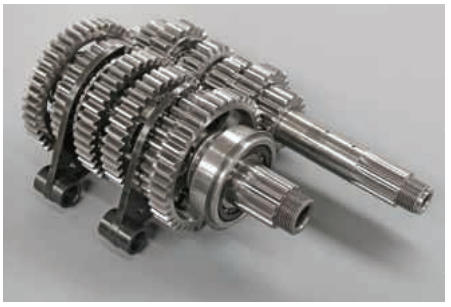
When Nova's directors decided to bring superfinishing in-house, a Google search led immediately to PDJ Vibro's website. Sean Whittaker and his colleagues were keen to avoid processes that use chemicals, such as the acidic isotropic method used by its previous superfinishing service provider. One drawback is the expense associated with disposing of the chemicals after use. Another is the tendency of the treatment to

erode the metal surfaces and alter component tolerances, which are tight at the Partridge Green factory at down to ± 5 microns.

PDJ Vibro recommended the porcelain and paste process, as it polishes surfaces but the amount of material removed is negligible. This has been proved by Nova as, in addition to superfinishing bare metal surfaces, it polishes some components that have been tuftrided rather than induction hardened. There is no discernible change to the five-micron thick tuftride layer after they emerge from the vibratory bowl.

Further evidence of the microscopically small amount of metal removed by the porcelain medium is provided by very fine machining marks, such as a single-point turned finish on a shaft, that are still visible





on the surface of the metal after superfinishing.

Two EVP vibratory bowls were supplied by PDJ Vibro after completion of successful trials on sample steel gears and shafts at its Bletchley technical centre. The second bowl delivered to Partridge Green was replaced after Nova originally ordered a model that was too large for its needs. It highlights a PDJ Vibro maxim: 'it is impossible for the customer to make a mistake'. All deliveries were from stock within 24 hours.

A batch of parts is processed for five hours in one of the two 100-litre capacity bowls, which is filled with two sizes of ceramic medium to optimise finishing over the entire surface of the components. A recirculating water and detergent mixture prevents oxidation of the steel. Afterwards, the components are transferred to the second bowl containing smaller porcelain stones, where they spend 16 hours overnight being polished, again in a water and detergent mixture.

Sean Whittaker concludes, "PDJ Vibro handled our enquiry well. The bowls were well priced and are even equipped with hour counters that are useful for calculating our charges and also warn when media needs changing or if a service is due.

"The porcelain medium in particular lasts thousands of hours, as it removes very little material, so running costs are low.

"The whole superfinishing process has proved a great success. It means that all of our manufacture is now in-house, except for heat treatment, allowing us to keep close control over quality and delivery.

"We can react very quickly to race situations and can produce components in two weeks, rather than the six months that most major manufacturers need."

PDJ Vibro Ltd
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www.pdjvibro.co.uk

Morgan's fuel flow sensors keeps motorsport moving

Morgan Advanced Materials and Sentronics have been working together to create a new fuel flow sensor which is providing motorsport manufacturers with accuracies of +/- 0.25 percent, an industry-leading innovation which is contributing to increased control over fuel consumption.

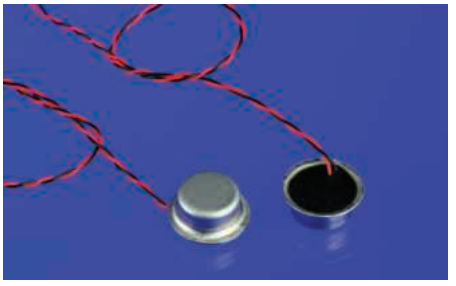
Designed to help promote energy efficiency in motorsport by measuring fuel flow as part of limiting total energy use, the fuel flow sensor is appropriate for all categories of motor racing, including touring and rally cars, as it can accurately measure flow rates of +/- 8,000 ml per minute, across a temperature range of 0°C to 105°C. Weighing in at just 330 g, far less than the 500 g maximum weight permitted by the Fédération Internationale de l'Automobile (FIA), the sensor provides an exceptional degree of accuracy without adding unnecessary weight to the vehicle.



The fuel flow sensor is capable of operating in fluid pressures of 50 kPa to 2,500 kPa and an external pressure rating of 300 kPa, making it ideal for harsh vehicle applications. Intelligent on-board electronics process volumetric flow values and compute a mass flow output.

Charles Dowling of Morgan says: "Sensor functionality in motorsport is crucial, as teams risk disqualification if they cannot efficiently balance performance and fuel consumption. In this case Morgan have managed to provide a highly responsive sensor to combine with Sentronics flow meter, creating a revolutionary new product. Morgan and Sentronics have worked together to turn this project around in only a few months, showcasing the responsiveness necessary to meet the tough demands of the motorsport industry."

"Sentronics have optimised the



electronics around the sensor to create our most accurate readings to date, twice as sensitive as some mass flow meters available and at a much lower cost. This ground breaking technology is extremely exciting and could have a very significant impact on how everyday automobiles work today."

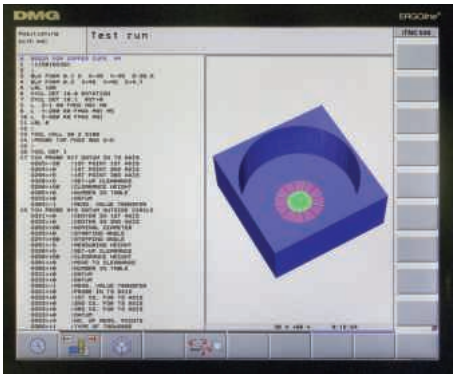
Manufactured from highly engineered materials including anodised aluminium alloy with stainless steel to form a compact and lightweight unit with no moving parts, the sensor is compatible with all fuel types.

Morgan Advanced Materials
Tel: 01299 827000
Email: marketing@morganplc.com
www.morganadvancedmaterials.com

Subcontractor expands 5-axis machining

Reading-based precision engineering company, Duckworth & Kent, which specialises in low-to-medium volume production of complex components in difficult-to-machine materials, has purchased a DMU 50 vertical machining centre from DMG MORI to strengthen its 5-axis machining capability.

The machine is the first on site capable of interpolative machining in all five axes simultaneously, although to date it has been used exclusively for 3-axis work with the rotary CNC axes positioned and clamped. A move to full 5-axis machining is planned for 2015.



Until the DMU 50 was installed, Duckworth & Kent relied for its multi-axis prismatic metalcutting on a number of 4-axis vertical-spindle machines and a 3-axis machine that was retrofitted in 2010 with a 2-axis table capable of performing 3+2-axis work.

Managing director Terry Gleeson says: "As soon as we started using the 5-axis machine, it started to attract work and was quickly operating at full capacity.

"We tried to put on as many jobs as possible, as were able to save on fixture costs, which for smaller batches could be the same as the cost of producing the parts. Now we use generic workholding systems like Lang vices and System 3R pallet chucks, without the need for any bespoke fixtures.



"Components were machined in a single cycle that previously needed to be repositioned once or twice, saving setup time and increasing productivity.

"These two economies, on fixtures and the number of operations, allowed us to quote more competitive prices and win more work."

Early success using 5-axis technology led the subcontractor to invest in a fully-fledged 5-axis machine. A review of the market identified two top-end machines of the right size that were within budget. The DMU 50 was selected, as its footprint was smaller, space on the shop floor in Reading being limited. The machine also happened to cost less than the other shortlisted model.

A further advantage of the DMU configuration is that the -5 / +110 degree swivelling rotary table offers a larger clamping area than tables on equivalent trunnion-type 5-axis machines, on which the trunnion pivots and drives take up a lot of space. Additionally,Terry Gleeson points out that the DMU table's swivel axis is from front to back, in the Y-axis, unlike with most trunnion machines on which the swivel axis is in X. If the DMU table is tipped up to 90 degrees and locked, there is a lot of clearance for machining longer parts than would normally be possible. Duckworth & Kent have frequently used this capability, which avoids the need to use an angle bracket for fixturing components.



The versatility of the machine coupled with the low cost of 5-axis manufacture has resulted in work queuing for the DMU 50 as well. It is the most accurate machine currently on the shop floor in Reading, easily able to hold ± 5 microns tolerance, thanks in part to the optional linear scales fitted in X, Y and Z.



The machine features an 18,000 rpm / 35 kW spindle, 24 m/min rapid traverse, tool and part probing, and a Heidenhain-based DMG ERGOline ® Control with 19" colour screen and 3D software. Videos of the subcontractor using the machine may be viewed at the following URL: **http://www.duckworthandkent.net/5-axis-machining.php**

The website includes information on the full range of activities of the company, which was established nearly 50 years ago and moved to its present site in 1985. In addition to subcontract machining of precision components in volumes ranging from one-off to the low thousands, mainly for the aerospace, defence, motorsport, medical and oil & gas sectors, the firm makes tools and moulds for pressworking and plastic component manufacture, and builds special purpose machinery.

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Haas Automation's CNC Exhibition a resounding success

Over 100 visitors from across the UK and Ireland attended the recent Haas exhibition held in Leicester.

Managing director Nick Remington says: "The exhibition has been a resounding success, with manufacturers from around the UK and Ireland having taken the time to come and see us.

"Many users explained that 5-axis machines were often advertised with a low base price, but accordingly a low specification. Priced at £139,995.00 our fully simultaneous 5-axis machine includes almost every option.

Prior to the official launch, 12 UMC machines had already been sold in the UK. Nick Remington comments, "global demand for the UMC has been astonishing."

"It's no secret that Haas is doing remarkably well in the UK. "We installed 505 machines in 2014 and we expect to do the same in 2015. We continue to focus our attention on our award winning service and support. As our customer base increases, so does the number of factory trained service engineers we employ. With 35 engineers strategically based around the UK, we boast the largest and fastest response service department in the industry. Our first visit fix-rate is 94.9 percent.

"The Haas success story is based on designing and building machines that offer greater value, providing unrivalled productivity and give peace-of-mind to our customers. As well as selling more machines, (over 1,000 every month in 2014) and increasing our market share, we're also selling higher value machines; machines with features our customers use to make better parts, more quickly."

The highlight at the event was the officially launch of the new UMC-750. The full simultaneous 5-axis machining centre is already proving to be a hit globally and has established itself as a market leading machine in the UK.

Comprising a compact footprint, yet boasting a large capacity, Haas is currently offering a 12,000 rpm spindle, full 5-axis simultaneous control, dynamic work offsets, tool centre point control, high speed machining, a 40+1 side mount tool changer and a host of other features for only £139,995 and delivery.

Ten of the most popular Haas CNC machine tools were also on display, all of which were cutting metal and demonstrating the latest high-productivity features and options. A range of supporting technologies and products from fellow exhibitors Delcam, Renishaw, 1st MTA, Hainbuch, Hangsterfer, M.A Ford and Kyocera could also be seen.

High-speed 5-axis universal machining centre

Haas has expanded its line of universal machining centres with the UMC-750SS, a super speed version that offers high performance and speed for quickly machining 5-sided (3+2) and simultaneous 5-axis parts.

The UMC-750SS is a 5-axis, 40-taper universal machining centre with 762 x 508 x 508 mm travels, 30.5 m/min rapids, and an integrated high-speed, dual axis trunnion table. The machine is equipped with a 15,000-rpm inline direct-drive spindle, a high-speed 40+1 tool side-mount tool changer, and Haas Automation's powerful high-speed machining software.

The UMC-750SS's high-speed, roller-cam trunnion table offers 150 deg/sec feed rates to quickly position parts to nearly any angle for 5-sided (3+2) machining, or provide full simultaneous 5-axis motion for contouring and complex machining. The trunnion provides +110 and -35 degrees of tilt and 360 degrees of rotation for excellent tool clearance and large part capacity, and the 630 x 500 mm table features standard T-slots and a precision pilot bore for fixturing versatility.

To simplify job setup, the UMC-750SS features Dynamic Work Offsets and Tool Centre Point Control, and comes standard with Haas Automation's Wireless Intuitive Probing System.

The machine's 15,000 rpm inline direct-drive spindle is powered by a 30-horsepower vector drive system that yields 122 Nm of cutting torque. The Haas inline system couples the spindle directly to the motor to reduce heat, increase power transmission, and provide excellent surface finishes.

A wide selection of high-productivity options is available for the UMC-750SS, as well, including a belt-type chip conveyor, high-pressure through-spindle coolant systems, expanded program memory, and much more.



If you're searching for a high-speed 5-axis solution to reduce setups, increase accuracy, and boost throughput, look no further. The UMC-750SS from Haas is the answer.

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9:30	Welcome and Introduction to Mazak
9:50	Delcam update
10:05	Mazak SMOOTH TECHNOLOGY
10:25	Developments in PowerMILL
10:45	Coffee
11:00	Factory & European Technology Centre tour
12:30	Lunch
13:15	Modelling for manufacture
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Versatile 5-axis machining centre can tackle almost any material

The new T1 5-axis horizontal-spindle machining centre has been introduced by Makino for high efficiency machining within a 1,500 mm (X) by 1,300 mm (Y) by 2,000 mm (Z) working envelope. The fully enclosed, temperature controlled, twin-pallet centre is well suited to machining large prismatic or cylindrical workpieces to high accuracy across a wide range of industries. Availability in the UK is through the Japanese manufacturer's sole agent, NCMT.

The direct-drive spindle, which uses the HSK-A100 interface for superior rigidity and accuracy, is suitable for milling titanium alloys with 1,000 Nm of torque from 20 rpm up to 1,000 rpm. Typical metal removal rate is 202 cm^3/min for Ti-6Al-4V. Aluminium components, on the other hand, can be machined at 4,636 cm^3/min for A6061 using 56 kW of continuous power up to the full spindle speed of 12,000 rpm.

While these metals highlight the extremes of the T1 spindle's capability, mid-range power and torque levels are available for efficient machining of materials ranging from cast iron, tool steel and stainless steel to Inconel.

Robust box-way castings, wide slideway surfaces and a deep monolithic column impart rigidity and dynamic stiffness. Active damping suppresses cutting vibrations, leading to more precise machining and increasing both metal removal rate and tool life. High volume, high pressure, through-spindle coolant also improves tool life by eliminating heat and evacuating chips from the cutting zone. Maximum pallet payload is three tonnes. Complementing these attributes is the T1's kinematic structure. Its + 45° to -110° A-axis tilts the spindle to provide full five-sided machining capability for parts up to 1,500 mm in diameter. The configuration also allows -90° spindle centreline positioning up to 550 mm beyond pallet centre, so large workpieces can be machined in one hit.



The new Makino T1 5-axis horizontal machining centre from NCMT



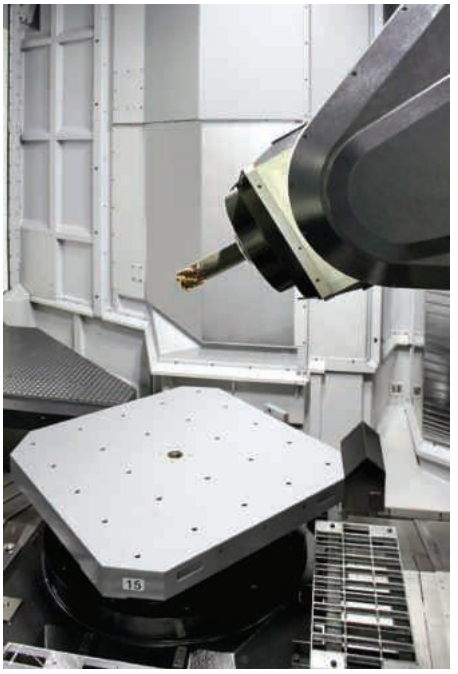
The A-axis spindle of the Makino T1

The B-axis rotary table has a rotational speed of 3,600°/min, which is supported by 10,000 Nm of continuous torque (29,000 Nm peak). The A-axis is equally fast and offers 6,300 Nm of continuous torque (20,000 Nm peak). Spindle and workpiece accessibility is promoted by a compact 400 mm pivot distance.

Operators benefit from an unobstructed view of the cutting area and a low pallet height for easy set-up, which is not the case if a trunnion-mounted table provides the rotary axes on a 5-axis machine. Moreover, the latter arrangement can deflect under a heavy load, unlike with a tilting spindle machine like the T1, on which the workpiece is supported directly by the bed.

The high volume of chips generated by aluminium machining and elevated cutting temperatures when hogging titanium presented challenges when designing the T1's swarf and coolant management. The machine includes a temperature controlled, filtered, through-spindle coolant system delivering 100 litres per minute (optional) at up to 1,000 psi directly to the cutting tip. This system effectively eliminates heat from the cutting zone, extends tool life and optimises chip evacuation.

The Makino T1 offers numerous capabilities for maximising utilisation and reducing non-cutting times. Feed rate in X-, Y-, and Z- is 25 m/min. The 60-position automatic tool changer (137-position optional) and automatic pallet changer ensure uninterrupted operation. The T1 may be integrated with Makino's MMC2 automatic pallet transfer and storage system to enable long periods of unattended operation.



A view of the spindle and B-axis rotary table of the Makino T1

Formed in 1964, NCMT operates from three strategically located sites in the North, Midlands and South of England. NCMT delivers high technology engineering solutions for metal cutting and grinding applications in the UK and across Europe, from stand-alone machines to complete production lines involving a high degree of automation. NCMT tends to specialise in the more demanding fields of engineering.

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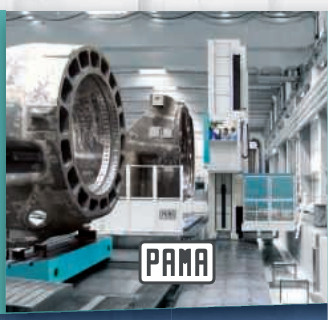
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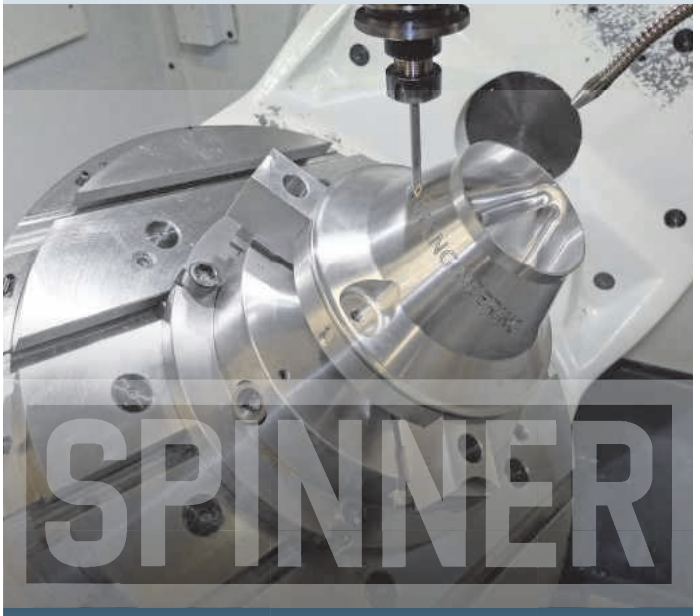
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Subcontractor progresses to simultaneous 5-axis machining

Leicester subcontract machinist, Nisan Engineering was recently awarded a new contract to machine stainless steel splitter valves used in the food industry. Complex internal profiles dictated the need for full simultaneous 5-axis machining, so managing director Mukesh Prajapati set about acquiring suitable capacity for the work.

After researching the market, he decided that a Spinner U5-620 5-axis vertical machining centre (VMC) from Whitehouse Machine Tools was ideal. The German-built machine, which was compared against competitive products from Japan and Korea, was considered to be the most robustly built, particularly with respect to the heavy-duty support at the front of the machine for the non-driven side of the trunnion.

Mukesh Prajapati's estimation was that the machine would hold tight tolerances for at least a decade and probably for up to 15 years. This is a benchmark for all purchases at the Leicester factory. The new VMC, with Siemens 840 D-SL control, 22 bar through-spindle coolant, Blum wireless infrared touch probe and mist extraction, was purchased in August 2014 along with a seat of SolidCam software. This was also considered best of breed, with its advanced cycles including iMachining, which considerably reduces roughing times and at the same time prolongs tool life.

Forming part of a new range of food industry products launched recently by the customer, the family of five twin-cavity splitter valves is produced from solid stainless steel billets varying in diameter from 76 mm to 158 mm. Two operations are required per component, the first of which involves turning the billet on a CNC twin-turret, twin-spindle turning centre.

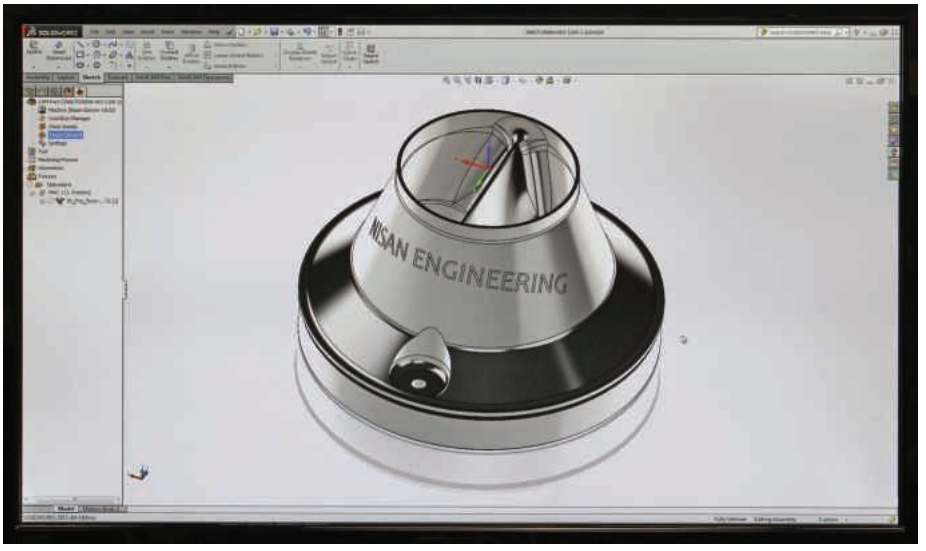




Two factors in particular complicate the second, prismatic machining operation. One is an undercut at the top of both cavities that would prevent a tool in the spindle of a 3-axis machine accessing some areas of the profile. The other is a requirement for a surface finish of 0.8 Ra or better to discourage bacteria from accumulating on the contoured surfaces over which food flows.

A machine capable of simultaneous 5-axis machining was the answer and had the added advantage of being able to engrave the necessary traceability data onto a curved surface of the component using the 5-axis capability. This eliminated a separate laser marking operation, which was previously subcontracted. The CADCAM software is an integral element in achieving the surface finish as well as dimensional tolerances down to 0.05 mm. Ten potential carbide tooling providers were reviewed and premium brand supplier MA Ford was chosen. It takes 1.5 hours to complete the turned profile of the largest splitter valve initially and a further five hours to complete the machining on the Spinner 5-axis VMC. The finishing passes alone for the two cavities, involving 0.075 mm stepovers using a solid carbide ball nose cutter, consumes 3.5 hours of machine time.

Mukesh Prajapati says: "Splitter valve volumes will hopefully grow over the next five years, but at present the contract



occupies our Spinner U5-620 for only about one-quarter of the time.

"We carried out market research before investing in the machine and saw considerable business opportunities. Although there are plenty of subcontractors offering 3+2 and even 4+1 CNC milling, there are not many companies of our size with full simultaneous 5-axis capabilities and capacity.

"It is an area we have been keen to break into for some time and the splitter valve project was the perfect opportunity to trigger the investment.

"We have already done a couple of jobs in certified 316 stainless for a major petrochemical company and are actively selling the spare 5-axis capacity.

"We are also evaluating transferring some of our existing, 3-axis jobs onto the Spinner to benefit from fewer setups and reduced production costs."

He was complimentary about the involvement of the machine agent, Whitehouse Machine Tools, with which Nisan has had a relationship that he describes as "second to none" dating back more than 20 years.

The supplier's commitment was especially evident in the early stages of the splitter valve project when the machining process was being developed. It was carried out at another company that operates a similar U5-620 and involved a Whitehouse applications engineer on site together with a SolidCam expert and Mukesh Prajapati ,with a newly purchased surface roughness tester, to check the results. Indeed, the first components supplied to Nisan's customer were machined at the third party's factory.



It is noteworthy that the splitter valves are being produced for an existing Nisan customer that specialises in manufacturing flow meters used in the oil, gas and food industries worldwide.

The relationship began in November 2012 when the subcontractor started producing a family of 10 cylindrical components on an Akari twin-pallet, 4-axis, horizontal machining centre supplied by Whitehouse Machine Tools. The parts were re-engineered by Nisan at the outset to secure quality and continuity of production and to shorten lead-times for the customer's premier product line.

Work for this firm is carried out alongside the subcontractor's ongoing business servicing many different sectors including medical, auto sport, rail, marine and yellow goods. New this year (2015) at the Leicester factory is an LK Altera 8.7.6 CNC coordinate measuring machine supplied by Nikon Metrology, which also upgraded the software on an existing Mitutoyo manual CMM on site. Further details can be found at: **www.nisanengineering.co.uk**

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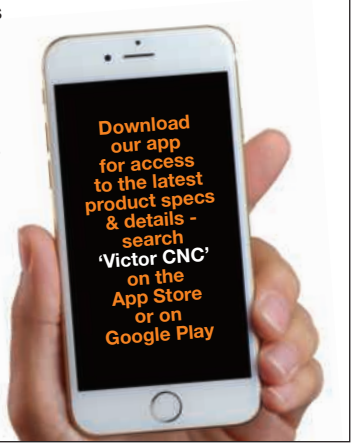
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TDT unveils KAFO KG/KG5A gantry machining centres

Kao Fong Machinery (KAFO) has developed a gantry type machining centre for large and/or heavy workpieces. Available in the UK from sole agent, TDT Technology, the range comprises KG (3-axis) and KG5A (5-axis) series machines, with the latter featuring a full A/C-axis tilting and rotating head to facilitate highly efficient machining operations in five axes of motion.



The 2-axis milling head, which offers ±105° in the A-axis and ±200° in the C-axis, is manufactured by Kessler of Germany and is representative of the high quality components deployed throughout the series. For instance, Hiwin C3 class ballscrews are featured on the machines, with dual screw types in the X and Z axes and single screw in the Y-axis. Here, an innovative ballscrew cooling system is deployed to negate thermal discrepancies and promote dynamic performance.

The main X, Y and Z axes also feature INA linear guideways from German company, Schaeffler. These are designed to deliver high rigidity while machine motion is taking place. To ensure positioning accuracy of ±0.015 mm and repeatability of ±0.01, the use of Heidenhain linear scales and closed loop control is offered in X, Y and Z so that customers can rest assured of precision-machined workpieces. This is obviously critical where large components are involved, particularly considering the high cost of raw materials and the hours of added-value metalcutting that could potentially be lost on inaccurate machines.

Importantly KAFO imparts rigorous tests and inspection routines to guarantee quality control on key machine components. Laser inspection, 3D tactile probing, ballbar inspection and rigidity checks are all used by KAFO to make sure that customers receive a quality gantry machining centre that is capable of producing precision workpieces to specification, time and time again.

To further boost the impressive specification of the KG/KG5A series, Siemens 840DSL controls help operators increase work efficiency. However, for machine shops that prefer Heidenhain, the iTNC 530 CNC is available as an option.

Models in the KG/KG5A series extend from 2 to 6 m in the X-axis, and from 2.5 to 3.5 m in the Y-axis. The Z-axis covers 1 m as standard across all models. Components weighing up to 52,500 kg can be accommodated on the table.

Rapid traverse rates are 20 m/min in the three main axes, either direct driven or via gearbox, while acceleration is 4 m/s². The BT50, 25/30 kW spindle offers speeds up to 8000 rpm and torque up to 420 Nm. To suit the large number of tools that are often required to machine large workpieces, tool magazines are available up to 120-station capacity.



TDT Technology Ltd, headquartered in Rugby, Warwickshire, is the official UK & Ireland importer, sales distributer and service agent for numerous machine tool sector-related manufacturers. Its carefully selected technical partners from around the world produce some of the most technologically advanced products and CNC systems available including the very latest machine tools, together with a comprehensive range of ancillary equipment plus machine guarding and machinery safety systems to comply with all PUWER 1998 regulation issues. Kao Fong Machinery Co., Ltd (known as KAFO) was founded in 1968. It has experienced growth alongside the Taiwan Machinery Industry Market. The company produces all kinds of traditional milling machine and a complete range of modern vertical/horizontal/double column/bridge type machining centres. Its expertise covers everything about machining with the highest possible precision and this produces the machine to match this criteria.

For the right solution or technical advice on your machine tool needs or production requirements, contact:

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www.tdt-technology.co.u

Leader proposes success with a real diamond

For the high precision machining of large components, Leader CNC is now offering the new Linear Diamond range of 5-axis bridge type machining centres from Gruppo Parpas. The new Diamond Linear series provides a spacious work area, multi-axis capability and astounding precision that gives the end user everything they need from a 5-axis machine tool.



The precision and speed of the Diamond Linear is provided by linear motors on the X, Y and Z axes and also the thermal, geometric stability of the machine that is controlled at 21° C. This combination ensures that parts are produced in a thermally stable and precise environment that will deliver component quality and consistency far beyond that of other machines in its class.

The Diamond Linear has an X-, Y- and Z-axis travel of 2,200 x 1,500 x 1,000 mm that effectively covers the 2,300 by 1,600 mm table. With a table to spindle nose distance of 1,250 mm, this new machine has an extremely spacious work area that enables users to load parts up to 20,000 kg on the machine table. With innovation in every aspect of the Diamond Linear, Gruppo Parpas has cleverly installed a sliding roof on the machine. This enables large parts and billets to be loaded by gantry or fork lift with remarkable ease. This also reduces machine and operator collisions and accidents. Clearly built for the robust machining of large parts, the Diamond Linear has an overall weight of 30,000 kg.

As would be expected from a high-end large Gruppo Parpas machining centre, the Diamond Linear has a powerful 29 kW spindle motor that can run at up to 22,000 rpm. This configuration delivers a high level of torque for heavy material removal machining and the high speed spindle range makes the Diamond Linear a truly flexible HSM option.

From a productivity perspective, the new machining centre has an acceleration rate of 5 m/sec and X-, Y- and Z- axis rapids of 40 m/min, attributable to the linear motors fitted on each of the axes. With regard to flexibility, the machine is fitted with a spindle head fully controllable in two rotary axes, the C-axis has an impressive rotation of +/-370° with an A-axis rotation from +/-105°. In addition, Leader CNC can supply the Diamond Linear with the option of an in-built rotary table to enable large parts to be turned within the machining area.

Adding to this flexibility, the new machine is available with a tool carousel with an option of 24, 40, 48, 64 or 80 tool positions that can reduce tool changeovers and operator intervention. To ensure the tooling configuration meets the precision levels of the machine, Leader CNC can install a laser tool setting probe to inspect cutting tools on every job and every process.

Leader CNC Technologies Ltd Tel: 02476 353874
Email: sales@leadercnc.co.uk www.leadercnc.co.uk



Vastly increased axis speeds

High-speed machining centres accelerate automotive component manufacture

Neville Precision Engineering, one of the UK's leading names in the design, prototyping and manufacture of aluminium extruded products, has taken delivery of two high-speed MECAL CNC machining centres from West Midlands-based cutting and sawing technology specialists, Addison Saws Ltd.

The machining centres, both 4-axis MECAL MC 307 Falcon models, have an X-axis traverse speed of 150 m/min and are believed to be the fastest CNC machining centres of their kind. They will be used to produce in excess of 40,000 aluminium door sill plates per year for one of the world's premier automotive brands.



Staying ahead of the competition

"Choosing the MECAL MC 307 Falcon machines from Addison Saws has enabled us to stay well-ahead of our competitors in terms of capability and helped secure this extremely important contract," comments Neville Precision Engineering's managing director, Edward Neville. "Their purchase also underlines our commitment to regularly invest in manufacturing technology in order to remain at the leading edge."

Technological advancements

The MECAL MC 307 Falcons have axis speeds which are nearly double those offered by the nearest competitor. Coupled to technological advancements, such as fibre-optic plc communication for rapid data transfer and ultra-precise absolute smart motor servo drives, they are already bringing significant benefits to the company's production strategies.

"Had we not opted for the MECAL MC 307 Falcons, we could quite easily have required three standard machines," adds Edward Neville.

Automatic tool measuring

To accelerate the replacement of consumable tooling, both MC 307 Falcons are equipped with automatic tool measuring. This system was retrofitted to the first Falcon CNC machining centre and then fitted as standard to the second machine. This modification to machine design demonstrates both Addison Saws' and MECAL's desire to create manufacturing solutions that fully meet each customer's specific needs.

Addison Saws and MECAL also worked closely with Neville Precision Engineering to ensure that each machine's software fully met the firm's demanding production requirements. The second 307 Falcon was, in fact, supplied with native ISO programming to enable Neville Precision Engineering to write its own CNC code.

'Stepped up to the mark at every stage'

"We have received excellent service from both Addison Saws and MECAL," concludes Edward Neville. "Both organisations have stepped up to the mark at every stage of the process and certainly helped make it possible for us to win the automotive contract. Addison's engineering and technical support has been very good and MECAL, who are very technically focused, brought their software development forward by months to meet our requirements."

Leading the way in sawing and metal cutting technology

Established in 1956, Addison Saws Ltd brought a new breed of metal cutting solutions to the UK and, in doing so, created a whole new market for bandsaws and circular saws. Today, almost sixty years on, Addison Saws Ltd continues to lead the way in metal cutting technologies and offers an extensive range of full CNC machine tools, from the world's premier industrial machine manufacturers, all supported by uncompromising levels of customer care.

The Addison Saws Ltd product range includes everything from simple, manually operated machines to highly sophisticated, fully automated sawing lines and has recently been increased with the addition of heavy-duty 3, 3+1, 4 & 5-axis long-bed multi-piece machining centres.

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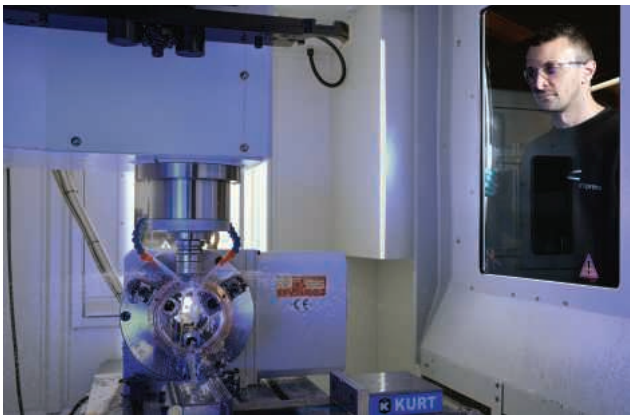
Cincom Miyano

XYZ specification impresses Impress

The growth of Gateshead-based Impress Group has been achieved by diversifying the sectors that it operates in, providing a 24/7 service, and working hand-in-hand with customers to ensure components and assemblies are supplied on time to the highest levels of quality. It has also been supported by investment in manufacturing technology, something that started in the early days of the business.

The group of five businesses provides a diverse range of services from pressings, laser profiling, high volume turned parts, coded welding and general subcontract machining, but it all started with the creation of a metal pressing and fabrication business in 1997, Impress North East Ltd. Impress director Jason Young says: "We are fortunate in that we work across many different sectors and that has allowed a level of consistency in our business. Based in the north east there is always a tendency to look at heavier industries and the oil & gas sector in particular, but we have resisted that and, while we still count these businesses among our customers, there isn't a heavy reliance on them, allowing us to continue with minimum impact on our business when one sector may be struggling''

One of the catalysts for the growth at Impress may well lie in its decision to invest in an XYZ ProtoTRAK bedmill at an early stage of the businesses development. The machine was purchased as a toolroom mill to provide support for the press brakes and forming machines operated by the company. However, it quickly became evident that the ease of use and versatility of the XYZ machine offered much greater potential and led to the first foray into subcontract machining. This quickly led to further investment in XYZ machines with the first vertical machining centre, which is still used on a daily basis, being purchased in 2000, with an XYZ MiniMill 560, and XYZ 710 VMC, an XYZ 1020 VMC following, along with additional XYZ bed mills and a ProTurn lathe.







"The XYZ machines have been excellent workhorses proving to be extremely reliable and when we have had to call on support, for service or updates in training the response from XYZ either through the local service engineer or the factory based applications engineers it has been excellent," says Jason Young. It was the confidence derived from this experience that saw Impress look to add to its machining centre capacity earlier this year. It was seeing an increased demand for light alloy/aluminium components, which meant that the existing machines were being run at their maximum spindle speeds of 8000 revs/min for extended periods. Initially, Impress looked at simply adding another XYZ VMC 1020, but with the optional 12,000 revs/min spindle fitted. However, a quick chat with their local XYZ salesman, Greg Hall changed their minds.

"Greg came in to see us and we explained the problem and he immediately suggested looking at the new XYZ 1060 HS high speed VMC. The specification of this machine ticked all of our boxes with the standard 12,000 revs/min spindle and feedrates up to 43 m/min. Not only that, but with through spindle coolant as standard we are able to maximise the machine's capability on the materials we are cutting, allowing us to reduce cycle times and improve tool life. One other feature that will have an impact on our business is the large z-axis travel of 620 mm on the XYZ 1060 HS machine, which will allow us to target larger components and also give us the capacity to machine welded fabrications," says Jason Young.

The XYZ 1060 HS was installed during January 2015 and is already having an impact on productivity due to its capabilities. The investment in XYZ machines made by Impress has ensured that it remains at the forefront of providing the production capability demanded from it by its customers, who require anything from a one off to 1000s off. The versatility of the XYZ VMCs allows Impress to work with customers that need parts on quick turnarounds or those that require a more formal, scheduled approach to component manufacture.

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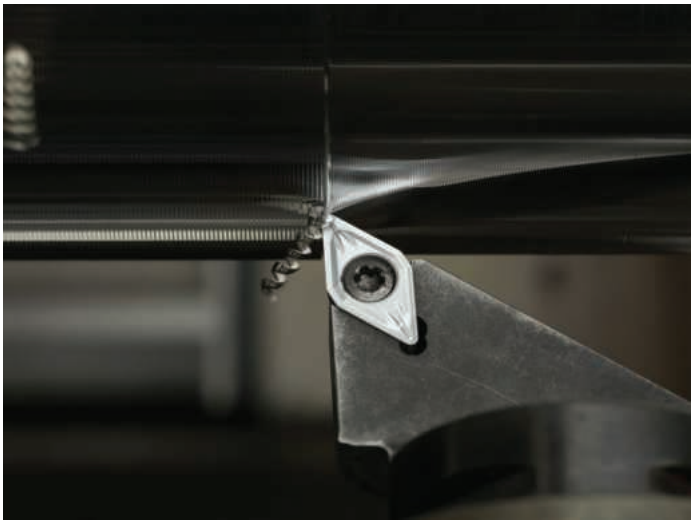
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Duratomic is a major step-change

The new, next generation Duratomic insert technology for all steel turning applications has quite literally become an industry standard overnight. However, this is certainly not an overnight success, as it is the result of eight years of hard work and commitment by the Seco research and development team.



Since Seco's Duratomic insert technology was first introduced in 2007, it has rapidly become the number one choice for precision component manufacturers turning steel and stainless steels ever since.

Three new Duratomic grades were launched into the market simultaneously from April 2015.

The new grades TP0501, TP1501 and TP2501 are tougher and more wear resistant than their predecessors, and the improvements made, some of which are immediately visible to the naked eye and some which are not, will dramatically improve customers' productivity, process reliability and cost-efficiency.

The new bright chrome-coloured coating enables customers to make sure they select the right grade for the right application:

TP0501 has been designed for the high-speed machining of High Alloy steels (SMG P3; P5; P7) where stable cutting conditions exist. The grade delivers excellent cutting performance and low insert wear when machining at high speeds and feeds with or without coolant.

TP1501 has been designed for the machining of Low Alloy steels (SMG P2; P4; P6 and SMG K4), and delivers excellent cutting performance and low wear when machining with medium to low speeds and feeds. TP2501 has been designed for the machining of a wide range of steels where unstable machining conditions exist, and where heavy-duty, interrupted cuts are the norm.

Whilst still using using an Aluminium Oxide (Al2O3) coating, Seco's R & D engineers have reconfigured the material's molecular structure. The new chrome-coloured exterior on the new Duratomic inserts helps customers easily detect whether an insert's edge is worn or not and, as a consequence, whether the insert in question can still be used or will need to be replaced.

Because wear scars are immediately visible, there is less likelihood that customers will discard inserts because they believe the edges to be worn, and that, quite simply, means less waste and reduced operational costs. Conversely it also means that inserts with worn edges will be easily recognised too.

Each of the new grades (TP0501, TP1501 and TP2501) is available in a range of different insert sizes, with different geometries and with different chip-breaker configurations. In total there are now over 1000 different Duratomic insert types now available for customers.

New grade design

When we talk about the three new Duratomic insert 'grades' it's important to remember that a grade comprises a number of elements which includes the insert coating, the insert substrate and insert-specific performance attributes.

The new Duratomic inserts have tougher edges which are less prone to wear and increase process reliability. They also reduce the effects of 'chip hammering' and deliver a reliable solution when performing intermittent cutting operations.

Seco creates two videos to support new Duratomic insert technology launch

Seco Tools UK has created two videos to support the launch of its new Duratomic insert technology into the market.

The two videos, available to view at Seco's website **www.secotools.com/uk** and Seco Tools UK's Youtube channel (**www.youtube.com/user/SecoToolsUK**) comprise:



A short, fast-moving 50 second promotional video ad titled 'Duratomic®: Chrome is the new black' that highlights the three new Duratomic insert grades now available from Seco for all steel turning applications and their six key performance attributes and strengths

A longer three minute video that uses the theme of continuous improvement at Seco as the platform to promote the launch of Duratomic.

Mike Fleming, Seco Tools UK's sales & marketing manager says: "This year's Duratomic launch is a global phenomenon and is the biggest in Seco's history.

"The two new Duratomic videos are important awareness-raising tools, and will be used extensively in group and one-to-one sessions with customers to help set the scene and promote the arrival and performance-enhancing features of our new, next generation insert technology.

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Tiger bares its teeth

Walter adds new geometries to extend Tiger.Tec Silver's cast iron capabilities

The three new ISO K MK5, RK5 and RK7 geometries of the Tiger.tec Silver high-performance cutting material from leading cutting tool manufacturer Walter GB offer greater process reliability and longer tool life in cast iron machining applications. MK5 for medium machining is universally suitable for all cast iron workpieces. It has an open chip breaker groove for a soft cutting action and is targeted at applications in ductile cast iron, unstable components or internal machining with low cutting pressure.

The RK5 and RK7 geometries are for roughing. RK5 is a classic flat top insert without chipgroove for cast iron workpieces. A stepped plateau guarantees more process reliability for cast iron machining. RK5 is the first choice for grey cast iron whilst RK7 is an extremely robust insert for very heavy interrupted cuts, tolerance variations, very uneven material removal and hard cast skin.

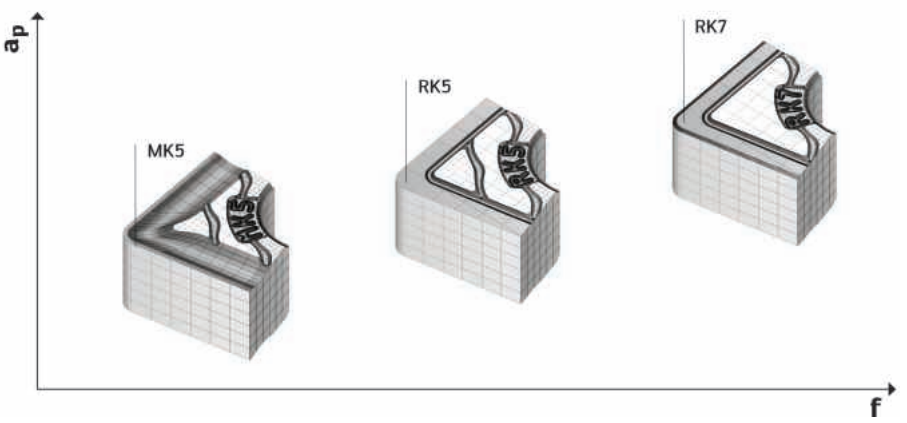
The RK7 geometry is similar to that of the RK5 but also has a protective chamfer on the cutting edge. RK7 is also suitable for the hard/soft machining of hardened steels with hardness values of 40-61 HRC, where in most cases CBN inserts are unsuitable.

A key feature of the new geometries is their plateau step between location face and cutting edge, which enables the location face to be ground after coating. It is impossible to grind the location faces of standard CNMA and DNMA inserts without a chipbreaker groove.

While the uneven location face on standard inserts can lead to micro-vibrations and chipping at the cutting edge, the evenness of the face on the new ISO K geometries ensures the indexable insert is seated with the utmost stability. As a result, cutting-edge wear is reduced, particularly in the event of high dynamic loads.

The Tiger.tec Silver cutting tool material offers speed, reliability and longer tool life. Increased cutting speed is a result of the coating using aluminium oxide with an optimised microstructure which extends the time it takes for crater wear recesses to form.

Increased process reliability and toughness are achieved thanks post-treatment of the material, where compressive stresses are introduced into the coating and this prevent fractures to the cutting edge. In terms of longer tool life, particularly when machining cast iron, increases up to 75 percent have been achieved.

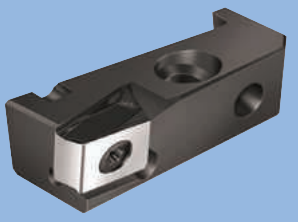


Greater process reliability and longer tool life are on offer with Walter GB's new ISO K Tiger.tec Silver geometries

Tiger.tec Silver WKK10S and WKK20S cutting materials are used on grey cast iron, ductile cast iron and vermicular cast iron. WKK10S is primarily used for grey cast iron and is suitable for continuous cuts through to light interrupted cuts, and is recommended for use in dry machining. WKK20S is suitable for wet and dry machining, and ductile cast iron is the primary application area.

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Walter adds Blaxx performance to F2010 cartridge milling cutters

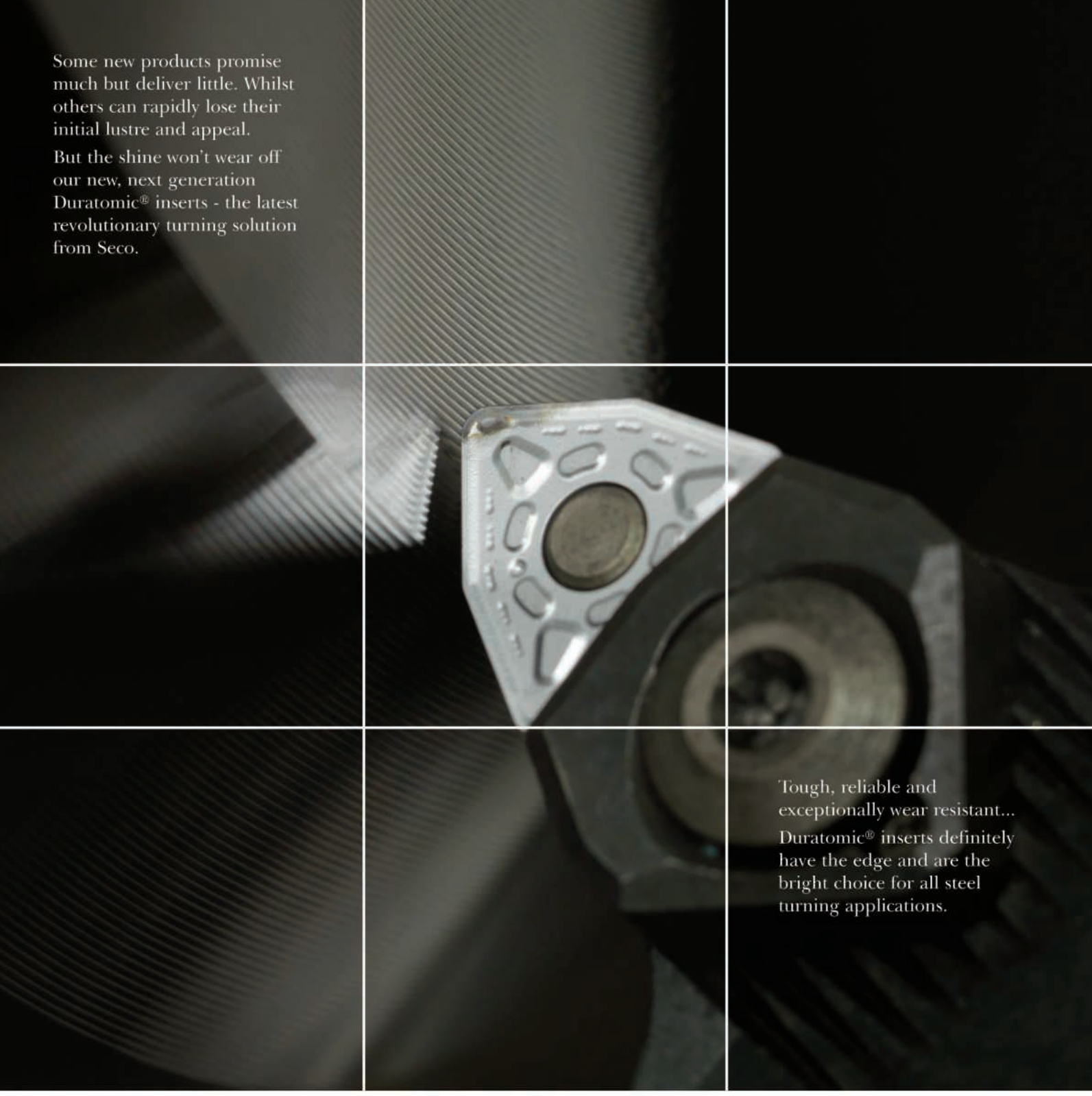


New cartridges featuring Blaxx indexable inserts with Tiger.tec Silver cutting material technology are now available for the F2010 face mill available from Walter GB. The result is an adjustable axial runout face mill that offers up to 30 percent higher feed rates.

Of flexible cartridge construction, Walter's F2010 is supplied in diameters from 80 mm up to 315 mm and because the axial runout of the inserts can be adjusted with micron precision, the cutter can be used for fine finish finishing, among other applications.

Blaxx inserts are offered either as the L55T universal geometry or as L85T, which has particularly sharp cutting edges for low cutting force applications on aluminium. The inserts are available in three sizes.Walter's Tiger.tec Silver inserts feature a surface treatment that significantly reduces the in-cycle machining stresses of both wet and dry applications, due to its balanced combination of a high level of toughness and maximised hardness.

The CVD-Al2O3 grade coating counters any influence from thermal shock that can lead to thermal cracking at the cutting edge and minimises tribochemical wear on the flank face. These are key areas that can lead to premature insert failure.



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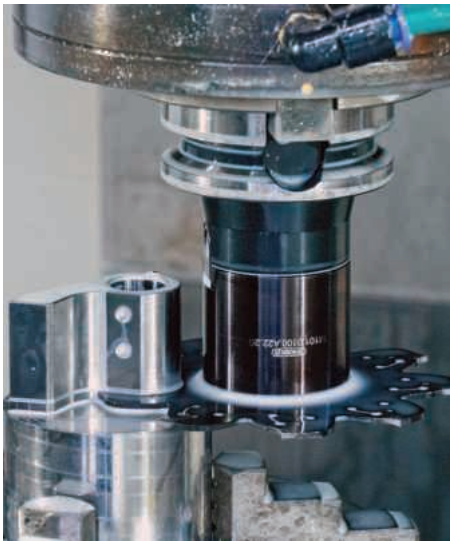
Horn M101 cutting system a cut above the competition

By utilising Horn Type M101 disc milling cutters, precision engineer SRD Engineering Ltd has gained extreme improvement in part-off/cut-off operations, reducing overall cycle times by around 10 minutes per component. In addition the inserted carbide tooling can process large quantities of components before the need for insert exchange arises, whereas an HSS saw required re-sharpening after each component. Moreover, a single insert geometry/coating can be utilised on a wide variety of exotic materials, rationalising the requirement for different geometries/ coatings for different material specifications.

In a world where time is everything there is always a chance that a useful innovation might be overlooked. Where cutting tools are concerned, the time needed to evaluate new tool 'A' against established tool 'B' can be an unaffordable luxury when set against the overwhelming need to deliver 'yesterday'.

Family-owned and Bicester-based for 23 years, SRD has profited from a fairly open-door policy to tool try-outs and has also been a regular investor in high performance machine tools and equipment. This is a partial necessity, given the variety of 'difficult' materials such as stainless steel, titanium, Inconel and other 'exotics' that it processes. Components are produced to high precision for applications ranging from medical to agricultural and motor sport to satellites, typically in batches of 10 to 100-off.

The success of this overall strategy can be measured by the relocation to new premises in Bicester during 2014. This has been





followed by acquisition of an adjacent factory unit, doubling overall shop floor space, early in 2015.

Adoption of the Horn Type M101 disc milling cutter for cut-off/part-off applications has played a not inconsiderable part of this success. An in-house 'contest' to improve on HSS slot cutting saw performance saw Type M101 demonstrate substantial superiority over inserted carbide disc mill solutions offered by other well-known tooling brands.

Key advantages are the flexibility of the cutter body/blade which allows machining close to the job/material interface. This combines with the insert design to generate positive low cutting forces, and allows the cutter/inserts to be used across a wide variety of exotic materials. Further flexibility is afforded by availability of the S101 inserts in 1.6 mm and 2.0 mm widths.

SRD milling team leader Chris Bryant comments: "This class of component is machined from a billet mounted in a vertical machining centre with a 4th axis table. Using the saw/disc mill allows almost complete machining whereas previous tooling options produced a compromised finish on the part-off face and lengthy cycle time."

Cutting data for the 128 tooth HSS tooling was 75 rev/min with a feed rate of 8 mm. By comparison, the 100 mm diameter, 9 insert Horn M101operates at 378 rev/min, with program feed of 68 mm/min. This gives cutting speed Vc of 120 m/min and 0.02 mm feed per tooth. Each cutting edge is provided by a single-ended Horn S101 insert, located and secured by a quick-change self-clamping system. The 2 mm wide sintered insert incorporates a moulded chip breaker and is available in a variety of specialised grades and coatings.

SRD machinist Michael Reading noted from the off that the 101 is a well-developed product:

"One of its notable qualities and the one that you associate with a smooth, efficient cutting tool is the sound it generates.

"Another positive feature is the flat surface provided by the assembled tool so that minimal preparation of the cut face is needed for further machining. Likewise the high consistency, positive geometry and long service life of the inserts have established it as the 'go-to' solution for sawing and part-off."



"Type M101has proved to be a very reliable, efficient tool. We previously had to plan for a certain amount of waste/sacrificial material or rework in associated manufacturing processes but that is no longer the case. Moreover the lead-time and high costs/tool inventory associated with regrinding HSS tooling is no longer an issue. Introduction of the Horn tool has been very much a win-win exercise."

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Uncoated cermet inserts post perfect grade advantages

Two new uncoated cermet turning grades: T1000A, for high speed finishing and T1500A for more general purpose machining, have been launched by Sumitomo Electric Hardmetal for use across a wide spread of applications, from high speed continuous processing cycles to low speed interrupted cutting.

Described by the Sumitomo team as the perfect turning grade for fine finish profiling and continuous high speed cutting of cast iron, soft materials, ferrous powdered metal, high carbon and alloy steels, the uncoated Sumitomo T1000A (P10) cermet grade incorporates a dual structure giving excellent wear resistance and toughness.

T1000A can be used on a wider range of applications than conventional turning insert grades, due to its high wear and fracture resistance giving a performance comparable to many more expensive coated grades under similar cutting conditions. T1000A delivers a high resistance to welding (built-up edge), even when cutting softer material as well as ferrous powder metal whilst being able to produce a superior surface finish.

Complementing the T1000A is a sister uncoated cermet insert T1500A (P20). This insert includes a choice from a series of 3D designs of chipbreaker in order to optimise chip control under different operating scenarios between 50 and 300 m/min. Here the insert is able to create a stable, quality finish while maintaining an excellent level of resistance to fracture and cracking, even when applied to interrupted cutting cycles.

Launched in the UK through Sumitomo's Princes Risborough headquarters, both uncoated cermet inset grades are depicted on a one minute YouTube/Otf2s8UfnOC sequence.

Recent trails involving continuous multi-diameter profiling on 42CrMo4 steel shafts, the T1000A insert enabled tool life to be extended by 250 percent over a competitor cermet grade. The operation was run without coolant, at 180 m/min at a feed rate of 0.25 mm/rev and depth-of-cut of 0.4 mm.

Also, when using the general purpose grade T1500A cermet insert pitched against a competitor grade to turn the internal features of an automotive brake drum using coolant, this resulted in the tool life being doubled. The new Sumitomo insert was run at 280 m/min with a 0.07 mm/rev feed and a depth-of-cut of 0.25 mm.

As part of the continuous development by Sumitomo of its powder sintering technology, the T1000A grade incorporates a composite 'Hard Phase' involving strong but brittle ceramic particles in a soft but highly ductile metal matrix that further enhances its toughness. This matches the wear resistance of TiCN with exceptional toughness and fracture resistance making it the ideal solution for continuous finishing and profiling at speeds between 150 and 400 m/min.



Sumitomo's T1500A uncoated cermet insert is ideal for general medium duty turning, including lighter interrupted cutting cycles, providing increased wear resistance

For more general purpose applications, the uncoated T1500A cermet insert enhances and provides a stable ultra-high quality finishing operation giving precise dimensional accuracy in medium duty and light interrupted cutting cycles. The insert features an optimised balance of a dual structured 'Hard Phase' where single and dual phased particles, having both a core and outer layer, are combined to enhanced hardness and toughness giving increased wear resistance and suppression of cracking.

Sumitomo Electric Hartmetall is a world leading manufacturer of modern standard and special tools for demanding machining tasks in turning, milling and drilling. As part of the Japanese Sumitomo Electric Hardmetal Corp, a subsidiary of Sumitomo, it specialises in the development of cutting materials like carbide, cermet, CBN (Sumiboron) and PKD (Sumidia).



Sumitomo's T1000A cermet high speed finishing grade with dual structure gives excellent wear resistance and toughness

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Tangential cutters are the new face of heavy milling

A new range of tangential face milling cutters and inserts for heavy roughing has been launched by Dormer Pramet.

An important addition to Dormer Pramet brand's wide assortment of milling products for heavy machining, the tangential mounting of the new robust double-sided inserts ensures rigid clamping. This results in good impact strength and cost efficient machining due to both high feed and cutting depth capabilities.



For use on Pramet's S60LN15C cutter, with a 60° approach angle, the tangential inserts LNEX are suitable for face milling of cast iron and steel in heavy machining conditions.

Tomasz Cymorek, international application engineer at Dormer Pramet, says: "Construction of the tangential milling cutter ensures the stable clamping of the inserts, while its mounting means the cutting force is along each insert's thickest, strongest axis. This helps to withstand greater forces and gives us at least 30 per cent higher tool life in heavy conditions compared with the radial option.

"Our new range of inserts will be suitable for large workpieces on big castings and forgings for, in particular, the power and marine industries."

To support the new range of cutters, Dormer Pramet has developed the M and KR chipbreakers. M has a positive geometry for standard workpieces and promotes low cutting forces. Chipbreaker KR has a more negative geometry for hard workpieces and is the first-choice for heavy cutting conditions.

The inserts have been produced using the new grades M5326, M8326 and M8346, which were developed especially for heavy milling to offer additional durability. Dormer Pramet launched the grades in November 2014.

Meanwhile, Dormer Pramet now has a complete range of ADMX16 inserts for productive 90° shoulder milling. From 1 April, it is adding five new radii (0.4 mm - 5.0 mm) and a new ADEX insert with HF geometry for high feed machining.

ADMX16 offers a universal solution for machining steel, stainless steel, cast iron, copper and aluminium.

The inserts' highly positive geometry allows low cutting forces for durability and reliability. Its optimised shape ensures ADMX16 provides a smoother operation and successful chip evacuation, leading to a quality machined surface finish.

Dormer Pramet's introduction of the milling ranges form part of a wider product launch on 1st April 2015, the first combined unveiling since Dormer and Pramet merged last year.

The merger of round tools manufacturer Dormer Tools and cemented carbide tooling specialist Pramet Tools was instigated in 2014. The combined product programme now encompasses a comprehensive range of rotary and indexable drilling, milling, threading and turning tools for the general engineering sector. An expanded sales and technical support service extends to over 30 offices serving more than 100 markets worldwide. These are supported by state-of-the-art production facilities in Europe and South America and a global distribution network consisting of five strategically placed hubs.

An overview of all the new Pramet ranges is included in the latest new product brochure, which is available to order from your local Dormer Pramet sales office.

Pramet is a product brand within Dormer Pramet.

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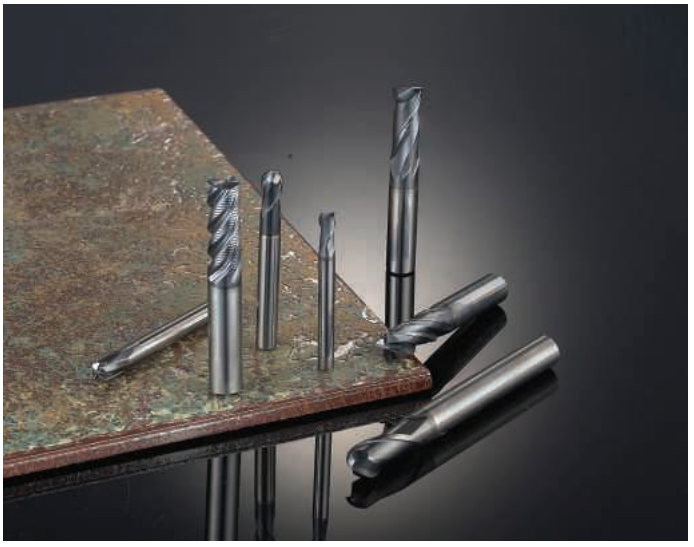
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TOTAL TOOLING = QUALITY x SERVICE²

YG-1 develops 4G mills series for mould and die industry

The innovative range of 4G milling cutters is now available from Cutwel Ltd, the UK and Ireland leading supplier of engineering cutting tools.

In an increasingly competitive global market, productivity is at stake, especially in the mould and die and automotive industries, where cost reduction and productivity gains are the main challenges.



In order to tackle these issues and to offer the best solution to highly demanding industries such as the mould and die industry, YG-1 Co Ltd, a global leader in advanced cutting tool manufacturing has developed the 4G Mills series.

The 4G Carbide Mill series are high speed cutting end mills designed to cut materials including medium and low hardened steels, cast iron alloy, carbon steel and pre-hardened steels up to HRc55.

From material to geometry, the 4G Mills series includes various innovations that are optimised for exceptional performance. Made with high a quality ultrafine carbide substrate and coated with a YG-1 special tailored coating, the 4G Mills demonstrates an enhanced heat and oxidation resistance that contributes to a longer tool life and an excellent surface finish at higher speed.

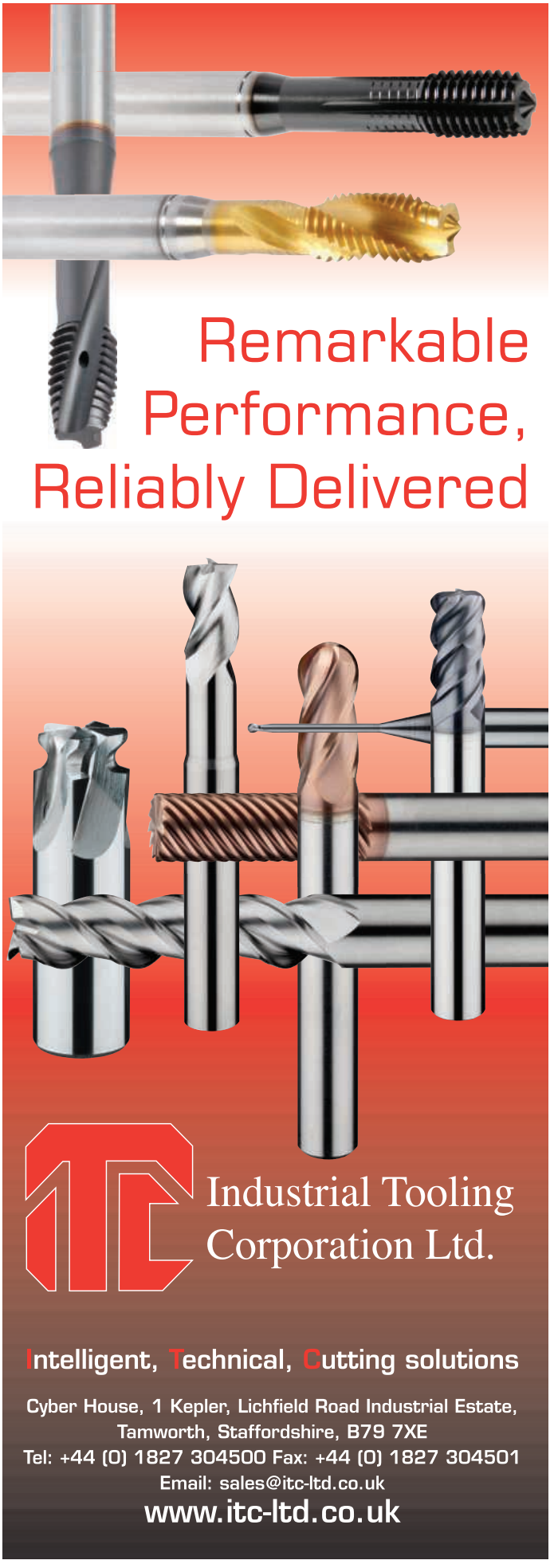
Available with two, four, six flute (with and without corner radius) or ball nose, the 4G Mill diameter sizes range from 0.03 mm to 25 mm in metric size and from .004" to 1" in inch size. Various lengths are also available: short and long length, long reach, regular and long shank as well as extended neck for rib processing.

Furthermore, the four flute end mills have been designed with a multiple helix to reduce vibrations at higher speed and to optimise results during heavy cutting operations and close tolerance applications.

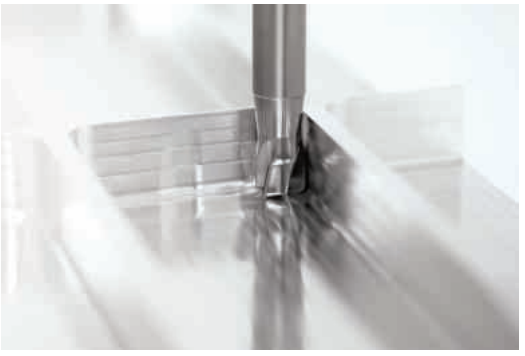
4G Mills are particularly recommended for wet and dry cutting as well as for high speed and high precision machining processes of HRc30 to HRc55 materials.

For further information on the 4G Mills or to order, contact:

Cutwel Ltd Tel: 01924 869610
Email: sales@cutwel.net www.cutwel.co.uk



New range of roughing milling cutters for aluminium



Tooling specialist MAPAL has launched OptiMill-SPM, a new range of high-performance roughing milling cutters for structural machining of aluminium parts. These new cutters have been developed with the demanding requirements of the aerospace industry specifically in mind.

Frame elements and wing parts are frequently milled from solid material and often more than 90 percent of the raw material has to be removed. MAPAL's new PCD milling cutters have a cutting-edge length that corresponds to around 60 percent of their diameter, which represents the maximum contact depth for high-performance milling in these applications. The new tools help to reduce scrap and to minimise machining times.

With OptiMill-SPM tools, the PCD blades are optimally embedded and balanced vertically, guaranteeing a high level of stability and minimising the risk of vibration. In addition, thanks to their high, positive cutting edge geometry and the optimised chip handling, cutting force is reduced by up to 15 percent compared with conventional tools, further improving performance. Bending of the tool during the machining process is prevented by the cutter's conical design, a further benefit of which is the clearance that is created between the wall of the part and the milling cutter shank. This prevents chips from scratching the wall of the part, a benefit that is particularly important in applications that involve deep pockets.

The new OptiMill-SPM milling cutters are being used very successfully in practice. For example, a 32 mm diameter OptiMill-SPM tool with three cutting edges is currently being used to machine a frame element from AlZnMgCu 1,5 with a spindle speed of 28,000 RPM. The tool delivers excellent results with feed speeds of 16,800 mm/min and a cutting depth of 12 mm.

The machining parameters for this application have been increased even further in tests conducted at the MAPAL development centre, where the milling cutter delivered outstanding performance even at a feed speed of 22,000 mm/min. The material removal rate under these conditions exceeded 8 l/min. MAPAL's OptiMill-SPM tools are available in both PCD and solid carbide versions with diameters ranging from 6 to 50 mm. The product portfolio also includes versions with the CFS replaceable head system.

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NTK takes turning applications to a new high



Finish turning applications for the aerospace sector have now been taken to a new level with the new Bidemic line of inserts from NTK. The company's new JP2 turning grade is capable of machining at 15 times the speed of high-end carbide insert grades.

The new series of coated multi-tipped brazed inserts is capable of running at a surface speed in excess of 500 m/min, taking aerospace turning into a new era. When compared to market leading CBN grades, the JP2 provides superior wear and notching resistance whilst delivering superior surface finishes. Whereas many ceramic grades have historically witnessed edge chipping when finish cutting inconel, the new JP2 delivers astounding tool life and consistency.

Suitable for machining at cutting depths of 0.1 to 3 mm on heat resistant alloys such as Inconel, Rene, Waspalloy, Hastalloy and 718 stainless, the JP2 has been developed for ultra high speed cutting. From a productivity perspective, the JP2 increases productivity and tool life by four times. This is credit to a TiN coated insert that has an exceptionally strong brazing to withstand the high temperatures during machining.

For the end user, the results can be immediately noticed with an insert grade that can meet the highest expectations of the demanding aerospace sector. The JP2 is available in a host of insert sizes and geometries to correspond with existing toolholders from the NTK catalogue.

NTK Cutting Tools is a division of NTK Technical Ceramics, part of the NGK Spark Plugs Corporation of Japan.

Based in Hemel Hempstead, Herts, the company has a long and progressive history of technical excellence and product development with the result that NTK are recognised as a world leader in the design and manufacture of advanced cutting tools.

Ceramics have always been the core of its business, which has led through painstaking research of other materials to the development of new types of cutting tools to meet metalworking applications. One of the latest developments is Poly-Crystalline Diamond which brings a new and cost-effective dimension to high speed cutting of aluminium alloy materials.

NTK Cutting Tools
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www.ntkcuttingtools.co.uk

New cutters take the edge off aluminium machining

The reputation of Industrial Tooling Corporation (ITC) as a market leading manufacturer of cutting tools for machining aluminium has been further extended with the launch of its Cyber Series of 3091 Radius tools. The three fluted 3091 Series is synonymous with rapid material removal rates and long tool life. These attributes have now been enhanced with the arrival of the new aluminium radius tool.

The impressive new line offers an extended reach for cavity machining and the processing of complex geometries. With a long overall length and extended reach, the tool life and consistency of the new radius tool is setting standards within the aerospace and motorsport sectors. The new range is available in diameters of 3, 4, 5, 6, 8, 10, 12, 16 and 20 mm, with each diameter having a selection of radii ranging from 0.25, 0.5, 0.75, 1, 1.5, 2, 3, 4 and 5 mm, depending upon the chosen diameter.

The 3091 Radius Series has a cutting depth of 1.5 x D. This enhances rigidity and surface finishes by minimising vibration when conducting heavy cutting depths at high feed rates. With an overall length from 75 to 150 mm, a cut length up to 30 mm and a reach of 12 to 65 mm, ITC has optimised the geometry of the new radius series to outperform all alternate aluminium tools available.

In addition to the high helix flute design that rapidly evacuates swarf and the relatively short cut length that stabilises vibration and machining performance, the 3091 Radius Series is centre cutting. This enables it to conduct a wide variety of machining strategies that are now being introduced by high-end CAM vendors.

ITC's state-of-the-art production facility includes CNC grinding machines from world leading manufacturers, including Walter, Schneeberger, Deckel, Rollomatic and ANCA. It has invested in a centralised oil filtration system to ensure that grinding takes place under optimum conditions with clean oil, and the inspection department includes computerised laser measuring equipment, to maintain the high standards for which ITC is renowned.



ITC sources and stocks the best available products from around the world, and hold over 100,000 HSS and solid carbide tools on the shelf ready for immediate despatch.

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Guhring launches all new RF100 Diver milling cutter



A new solid carbide range of unequal helix milling cutters has been developed by Guhring for ramping, drilling and slotting operations. The end mills are designed to be applied universally in most materials for both roughing and finishing operations.

The key element in the design of the Guhring Diver end mill is the face cutting geometry which incorporates great edge strength with maximum chip clearance essential for steep ramping angles (diving up to 45°) and drilling at high speed.

Additionally the well proven unequal helix angle design (36°/38°) reduces machining vibrations allowing higher speed and feed rates to be applied.

To further increase tool life and enable the tool to run at the fastest possible cutting rates the Guhring Diver end mills are all coated with the latest Superhard Signum Coating.

Available in two designs, plain and Weldon shank, the standard program covers seven sizes, ranging from Ø6.70mm to Ø19.50mm (undersize diameters) to accommodate precision slotting, contours and interpolated corners etc.

Here is a typical example: material - alloyed heat treatable steel 42 CrMo4; plunge milling angle = 30°; tool diameter = 11.70mm; speed (Vc) = 200m/min; feed (Vf) = 1200 mm/min

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SCHUNK offers quick jaw changes pronto

After the successful introduction of the SCHUNK PRONTO quick-change principle one year ago, SCHUNK now presents a complete system program that optimizes the setup process from the storage of the quick-change set to the jaw change on the machine. When SCHUNK, the competence leader for clamping technology and gripping systems designed the PRONTO quick jaw change system for conventional lathe chucks, the design remit was to lower setup time of a complete jaw set to 30 seconds. The innovative new product line for screw connected chuck jaws comfortably achieves this, reducing setup times by 95 percent. However, the new system takes ease of use and setup reductions to a whole new level.

SCHUNK PRONTO combines fine-serrated supporting jaws (1/16'' X 90° or 1.5 mm X 60°) with special quick-change inserts and this extends the clamping diameter up to 45 mm in seconds. This is eight times more than conventional lathe chucks. To achieve a fast and highly repeatable jaw change, the locking of the changing inserts are loosened with an Allen key. The insert is then removed and replaced with another one. This prevents incorrect positioning. In locked condition, a six-sided form-fit clamping ensures maximum process stability and provides high force and torque transmission. This system is suitable for clamping raw and machined parts.

As required by the application, different supporting jaw variants for small, medium and large clamping ranges are available. For top jaws, the innovative family-owned company is offering hard claw inserts for different diameters and clamping ranges with soft changing inserts for finished part processing.





SCHUNK PRONTO can be used on every fine-serrated lathe chuck in sizes 200, 250 and 315 mm and this is independent from the manufacturer. The modular design of the program system allows individual and economical combinations of individual components. A specifically developed tool and gear wagon ensures clean storage and fast access to the claw inserts, soft changing inserts, supporting jaws with mounted screws, T-nuts and adjustment aids. Clearly structured technical data charts simplify the selection and assembly of the individual components. As an added bonus, storage space is integrated in the machine as all the components can be transported on a tray and by using a quick release fastener that can be assembled directly in the machine.

Quick-change chuck for lathes with short stroke cylinder

Quick-change jaw chucks from SCHUNK, the competence leader for clamping technology and gripping systems are renowned for a very short return on investment for companies turning smaller and medium-sized parts. Following the success of the SCHUNK ROTA THW plus wedge bar power chucks, SCHUNK now transfers this principle of the fast jaw change to CNC lathes with short stroke cylinders with the launch of the SCHUNK ROTA NCX power chuck.

The universal SCHUNK ROTA NCX power chuck can replace conventional lathe chucks without a quick-change jaw system 1:1 without any necessary conversion on the machine. It minimises the setup and extends the productive machine running times. Within 60 seconds, a new jaw set is retrofitted with a repeat accuracy of 0.02 mm. The ROTA NCX is suitable for finish machining as well as volume production.

To ensure maximum operational safety, the SCHUNK ROTA NCX is equipped with a jaw locking system and jaw presence monitoring. With an individual base jaw system, the ROTA NCX becomes particularly appealing for users that do not yet work with a quick-change jaw chuck. Every type of standard top jaws with tongue and groove can be used as top jaws. The



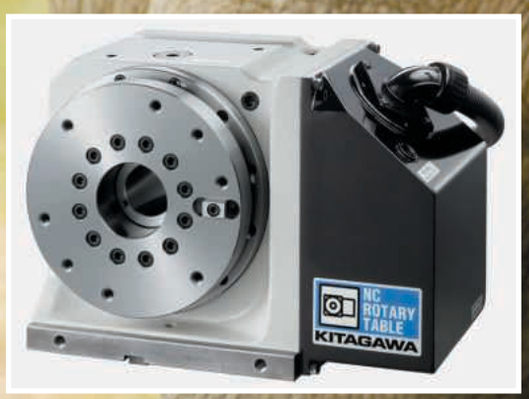
universal SCHUNK ROTA NCX chuck is available at of beginning of 2015 in the sizes 165, 215, 260, and 315 mm with a through-hole of diameter 53 to 106 mm, a jaw stroke from 3 to 6.3 mm, and a clamping force from 55 to 155 kN. The versatile new unit can also be used for I.D. and O.D. clamping.

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Clamping multiple workpieces and 4th axis indexing raise profitability

The way in which workpieces are clamped for milling and drilling can make a big difference to a manufacturer's bottom line. With this in mind, Armac Martin, a manufacturer of luxury fittings for kitchens and furniture, uses Chick workholding equipment from the USA to increase profitability and at the same time improve quality.

Salisbury-based 1st Machine Tool Accessories(1st MTA), Chick's UK distributor, provides the equipment and ongoing advice. The original contact was eight years ago, when Armac Martin progressed from using manual CNC turret mills in its Birmingham factory and started installing vertical machining centres (VMCs) from XYZ.

Their larger working areas were exploited to accommodate more components at a time in dual-station workholding units. Instead of having one component under the spindle of a turret mill, at least four and sometimes six components were mounted in two or three Chick Qwik-Loks on the 610 x 370 mm table of a 560 Minimill. When the first 710 VMC with 760 x 430 mm table was added, the number of components under the spindle could be increased to eight. If parts are sufficiently small, two may be mounted in each jaw, doubling the above numbers.

The major benefit is that, while the amount of metalcutting per component is unaltered, the number of tool changes is reduced by a factor equal to the number of parts on the table. The associated rapids traverses are similarly reduced. Non-cutting time is therefore significantly less, lowering the overall cycle time per part.



A Chick foundation plate fixed to the machine table allows quicker and more flexible placement of the Qwik-Loks across an array of pre-drilled holes in the plate and avoids having to use toe clamps and T-nuts to anchor them to the table. Moreover, the round and diamond pin sets supplied for mounting the clamps onto the foundation plate give a high degree of repeatability and consistency of machining from one batch to the next.

Each Qwik-Lok allows two parts to be squeezed simultaneously against a common, fixed jaw in the centre by turning a single handle. Opposing forces are cancelled and a reliable reference point is provided for machining. Profiling in the Chick jaws creates a pull-down action when they close for added rigidity, prolonging tool life. Sometimes, two or more Qwik-Loks are ganged on a machining centre table to allow large components to be clamped.



Phase two of the workholding makeover started in the summer of 2014, when Armac Martin called in 1st MTA again to advise on possible improvements to some workpiece clamping arrangements.

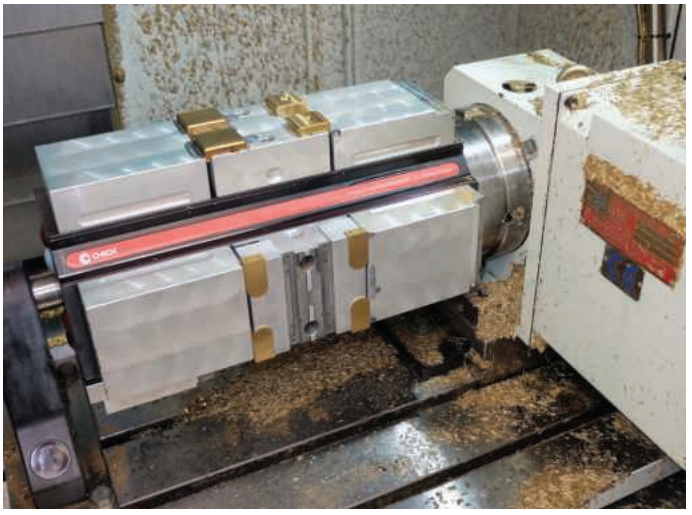
More and more handle blocks and other window and door furniture such as bolts and catches are having to be machined on the sides as well as the face. If such components are held in a standard Qwik-Lok, further setups and separate operations are needed to complete each part, lengthening floor-to-floor times and potentially compromising accuracy due to repeated relocation.

The solution provided by 1st MTA was a four-sided Multi-Lok mounted horizontally between a rotary indexing table and a tailstock clamped to the machine table. The complete unit is referred to as a Chick ISS (indexing subsystem) and the first was delivered in August 2014.

It is essentially four Qwik-Loks mounted on each face of a square section column and uses the same snap on / snap off interface, so jaw sets and other accessories are interchangeable between Qwik-Lok and Multi-Lok / ISS systems.

After the faces of the first components have been machined on any given side of the ISS, one or two edges of each component (and potentially more) can be accessed after indexing for further operations to be performed, reducing the need for additional setups to a maximum of one. 90-degree indexing is normally

programmed, as workpieces are usually orthogonal, but occasionally components are set at intermediate angles for machining. The flexibility of the indexable Multi-Lok is underlined by its ability to present components in four sets of twin jaws for face machining in a cycle time similar to if they had been in four separate Qwik-Loks. Thus it is not necessary to take the ISS off the machine table, as it can handle all jobs equally efficiently. Armac Martin had



no hesitation in buying a second in February this year.

Some drawing tolerances are surprisingly tight for this type of product, down to ± 0.1 mm, the idea being to minimise subsequent hand finishing and preserve the form of the fittings. Handles can cost hundreds of pounds each when installed in venues like the Dorchester hotel, London or the Waldorf Astoria in Edinburgh. Repeatability is also important so that the luxury items look identical when placed side by side in a top-end kitchen.

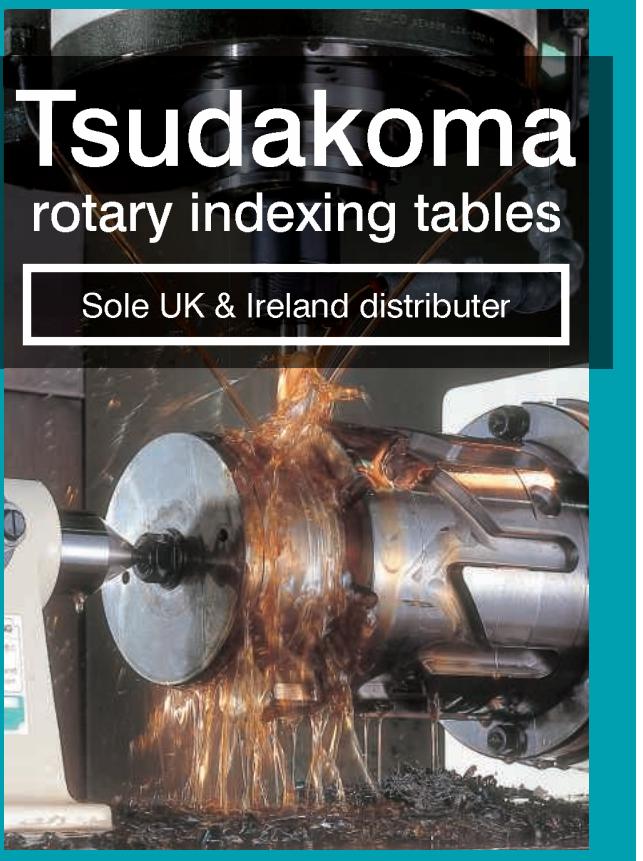
Many of the mainly brass as well as aluminium, stainless steel and plastic components produced by Armac Martin are turned in a shop dating back to 1918 that now sports the most up-to-date fixed-head and sliding-head CNC turning centres.

Of 6,660 part numbers, about one-quarter requires some prismatic machining and the proportion is increasing as fittings become ever more complex. Of those, 25 percent can be machined in one hit but the remainder requires a second operation. To produce these components, equal numbers of parts are secured in both halves of the jaw positions for Op 1 and Op 2 to be performed sequentially, allowing finished parts to emerge each time the doors open.

There are now eight XYZ machining centres on the shop floor, including a relocatable 2-OP model if extra operations are needed. All machines can be equipped with Qwik-Loks, of which there are two dozen on site, although two of the 710 VMCs deploy the two Multi-Lok / ISSs for most of the time.

Hundreds of soft aluminium jaw sets, some machined for specific jobs and others used for families of parts, may be fitted to any of the workholding units. Such jaws allow parts of irregular shape to be held more securely and heavier cuts to be taken compared with if hard jaws were to be used.

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New vice range offers a juicy addition

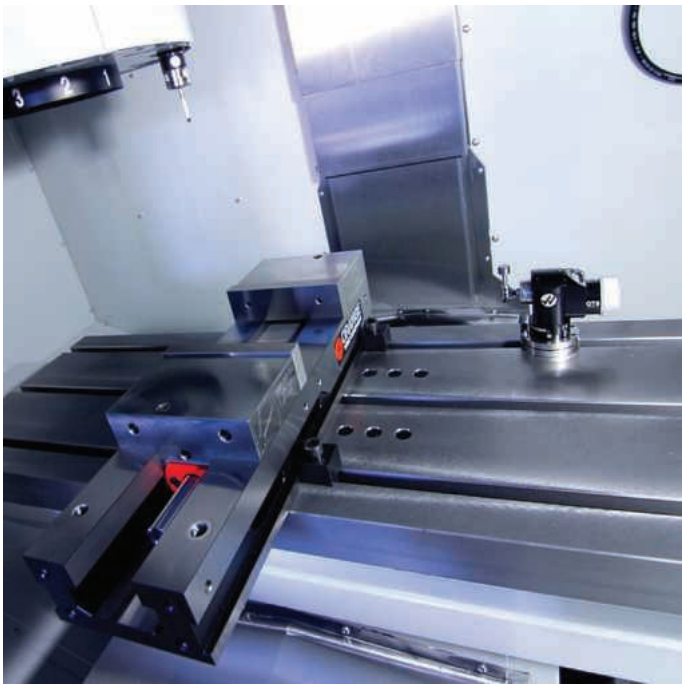
The Orange Vise range of high quality precision vices from America is now available in the UK exclusively from workholding specialist, Leader Chuck Systems. Thoroughly engineered to deliver maximum clamping force and repeatability with quick-change features throughout, the vices are designed and manufactured in the USA to achieve the ideal balance of performance and longevity. Every vice is covered by a lifetime warranty against defects in materials and craftsmanship.

The range includes 4 and 6 inch dual station, and 6 by 16 inch single station vices. The 4 inch dual station vices offer a compact footprint while the larger vice is available in 17.5 and 20 inch lengths. Every dual station model features independent jaw stations, so dissimilar sized workpieces can be clamped with equal force.

Managing director, Mark Jones says: "These precision machining vices are produced to exceptionally high levels, which is why they carry a lifetime warranty on materials and workmanship. This quality comes as standard and the range is very competitively priced, so there is no cost penalty for any workshop selecting the best solution."

Machined from a solid billet of Dura-Bar iron rather than cast to shape there are no rough sand cast surfaces, every surface of the vice it is either machined or ground and then selectively powder coated. The screw is sealed so that no threads are ever exposed to chip or swarf ingress.

Dual station vices can also be quickly converted into single station vices without any additional hardware. This flexibility is also applied to the 6 by 16 inch single station vice as double station conversion kits are available. Similar in design to the dual station vices but without a centre jaw, the fixed jaw is held down securely with an angled wedge from underneath, rather than cap screws from above. This allows unobstructed machining of optional soft jaws.



Available in steel or aluminium the optional low-cost soft jaws feature a greater machinable volume than most other jaws on the market. For additional capacity XL stepped jaws can increase the jaw opening from 12 inch to as much as 18.5 inches on the 6 inch dual station vice. Made of cast iron and compatible with all 6 inch vices, the XL Stepped jaws are said to be far more rigid and repeatable than outboard jaw plates used on typical vice setups.

Long and thin workpieces require additional support to prevent tool chatter and workpiece flex. Orange Vise produce extra wide machinable jaws that provide the solution. Available for all 6 inch vices they are offered in standard widths of 8, 10 and 12 inch.



Cost-effective, machinable vice pallets can be directly clamped to the vice body, using dowel pins and carriers for locating and hold down. No bolts are required, which frees up the entire surface of the plate for holding parts and clamps. Pallets are available in a variety of standard and custom sizes.

To secure irregularly shaped workpieces the sliding jaws can be machined down to just 13 mm from the vice bed, enabling users to remove a significant amount of the material to hold challenging workpieces. This large amount of machinable volume adds a level of flexibility that is typically only seen in dedicated fixturing setups at just a fraction of the cost

Quick-change jaw plates with 3-axis locating ability are included with every vice, with bolt-hole patterns to industry standard to ensure compatibility with existing jaw plates. While cast iron, steel, and aluminium sub-plates are available in a variety of sizes and can be customised to fit any machine table.

Based in Tamworth, Leader Chuck Systems has an enviable reputation for the in-house design and production of Leader chucking, stationary clamping, gripping and workholding products. A respected brand name for high quality equipment with more than 60 years' experience, the company also stocks products from the very best suppliers, such as AutoGrip, Bison, CARVEsmart, Gamet, Hainbuch, Hewa, Iram, Lexair, Maprox, MicroCentric, Orange Vise, Posistop, ZeroClamp and Zweifel.

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New low cost pallet vice from Roemheld



Roemheld has just launched a new pallet vice system that offers a simple, compact design at an economical price. The new Roemheld PC 80 clamping systems offer high precision and process safety. The vices are particularly suited for the manufacture of small and medium sized batches and can be used in pallet magazines within automated systems.

These workholding vices are mechanically operated and can be used for either fixed jaw or concentric clamping applications. All-steel in design, the Roemheld PC 80 pallet clamping range are supplied with jaws that are designed to offer a high retention force even with low clamping forces. With an 80 mm jaw width, a maximum clamping force of 20 Kn at 60 Nm can be achieved.

Mounting holes to customer specifications can be provided and the simple design of the clamping system enables easy disassembly and cleaning, simplifying maintenance.

Roemheld is committed to researching and developing products designed to meet not only the demands and expectations of today's discerning buyer, but also emerging markets and applications.

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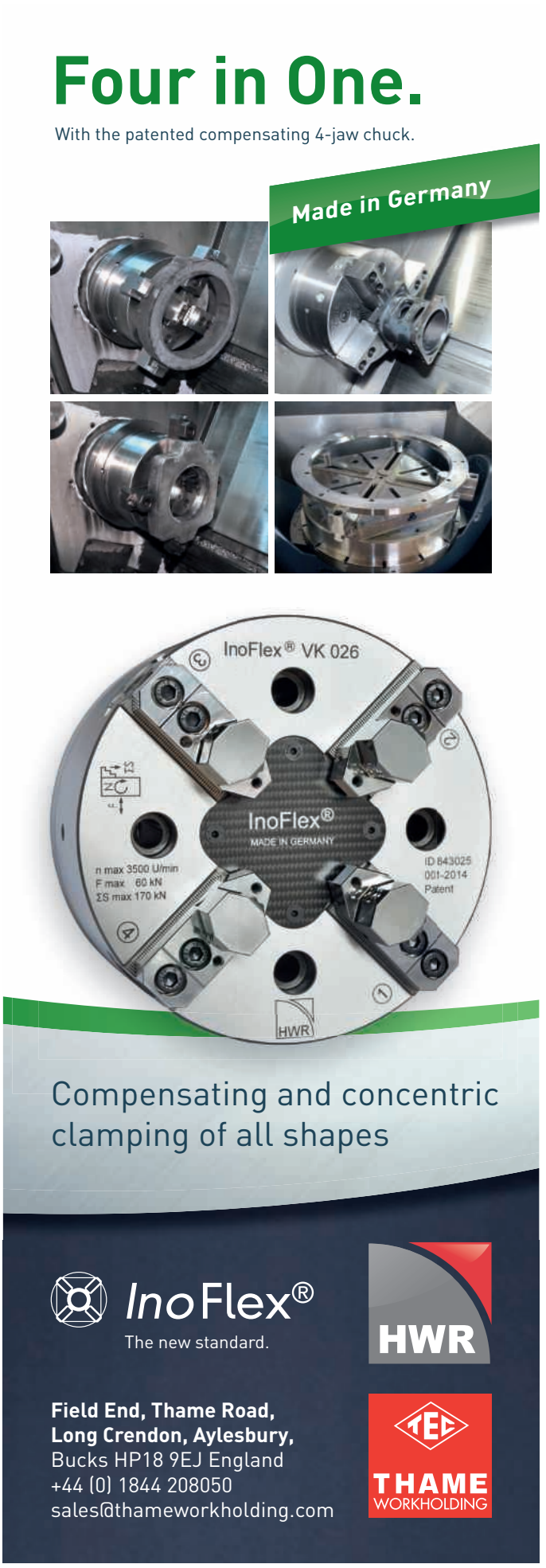
New Stallion Hybrid trunnion



The new Stallion Hybrid trunnions from TrunnionTable.com allow faceplates and chucks to be installed without removal of the trunnion table for faster part setups, increased productivity and higher quality parts. The versatile workholding workhorses accommodate a variety of vises, fixtures, 3- and 4-jaw chucks and collet chucks for flexible job shop workholding. Two models are available, the Stallion Hybrid 9/20 (9" x 20") designed to hold a 6" vise and the 9/23 (9" x 23") designed for double or single station 6" vises. Both sub-plates and quick-change sub-plates are available with quick-change ball locks. Standard baseplates allow the trunnion assembly to be offset to one side of the machine to maximise machine travel. A pneumatic brake, built into the outboard support, provides up to 600 lbs. of clamping torque, an invaluable feature for shops doing heavy off-centre milling and drilling. Hydraulic workholding packages are also available.

The US-made trunnions are engineered to bolt on to any machine's rotary indexer, allowing operators to precisely mill, drill, tap and contour up to three sides of a part in one setup. Heavily ribbed cast iron construction provides high rigidity and durability, needed to withstand long-term repeated use in demanding shop environments.

TrunnionTable.com Email: stan@trunniontable.com
www.trunniontable.com



Make an economical two-station tombstone fixture

Machine shops looking to maximise workholding flexibility can achieve this with Kurt VersatileLock tombstone fixtures. Mounted back-to-back on a subplate, two VersatileLock vices make a very precise and economical two-station tombstone fixture.

Available in multiple models with jaw open capacity from 4 inches to 10 inches for clamping small to larger parts, these VersatileLock vices can be mounted on pallets to fit specific machine table sizes. Because of their narrower profile and lighter weight, these tombstones will fit into smaller machining centres than equivalent tower setups. Assembled at Kurt's factory using very tight indicators, these back-to-back tombstone fixtures utilise standard Kurt vice components that provide rigid, precise and versatile workholding.

The VersatileLock tombstone setup expands the range of existing machining centres, particularly smaller ones with worktable size and weight limitations. The VersatileLock tombstone can be 200 to 300 lbs lighter, depending on model size, than a comparable cluster tower. Also, the cost differential of the VersatileLock tombstone is at least 50 percent less.

The short, compact design of this precise operating tombstone assembly is made possible by the VersatileLock one-piece body and stationary jaw design integrated with Kurt's time-proven Anglock® feature. The pull-type jaw clamping design reduces jaw stationary deflection by at least 80 percent. This provides highly precise clamping repeatability of 0.0005".

VersatileLock tombstones have matched stationary jaw to keyway including the body height ±0.001 inch. The one-piece vice body and stationary jaw provides maximum strength while reducing weight. Clamping force for the 6 inch capacity model is 6,356 lbs at 80 lbs of input torque. The Anglock design resists any tendency for part lift during machining operations. The 80,000 PSI ductile iron body provides stability to eliminate chatter or vibration from the process.

For maximum versatility, these VersatileLock tombstones can be equipped with Kurt's new DoveLock™ jaws, enabling fast jaw changes and repositioning with high precision. The tombstone/jaw setup is ideal for short part runs allowing the user to leave the tombstone in the machining centre ready to handle multiple part sizes and quantities. Jaw change time over standard jaws is reduced 90 percent to less than a minute, with jaw positioning repeatability of up to ±0.001 inch. The machinable jaws can be rotated 180° and machined on both sides for two different part setups.

"This VersatileLock tombstone and DoveLock jaw assembly really expands a shop owners machining capabilities at a moderate investment," states Steve Kane, Kurt's global sales and marketing manager. "It's another example of Kurt's advanced workholding technology that brings maximum value to machining processes.

Another industry first, VersatileLock tombstone assemblies and all Kurt vise products are backed by Kurt's lifetime "Iron Clad™" warranty for workmanship and materials.

Typical VersatileLock tombstone photos, drawings and specifications can be viewed at **www.kurtworkholding.com**

Kurt Manufacturing is a vertically integrated company dedicated to providing high quality customer solutions. As a recognised leader in the manufacturing of close tolerance parts and assemblies, it maintains its customers' competitiveness.



Two Kurt VersatileLock Vises mounted back-to-back vertically make a precision and economical tombstone fixture. By equipping the fixture with Kurt's DoveLock quick change jaws, multiple setups take less than a minute. This workholding setup is ideal for frequent part changes and varying quantity requirements. No need to remove the tombstone from the machining centre

Kurt Manufacturing was founded in 1946, specialising in CNC precision machining, gearing and assembly solutions. Kurt Manufacturing works with many industries including semiconductor, aerospace, automotive, oil, and defence. Manufacturing services include CNC machining services, gearing solutions, precision CNC machining, CNC turning, turnkey manufacturing, aluminum die casting, assembly services, screw machining, as well as a diverse product offering. Kurt also offers a diverse range of industrial products including Kurt vices, gauging, automation, and industrial compactors. Kurt is an employee-owned small business.

Kurt Manufacturing Company
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www.kurtworkholding.com

Workholding products cover spectrum of applications

ETG Workholding, a new division within the Engineering Technology Group, now offers thousands of specialist metal cutting related products alongside a bespoke fixturing design and manufacturing capability using the well-proven Hyfore capabilities.

The all new ETG Workholding website **www.ETGworkholding.com** has over 100,000 individual products for sale covering the spectrum from collets and workholding accessories to precision engineering equipment such as probing and quality control products, as well as everyday consumables from leading brands.

In addition, now being located in the same Coventry premises as the Hyfore Engineering design and engineering facilities, ETG Workholding offers a comprehensive bespoke workholding and prototype manufacturing capability all from a single source.

Hyfore has specialist expertise in the design and manufacture of high quality, bespoke workholding systems for metal cutting, welding and assembly applications. This includes cubes and tombstone fixtures with hydraulic, pneumatic, vacuum and manual clamping, zero point fixtures for rapid changeovers and retrofit NC axes.

Additional capabilities include the design and manufacture of bespoke special purpose machines for the assembly of mechanical components such as bearings, bushes, pins and mechanical seals.

Hyfore can therefore offer high levels of added value to any machine tool supplier. Its precision manufacturing capabilities are in line with accredited standards and include the production of jigs, fixtures, gauges, hydraulic and electric rotary devices, hydraulic workholding systems, special purpose machines and turnkey packages.

It also offers a bespoke capability for design and manufacture of equipment such as fixture plates, trunnions and other aspects of tooling, with very competitive pricing and turnarounds. Hyfore's workholding know-how is complemented by a bespoke prototyping, low-volume manufacturing and a component verification service.

ETG Workholding's expertise is based on



the proven 'ShopHardinge' model. When ETG took over the sales, service and customer support agreement for Bridgeport and Hardinge machine tools some two years ago it acquired the UK sales operation known as 'ShopHardinge,' effectively an on-line shop for Hardinge toolholders and a range of third party products. Now, ETG Workholding has expanded the inventory, offering many thousands of products not just from Hardinge but also a growing number of specialist suppliers in its web based catalogue.

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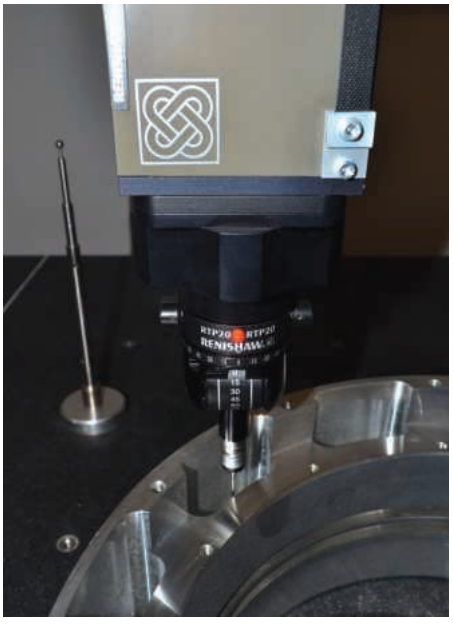
Aberlink CMM speed and accuracy 'Impress'

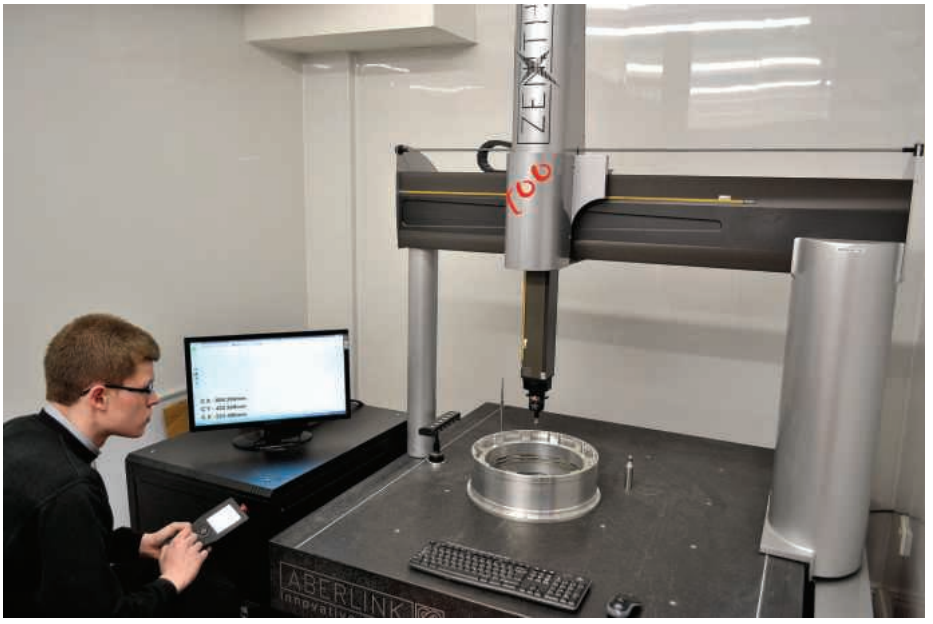
Based on two sites in the North East of England, the Impress Group is one of the UK's leading subcontract engineering services providers. Since Impress' inception in 1997, the company has continually expanded its range of capabilities, allowing it to diversify and to offer what is now a truly comprehensive 'one-stop-shop' subcontract service.

Over nearly two decades an expansion of the company's skilled workforce and continual investment in the best available technologies has resulted in significantly increased production capacity. In addition to high quality CNC milling and turning, the Impress Group's broad range of manufacturing activities now include pressings, CNC sheet metal forming, tool engineering, specialised welding services, fabrication, laser cutting, fibre optic laser cutting and wire erosion services.

To ensure that the Impress Group retains its hard-won reputation for the quality of its output, the company has continually matched its investments in the latest CNC Machine Tools with the purchase of the best available quality control technology.

Recently, an expanding order book, increasing requests for the production of larger parts and a rising number of components passing through the company's busy QA department, motivated a search for an advanced Coordinate Measuring Machine (CMM). The chosen CMM needed to have the required levels of precision for the measurement of extremely accurate





machined components and also the capacity to accommodate large fabrications.

Jason Young commercial director says: "We have developed our internal systems to ensure that the components we supply are to world class standards. In addition to in-process inspection, components go through rigorous final inspection routines prior to despatch. Operating within our UKAS, ISO, British Standards approved, quality system, our QA department ensures the continued high quality of our output.

"Higher levels of machined component production and the need to measure ever larger fabrications prompted us to look for a CMM that had ability to measure one-off large parts and that could also inspect multiple machined components in a rapid fully automatic mode.

"After considering other similar capacity CMMs, we decided that the 1.5 x 1 x 0.8 meter Zenith Too from Aberlink was the ideal CMM for our needs. Not only did the Zenith Too have capacity to accommodate our fabrications, it had the speed to keep-up with the production of machined components by accurately measuring multiple parts in a CNC mode.

"As we were aware of the excellent reputation of Aberlink CMMs and impressed at the range of advantages that the Zenith Too had over comparable CMMs, we were pleased to learn that the Aberlink CMM was also the least expensive of the machines we considered

"Following a short training course, our QA personnel quickly mastered the new Zenith Too's controls and software. Now, in addition to manually measuring a single part on the CMM, having written and saved measurement programs, our operators are then able to recall them when required, load numerous small parts onto the machine and quickly measure them in a fully automatic CNC mode.

"If required, on completion of a measuring routine, the Zenith Too can automatically generate a variety of inspection reports, with options for dimensioned graphical representations in tabulated report formats.

"Our Aberlink Zenith Too has proven to be an excellent addition to our QA department, it has considerably speeded-up the throughput of components in our Quality Department and further improved our accuracy capability."

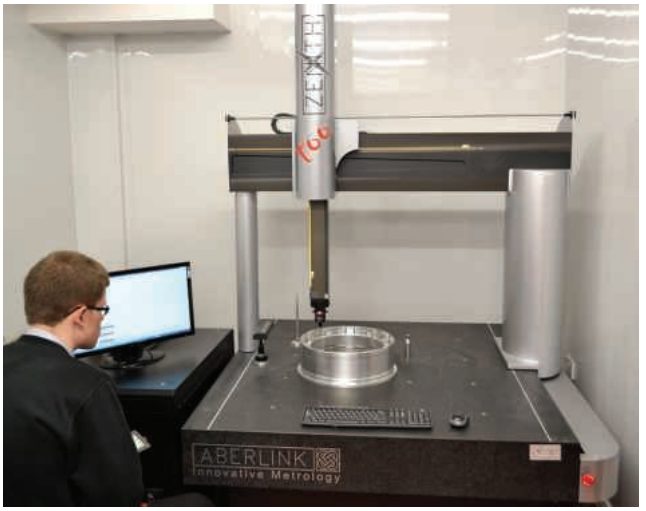
Manufactured by Aberlink Innovative Metrology, the largest UK-owned CMM manufacturer, the large capacity Zenith Too range consists of 10 machines with XYZ capacities from 1000 x 1000 x 600 mm to 1000 x 3000 x 800 mm.

The range's cutting edge, all aluminium construction, advanced drive design and raised guide-ways ensures that despite their generous measuring envelopes, the machines' extremely low inertia characteristics guarantees high operational speed. Impressive accuracy and repeatability figures are further aided by the Zenith Too's measuring structure being

completely independent of the machine's granite surface table. Although the Aberlink series is perfectly suited to use within environmentally controlled inspection departments, it is on the shop floor where the Zenith Too range's low thermal mass and extremely robust characteristics come to the fore, enabling the accurate measurement of large components to take place nearer to their point of manufacture.

The impressive hardware of the new Zenith Too is complemented by the range's intuitive Windows based software. A welcome bi-product of any Zenith Too CMM inspection routine is that a simultaneous picture of the measured component is created in real-time on the operator's computer screen. Dimensions between the measured features, mirroring those that appear on the component drawing, are then picked off as required. In essence Aberlink's 'smart' software represents an intelligent measuring system that is able to automatically recognise and define the various features being measured. Aberlink 3D is claimed to be the easiest to use CMM software currently available, so much so, that a complete novice is usually able to perform relatively involved measurement routines after just five minutes training.

To further improve Aberlink's popular Zenith Too series, a range of improvements were recently included. Each machine is now supplied with an adjustable arm, supporting the machine's keyboard, mouse and new, high-quality 22" flat screen monitor. Whilst an easy to access storage compartment, situated beneath the CMM table, now houses the machine's printer and probe controller. The latest enhancements to the Zenith Too have negated the need for the previous desk unit and further reduced the machines' overall footprint. Offering what Aberlink claim is the industry's best performance to cost ratio for this class of CMM, the new features have not affected the price of the popular Zenith Too series.



Aberlink supply a complete Zenith Too 'turnkey' package, including a comprehensive training programme, a wide choice of motorised or manual probes, Aberlink's celebrated 3D software and not least the latest generation of high speed custom controllers, that are capable of generating true, three dimensional contours.

Aberlink Innovative Metrology LLP
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New miniature tactile roughness sensor

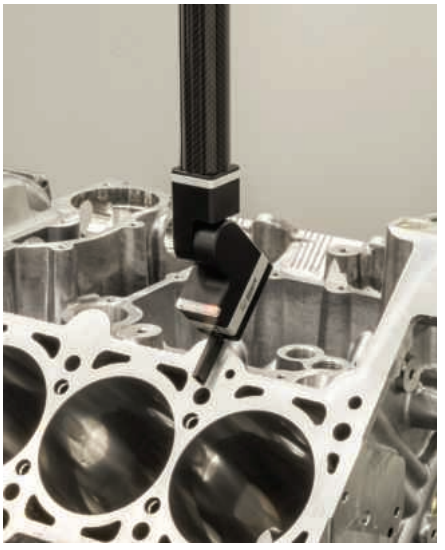
Hexagon Metrology has announced the addition of a new sensor for its Leitz ultra-high accuracy coordinate measuring machines (CMMs). The PROFILER R miniature roughness sensor offers an alternative to manual roughness measurement devices, allowing quick and easy surface checks within a quality inspection program.

The PROFILER R miniature roughness sensor can be automatically swapped on to several Hexagon Metrology and Leitz range scanning sensors using a standard probe changer. Supporting all common roughness parameter measurements, it removes the operator variances that limit the reliability of manual measurements. An integrated pivoting rotary axis gives good part accessibility for simple programming, helping users to optimise alignment without the need to reclamp the workpiece. Setup and changeover times are also reduced, enabling greater efficiency in the quality assurance process.

Micha Neininger, sensor product manager at Hexagon Metrology says: "With increasingly demanding tolerance requirements across the industrial spectrum, the texture of the workpiece surface is more important than ever.

''PROFILER R gives customers the option to make roughness measurements part of their regular inspection routines. Where previously this was a manual process which added the complication of reconciling reports, this new sensor enables surface measurements to be packaged with other quality data in the CMM software."

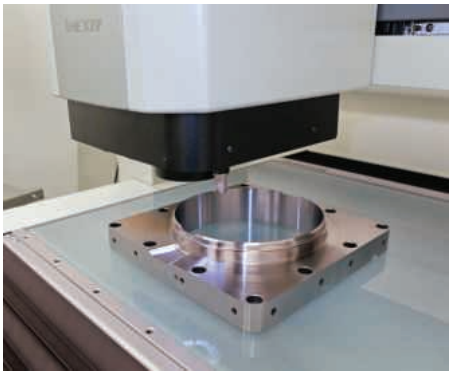
Currently compatible with the Leitz PMM-C and Leitz Reference CMMs from Hexagon Metrology, the PROFILER R is now available to order through local Hexagon Metrology commercial operations and dealers. Hexagon Metrology offers a comprehensive range of products and services for all industrial metrology applications in sectors such as automotive, aerospace, energy and medical. We support our customers with actionable measurement information along the complete life cycle of a product, from development and design to production, assembly and final inspection.



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Automated video measuring speeds inspection by a factor of 60

EDM subcontractor and toolmaker installs Nikon Metrology CNC video measuring to speed accreditation to AS9100 aerospace quality management standard



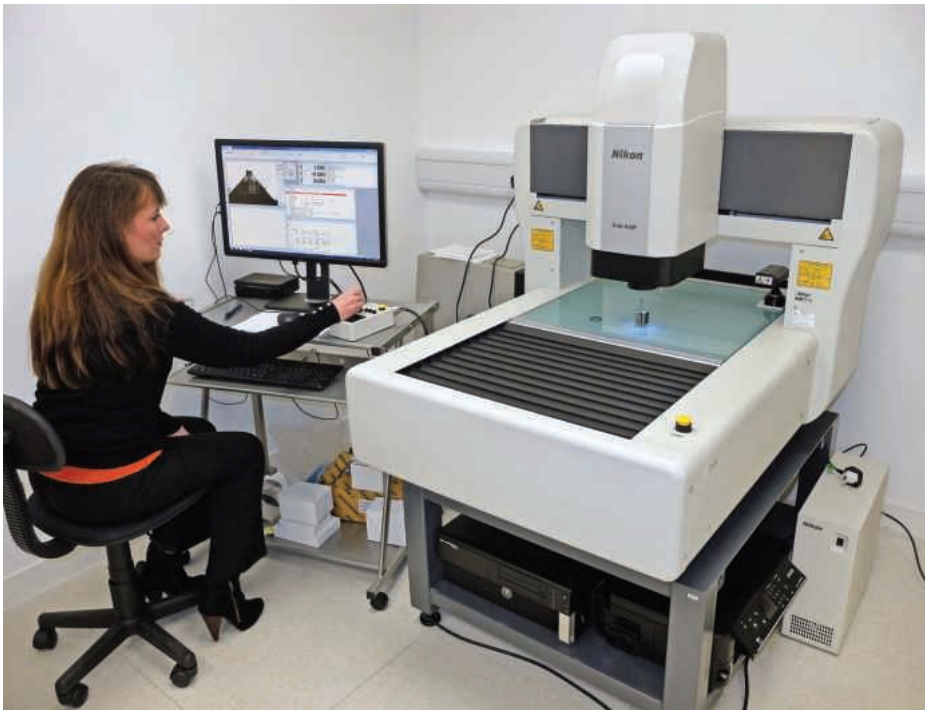
What does an orbiting telescope currently mapping the Milky Way have in common with the first all-English wristwatch to be produced in half a century? UK subcontractor Microtec EDM, Basildon, supplied prototypes and components for both ventures, as well as for a host of other innovative and high profile projects. The company recently raised the capability of its metrology department significantly by purchasing a powerful CNC video measuring system, an iNEXIV VMA-4540 from Nikon Metrology.

Until the machine was installed at the end of 2014, Microtec relied on manual video measuring using another make of instrument. Owner and managing director, Graham Cranfield says: "We are currently seven years into an 18-year contract involving electro discharge machining (EDM) and centreless grinding of nickel-copper alloy tube to produce a decoy missile component.

"A complete inspection of the part using our manual video measuring system used to take 20 minutes. Now that the job has been programmed on our new Nikon machine, the same inspection cycle is completed automatically in just 20 seconds. We find that time savings of this magnitude are typical and have revolutionised the productivity of our metrology department."

He explained that it took them only a few hours to create the inspection cycle for this fairly complex job, based on a CAD model of the part. The process will become even shorter as company employees become more familiar with programming. For contracts that frequently repeat, the automated measuring approach saves a lot of time in the long term. Even after measuring a dozen of the missile tubes, the programming time had been justified. The component is actually required in quantities of a few thousand every year and even though only one in 12 needs to be inspected, the saving in measuring time during 2015 alone will be more than double the programming time.

By the same reasoning, prototypes and components needed in small batches are more productively inspected manually on the pre-existing video measuring machine, or indeed on the iNEXIV VMA-4540 operated in manual mode.



Wide range of component sizes

Work carried out by Microtec for space missions includes making parts for the joint ESA / JAXA (Japan Aerospace Exploration Agency) BepiColombo mission to Mercury, which will set off in July 2016 on a seven and a half year journey to the smallest terrestrial planet in our solar system. Another project involves the manufacture of prototypes and components for an orbiting telescope. In both cases, the telescope parts are relatively large. Many other components that the Basildon subcontractor produces go down to 20 microns in size, however, placing the firm in very select group of such specialist providers of wire-cut EDM and spark-erosion services in the UK.

Multiple target markets led by aerospace

Aerospace and defence contracts are the mainstay of Microtec's business, Rolls-Royce, BAE Systems, Selex Galileo and Astrium being regular clients. It is the principal reason for Microtec seeking AS9100 accreditation, a process that will be assisted by the purchase of the Nikon Metrology iNEXIV machine. It will be especially important for speeding production of first article inspection reports. The Nikon Metrology VMA AutoMeasure software automatically compares measured results against CAD models and allows such reports to be produced quickly and in standardised format.

Motorsport, closely related

technologically with aerospace, is becoming an increasingly important target market for the subcontractor. Medical and dental industry work, which is often defined by complex machining in difficult materials, is another specialism. A current contract involves producing very small tweezers with serrations that are eroded with 20 µm wire, five times thinner than an average human hair.

Another medical job requires a plastic filter mould to be produced with 0.25 mm ribs. Mould and tool manufacture in the 1990s accounted for 80 percent of Microtec's turnover, dropping to 20 percent in subsequent years as China absorbed much of the business. Recently, however, the percentage is increasing as mouldmaking is reshored due to an increase in the cost of production overseas as well as problems with quality and logistics.

Non-contact 2D and 3D measuring

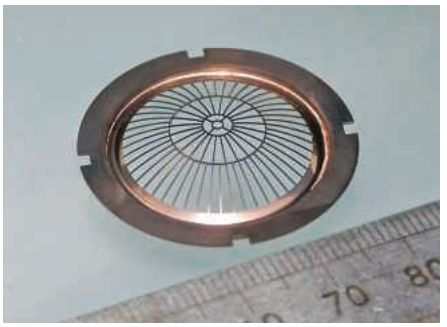
Most wire-cut EDM work requires 2D inspection, for which video measuring is ideal. However, some spark eroded components need to be measured in 3D and one of the advantages of iNEXIV video inspection is the ability to measure heights using the instrument's generous 73.5 mm working distance.

Inspection in 3D extends to mouldmaking. Early in January 2015, Microtec was tasked with refurbishing a plastic injection mould for producing electrical plug sockets for the British manufacturer, MK. No drawings or CAD model were available, so the mould's broken upstands were remanufactured in tool steel by measuring the height and width of the relevant sections on the iNEXIV.

Touch probing capability

Some features on components, such as sloping faces and undercuts, do not lend themselves to optical measurement. In such cases, the iNEXIV VMA-4540 has the facility to accept a Renishaw TP20 or TP200 touch probe to capture the point data. The probe is offset from the optical axis but works in the same 450 x 400 x 200 mm coordinate space, with only slightly reduced operating range. A stylus changer is provided.

It is even possible to mix optical and tactile measurements in the same cycle, which is another option that Microtec will be using. For example, the BepiColombo telescope parts require mainly 2D optical inspection of apertures, but there are arrays



of 2 mm diameter tapped holes whose positions will need to be probed during the same program.

It is noteworthy that this job will benefit from image stitching within the Nikon Metrology software, as the aluminium components are 550 mm in diameter and will need to be scanned in four quadrants under the 450 x 400 mm X / Y travels of the iNEXIV's moving column. Additionally, stitching of multiple images at different Z-axis heights allows deep components to be rendered all-in-focus.

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Precision, performance, perfected



As no two jobs are the same, ever increasing product complexity demands the ability to accurately measure a vast array of features, OGP measuring machines provide future-proof comprehensive capabilities.

OGP machines feature multi-sensor capabilities to meet any measurement requirement, offering precision, perfection performance. Rather than use a traditional coordinate measuring machine (CMM) alongside a laser scanner and a profile projector, a single OGP SmartScope can do the work of several machines. Not only does the use of an OGP Smartscope speedup inspection routines by processing a efficient one measure routine, it reduces purchase costs and releases valuable floor space.

To illustrate the multiple benefits of using OGP SmartScope technology, a Flash CNC 200 machine will be demonstrated on stand number A9 at the Manufacturing & Engineering North East exhibition from the 8th-9th July at the Metro Arena, Newcastle. The OGP Flash CNC 200 is a fully-equipped automatic benchtop measurement system that provides extensive accurate measurement capabilities. An elevating bridge and embedded computer results in the compact system taking-up minimal space whilst offering a generous 200 x 200 x 150 mm measuring range.

OGP is a pioneer of multi-sensor metrology and was the first to develop a coordinate measuring machine (CMM) designed specifically to measure utilising video technology. Since then OGP has pioneered CMM technology and now offers the most sophisticated metrology platform available.

OGP only use the highest quality components in the machine construction in order to achieve the highest levels of performance and reliability.

The company has over 20 years of experience and has supplied coordinate measuring machines (CMMs) to a multitude of different manufacturing industries, including: medical devices; automotive components; aerospace; electronics; metal cutting and life sciences, in order to measure components such as: high accuracy medical implants; medical mouldings; blood delivery devices; turbine blades; electronic connectors; razor components; PCBs; packaging caps and closures.

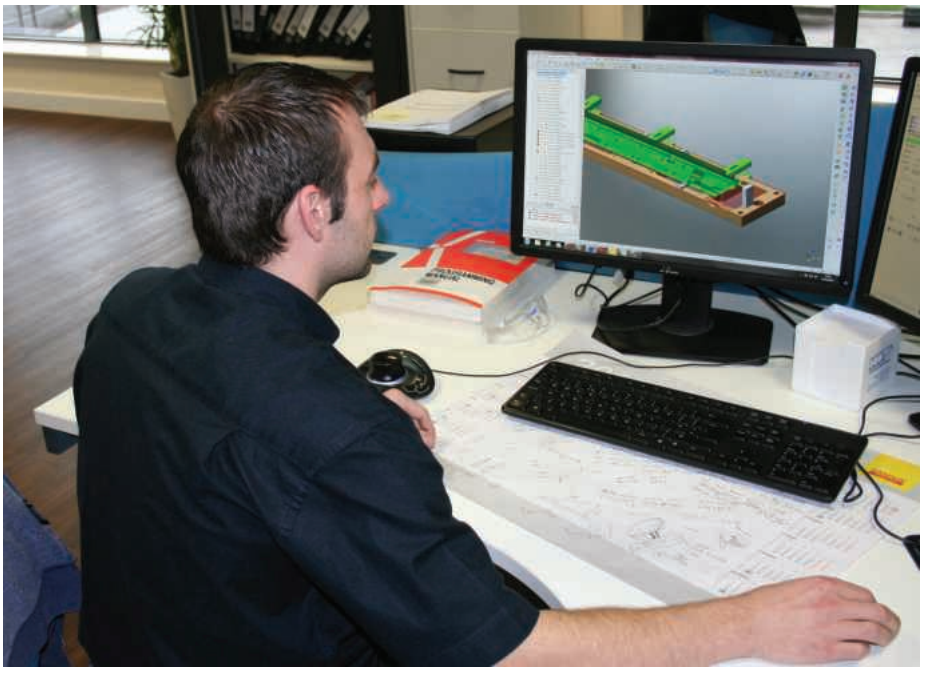
Everything the company does is underpinned by ISO9001:2008 accreditation. This ensures that they consistently deliver excellent service to back up world leading measuring equipment.

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Automotive subcontractor burns rubber with OPEN MIND

Over a decade ago, Burnley was devastated by the news that French Tyre manufacturer Michelin was closing its truck tyre factory in Lancashire with the loss of over 450 jobs. Since the 2002 closure, the local authority has strived to re-develop the 84 acre (406,270 sqft) site and its efforts were rewarded in 2013 with Burnley winning the prestigious award of the 'Most Enterprising Area in the UK'.

Rising from the rubble of the Michelin site with government grant funding is BCW Engineering Ltd. The company that coincidentally started its business in the same year as the Michelin closure, recently moved to a new 30,000sq/ft factory that opened in October 2014 with another factory currently being built and an additional factory planned that will take the total floor space beyond 100,000sq/ft in the next two years. This phenomenal growth has seen the subcontract supplier to the automotive and aerospace industry recently take delivery of its 70th machine tool and its staff numbers swell to its current level of 124.



With the company producing fast turnaround prototypes as well as scheduled batch production for marquee automotive and aerospace brands, BCW relies upon hyperMILL CAM software from OPEN MIND Technologies to program its components. Prior to the arrival of hyperMILL, the highly skilled programmers used a combination of less capable software, manually programming using G-Codes and using external subcontractors. All practices prolonged lead-times and required perseverance to ensure consistently high quality parts.

BCW investigated the packages available from CAM vendors and selected OPEN MIND's hyperMILL based on three factors. As BCW Engineering's group engineering director, Tony Kilfoyle recalls: "We knew that as our business continued to grow and the complexity of our components varied, we needed a reliable, capable and user friendly package that would improve our lead-times, productivity and reduce our subcontract programming dependence. We invited the leading CAM suppliers to conduct an on-site programming trial of a relatively complex part. Only two sales engineers were prepared to blindly program the part on-site whilst the others wanted to send the part back to their office for programming. This instantly raised doubt regarding the technical capabilities and support of the respective vendors and the engineers. The OPEN MIND engineer impressed us by completing the part in 30 minutes, but we were astounded by how easy the programming process appeared. Within 40 minutes the job was on the machine. The knowledge of the engineer, the master class in ease-of-use and the programming speed sealed the deal for us."



"In addition, the fact that OPEN MIND was the only CAM vendor with its own CAD package that is fully integrated into the hyperMILL CAM suite, is something that gave us confidence. We selected OPEN MIND, knowing we were also future proofing our business. The ability of hyperCAD and hyperMILL to work in harmony with CATIA files is a real plus for us as many aerospace files are received in this format. Furthermore, the ability to open and work with CATIA, IGES and Step files simplified the process. In no time at all, parts that took two days to program and then prove on the machine were considerably reduced."

The exponential growth at BCW, now sees the Lancashire company produce over 300 different types of component each week. When considering varying batch sizes, this sees an impressive total of 12,000 parts going out of the door each week. A figure that is projected to grow to 26,000 parts per week in 18 months time. These components vary from gearbox, chassis, bearing housing

and turbine parts for the automotive sector to undercarriage, thrust reverser and ejector seat parts for the aerospace industry. To support the diverse range of component and material types, BCW has invested heavily in machine tools from Matsuura, Okuma, Ward Hi-Tech (Dahlih), Mazak, Heller and Mori Seiki with the next planned addition being a Fanuc Robodrill. Open Mind has supplied the post-processor solutions to ensure the delivery from shop floor program to tangible working G-code has been seamless for each machine tool, regardless of machine type and configuration.

Identifying the benefits

In its most simplistic terms, hyperMILL has reduced programming times at BCW whilst also reducing its reliance and the cost implications of having some jobs programmed by external subcontractors. Furthermore, the ability to program all its parts in-house has reduced the lead-time for the company's unscheduled production jobs. BCW has two seats of hyperMILL with a programmer dedicated to the aerospace industry and another focusing upon the automotive market.

Shaving time off the programming process

In both the aerospace and automotive industries, the symmetries of the end product demand a lot of right and left handed parts to be produced. Here, hyperMILL has excelled, as BCW's chief programmer, Jim Wharton comments:



"We can use the hyperMILL mirror feature for a wide variety of parts. Our parts have an average programming time from 20 minutes to a full day, so the ability to click a button and let hyperMILL reverse the toolpaths and strategy in its entirety is a labour saving for us. We reviewed other packages and their 'mirror' feature will just flip the part and reverse the toolpath; not giving full consideration to special features and strategies on the job.

"We compared our programming time on one component against one of our subcontract suppliers that uses CATIA. Not only did we improve upon their programming time, we also created better toolpaths with smoother and better surface finishes with a shorter cycle time.

"In addition, we have been fully impressed with hyperMILL's ability to change the toolpath and machining strategy from 3-axis to 5-axis (or vice versa) with just the click of a button. This is a huge benefit for our scheduling of work as we produce so many different components that require 3-, 4- and 5-axis cutting and we can alternate these jobs around our machine shop depending upon machine capacity and utilisation."

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New game-changer from Edgecam

Figures show that Edgecam's new game-changing Waveform roughing strategy for turning, gives an overall material removal rate that is three times faster than traditional machining when used in conjunction with Seco's latest Duratomic® technology.

Following the success of the milling waveform technology Edgecam's latest release introduces a brand new turning cycle, Rough Waveform Turning. The toolpath maintains a constant cutting load, enabling significantly faster cutting data, and prolonging tool life. Similar to other turning commands, the cycle is sensitive to the stock condition, eliminating 'fresh-air cuts.'

Edgecam's strategic partnership manager, Wesley Tonks, says in trials conducted with Seco Tools combining Edgecam Waveform with the next generation of Seco's Duratomic insert technology, the metal removal rate increased from 134.4 cm^3 per minute to 448 cm^3 per minute: "That's over three times quicker. This is a significant improvement, as it enables machining facilities to remove material from the stock more efficiently for part completion."

Duratomic technology increases a cutting tool's toughness and abrasion resistance. Seco's sales and marketing manager Mike Fleming says: "although Duratomic and Waveform can be completely standalone solutions, they complement each other perfectly, as the trials demonstrate."

Cutting EN8 unalloyed medium carbon steel on a Mazak Integrex 200-lll machine tool with a 1 mm depth of cut, 0.8 mm/rev Stepover, and surface speed of 280 m/min, first using multi directional turning, and then with Waveform, the figures were:

Traditional: surface speed Vc (m/min): 280; DOC Ap (mm): 4; feed Fn (mm/rev) 0.12; material removal rate (cm^3) 134.4.

Waveform: surface speed Vc (m/min): 280; DOC Ap (mm): 2; feed Fn (mm/rev) 0.8; material removal rate (cm3) 448.0.

Wesley Tonks says: "The Waveform roughing strategy is a high speed machining technique that maintains a constant tool cutting load by ensuring a consistent tool engagement into the material. The tool path moves in a smooth path to avoid sharp changes in direction, maintaining the machine tool's velocity.

"As well as reducing cycle times and increasing the material removal rate, Waveform also improves tool cutting life through less cutting force and better swarf management, lengthens machine maintenance cycles, keeps a constant chip load meaning there are no 'spikes,' and it cuts deeper, faster and smoother."

The trial resulted in a 333 percent material removal rate increase with 50 percent less tooling, and an increase of 20 percent in tool life.





Seco partners with Edgecam at roadshows and events demonstrating how the combination of Waveform and Duratomic improves productivity, efficiency and reliability.

Headquartered in England, Vero Software designs, develops, and supplies CAD/CAM/CAE software radically enhancing the 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 (Nordic exchange: HEXA B), a leading global provider of design, measurement and visualisation technologies that enable customers to design, measure and position objects, and process and present data.

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VERICUT software for aerospace manufacturers

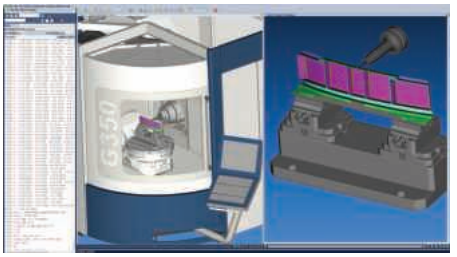
CGTech will showcase its expanded range of software applications for the aerospace industry at the Paris Air Show in Le Bourget, Paris on June 15th-19th (Hall 2B, Stand F172, Booth 2)

CGTech's VERICUT is widely used in aerospace and defence to improve the efficiency of all types of CNC Machine Tools. VERICUT is CNC machine simulation, verification and optimisation software that enables users to eliminate the process of manually proving-out NC programs. VERICUT simulates all types of CNC machining, including multi axis milling, drilling and trimming of composite parts, water jet cutting, robotic machining and mill/turn Centres. VERICUT runs standalone, but can also be integrated with leading CAM systems used in aerospace including Dassault Systemes CATIA, Siemens PLM NX, Delcam PowerMill and Open Mind HyperMill.

Aerospace applications featuring some of the world's leading CNC Machine Tool suppliers including DMG MORI, Mazak, Starrag, GROB, CMS and Hermle will be featured. Throughout the show, CGTech will be demonstrating VERICUT composite applications: VERICUT Composite Programming (VCP) and VERICUT Composite Simulation (VCS).

CGTech will feature projects that highlight the use of off-line NC programming and simulation software for Automated Fibre Placement (AFP) machines and Automated Tape Laying (ATL) machines including robot cells. VERICUT Composites Applications are machine independent and machines from the world's leading composites machinery suppliers, including Electroimpact and mTorres, will be featured.

VERICUT drilling and fastening (VDAF) is software for simulating and programming auto-drilling and fastening machines. These machines are used to assemble large aero-structures and it is essential to avoid programming errors and collisions at such a late stage in the aircraft manufacturing process. VERICUT allows the user to program drilling and fastener assembly operations in a virtual machine tool environment and provides simulation to



check for a variety of potentially disastrous error conditions. Like all VERICUT software VDAF interfaces to leading CAD/CAM/PLM systems such as Dassault Systemes CATIA and Siemens NX, and is independent of the assembly machine manufacturer.

Headquartered in Irvine, California, CGTech specialises in numerical control (NC/CNC) simulation, verification, optimisation and analysis software technology for manufacturing.

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Additive manufacturing & 3D printing to revolutionise industry

3D printing has been around for decades but it didn't really gain traction until the 1990s. Until recently, only a handful of industries used additive manufacturing but that's all about to change. 3D printing is currently one of the hottest and most interesting advancements in technology and has the potential to revolutionise all sorts of industries from automotive and aerospace to electronics and healthcare.

One of the key advantages of 3D printing is that it makes it possible to create a product from scratch in just a few hours. Designers and developers simply create their product onscreen and the 3D printer will produce an accurate, physical part. It saves time, minimises costs and has dramatically increased the flexibility of design processes in all industries.

Automotive manufacturing

3D printing is not a new concept to the automotive industry. Car manufacturers have long been using additive manufacturing to print out prototypes for manufacture; however more recently companies have started to actually print the physical parts too. Back in 2012, Grainger & Worrall a specialist automotive parts manufacturer invested half a million pounds in 3D printing technology. This was in anticipation of orders of small quantities of vehicles parts for luxury car brands such as Aston Martin, Bugatti and McLaren. Using 3D printing allows automotive manufacturers to bypass very long lead manufacturing processes (such as tooling) and achieve direct manufacture.

Although smaller auto companies are currently using the technology to create parts and concept cars, it is believed that 3D printing has the potential to improve the efficiency of making replacement parts for any car by any company.

Aerospace manufacturing

Additive manufacturing is also enabling massive transformations in efficiency in production processes within the aerospace sector. Aircraft manufacturers see the potential of additive manufacturing and have invested billions of pounds into the technology and development of metal powders used to make everything from turbine blades and structural parts to jet engine parts such as combustion nozzles.



Whereas in the past many aircraft parts needed many individual components, thanks to 3D printing they can now be printed in one. This is illustrated by GE, which recently printed a fuel injection nozzle in one piece that was previously comprised of twenty different components. Not only did it simplify the manufacturing process by using 3D printing but it also managed to make the fuel injection nozzle five times stronger.

3D printing electronics and semiconductors

Another industry that is at the forefront of additive manufacturing is the electronics industry. The size, shape and materials used to make electronics products make this industry a natural candidate from 3D printing. By creating electronics products with 3D printing, companies are able to save a significant amount of time, money and waste during the manufacturing process.

Whilst 3D printing is currently being used to make a handful of electronics such as antennas and batteries, the process of creating semiconductors has been a little trickier. However a team of researchers at Princeton has recently found a solution for 3D printing semiconductors, which involve using printable electrodes, polymers and semiconductors that are dissolved in solvents.

Revolutionising health care

Of course it's not just the automotive, electronics and aerospace industries that are benefiting from 3D printing. Industries you may not have even thought about associating with additive manufacturing like the health care sector have also found the technology to be particularly beneficial.

3D printing is currently being used to create medical devices, save theatre time and costs and improve patient care. In this sector, the most success has been achieved with 3D printing prosthetics and medical devices like hearing aims, which can be made from plastic or pliable materials. The key benefit of 3D printing these devices is that it makes every item completely customisable, allowing patients to benefit from a perfect fit.

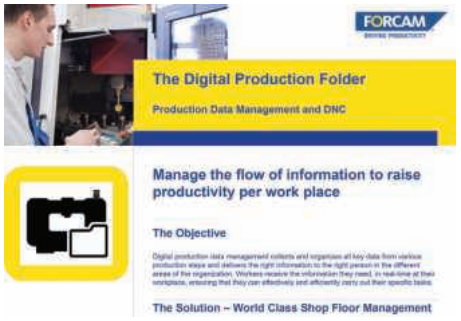
With so many benefits it is no wonder that so many industries are incorporating 3D printing into their manufacturing processes.

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Raising shop-floor productivity by the optimisation of digital information

A technical paper is available from Forcam, the factory shop-floor networking specialist, on the use of digital information to boost workshop productivity. Looking specifically at the role of the machine-shop operator it explains how each manufacturing process can be supported with a bespoke package of information in the form of a digital production folder.

Every production process has unique requirements. Work instructions, parts lists, tooling needs, NC programs, drawings and a host of other information essential to complete the task successfully. This can be downloaded direct to the operator's workstation screen by Forcam's manufacturing execution system software, Factory Framework.



Digitally archived manufacturing information is more effectively managed, it is easily updated and access can be provided on a controlled basis. The system retains full traceability of changes, recording what alterations were made to what part of the specification by whom, when, and why.

Forcam's UK managing director Andrew Steele notes: "How often, with the best intentions, are parts wrongly manufactured? This costs time, increases scrap material or rework and upsets schedules, all because the operator had out of date information. No longer does the operator have to waste time searching for drawings or key specification information. Everything that is needed can be held in a digital production folder, enabling the technician to get straight on with the task."



The digital production folder software is designed to easily integrate with other third-party software. For example, data can be streamed automatically from and to TDM Systems tool data management package.

Engineers wishing to access a PDF version of the Forcam paper can download it from **http://www.forcam.com/index.php?id=300** The company will also be happy to provide further advice on any aspect of MES implementation.

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Bandsaw supports special machinery manufacture

Sondermaschinen Oschersleben GmbH (SMO) is a medium size company that since the late 90s has designed, produced and serviced flexographic printing presses and peripherals as well as special purpose machinery and handling systems. Within the last few years, the contract manufacturing company has developed its own series of over-printing presses, designated EDM, which are especially suited to economical, just-in-time printing of labels in small batches.



The front of the high performance, straight-cutting, automatic bandsaw KASTOverto A2 with folding doors for good access to the working area to facilitate easy and fast saw blade change (3,180 x 27 x 0.9 mm length x width x thickness)

The modern production facility in Oschersleben, Germany, has more than 30 employees working in mechanical manufacturing, mostly in double shift operation to meet production schedules and delivery deadlines. To be able to guarantee long term quality that is both high and repeatable, they make everything in-house and so rely heavily on experienced staff, top quality production equipment and a well-equipped quality department. Small to medium batch sizes from one to 1,000 pieces are produced for the company's own needs as well as for special customer orders. For many parts that start out as sawn billets, these batch quantities are applicable to the sawing equipment as well. Bottlenecks used to occur in the sawing department despite the utilisation of several sawing machines. So when an older saw needed to be replaced, the person responsible at SMO searched for alternative sawing technology that would solve the problem.



The vice feed system for accurate multiple feed of the stock

After determining the requirements and considerable research at several exhibitions, an order was placed on KASTO for a high-performance, straight-cutting, automatic bandsaw, KASTOverto A2.

Peter Neumann, the sawing machine manufacturer's representative in nearby Laatzen, says: "With a cutting range of 260 mm round or 320 x 260 mm flat combined with automatic operation, the saw is ideal for SMO's requirements.

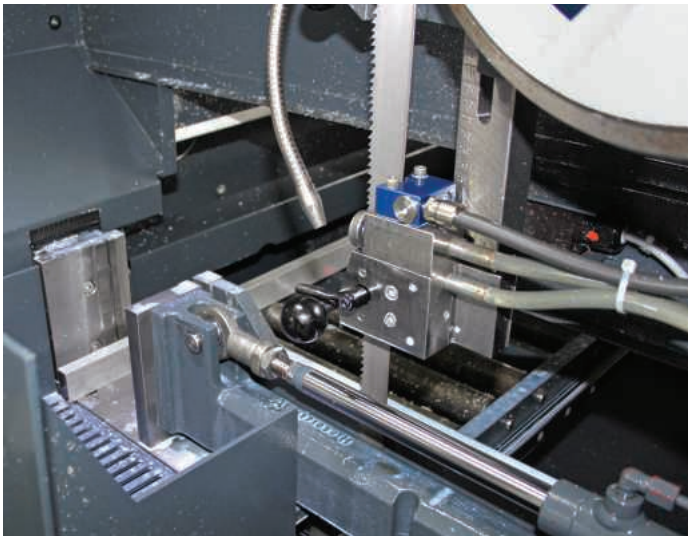
"The concept of a fully-hydraulic bandsaw with a vertically running, horizontally moving saw blade is optimally designed for series cuts in solid materials, tubes and profiles, irrespective of whether the materials are easy or difficult to cut.

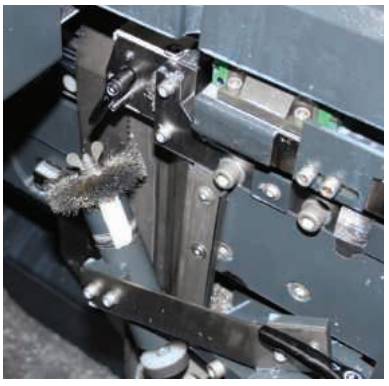
"Thanks to the compact design and the

small footprint of only about 3 m², the saw including infeed and outfeed roller conveyor could be easily integrated into the production process within the tight manufacturing area at SMO."

The KASTOverto A2 is equipped as standard with a double clamping vice to hold the workpiece on both sides of the saw blade, a blade side shift unit for contact-free retraction of the saw blade from the cut to prevent undue blade wear, a multiple feed system, hydraulic saw blade clamping, idling band wheel rpm monitoring (SpeedControl) and the operator-friendly control BasicControl. Only the 2,040 mm infeed and 1,020 mm outfeed roller conveyors and the minimum lubrication system had to be added.

As a result, SMO received from a single source a complete, ready to operate system for universal cutting of different materials. Matthias Franke, the company's general manager, is very satisfied





The standard powered brush for continuous chip removal to support high saw performance and a good cut surface

with the performance and flexible utilisation:

"Using bi-metal saw blades on the machine, we cut aluminum, steel, stainless steel and copper as well as plastics. KASTO provided good advice as to the correct tooling and carried out comprehensive training.

"Today, two operators work with the saw over a double shift. Thanks to the automation, they are able to perform other jobs while the machine is running. This makes us very flexible and also productive, especially since there are no downtimes due to missing cut parts.

"Furthermore, the accurate, reproducible cuts and good surface finish allow us to assemble the sawn parts without any further finishing".

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Sawing technology on show

Behringer's "World of Saws" in-house exhibition will be held for the sixth time in June at the sawing manufacturer's premises in Kirchardt, Germany.

The event will focus on innovations and features from across the company's extensive product range of sawing technology. Besides the main exhibitor Behringer GmbH, daughter company Behringer Eisele GmbH will show an extensive range of high performance circular cold saws. Under the "Partners For Steel" banner, Behringer's French sister company Vernet Behringer and Rösler Oberflächentechnik GmbH will be showcasing turnkey system solutions for the steel trade and the steel construction industry. These combine sawing, drilling, blasting and painting with complex handling systems from a single source.

The economic and technological aspects of sawing technology will be up for debate, both in the technical lectures being held and also live at the machines. The company will emphasise the important trends that currently dominate the discussions in professional circles. In an exciting tour through the factory halls the visitors will enter different "worlds" of sawing technology:

With the further development of the successful HBE-Dynamic series, Behringer is not only focusing on today's requirements of the customers. "We develop and think clearly for tomorrows market and demand", says CEO Christian Behringer. Two new "big sisters" of the series will be presented during the Open House. These are suitable for solid material, pipes and profiles.

The visitor will be presented with solutions for cutting steel, high alloy materials and aluminium using BEHRINGER and EISELE band and circular sawing technology for OEM and steel distribution applications.



The HBE Dynamic Series has been heralded as the answer to ever growing market demands for more efficient, more economical and more precise sawing machines



Whether wet or dry cutting, the HCS 160 Multifuid from Behringer Eisele features powerful cuts even in high-alloy, heat treated material exceeding 1200 N/mm² hardness



With its compact, longitudinal-cutting LPS60T plate saw, Behringer has created a true specialist that is guaranteed to be a winner. It is particularly suitable for cutting small and compact parts and for short sections like those which are, for example, common in the field of toolmaking. The LPS60T also makes sample cuts quickly and precisely in material that is difficult to cut

Partners 4 Steel:
Three well established industry leaders have partnered together in order to provide their combined know-how to steel fabricators' and distributors' worldwide under the name Partners 4 Steel. Vernet Behringer, an innovative manufacturer of dedicated production lines for the steel industry, Behringer GmbH, one of the world leaders in sawing solutions and Rösler Oberflächentechnik GmbH the world's leading manufacturer of surface finishing technology, including preservation lines, have allied their competencies in order to provide turnkey installations that combine machining, sawing and shot blasting equipment.

Solutions with horizontal and vertical band saws for cutting large slabs and rings will be covered by the topic "Sawing of large Dimensions".

Universal, compact solutions for craftsmen and workshops will be showcased, covering a wide range from simple sawing tasks to cutting sample sections of heat-treated material.

"We want to inspire our customers to take advantage of dialogue with our first-hand expertise during the Open House," explains Christian Behringer.



The ideal machine for "mammoth" jobs, the high-performance large band sawing machine Behringer HBP1500T takes even forgings easily in its stride

Lean processes in the foundry can be experienced during a tour of the highly modern Behringer iron foundry. The correlation between parts design and the input of casting technology expertise form a winning combination, so that process optimisation is more than just a slogan.

For more information and ro register for the event, visit **www.behringer.net**.

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Machining centre and mitre saw cut lead times in half

Investing in a MECAL CNC machining centre and a MECAL CN mitre saw from Addison Saws of Stourbridge has helped Surrey-based Designplan Lighting reduce customer lead times by up to 50 percent.

A leading name in specialist robust lighting solutions for transport, social housing, custodial, secure healthcare and urban exterior settings, Designplan Lighting has enjoyed a boom in demand for its high quality aluminium extruded light fittings over recent years. However, with outsourcing both the cutting and machining of aluminium extrusions typically taking several weeks, the lighting specialist decided it was time to extend its already considerable in-house machining capabilities.

"We had initially considered purchasing a mitre saw and a costly 5-axis aluminium milling machine from another source," comments Designplan Lighting's engineering manager, Rob Aldred. "A meeting with Addison Saws, however, convinced us that this was far from the most cost-effective or production-efficient solution.

"With our milling requirements largely surrounding the production of cast bulkhead fittings, Addison was able to demonstrate that our money would be better spent on a high-speed CNC machining centre and mitre saw for extrusions, supported by a small CNC production machine for completing milling work on bulkhead castings."

The CNC machining centre supplied to Designplan Lighting by Addison Saws is an MC 305 Kosmos model from Italian manufacturer, MECAL. Able to machine components of up to 8000 mm in length, the MC 305 Kosmos can easily accommodate the longest extrusions used by Designplan Lighting, while its 4-axis operation enables the lighting specialist to drill, mill and tap components in one single operation. Before being machined on the MC 305 Kosmos, profile sections are cut to length using a MECAL SW 453 CN Reverse Vico double mitre saw that has also been supplied by Addison Saws.

Highly robust, with a user-friendly control system, the MC 305 Kosmos CNC machining centre has brought considerable versatility to Designplan Lighting's product development and manufacturing capabilities, reducing lead times by up to 50 percent. Significant savings have been made both in production and capital equipment costs. Perhaps most importantly, Designplan Lighting's reduction in reliance on outsourcing the machining of its aluminium extrusions has delivered significant savings in production costs, a benefit that is enabling the lighting specialist to remain highly competitive.



Reducing production lead times: Designplan Lighting's new MECAL MC 305 Kosmos CNC machining centre and MECAL SW 453 CN Reverse Vico double mitre saw

"We are now able to log every job by material cost and machining time," adds Rob Aldred, "and already, just one month after the MECAL machines were installed, the savings we are making are considerable. So far we have invested approximately £120,000 in the MECAL CNC machining centre and CN mitre saw from Addison Saws. We now anticipate making a further modest investment in a CNC machine for milling bulkhead housings.

"Had we not spoken to Addison Saws, however, we could have easily spent £250,000 on a 5-axis milling machine. Their sound advice and first class production solutions have not only halved our lead times for aluminium light fittings, but also saved our company a substantial amount."

Established in 1956, Addison Saws Ltd brought a new breed of metal cutting solutions to the UK and, in doing so, created a whole new market for bandsaws and circular saws. Today, almost sixty years on,



Addison Saws continues to lead the way in metal cutting technologies and offers an extensive range of full CNC machine tools from the world's premier industrial machine manufacturers, all supported by uncompromising levels of customer care.

The Addison Saws product range includes everything from simple, manually operated machines to highly sophisticated, fully automated sawing lines and has recently been increased with the addition of heavy duty 3, 3+1, 4 & 5-axis long-bed multi-piece machining centres. Addison Saws Ltd. is part of the Addison Group, an organisation that also includes sawblade re-manufacturing specialist Dynashape Ltd and tube-bending technology specialist, Tubefab.

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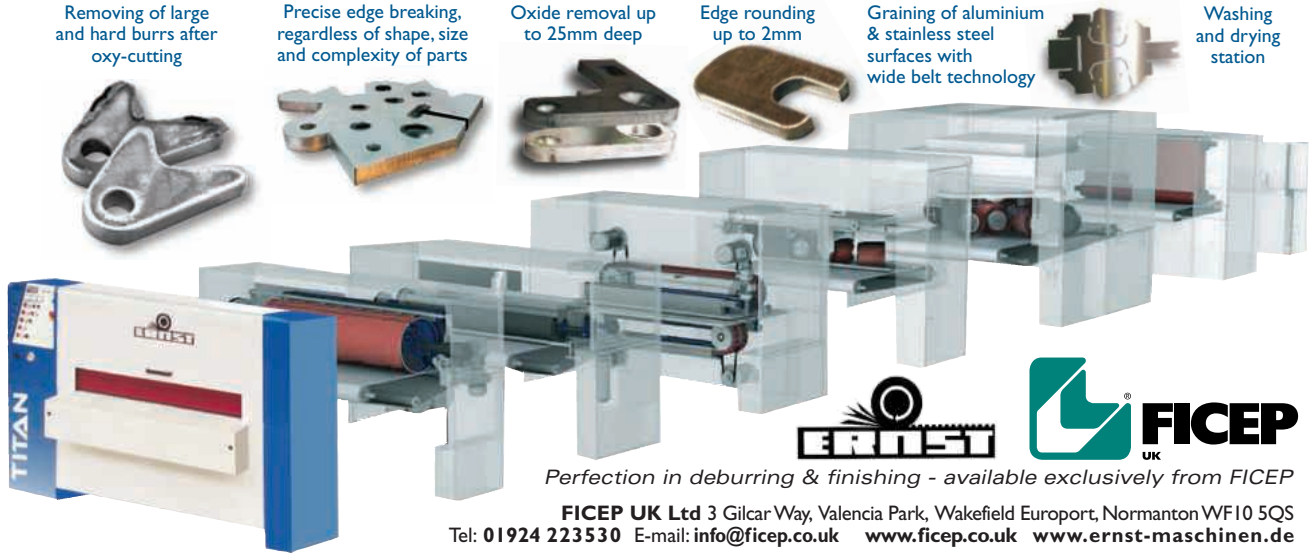
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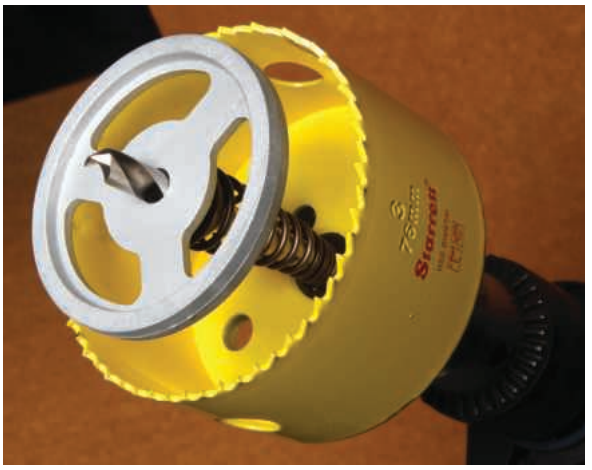
Starrett Core Ejector addresses an age old problem

Following comprehensive product testing and evaluation at its facility in Jedburgh, the L.S. Starrett Company is launching a cost-effective and simple solution to an age old problem. The company's new Core Ejector for bi-metal hole saws has been designed and developed to effectively remove the slug of material that usually ends up inside the cup of the hole saw once it passes through the sheet material being cut.

Comprising a precision tapered spring and an aluminium pressure plate the Core Ejector has been created to improve productivity and efficiency, as well as operator health and safety. Marketing manager, John Cove explains: "Safely removing the annular disc of sheet material that often becomes jammed inside the hole during normal operating conditions is an age old problem that many customers have faced. Usually the operator will stop the saw, remove the entrapped material by sliding a drift or even a screwdriver in to the slots in the side of the hole saw. As well as the lost time required to perform this task there is an obvious danger to the operator as the teeth of the saw are naturally sharp and will be at an elevated temperature."

The Core Ejector addresses these problems in a simple and reliable way; as the saw cuts into the sheet material, the aluminium pressure plate compresses the spring inside the cup of the saw. When the saw breaks through the spring will act on the pressure plate as it returns to its natural open state, effectively ejecting the disc of raw material before it becomes trapped.

Fitting the Core Ejector is very straightforward as the saw's pilot drill slides through the internal diameter of the nickel-plated spring. The narrowest wrap of the spring is precisely sized to sit on the shank of the drill, holding the Core Ejector in position so it rotates with the hole saw when it is in use and keeping it correctly located when it is not running.







Available in six sizes to cover a range of hole saw diameters, the Core Ejector works best for sheet material below 7 mm thick with optimum performance achieved with material between 2 to 5 mm thick. The range starts with the KA8-1 Core Ejector for saws between 20 and 24 mm diameter, stepping in increments up to the largest KA8-6 for saws between 133 and 210 mm diameter.

"There is a lot of flexibility in the size ranges and customers do not need to stick to the sizes too rigidly," says John Cove. "During our tests we have taken the KA8-1 and used it perfectly with a 38 mm diameter saw. So, even though the purchase cost is very reasonable at just a few Pounds the number of units required to cover a vast range of hole sizes is very low."

As well as ferrous and non-ferrous sheet metal the Core Ejector also works very effectively when applied to holes generated in sheet GRP and composite materials, as well as ceramics and tiles when fitted to diamond hole saws.

The L. S. Starrett Company is a global business, headquartered in Athol, Massachusetts, but with production facilities in North and South America, the UK and China.

The L. S. Starrett Company Ltd
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Advancing titanium

The acquisition of an automatic Danobat Vertical Plate Saw has boosted productivity and reduced metal cutting running costs.

With a customer base that includes Airbus, BAE Systems, Boeing, Bombardier, Lockheed Martin, and Sikorsky, it's hardly surprising that RTI International Metals Ltd is a leading supplier of specialty metals to the aerospace industry.

Part of a worldwide international group, the UK company employs 50 employees with a multi-million pound turnover.

At its facility near Tamworth in Staffordshire, it has recently taken delivery of a Danobat Vertical Plate Saw, supplied by Kettering based Prosaw Ltd, to process titanium plate for use in the aerospace industry.

Specially designed to efficiently cut the more difficult materials such as titanium, the Danobat Vertical Plate Saw is equipped with an automatic gripper system to position the plate to be cut to the desired width, whilst the fully automated CNC control allows the operator to enter a batch to process an entire plate in an automatic cycle.

Senior manufacturing engineer, Amar Iqbal comments: "We are very pleased with the performance of the Danobat system. It has significantly increased our capacity since we took delivery just over six months ago and it completely eliminated our backlog within the first three months of use, which has of course had a hugely beneficial impact on our delivery schedules."



As part of the decision process RTI investigated several bandsaw machine manufacturers from Europe, but chose the Danobat machine from Prosaw as it was able to deliver a complete solution for the processing of RTI's products combined with a high level of technical expertise before, during and after the installation.

Amar Iqbal continues: "Prior to taking delivery of the Danobat machine, we were reliant on a single non-automatic saw. Now, due to the completely automatic operation of the Danobat machine it is possible for us to run both saws with the same staffing level as before.

"Additionally, our original manual saw utilises a vapour blade lubricating system which can raise Health and Safety issues, in contrast to the Danobat machine which uses a 'flood coolant system' that not only eliminates those issues, but adds significantly to the blade life, helping to reduce the cost of consumables by up to one third."

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Advantages of sawing:

- **No deformation through pressure**
- **No heat affected zones -** minimal machining or waste
- **No damage** to base materials - cold process
- Cutting of materials or items **up to 2000mm thick**
- **Reusable offcuts** - not turned into expensive swarf
- Enables **recovery and reuse** of metals or re-purposed castings, forgings, machined components very cost effectively
- **Sectioning** of large components for inspection and test pieces

Accurate Cutting Services

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Space-saving high-tech sawing

The MEBApro product line stands for high-tech along with outstanding price-performance ratio. As the first manufacturer in the industry, MEBA has constructed almost all type of machines within its innovative product portfolio in a way that saw feed as well as material infeed system, is driven via an innovative electric ball screw technique. This technique assures optimum cutting power, cutting accuracy and cutting process, and it leads to a positive impact on durability of saw blades. In addition, the electrical system helps protecting natural ressources.

MEBApro 260 GP is a portal band sawing machine which covers a wide variety of parts to saw with its cutting capacity of 260 mm round or 260 x 300 mm square/flat. The patented sawing concept is equipped with the latest technology as a standard. Along with its creative construction, MEBApro can be placed anywhere with only a 3 m² size ratio.

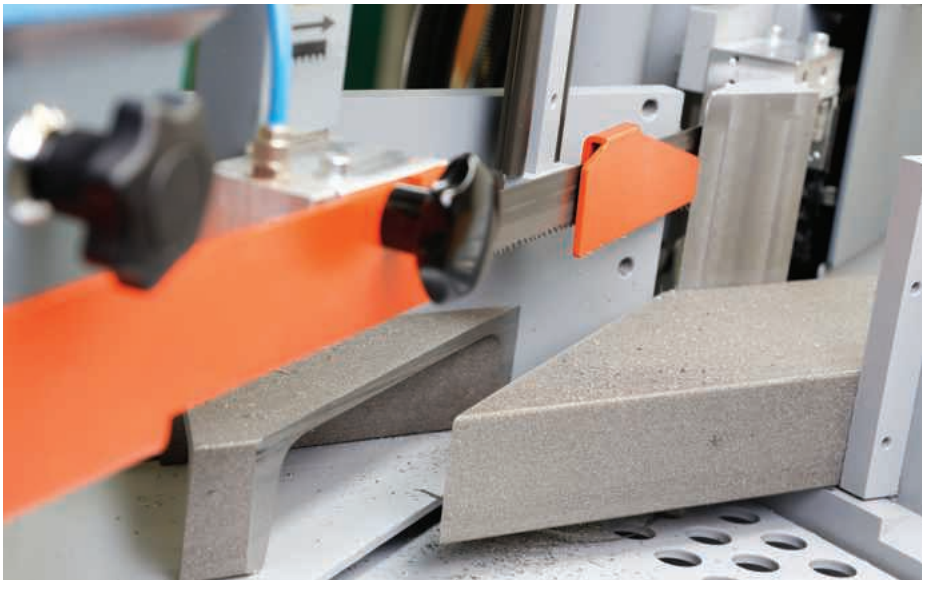
MEBApro 260 GP is based on a rigid portal frame construction. The saw frame is precisely guided on a rigid portal column structure by linear guidances. In total, MEBA's high-tech assistance appears with easy action, highly resistant and with less maintenance while minimising blade wear.

Thanks to the unique mitre bearing with digital display, all sensitive parts like guide elements and the mitre measuring system are out of reach from damaging chips and coolant. Equipped with a fixed mitre clamping, a fixed stop at 90°and 30°as well as an intermediate stop at 45°, there will be no deviation in the measure of length.

The saw frame of MEBApro 260 GP is inclined by approximately 2° which leads to more efficient cutting. Another highlight is the stepless frequency-regulated saw blade drive with its high flexibility according to profile and material. The feed system and its regulation is conducted via a frequency driven spindle with a stepless regulated speed via Poti 0-600mm/min. Cutting pressure regulation is operated via sensor technique. The advantages of this feed system are obvious: fast and precise positioning as well as continuous calm feeding. As a result, the regulation leads to perfect sawing behaviour and saw blades are prevented from damage.

As standard equipment, the machine incorporates an environment-friendly micro spray saw blade lubrication system as well as a separated air-oil-supply. Oil supply can be regulated via pump. MEBApro 260 GP is very easy to handle due to the ergonomically fixed control panel with digital mitre display and automatic material size records. The all-purpose high-tech band saw utilises a controlled, semi-automatic sawing work cycle, high-speed material clamping, an integrated chip removal along with carbide pre twist roller.

MEBApro 260 GP is even applicable at construction sites, for pipe installations due to its easy transportation. Furthermore, there are numerous other possibilities of use for MEBApro 260 GP with its modular add-ons such as roller track systems or digital and linear guided MEBA measuring devices.





MEBApro CREA Drill with drill

Another outstanding highlight is the MEBApro 260 GP / CREA DRILL with drill. When presented for the first time, this small machine won the "Federal Award for outstanding innovative performances in industry and trade".

This concept is the combination of MEBApro band saw with Crea Drill drill and automatically movable MEBA length measuring system. The space-saving high-tech machine combines efficient sawing, drilling and measuring, even for small parts and small lot sizes. By manufacturing components continually, material can be precisely cut and drilled without removing from the machine, cutting down on time and without dimensional inaccuracies.

A huge advantage of the CREA DRILL drilling unit is that measuring, line marking, or punch marking arenot necessary. As a result there will be no visible line marks. Due to its high torque, the drill chuck (3-16 mm) and its core drill up to 60 mm, all current steel grades can be processed. This model also incorporates an environment-friendly micro spray saw blade lubrication system as standard equipment. The MEBApro 260 GP / CREA DRILL saves space as well as time, combining sawing and drilling into one unit device.

UK Distributor:
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High production band sawing

With advantages like high material removal rates and low kerf widths, band sawing has been a competitive method for cutting material to length for years. Today's most important focus points are reducing cycle times and maximising output and these will continue to be key considerations for the future.



With previous developments like a servo driven saw feed, carbide tipped sawing blades and software controlled feed rates, cycle times were already cut down. Voortman recently equipped its sawing range with pressure sensors which measure the exact pressure on the sawing blade. If a profile is unknown or with bundle sawing, where cross sectional areas constantly change, pressure sensors measure the exact sawing blade pressure and control accordingly. Collected data is used to constantly adapt the sawing speed, feed rate and pressure for the best cutting results with less wear of the sawing blade and optimised cycle times.

Voortman sawing systems are also equipped with a height detection laser. When the sawing cycle is started, the blade moves down at full speed until the height detection laser reaches the top of the material. At this point the machine switches over to exact sawing speed calculated for that type of profile.

Cutmaster Machines UK was formed in 2000 for the sale of machinery for the steel fabrication, steel construction, steel service industries. To date it has supplied many of the leading steel fabricators and stockholders with solutions for fabrication. In 2010 the company opened an office in Barnsley, South Yorkshire for the sale of Voortman Steel Machinery products to the UK market.

Cutmaster Machines UK service includes the installation, commissioning, training and general maintenance on its wide range of machines throughout Ireland. Along with its Service Department, Cutmaster's Spare Parts division ensures customers get a fast, reliable service from a wide range of in-house stock.

For more information about how Voortman sawing systems can reduce your cycle times or to ask for a demo, contact:
Cutmaster Machines UK Ltd Tel: 01226 707865
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www.voortman.net





Prima Power - the essential ingredient for success

The Premier Group in Coventry has been producing niche production runs of panels and assemblies as well as prototype work for 20 years. It now has 10 different factory units where it succeeds in producing difficult to form components in challenging materials. Its most famous success story is the Olympic Torch for the 2012 London Olympics. The company designed and built the prototype in four days. It then manufactured 12,100 torches for the games, laser welding the seam down the length of each torch on its Prima Power Optimo, and laser cutting 100 million holes in six months using its Prima Power Syncrono laser.



The bulk of the company's business is in the automotive sector, where it has had a close relationship with Jaguar Land Rover for around 10 years. However it also operates in many other sectors including aerospace, rail, renewable energy, special industrial projects and specialist vehicles. The Premier Group works in partnership with its customers right from the design stage, advising on material, formability and tooling, using its skills and knowledge to produce high quality parts and assemblies at an economic cost. Its special relationship with Prima Power, which extends back 13 years, makes a major contribution to this process.

The Premier Group added to its original Prima Power Optimo 5-axis laser with a new model in 2012. The machine has a split cabin, which adds to the flexibility of the machine, enabling it to cut the largest single panels or numerous smaller panels in one operation.

John Campton, key account manager at The Premier Group says: "The Optimo delivers completely new levels of accuracy. We used to work to 0.2 mm tolerances from the laser. Now we can work to 0.02 mm, which is what our OEM customers are demanding. The machine is five times faster, very strong and reliable and offers us pure versatility. Prima Power gives us great after sales service. When we needed to add to the original Optimo, we considered the whole market, but again chose to select Prima Power."



As well as the Optimo, The Premier Group has a Prima Power Syncrono 2-axis high speed laser, with a Compact Server for material loading and unloading, and added to the existing Prima Power Rapido with the latest 5-axis Rapido Evoluzione2 in April 2015. There are also a further two new Prima Power Optimo Lasers on order for installation during 2015.

When collaborating with customers, The Premier Group takes designs into its CATIA CAD system and checks formability with its AutoForm software before working with the customer to produce a solution, and then designing and manufacturing the necessary tooling. New material properties can be challenging, so the company uses its considerable experience in this field and also consults with the University of Warwick for more complex projects.

The company is producing the panels for the Morgan 3 Wheeler, a new, re-engineered version of the classic, which had previously not been manufactured for 60 years. With AutoForm simulation, The Premier Group was able to arrive at the 2D shape for each blank, which it laser cut ready for forming. In total, the company has so far produced 1500 sets of bodywork panels with the speed of laser cutting keeping the costs down. Morgan came to The Premier Group as it could provide a solution which was much lower in cost than conventional production tooling.

For Jaguar Land Rover The Premier Group

produces 1,000s of different panels. For the new Jaguar XJ the company manufactured every single panel for the underbody and superstructure VP stage, which demonstrates its capabilities in low volume production. Furthermore, it has the ability to produce quantities up to around 10,000. For this the speed of the trimming of formed panels possible on the Optimo and Rapido machines is crucial for on time delivery. Other projects have included exhaust panels for the A400M military transport aircraft, with quality and delivery benefiting from the very small heat affected zone and the speed of laser cutting. The company also collaborates with companies such as Nilsson to produce prototype panels for limousines, ambulances and hearses, which are based on the Volvo S80 and V70, helping them take the vehicles through to production. Furthermore, it works with Modine, developing heat exchanger systems for agricultural vehicles.

All these applications rely heavily on the Prima Power lasers.

John Campton says, "We have a proper technical relationship with Prima Power. We worked closely on laser welding, producing a 1.5 m weld seam in 7.5 seconds. We first used it on the Olympic torch and now we are examining other applications. Currently we are working on a project to produce angled holes. Prima Power's continual development programme fits in with our comprehensive growth plans and, the after sales service and machine reliability is excellent. As the majority of our panels are laser cut, the close rapport we have with Prima Power is essential for our business."



The Prima Power Group offers a complete range of equipment for the sheet metal industry. With over 30 years of experience, it has over 10,000 machines installed in more than 70 countries. It has manufacturing facilities in Italy, Finland, the USA and China and it offers sales and service through a worldwide network of Group companies and distributors. Its range of machinery covers bending, punching, punch-shear, laser, combi and FMS. Automation through automatic loading and unloading, transfer between stations and buffering are highly important for modern productivity. Prima Power can provide a range of solutions and software systems tailored to suit manufacturer's requirements, even for the most complex applications.

Prima Power UK Ltd
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www.primapower.com

Entry-level punching machine with cost-effective automation

With such high focus on laser production in the modern machine shop, there is a tendency to see punching and profiling as old technology, but this is far from the truth. TRUMPF continually develops this method too because it still has a major contribution to economical sheet metalworking. Its latest development, the TruPunch 2000, was demonstrated for the first time in the UK at the recent TRUMPF Open House.

High axis speeds of up to 108 m/min, short setup times and maximum stroke rate of 900 per minute when punching and 1,600 when marking makes the TruPunch 2000 the most productive and flexible machine in its class. This is a basic and affordable machine based on a time-tested concept for proven parts accuracy.

This new addition to the TruPunch range is designed to make it cost-effective for any manufacturer to enter the world of automated production. The combination of high performance and low investment cost means the machine is even economical when operated at low capacity.

The TruPunch 2000 can be supplied as a stand-alone or automated machine or one whose automation is added as opportunities arise. The machine itself has a small footprint and, as automation comes in the form of SheetMaster Compact, the automated version can be comfortably accommodated even when production space is at a premium.



Brush tables with loading and unloading aids ensure careful materials' handling and the large selection of TRUMPF tools available with the machine enables a wide variety of parts to be produced. This is largely thanks to 360° tool rotation and when this is ability is combined with TRUMPF MultiTool, the possibilities are significantly increased.



The on-demand drive feature means that the punching head hydraulics always work at an optimum power level. Not only does this limit power consumption but also means that less noise is generated during non-productive times. Additional gains in process reliability and efficient material utilisation are made possible by skeleton-free processing without the need for repositioning and in only one clamping operation.

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Orders taken and new equipment presented at Bystronic Open House

More than 100 visitors to Bystronic UK's latest open house, held from 10th to 12th March at its Coventry headquarters and technical centre, were able to see some of the most advanced sheet metalworking machinery currently on the market, including some new equipment launched at the EuroBlech show in Hannover last October.

One order placed at the show, by sheet metal contract machinists Water Jet Cutting, was for a 6 kW BySprint Fibre laser profiling machine. A division of Gee Graphite, which specialises in supplying graphite gaskets and valve seals to the petrochemical sector, the subcontract firm will take delivery of the machine at its Dewsbury factory in early April 2015.

It will be the first in the UK to have the new, optional Power Cut Fiber feature, which doubles the thickness of aluminium and stainless steel that can be cut to 30 mm, while maintaining extremely fine cutting quality. Being powered by a fibre laser, the machine is also able to process copper (up to 12 mm) and its alloys, such as brass (up to 15 mm), without damaging the optics. Consequently, the electrical and motor manufacturing industries will be new target markets.

The Dewsbury company was the first water jet cutting subcontractor to be set up in the UK and is now the largest, with 10 water jet profilers in constant use. Director David Bennett says: "We decided to set up a new fibre laser cutting division because we were seeing a noticeable increase in enquiries more suited to the laser process.

"For example, 3 mm stainless or 8 mm brass takes too long to machine by water jet for some applications, so we could not quote a competitive price.

"Water Jet Cutting is still the first choice for producing high quality edges, especially in thicker materials, and for components where a heat-affected zone has to be avoided. For more cost-sensitive work, our new laser will enable us to take on new work and continue to expand our business."



The company chose a machine powered by a fibre laser, as it is three to four times faster than a CO2 laser at cutting thin-gauge sheets and approximately equivalent in its ability to process 12 mm plate. As to David Bennett's choice of Bystronic, he advised that they have used the supplier's water jet machines for more than two decades and that they have always found the equipment reliable and the after-sales service exemplary.



A reprise of EuroBlech

Much of what was on show in Coventry had been launched at EuroBlech 2014. Two of the new innovations were on Water Jet Cutting's fibre laser machine, namely the 6 kW source, 50 percent up on the previous maximum power, and Power Cut Fiber, which increases cutting performance. The machine comes as standard with the Cut Control safety function for automatically monitoring the cut and stopping the laser if the cut fails.



Another new fibre laser upgrade announced was Detection Eye, which speeds detection of the position of a metal sheet before cutting the nest of components begins. It allows a user to reduce setup times to four seconds and exactly adapt cutting plans to the material size, leading to precise cutting right to the outermost edges of the sheet, optimising material usage.

On show for the first time in the UK was the Xpert 40 press brake, the smallest currently manufactured by Bystronic. It is designed to be moveable by fork lift truck to anywhere within a factory, so it can be relocated easily next to other machinery that it serves, maximising productivity.

The innovative design results in highly dynamic movements at bending speeds up to 25 mm per second, allowing small parts to be processed three times faster than on larger press brake models. On component lengths of up to one metre, Xpert 40 generates a bending capacity of 40 tonnes.

Bystronic's latest ByMotion drive control system ensures finely tuned interplay between speed, precision and power. By coordinating the acceleration of the upper beam and the backgauges, it delivers bending results with a high degree of repeatability.

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Second laser cutter increases capability at XL-PT

As a result of continuing expansion, medical device component manufacturer XL Precision Technologies (XL-PT), based in Stockton-on-Tees in the North-East of England, recently added a second fine tube laser cutting system from Rofin-Baasel UK. As a result of increased demand for fine tube cutting and having reached the full capacity of the first ROFIN StarCut Tube, XL-PT took the decision to buy a new system in 2014.

When deciding to add a second fine tube cutting system, XL-PT was keen to also expand the capability. In the new system, they opted for the ROFIN StarFiber 320FC fibre laser source rather than the lamp-pumped YAG laser they have been using in the original ROFIN laser cutting system since 2009.



Jason Bonner sets up a component on the new ROFIN StarCut Tube laser cutting system

The new laser cuts 30 percent faster with better edge quality and can produce 10-15 percent more parts per shift than the previous system. Like the previous system, the new system has 4 CNC-controlled axes and an autoloader to automatically feed fresh tubes into the machine for higher throughput and lower operator intervention. The new system also allows longer parts to be processed and copes easily with larger diameters of tube.



Drug delivery filter manufactured by XL-PT featuring off-axis laser cutting and laser welding

XL-PT has seen demand for medical device processing grow year on year, with increased uptake in the USA leading to a planned expansion into that territory during the next 12 months. Tom Graham, MD at XL-PT comments:

"Laser processing now accounts for over half of the output from the factory. The relationship with ROFIN has allowed us to double in size changing the balance of the company and enhancing our traditional wire EDM business."

As well as laser cutting systems, XL-PT has an EasyMark laser engraving and marking system from ROFIN as well as 2 Select laser welders for CNC laser welding of small components.

Rofin-Baasel UK supplies systems for laser welding, cutting, engraving and drilling to a large base of industrial customers across the UK and Ireland.

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The perfect solution for every requirement

After many years of absence, Carl Cloos Schweisstechnik GmbH participated again at the Hannover show. Under the banner of automation technology, Cloos presented a wide range of manual and automated welding. Exhibition visitors were presented with a wide range of welding processes for different materials and components.

The focus of the large Cloos stand was on an automated robot system equipped with an automated torch changing system. No matter if thick or thin, steel or aluminium, here you can find the right welding process for every product requirement.



With Tandem Weld two separate welding wires are fed and melted simultaneously in one molten pool

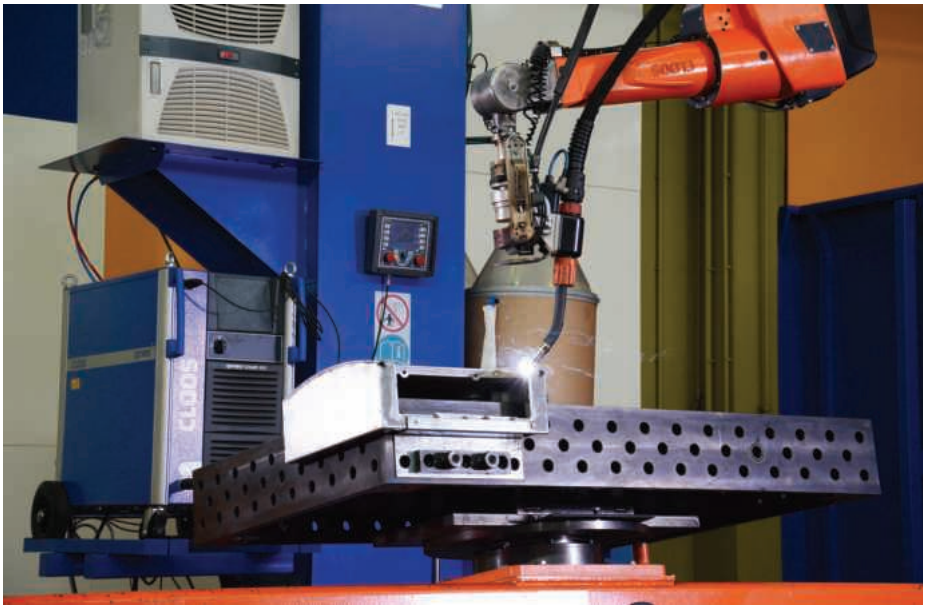
Tandem Weld: powerful welding times two

The welding specialists presented the new Tandem Weld generation for process-safe and very quick and comfortable welding. In the case of Tandem Weld, two separate welding wires are fed and melted simultaneously in one molten pool. The advantages of the Tandem Weld process are a high deposition rate, a high welding speed and thus a low heat input. Since 1996, Cloos has been the global market leader in Tandem Welding and has continuously developed this process and is offering new process combinations for the most different requirements in thin and thick plate welding.

The new ZMW 950 Tandem torch is equipped with a powerful cooling integrated in the torch neck and integrated gas nozzle sensor cables. This results in a higher deposition rate, a longer service life and a simple maintenance of the torch.

Cold Weld: welding with minimum heat input

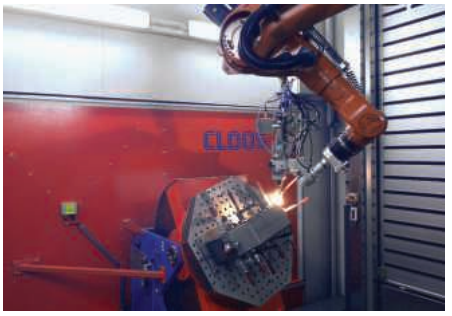
With the Cold Weld process, an alternating current produces a very special pulse form, which brings about an extremely low heat input. Due to this type of heat-reduced kind of arc welding the welding process can be optimally controlled. The increased deposition rate can either be used for more filling volume or higher welding speed. The material is only subjected to minimum heat and the original material properties remain to a large extent unchanged.



The increased deposition rate of the Cold Weld process results in enormous welding speeds particularly in the case of thin plates

Laser Hybrid Weld: high welding speed and optimum weld quality

Cloos also sets new standards in the field of laser welding. The laser MIG/MAG Hybrid process is the combination of a laser beam with a MIG/MAG welding process in one common process zone, thus using the advantages of both processes.



The main advantages of Laser Hybrid Weld are a high welding speed and an optimum weld quality

Considerable savings in production time and filler material are possible. Full-depth welds can be welded without preparation. Moreover a high weld speed can be reached when welding either thin plates or thick plates. Due to the combination of the two processes, many additional parameters can be set. Thus the process is perfectly matched to the respective task.

Narrow gap welding: a revolution for thick plate welding

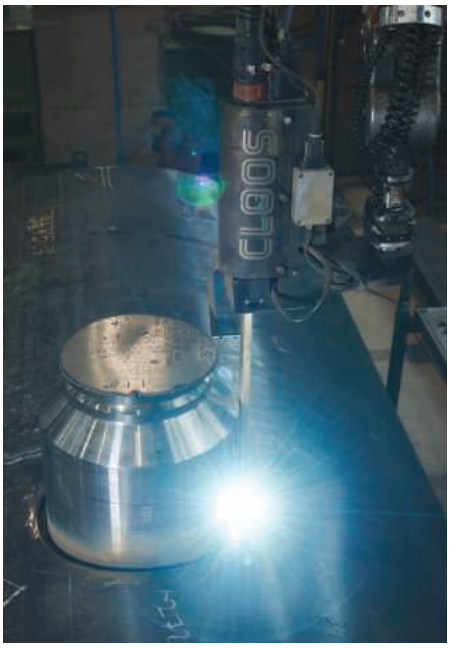
The MIG/MAG Narrow gap technology offers a particular economic efficiency for welding thick-walled component parts. The basis of the narrow gap technology is the rectangular narrow gap blade with a length

of up to 400 mm which guides the wire electrode, the shielding gas and the cooling water. Due to the very small opening angle there is no extensive weld preparation and the quantity of filler material and shielded gas can be reduced. The relatively low energy supply during narrow gap welding provides special advantages even for steel and for high-strength fine grained structural steel. Production downtime can be avoided by an automated change of consumables.

Another highlight is the new fully automated current tip and gas nozzle changer SpareMatic, which allows non-stop welding with operative components. When the welding robot needs new nozzles, the automatic current tip and gas nozzle changer comes into play. The changer takes the torch consumables and replaces them for new ones. Due to its compact, modular design, the SpareMatic can be integrated into both new and existing systems.

Compact welding robot with new gas nozzle sensor accelerates the production processes

Cloos also presented the new QRH-280 welding robot. This small, light and highly dynamic robot is perfectly suitable for the



Shorter production times, considerably less material consumption and a high quality are the main characteristics of the narrow gap technology

CLOOS cell solutions. The compact design saves production area and guarantees a very good accessibility to fixtures. The robot is equipped with a new tactile gas nozzle sensor which works with a considerably



higher tracking speed. This results in a significant acceleration of the production process and at the same time to an increase of quality.

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Kawasaki introduces new compact welding robot

Kawasaki Robotics has introduced its latest arc welding robot designed for high output demand in crowded manufacturing environments. The Kawasaki BA-006N Robot is a completely new ground-up design ideally suited for densely populated robot cells, or stand-alone cells, where minimal space is available.

A lightweight arm design and high-output motors, provides best in-class re-orientation times between weld runs. New anti-vibration control technology ensures smooth arm control for high speed short-pitch movements.

The common problem of snagged dress package cables, in crowded cells, has been overcome by integrating the cable into the new BA-006N robot. The arm and wrist of the robot are hollow allowing the internal routing of welding wire and gas to pass from the dress package, normally mounted on the top of the arm, through to the wrist.

In addition to preventing in process cable snagging this speeds up on-site programming and eliminates 'cable positioning variables' to make off-line programming more efficient and maintenance faster.

Further enhancing the new robot's suitability for arc welding is its small footprint and its slim arm. Combined with the integrated cable, the compact design allows greater efficiency when populating confined spaces with multiple robots.

Using the latest Kawasaki E01 controller the B-Series robot has highly accurate trajectory control and faster programming execution. Programming of the robot and in process monitoring is enhanced by integrated welding software. Supporting the robot's small footprint the E01 controller also offers a compact design. Additional axes control is available for applications requiring synchronised manipulation during the weld process. Noburo Takagi, president European Operations, comments: "We've optimised the range and payload, with a 1.445 metre reach and 6 kg, to provide our best performing unit for a wide variety of industrial welding applications. Feedback from first users reflects surprise in the smoothness and composure of the robot's



operation at very high speeds in confined areas."

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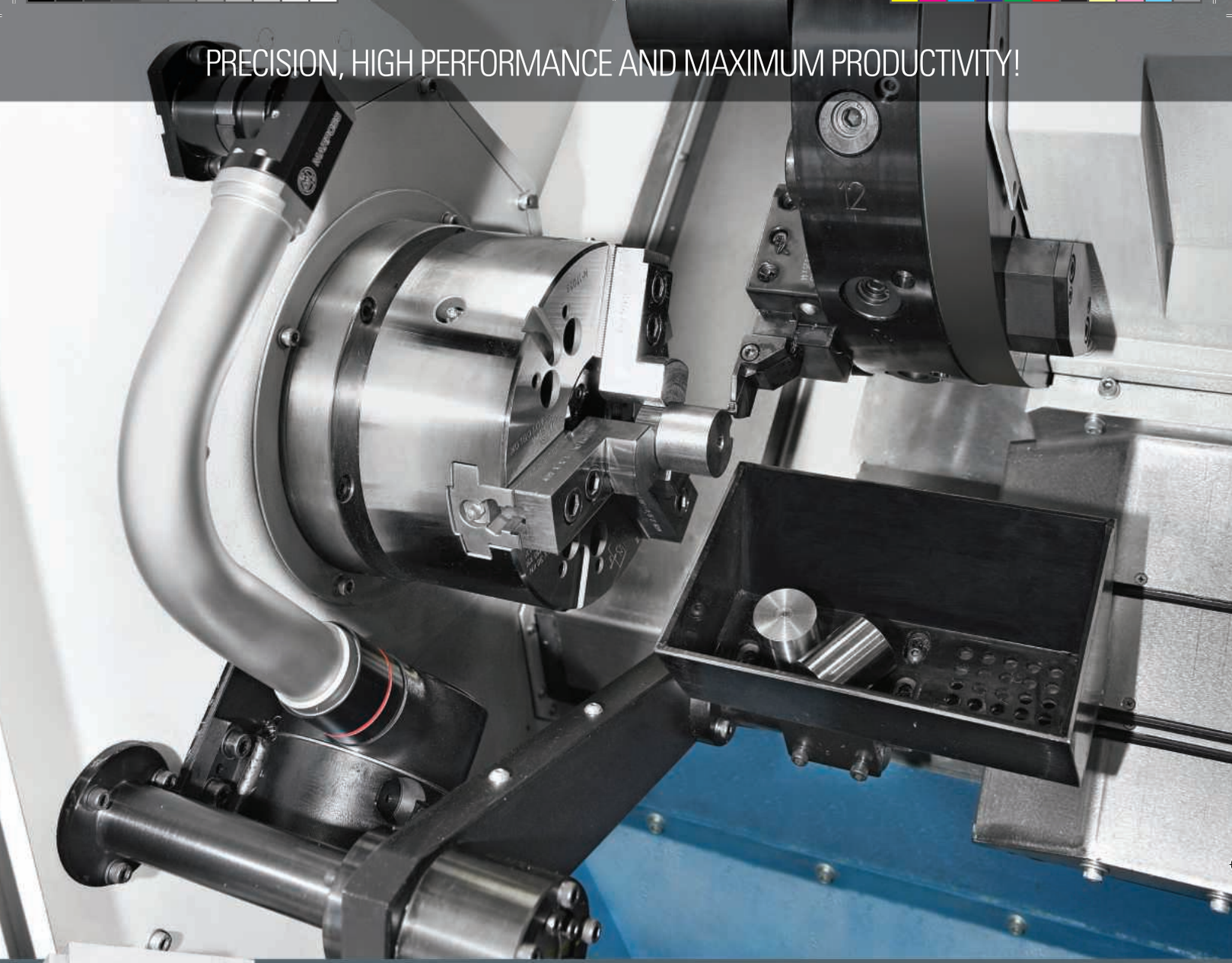
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