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- FASTENING & ASSEMBLY • METAL MARKING
- WATERJET MACHINING

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Twin-spindle twin-turret lathes are ideal for hydraulic component production

A second pair of Miyano BNE-51MSY turn-mill centres from Citizen Machinery UK has been installed at contract machinist Unicut Precision. Joining two identical twin-spindle, twin-turret lathes with live tooling and a Y-axis on the upper turret supplied at the end of 2017, they form the mainstay of highly efficient production of complex components for the hydraulics industry, which accounts for a large proportion of Unicut's business.

Established in 1990 by 24-year-old Jason Nicholson and a partner who has since left the company, in a double garage in East Barnet with £5,000 to spend on second-hand manual and cam-controlled machines, Unicut has been a turned parts subcontractor for most of its existence, progressing to CNC turning in 1993. However, in 2017 the company diversified into prismatic machining with the purchase of a multi-pallet machining cell, followed quickly by a second. A third cell is now on order for delivery later in 2019, which will be a record year for capital investment at £2.3 million.



Over the years, Jason Nicholson has bought 104 CNC lathes, 93 of which were either Citizen Cincom sliding-head models or fixed-head lathes from Miyano, which merged with Citizen in 2011. Today, Unicut operates 22 Cincom lathes with up to 13 CNC axes, 80 cutting tools and 2,000 psi coolant pressure, as well as eight Miyano machines deploying up to 72 cutters. The machines are usually replaced every five to seven years to take advantage of the high residual value of the lathes at that age.

While turning machines have been sourced mainly from this supplier, each purchase is rigorously analysed by Jason Nicholson with respect to machine cost and achievable cycle times to ensure lowest cost per part produced and the most rapid return on investment. Ease of machine integration and use as well as the desired quality of component are also paramount considerations. Additionally, prompt provision of service is an important deciding factor.

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EMO Hannover 2019 provides clarity in uncertain times

Trade fair builds on successful previous event

From the 16th to 21st September, around 117,000 production specialists from 150 countries convened at the world's leading tradeshow for the metalworking industry. EMO general commissioner Carl Martin Welcker says: "This EMO Hannover 2019 built on the success of our boom year in 2017. In the context of subdued economic expectations over the past several months, the moderate decline in attendance has to be viewed as a success. We are particularly delighted at the further increase in the percentage of foreign attendees."

The mood in the halls was positive, with many exhibitors pleasantly surprised at the high volume of visitor traffic at their stands. "EMO Hannover has once again proved solid as a rock, providing clarity for the further development of production technology, even in uncertain times," Carl Martin Welcker adds. Its trademarks included a strong international character, a high calibre of visitors and exhibitors, and an amazing wealth of innovations and new products, he stresses. As the world's leading metalworking fair, it was the "place to be".

Exhibitors with a broad customer base were satisfied with the fair. In the words of Dr Wolfgang Heuring, CEO of the Erlangen-based Motion Control Business Unit at Siemens: "The level of visitor interest at our stand this year was incredible. We are delighted at the way things have gone."



Other firms with a stronger focus on the passenger car industry seemed to be less upbeat about the situation. "Firms are clearly more reluctant to commit themselves, given the general uncertainty over where the market is heading," remarks Dr Christian Lang, CEO of Liebherr-Verzahrtechnik in Kempten. "But our discussions with customers at our stand have still been substantive and very promising for the future," he adds. While some exhibitors spoke of a historic paradigm shift in the automotive industry, which still needed to be mastered, other exhibitors reported successfully negotiating business deals with automakers during the fair.

At the start of EMO Hannover, there was some worry about the news that many customers were cutting travel budgets. Yet the percentage of company executives among tradeshow attendees was about as high as two years ago, at 58 percent. Around half of these came armed with capital investment plans and, for foreign visitors, this figure was even higher, at more than 62 percent. 25 percent of attendees actually placed orders during the fair or planned to do so in the near future. And a further 20 percent intended to spend money downstream from the fair.

The main focus was on expansion and replacement investments in flexible manufacturing, production machines, tools and automation. "First we need to find out what is happening in the industry, then we will make our investment decisions after EMO is over," says Kiyokazu Sugiyama of Nissan Motor Co. Ltd, Yokohama, after spending three days at the fair taking a close look at all the displays. Gebhard Debor, manufacturing manager at Linde Hydraulics in Aschaffenburg, comments: "If we find what we're looking for, we're ready to talk business right now."

As the flagship fair for its sector of industry, EMO Hannover has a strong international profile. More than half of all attendees came from abroad, split almost evenly between other European countries and overseas. A 20 percent growth in



attendance from overseas in comparison with the 2017 event was particularly impressive. This included a high percentage of Asian guests, who accounted for almost one third of visitors from abroad, with China, Japan, Taiwan and India heading the rankings. "The highly international makeup of EMO visitors, particularly from Asia, resulted in a busy and extremely global atmosphere at our stand," says Dr Stefan Brand, CEO of Vollmer Werke in Biberach. This trend was clearly related to a higher number of Asian exhibitors at this year's event, who encouraged their customers to visit them in Hannover. Other countries with strong representation at the event included Italy, Poland, Sweden, Russia and Turkey.

"This year's EMO once again generated fresh momentum for innovations," reports Lothar Horn, managing director of Paul Horn GmbH in Tübingen. As an innovations platform for production technology, EMO is expected to chart the trends for the years ahead, and once again the mission was successful. The EMO motto "Smart technologies driving tomorrow's production" accurately reflected the key issues facing the industry today. "Our many discussions with customers at EMO 2019 in

Hannover revealed that a focus on the holistic process chain, including digital services, creates the relevant added value for customers," says Christian Thönes, chairman of the executive board at DMG MORI AG. This feeling was shared across all exhibitor segments. "The positive visitor response to our cloud-based simulation tools and monitoring system as an Industry 4.0 application was striking," comments Marie-Sophie Maier-Wember, CEO of Haas Schleifmaschinen GmbH. And the buzzwords of IoT platforms, apps, digital twins, artificial intelligence (AI), edge and cloud computing were omnipresent at the fair.

This all served to highlight just how much has changed since the most recent event two years ago. Particularly in Hall 9, the domains of research and practice came together. This blend of research and industry attracted large visitor numbers from around the world.

This year's EMO also featured the first AI applications in the Start-Up area and at the stands of the relevant trailblazing companies. Along with the strong interest in AI and machine learning, visitors' appetite for future visions was reflected in the

accompanying events and forums, where the topics included not only AI, but also additive processes, the industrial internet of things (IIoT), 5G and not least OPC UA or umati, the new standard interface between machine tools and overarching IT systems. The standout attraction consisted of the big umati showcase, which included 110 machines from 70 international firms and partners, demonstrating for the first time that the universal interface between machines and IT systems can function across all product types.

"In spite of all the political turmoil, this trade fair has revealed that industry is actively addressing the challenges of the future and is determined to make its contribution as a problem solver," concludes Carl Martin Welcker.

The next EMO will be staged in Milan from 4th to 9th October 2021.

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The cutting edge of technology

Galway hosts Medical Technology Ireland 2019

Galway Racecourse was the venue for Ireland's and one of Europe's premier medtech events this year, the Medical Technology Ireland 2019 Conference & Exhibition, which took place from September 25-26, showcasing innovative products and solutions for the medical device design and manufacturing sector

Tom Mulligan, Ireland correspondent, reports

Ireland is one of Europe's largest medical device design and manufacturing centres and, as a globally recognised centre of excellence, is home to more than 300 companies employing about 32,000 people, with nine of the world's top ten medtech sector companies having operations in the country. Ireland is also the second-largest exporter of medtech products in Europe.

The issues: better health care, lower costs

Globally, pressures on health care systems have resulted in a greater focus on enhanced efficacy of treatments and cost reductions. Medical Technology Ireland addressed these issues through its two days of discussion and presentations between high-quality attendees within a comprehensive programme that included more than 15 conference presentations covering the critical technology and business issues shaping the future of the medical technology sector. The programme also included two highly topical workshops: the Women in MedTech Forum, highlighting how women are making an impact in the sector; and the Start-Up & Innovation Academy, demonstrating the business strategies new companies need to adopt in order to become established in the competitive field of medtech. The event also featured three floors of exhibits with more than 200 companies showcasing their products and services.

Visitor numbers were in excess of 1,200 and included manufacturers, clinicians, academics, entrepreneurs, managers of start-ups, financial specialists and other suppliers to the sector attending a combined conference programme defining present and future medical device trends, encouraging wide-ranging discussions on new developments, and on how these are improving the quality of life and increasing life expectancy for patients worldwide.

Conference programme: a prestigious speaker line-up

The conference opened with an address by



J.P. Gilmartin, deputy president of Galway Chamber, and featured a prestigious line-up of invited speakers, including: Professor Fengzhou Fang of the School of Mechanical and Materials Engineering, University College Dublin talking about nano-manufacturing technology; Ben Davison of micro-machining, moulding and printing specialist company Precipart describing how to move efficiently from prototype to full production by using metal 3D printing as a means of reducing development time and costs; David Alarco of Nypro Healthcare on the race for a qualified health care additive manufacturing solution; Ronan Benson, senior industrial designer at medical device designer and contract manufacturer Synecco discussing the utilisation of the IEC 62366 usability engineering standard to understand and optimise how users interact with medical devices; and Drew Forbes of US company Fort Wayne Metals describing new nickel-free alloy technologies being developed to address concerns over nickel allergies from long-term implants.

Several business topics were discussed within the conference programme: sessions included an overview of the changing EU

regulatory landscape, and presentations on how to make the most of R&D tax credits and practical approaches to innovation in pre-market studies.

Women in MedTech Forum

Chaired by Fiona Neary, commercial director of the BioExel partnership programme and innovation operations manager at NUI Galway, the Women in MedTech Forum proved a big success, attracting more than 100 people to listen to a prestigious line-up of speakers that included speakers from Boston Scientific, Medtronic, Creganna Medical-TE, Merck Sharp & Dohme and the Learning Reservoir, Galway and featuring discussions that included topics such as mentoring, balance and diversity in the workplace.

Start-Up & Innovation Academy

A second workshop, the Start-Up & Innovation Academy, was held in partnership with Medical Technology Ireland on the second day of the conference, a number of key support organisations in the West of Ireland region bringing together some of the best investment-ready start-ups to pitch to potential business angels and

investors. The Academy also featured a brief presentation on the extensive range of supports for start-up and early-stage companies in the region.

International exhibitor line-up

Complementing the conference programme and the two workshops were the three floors of more than 200 exhibitors ranging from component suppliers, precision tooling specialists, medical device designers, and contract manufacturers, to printing, packaging & labelling specialists, services suppliers, business advisors and consultants, including metal component, metal finishing, device assembly and precision tooling specialists. The exhibitors included:

XL Precision Technologies, a UK-based specialist in the manufacture of laser-cut tube components and micro-machined components for cardio, endo- and neuro-vascular devices including a range of metal components from flexible hypo tubes, Nitinol micro-machined components and complex sub-assemblies

Irish company Allied Automation, dedicated to the design and precision engineering of customised automated equipment for medical device companies and offering mechanical design, precision tooling, process control and safety systems, and R&D.

European Springs & Pressings Ltd offering engineering expertise in the spring coiling, wire forming, pressing and medical stamping industries across multiple metals, with coiling from 0.03 mm to 65 mm.

Carby Corporation, a US manufacturer of very-high-precision deep-drawn metal components for the medical, aerospace, military, automotive, electronics and other industrial sectors.

Danish company Stansomatic A/S, a producer of punched and drawn parts in all types of metals and steel made using hollow die tools and modern automated punches.

Blueacre Technology, a precision micro-machining specialist for the medical device and other advanced manufacturing

industries, using the latest technology in laser machining, Swiss CNC and electropolishing finishing.

Germany-based Klingel Medical Metal produces high-precision CNC turned and milled parts with complex geometries and tight tolerances. The company is an ISO 13484:2016 certified full-contract manufacturer of customised components of materials with low machinability for use in orthopaedic, cardiovascular, minimally invasive and robotic surgery and medical devices.

Fort Wayne Metals, a leading manufacturer of precision wire-based products, including centreless ground bar, strands, cables, and subassemblies, used in medical devices. FDA-registered and ISO 9001, AS9100D, and ISO 13485 certified, the company offers numerous alloys, including Nitinol, titanium, and stainless steel.

Deringer-Ney Inc., a global leader in the manufacture of platinum group metal alloys and precision biocompatible components for the medical industry such as dental implants, interventional and implantable devices.

Schivo, a company that supports medical device, instrument or sub-component builds from prototyping, design for manufacturing/assembly to full product build and test. In house capabilities include machining, additive manufacturing, fabrication, coatings and electro-mechanical assembly for the build and packaging of devices or subassemblies ready for shipment.

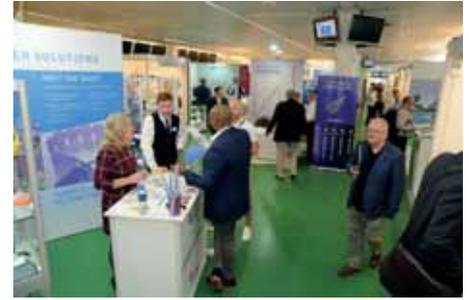
Sandvik Materials Technology, offering its EXERA range of alloys, wire forms and wire components, enabling wire diameter range and coating types to be combined to match specific applications in various industries.

Alpha Precision Ltd specialises in the design, build and support of complex tooling together with fixturing and production manufacture for the medical device industry.

MedNet GmbH, a component and service provider for medical device manufacturers that offers standard components and sets as well as customised parts and assemblies from polymers and, precious, metals.

Impact Ireland Metals is the exclusive distributor in Ireland and the UK for Boston Centerless Precision Ground Alloys, supplying precision ground bar materials for close tolerance CNC Swiss machining applications for the medical device industry.

US company MW Medical Solutions



develops specialised products for the medical and pharmaceutical industries, including precision wire forms, metal stampings, a wide variety of spring designs, tubular components, and related product assemblies.

Since 1992, Swiss company Parmaco Metal Injection Molding AG has been a manufacturer and developer of highly complex serial parts in steel and high-grade alloys, manufactured using metal injection moulding with excellent surface finish for the medical, automotive and other industries.

PI Medical (Prince & Izant Company) is a leading high-purity precious and non-precious materials supplier to global medical device manufacturers and supplies products such as ultra-fine wire, marker bands/ring electrodes, and micro-machined components.

Solid Solutions Ireland is a SOLIDWORKS reseller with extensive experience in the CAD and engineering industries. The company recently introduced 3D Printing to its portfolio of products, partnering with 3D Systems and Sindoh 3D WOX to bring a wide range of 3D printers to the Irish market.

Precipart engineers and manufactures custom mechanical solutions for the medical technology sector. As an ISO 13485 registered supplier, the company's core competences include high-precision micro-machining, moulding and printing; gears and motion control solutions; and finished instruments.

Telsonic AG has been designing, manufacturing and supplying ultrasonic equipment since 1966 with Telsonic UK being established in 1977. Telsonic UK offers a comprehensive range of ultrasonic modules and systems for plastic and metal welding, cutting, sieving, and splicing applications.

Next year's event, Medical Technology Ireland 2020, takes place at Galway Racecourse from September 23-24, 2020. For further information visit

www.medicaltechnologyireland.com



Innovative medical markers capped to perfection

TorqSense transducers are playing a vital role in packing leading edge medical test kits at Axis-Shield in Dundee, which develops new diagnostic compounds that help with the early identification and management of critical illnesses.

Axis-Shield is a leader in inventing new markers for identifying cardiovascular and neurodegenerative diseases, rheumatoid arthritis, sepsis, vitamin deficiencies and diabetes. Spotting early signs of such conditions during routine medical check-ups means treatment can be started in a timely manner, which leads to improved patient management, either curing or managing the problem.

The compounds it develops are initially produced in low volumes, where automated processes are not appropriate. This moves to medium volume production once the product has been proven, approved and certified and the medical fraternity begin using it.

Some compounds later move into high volume production, but it is in the very nature of medical advancement that in other cases Axis-Shield will keep on improving the formulations and developing new products fairly quickly. Thus Axis-Shield has a need for highly efficient medium volume packaging solutions that guarantee accurate and consistent adherence to performance parameters.

This led the company to commission a bespoke packaging line that could handle multiple products in a variety of different packaging formats at a rate of around 500-2,500 units per hour. The line fills bottles or other forms of container with the compounds, caps them, labels them, groups them into multi-packs, applies outer wrappers and overprints key data such as production date and use-by-date.

Dean Harper, operational excellence scientist at Axis-Shield explains: "Capping the bottles is a critical part of the process. Our line can work with two sizes of cap and each one must be tightened to just the right

level of torque to within pretty tight tolerances."

A cap that is too loose may lead to spillage of the marker, which is usually very expensive, during transit or handling. A cap that is fitted too tightly may cause upset to the patient or medical staff, who are both likely to feel stressed if smooth medical procedures are upset. Equally, forcing open an overly tight cap could result in spillage.



TorqSense is unlike any other sensor in that it does not rely on delicate slip rings to transmit torque readings. It does this wirelessly using radio signals transmitted from a pick-up located near to, but not actually contacting the rotating drive shaft of the capping mechanism. TorqSense met the design criteria of robustness, simple high-speed operation and non-contact for sterility.

Mark Ingham, sales engineer for Sensor Technology, says: "TorqSense was ideal for this application; we just needed to work out mounting arrangements. We supplied the sensor with our standard TorqView software which both displays readings in real time and archives them should analysis or track and trace be an application requirement."

Being wireless, TorqSense does not need to physically contact the bottle caps or shaft of the torque head it is monitoring. Instead,

sensing is achieved through a radio frequency link using Surface Acoustic Wave (SAW) sensors. A shaft twists very slightly when it rotates, the amount of deformation being proportional to the torque.

TorqSense measures the deformation so that it can calculate torque. To do this two tiny piezoelectric combs are glued to the surface of the shaft at right angles to one another; shaft deformation will expand one

comb and compress the other. A radio frequency signal emitted by the TorqSense is reflected back by the combs, with its frequency changed in proportion to the combs' deformation.

For Axis-Shield, the software was required to do two things: run the torque up to a set level within tolerances and record the actual value achieved. This secures the cap to the bottle at a level of tightness that will ensure security and sterility, yet is at a level that can be opened relatively easily by an adult. The logged values are saved to a hard drive to provide a permanent record for traceability purposes.

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HP 3D Printing allows LIMB-Art to bring newfound style to prosthetics

LIMB-Art, a UK design and manufacturing company, is using the HP Jet Fusion 3D 4200 in alliance with service bureau Design Reality to produce eye-catching, beautiful prosthetic leg covers. Thanks to HP's technology, LIMB-Art can create unique, clever designs for quick delivery, at a cost point that is not prohibitive.

Founded in 2018 by former Paralympic swimmer and medallist Mark Williams and his wife Rachael, LIMB-Art was born out of an overwhelming desire to help other prosthetic users raise confidence regarding their appearance.

"Working with HP and Design Reality



means that we can move away from traditional production methods, where we'd typically use an injection mould one design at a time, limiting our customer base and available styles," says Mark Williams, director and owner of LIMB-Art. "We can now uniquely print any shape or pattern we want with HP Jet Fusion technology, which enables endless customisation and limitless creativity. HP Jet Fusion technology really sets us apart from the competition and has enabled us to sell into the NHS and gain support from leading prosthetic manufacturers like Otto-Bock."

With the HP Jet Fusion 3D 4200, LIMB-Art can offer exceptional product quality in terms of both durability and affordability. LIMB-Art's mission is to make its prosthetic covers accessible for those who need it, with the business focusing on generating enough profit from sales of adult leg covers that it can offer the same product to children in need of prosthetics for free. The HP Jet Fusion 3D 4200 creates robust end



products, guaranteeing LIMB-Art's customers the reliability they require and expect.

The HP Jet Fusion 3D 4200 offers LIMB-Art an easy-to-use solution that scales with its business and an integrated, end-to-end process that delivers both functional prototypes and final parts.

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Medical packaging solutions from rose plastic

The design of packaging is a key component of any medical device manufacturing process and yet it is often considered an afterthought. Packaging offers protection against all types of harm, including damage as a result of handling and storage, transit and contamination. Plastic peel pouches and thermoformed trays are used by the majority of medical device manufacturers to meet sterile packaging needs.

These solutions, however, may not provide the required protection depending on the specific part. rose plastic Medical Packaging USA LLLP has addressed this need by developing robust and effective protective packaging solutions. The company aims to provide innovative packing solutions to the medical industry and uses its expertise, in injection and blow molding, to offer durable and well-proportioned products. The solutions help to save key components from damage, as a result of transit and storage, as well as offering key benefits including lower shipping costs and cost-effectiveness.

The company has a philosophy for the

responsible use of raw material resources with precise gauge control while building its packaging solutions.

For over 60 years, it has engaged in the development and production of special protective plastic packaging and has provided high levels of service in order to assist customers. This is further enhanced by its skilled workforce and optimal processes framed around valuable customer feedback.

As a manufacturer and supplier of primary and secondary packaging solutions for medical device, dental, healthcare and laboratory equipment and components, rose plastic can provide guidance on selecting from existing packaging solutions, while offering to develop custom packaging for customers with the help of its R&D Team.

It also produces packaging solutions, including a Sterile Barrier System (SBS), to reduce process cost at the manufacturer and to improve handling processes.

Located in California, Pennsylvania, rose plastic Medical Packaging USA LLLP has its main global headquarters in Hergensweiler, Germany. The company has manufacturing



facilities on five continents, producing unique individual and appropriate packaging solutions for customers worldwide.

Due to its global footprint and common internal standards, rose plastic offers global medical customers the same cost effective and high-quality, packaging solutions to any customer facility worldwide.

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Optimised pulses reduce electrode wear

GF Machining Solutions' Form P 350 die sinking EDM machines feature precision-enhancing qualities and integrated technologies that enhance productivity and profitability.

A compact C-axis construction, fixed table and cast-iron frame offer stability and force reduction to maintain a precise spark gap between the part and electrode. Regardless of part weight or dielectric volume, the machines deliver consistently high accuracies and surface finishes of Ra 0.1 µm. Integrated glass scales preserve repeatability and eliminate the need for recalibration and errors due to backlash and wear.

FORM P 350 machines are equipped with the company's intelligent power generator and Tecform module, which optimises each pulse, reducing electrode wear and producing high-quality surface finishes. Segment-dedicated technology eliminates the need to adjust the generator's parameters. These features ensure reliability, improve operational efficiency and reduce unproductive time.



The company's Innovation and Quality (iQ) technologies control the erosion of graphite and copper electrodes and help reduce costs. Real-time spark characteristic analysis and setting adjustment for pulse efficiency ensures wear-free spark erosion, precision, efficiency and greater control over the cost of the electrode.

The console's AC Form Human-Machine Interface (HMI) is based on Windows. Interactive graphics illustrate operations such as measurement and machining cycles for ease-of-use. It

provides descriptions of machining targets, automatic selection of optimal technologies and dynamic parameter adaption.

The machine is supplied with a four-position linear tool changer for System 3R macro tooling. An optional rotary tool changer can be specified which increases the number of electrodes to 160. The machines can also be paired with the System 3R WorkPartner 1+ robot for unattended night and weekend operations. With X-, Y- and Z-axis travels of 350 x 250 x 300 mm, the machine accommodates workpieces up to 700 x 460 x 275 mm in size.

High-speed machining centres designed for the effective and efficient machining of graphite

GF Machining Solutions' high-speed Mikron Mill S 400/500 Graphite and Mikron HSM 500 Graphite have been designed to machine graphite.

Graphite glass moulds for glass end products are increasingly used in ICT sector and industries, while graphite electrodes are popular and proven in the automotive, electronic components, aerospace and packaging sectors. These two machines from GF Machining Solutions are designed to meet the particular challenges of machining graphite.

The 3-axis Mikron Mill S 400/500 Graphite is aimed at machining graphite mould tools. As ambient temperatures fluctuate in machine shops and machining speeds change, process stability is maintained thanks to the machine's intelligent thermal management system and its thermo-stable machine body. Precision and stability at the tool tip are ensured by the Step-Tec HVC140 spindle, with speeds ranging up to 42,000 rpm and 13.5 kW of power.

As well as providing a 'best-in-class' solution for graphite, the machine can also handle a range of other materials which increases its versatility and appeal.

The Mikron HSM 500 Graphite, with its simple and compact, is ideal for dry machining graphite. The machine's Step-Tec HVC140 spindle, 42,000 rpm and integrated high-efficiency dust extraction system ensure fast part production and process optimisation and, when integrated to a System 3R WorkPartner (WPT1+)



part-changing robot, the productivity potential of this manufacturing cell is unrivalled.

GF Machining Solutions is a leading provider of machines, automation solutions and services to the tool and mould making industry and to manufacturers of precision components. Products range from electric discharge machines and high-speed and high-performance milling machines, including clamping and palletisation systems, to 3D Laser surface texturing machines, services, spare and expendable parts, consumables and automation solutions.

Based in Switzerland, GF Machining Solutions, belongs to Georg Fischer Group and is present in more than 50 countries with its own sales companies. In addition, the division operates production facilities and research and development centres in Switzerland, in the US, in Sweden and China.

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Boosting aerospace and defence quality and lead times with new Sodick EDMs

Excel Precision Group has enhanced its wire and spark erosion capabilities by acquiring two new Sodick machines from Sodi-Tech EDM. Installed at the company's Gloucester facility, which has AS9100 rev D and NADCAP AC7116/3 Rev B approval in place for both spark and wire erosion, the arrival of the Sodick ALC600G wire EDM and AG60L die-sink EDM will underpin a number of important contracts across both the civil and military aerospace markets.

Established in 1978, Excel Precision Group operates from two modern facilities in Gloucester and Leeds, which together house over 30 CNC wire and spark erosion machines. This capacity, along with its accreditations, make Excel one of the leading EDM subcontract operations in the UK, with particular emphasis on aerospace and defence.

Steve Batt, operations director at the Gloucester facility, states: "Few EDM subcontractors have both AS9100 and NADCAP approval. This level of process control allows us to serve an extensive number of aerospace and defence customers. In addition, we currently hold company approvals from BAE Systems, Rolls-Royce, Goodrich, Safran Landing Systems, Dowty Propellers, Messier Dowty, MT Satellite, GE Aviation, Moog Aircraft Group, UTC Aerospace Systems, Mettis Aerospace and Triumph Actuation Systems."

Along with the need to replace older machines, part of the reason behind the company's investment in Sodick technology was due to the imminent ramp-up of an existing defence contract that is currently scheduled to run until 2022. An NDA has been signed, so details are scant, but the parts involve the intricate wire erosion of titanium stock.

"We looked at both Sodick and our existing supplier of EDM machines, but the test cuts provided by Sodi-Tech EDM were simply better," continues Steve Batt. "In particular, the surface finish produced by the AG60L spark eroder really caught our attention. Due to the presence of debris, some machines struggle to replicate the surface finish achieved on the sides of parts, on the bottom face. However, this proved no such issue for the AG60L."

Excel Precision's AG60L has been set to work producing a variety of aerospace parts, including stainless steel actuator components. In total, the aerospace sector commands about 40 percent of the machine's time. The other Sodick machine, the ALC600G wire EDM, has around 50 percent of its output sent to aerospace customers, including the titanium defence part.

Steve Batt explains: "Compared with our old machines and process, using the ALC600G has transformed our operation for this component. For a start, we previously



needed two machines, whereas now the part is completed in its entirety on the ALC600G. Also, our old machine would only achieve a 90 percent pass rate on an angled face with a 5 µm tolerance. With the Sodick machine, the pass rate is 100 percent. That step-up in quality makes a real difference on high value-added parts such as these."

Excel Precision is currently tasked with producing 200 of the titanium defence parts every month, although this figure will shortly rise to 600. Using the ALC600G, the company can produce around 24 per day. However, with work for other sectors, both Sodick machines run for 24 hours a day, four days a week, with long cycle-time jobs loaded at the weekends. Aside from aerospace and defence, the company serves further high-end industries such as motorsport, nuclear, oil and gas, and medical.

"We've not had Sodick machines at Excel since before 1995, but we're very pleased to make the switch back," says Steve Batt. The technology has moved on considerably and we cannot fault the machines or the team at Sodi-Tech EDM, who have been very supportive since installation in early 2019. Through our own mistake, we once accidentally set off the fire extinguisher on the AG60L, but the response was excellent and we were back up and running the next day."

Good growth over the past two years has seen the Excel Precision Group hit an annual turnover of £2 million and more growth is expected moving forwards.

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Using a large grain size for wire cannot work, if only because the wire will always have the property to avoid the obstacle diamond/CBN grain. It will jump or tear off and therefore a profile distortion is



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Ceramicx takes the heat with Excetek EDM technology

Ballydehob, in rural County Cork, is about as far South as you can get in Ireland and not the location you would naturally imagine for Ceramicx, one of the world's leading designers and manufacturers of ceramic infrared heating elements and complete turnkey infrared heating systems and ovens for industrial and commercial applications. Here, an Excetek wire EDM machine and an EDM hole drill, supplied and serviced by Warwick Machine Tools, is supporting the capabilities of the toolroom operation for this globally renowned business.

Ceramicx was founded by Frank and Gráinne Wilson in 1992 and today the company employs 65 highly skilled and knowledgeable staff. The company's products and systems are used in a wide range of applications such as packaging, automotive, medical and aerospace among others in applications such as thermoforming, preforming, pressure forming, welding, non-contact drying, spot heating and numerous other industrial processes requiring the application of controlled 'radiant' heat.

Under the auspices of Frank Wilson, the company has gone from strength-to-strength with a firm policy of backward Integration, a process of bringing the skills, manufacturing and process capabilities



inhouse as opposed to outsourcing. Around 99 percent of its business comes from the exporting of its products to over 80 countries. Primary markets include Germany, UK, USA, Russia, Turkey, India, and China.

During the past decade, Ceramicx has found itself on a trajectory of growth with average growth levels of 15 percent annually. The company has also founded an R&D strategy investing heavily in people and equipment to move Ceramicx towards becoming one-stop providers for solutions, components and equipment builds. However, as Frank Wilson points out: "We are application focused, so we use a little R and a big D to develop a working solution not just research a potential option."

In 2017, the company reached a new milestone with the completion of a major building expansion project. New office space, larger machine/oven building space and cleanroom environments are all assisting future growth. The extra space further aided the goals of backward integration, with new sheet metalworking equipment and a well-equipped toolroom to provide day-to-day support for the ceramic mouldings required by the company.

Frank Wilson recalls: "We produce the

tooling needed to compact ceramic powder to generate the various heat insulation and control parts required for our products, so a fully capable and self-sufficient toolroom was a pragmatic decision we made. Some of my team visited the MACH 2018 exhibition and subsequently also visited Warwick Machine Tools' showroom near Kenilworth, in the heart of the Midlands.

"A demonstration of the compact Excetek V350 CNC wire EDM machine and the HD30Z EDM hole drilling machine provided my team with the confidence to recommend the investment required," Frank Wilson recalls.

Reflecting Ceramicx's philosophy, all Excetek's machine tool research and development is done inhouse, and the software and high frequency pulse control generator have been created by the company.

Even the CNC system has been developed by Excetek, using Windows-based 64-bit architecture with an LCD touchscreen for programming. This makes it easier for operators to understand as they are already familiar with the 'look and feel' of the Windows environment. It cuts down the training time required, so one day's training is all that is required before the operator is competent to program and run

the machine. Programming can be done using standard ISO G code or Excetek's Icon Assistant conversational software, which uses the controls extensive database of cutting technologies.

The control system can also apply offsets to allow for any misalignment during workpiece loading. Before machining an edge finding operation sets the actual position of the raw material, and the control software resets its datum points accordingly.

Also developed by Excetek, the automatic wire feed and threading system is produced inhouse. Designed to provide continuous unmanned operation around-the-clock, the AWT offers the ability to thread the wire at the point of the breakage. An automated annealing system straightens the wire so that it can be threaded at the break point during machining with almost 100 percent reliability and without the need to return to the start position. Submerged wire threading is possible, which removes the need to drain and refill the tank. A water jet assist system is available for automatic wire feeds on tall workpiece.

Fitted with a 600 litre tank, the Excetek V350 is capable of accommodating

workpieces up to 700 x 500 x 215 mm and weighing up to 450 kg. This fully specified wire machine has U and V axis travels of 80 mm and +/- 30o taper capability and an accuracy of 3 micron over 100 mm.

The HD30Z high-speed small hole EDM drilling machine offers an exceptional performance to price ratio for engineering companies looking to generate single or multiple holes accurately in metallic components.

With a 450 by 210 mm worktable the HD30Z is able to accommodate workpieces up to 690 x 440 x 120 mm and weighing up to 150 kg. With pinpoint sub-micron precision and outstanding surface finish, it can very quickly drill holes in any conductive material including hardened steels and challenging aerospace alloys.

Hole drilling by EDM uses low-cost electrode tube normally made of brass or copper to drill holes into an electrically conductive material at a very high speed. The hole depth diameter ratio is exceptionally long and the HD30Z can produce hole diameters from 0.2 to 3 mm. This technology is widely used for hole machining in aerospace, energy, cutting tools, automotive, medical, mould and die,

and general precision engineering industries.

Ceramicx's process and industrial engineering knowledge has global appeal and providing ceramic elements in the UK and worldwide has made it the infrared heat partner of choice for customers in over 80 countries. Specialising in infrared heat uses and process heat transfer for over 25 years, the business has been perfecting the price-to-performance ratio in infrared technology.

One small insulation component is produced at the amazing rate of 85,000 per day, so the toolroom support and maintenance provided by both Excetek EDM machines is vital.

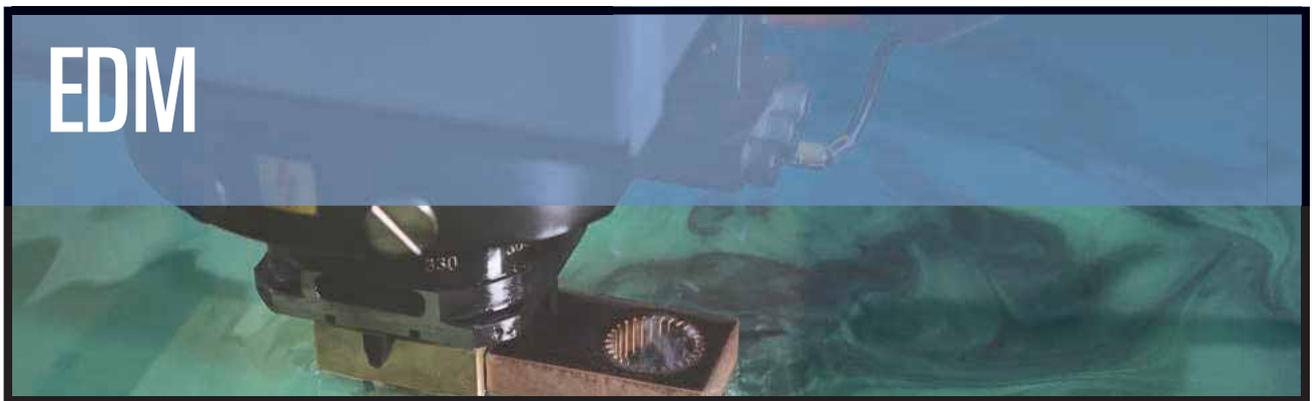
In use the Excetek EDM machines have proven reliable and robust. However, as Frank Wilson concludes: "While the machines are easy to use and maintain, it is reassuring to know that we have support here in Ireland should we need it."

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Gear skiving cuts cycle times three-fold

Established in 1953 and known principally as one of Europe's largest specialist manufacturers and suppliers of top-quality gear racks, pinions, leadscrews and nuts, Halifax Rack & Screw (HRS) has more recently started producing round gears as well at its Brighouse factory in West Yorkshire.

To take advantage of the latest technique for machining them accurately and quickly, the firm has invested in a gear skiving machine, a Multus U3000-2SW from Okuma, Japan. The bar-fed, multi-tasking lathe was supplied last year by sole UK agent NCMT, which is about to retrofit automation equipment of its own manufacture to speed the handling of components, free up operator time and make the process even more efficient.

Simon Matthews, sales engineer at HRS, who has been heavily involved in the project, says: "For medium to large batch production of gears, skiving has become the technology of choice. For example, in the case of the first three gears we are producing for our US customer, Vermeer, the 25-minute cycle times for the two larger gears would be three to four times longer by hobbing or using other gear cutting machines.

"We opted for the Multus from Okuma, as it was the first multi-function machine manufacturer to develop a generic platform for skiving high precision gears to DIN5 quality. I estimate that the Japanese company is 18 months ahead in this technology."

A crucial element in gear skiving on a multi-tasking lathe is being able to synchronise accurately the B-axis rotary movement of the upper tool spindle carrying the skiving tool with the C-axis rotation of the main spindle. It is notable that Okuma is able to achieve an unprecedented level of productivity and accuracy partly due to the rigidity of its machines, but more importantly because the company manufactures its own highly accurate rotary encoders, linear scales and control system, for which an easy-to-use gear cutting app has been developed. All these in-house-manufactured elements communicate with each other seamlessly.

Currently, three types of fairly open tolerance DIN8 gear for a US-built horizontal drilling machine are being produced on the Multus U3000 in Brighouse. Two are complex, shaft-type components and the third is a smaller, consumable item. They are all turned and skived from AISI 4140 steel bar or billet, the bar being fed from an Iemca Kid 80 short magazine capable of handling 1.1 m long stock up to 85 mm in diameter.

Around 3,500 each of the two gear shafts are needed annually, while the consumable item requirement is 2,400 per year. They are checked for accuracy on a Mitutoyo Crysta-ApexS CNC Coordinate Measuring Machine (CMM) that has been provided with full gear inspection software. Before delivery, all three components are surface treated after machining using the Tuffride QPQ process. As of July 2019, production of



the next gear to be supplied to Vermeer started on the Multus, with another six parts in the pipeline.

Investment in production equipment at the Brighouse factory has exceeded £3.0 million in the last five years. In addition to the Okuma Multus and the CMM, a hobber for producing larger round gears has been installed as well as a CNC slotting machine for producing internal gears. One operator is required to run the three production machines, which are positioned within a cell alongside the measuring machine, leading to significant economy in labour costs bearing in mind the machines run for two shifts, five days a week.

Simon Matthews concludes: "The gear skiving process on Okuma's turn-mill platform has proved a great success and has allowed us to penetrate a new sector of the market, namely the economical production of round gears.

"At its technical centre near Coventry, NCMT has also demonstrated to us skiving on a 5-axis machining centre, which is perfect for larger diameter gears and smaller production quantities. Should we receive meaningful enquiries for this type of product, we would have no hesitation in investing in this technology as well."

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Twin-spindle twin-turret lathes are ideal for hydraulic component production

A second pair of Miyano BNE-51MSY turn-mill centres from Citizen Machinery UK has been installed at contract machinists Unicut Precision. Joining two identical twin-spindle, twin-turret lathes with live tooling and a Y-axis on the upper turret supplied at the end of 2017, they form the mainstay of highly efficient production of complex components for the hydraulics industry, which accounts for a large proportion of Unicut's business.

1999 saw the first Cincom sliding-head lathe delivered to Unicut, a 12 mm bar auto and within a year three more were installed followed three months later by a 32 mm model. The first Miyano appeared on the shop floor in 2002.

To distinguish Unicut from other subcontractors, Jason Nicholson decided early on to adopt a different business model by approaching OEMs, analysing the main cost drivers, investigating the possibility of re-engineering components for more efficient production, establishing desired cycle times, identifying machine tools needed to machine components within those times and then proposing to make the required capital investments, subject to the manufacturer's commitment to a fixed-term contract. Strategic supplier status is what Unicut seeks in its business relationships with customers and 80 percent of throughput at the Welwyn Garden City factory is produced on this basis.

For machining larger diameter parts, a 51 mm capacity Miyano costs about the

same as a top-end 32 mm Cincom slider. Unless a high component length-to-diameter ratio dictates otherwise, Jason Nicholson prefers the fixed-head option based on a number of factors including rigidity, thermal stability, value for money and speed. Bar capacity is greater, offering more flexibility; spindle power is higher, leading to increased productivity; cycle times are comparable; access is easy for setting up, despite the compact machining area and the Mitsubishi control supports superimposed machining whereby three tools can be in cut at the same time, a facility regularly used at the Welwyn Garden City facility for elevated levels of productivity.

Once a BNE-51MSY is set, Jason Nicholson says that it will produce a run of say 1,000 components to very high accuracy without having to touch the machine by the simple expedient of including macros in the program to offset tools automatically after a predetermined number of parts have been produced. Tolerances down to ± 2 microns can be held and surface finish is described as impeccable. He favours the Mitsubishi CNC system fitted to Miyano and Cincom lathes due to its flexibility and ease-of-operation using the drop-down menus and comprehensive graphical support. Citizen's off-line Alkart Wizard software helps to ensure jobs are quickly into production. However, for larger production runs, time can generally be cut from a cycle by tweaking the program at the control.



Citizen's operating system in the CNC system fitted to one of Unicut's Cincom sliders features patented LFV (Low Frequency Vibration) software that operates in two CNC axes simultaneously, allowing stringy swarf to be broken into shorter chips of a length to suit the material being cut and the swarf conveyor. The feature is popular with operators, as it enables uninterrupted production without having to stop the lathe due to birds' nests clogging the workpiece and tools.

Citing a 320 stainless steel part that was previously impossible to run unattended even during the day yet is now routinely left to run lights-out with LFV, Jason Nicholson says: "The feature is easy-to-use and does not require any special skill set. The software can be switched on and off, either manually or within a program and parameters can be adjusted. It is especially good for processing plastics unattended as well as other difficult-to-machine metals such as Duplex and titanium. It just works."

In conclusion, he shared his thoughts on the current buoyancy of the subcontract machining sector due to the weakness of the pound against overseas currencies. It has cut 20 percent off the price of components that Unicut exports and has boosted turnover, despite raw material and indeed the equipment on which to machine it being more expensive to buy. The firm's first order from China was delivered in August this year.

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Pragmatic approach to machining centre purchase

Matching machine tool investment to the intended applications is something CREDITON subcontractor Adaero Precision Components has done well over the years. The latest addition to its capacity, a WELE AQ1265 3-axis vertical machining centre with Nikken rotary table 4th axis, is no exception.

The provider of the Taiwanese-built machine, sole agent Whitehouse Machine Tools, has delivered numerous other machining centres to the subcontractor during the last decade, sourced from Brother, Japan and Akari, Taiwan. So Adaero had confidence this time around in the supplier's advice, despite never having heard of the WELE brand.

The requirement on this occasion was for a replacement to an ageing, 4-axis machining centre that had become unreliable. Mainly, the new machine is devoted to carrying out cycles of relatively low complexity on simple parts, such as large aluminium plates.

A moderate level of investment was appropriate in a machine fulfilling this type of work. Nevertheless, dimensional

accuracies of typically ± 0.01 mm need to be held. Furthermore, despite three-quarters of output from the factory being aluminium parts, the machine needed to be robust to perform arduous cutting cycles continuously every day from 8.00 am to 5.00 pm.

David Smith, Adaero's finance manager, says: "The WELE met our requirements and cost significantly less than other machines we reviewed. Our engineering director Jack Wilson-Hill had visited a Whitehouse customer to see a similar machine in action and was impressed with the rigidity of build.

"The fact that WELE is part-owned by Toyoda, a Japanese manufacturer of top-end machine tools, also pointed to production equipment that was of high quality, added to which the AQ1265 was competitively priced, so we placed the order."

The rationale for opting for a 4th axis was to extend the machine's capability into producing more complex components in the future, if required. More specifically, the rotary table is needed in the short term to drill and pocket-mill lengths of aluminium extrusion on four sides in one hit. Single

setup machining is a goal throughout the entire factory.

The AQ1265 is equipped with linear roller guideways, while every major contact surface is hand-scraped. Featuring a generous specification, it has a working envelope of 1,200 x 650 x 610 mm; a one-tonne maximum table load; a two-speed, direct-drive, BT40 spindle to optimise roughing as well as finishing at speeds up to 15,000 rpm; a 40-station tool magazine and a cutting feed rate up to 15 m/min, with 36 m/min rapids in X and Y, 30 m/min in Z.

Automation drives growth

Judicious use of automation, including robotic load/unload around the CREDITON factory, is another indicator of Adaero's adeptness in matching investment to need. As far back as 2011, the company purchased from Whitehouse a Brother 30-taper, 4-axis machining centre with twin pallet changer. Notably, the 3.4-second pallet change takes place simultaneously with tool change and axis positioning, minimising idle times.

Automation was advanced further in 2014 with the arrival of a Brother multi-level automated storage and retrieval system for 84 machine pallets. It proved ideal for Adaero's high precision, high mix production of hundreds of different prismatic parts in batches ranging from 300-off down to six.

More recently, in 2018 an Akari machine was installed. Capable of long periods of uninterrupted, unattended running, it joined an almost identical cell installed two years previously that has proved highly productive for machining components that fall within its axis travels of 640 x 610 x 680 mm. Both cells are run by a single operator in a second factory unit opened in 2016 on the same industrial estate in CREDITON that has doubled Adaero's factory space to 15,000 sq ft.

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Slashing cycle times with super speed

'To run an efficient, well-rounded subcontract machine shop.' That was the goal of CPL Engineering's directors, Chris Edmondson and Paul Foster.

The company, based in Wetherby near Leeds, has developed in each of its 14 years, increasing in staff, turnover and machinery.

When taking the first steps, managing director Chris Edmondson began looking for a CNC machine, but he found that most of the suppliers were not eager to help a fledging business. It was at this point that he contacted his local Haas salesman.

He explains: "Haas bent over backwards to support us. We had no idea which model we needed, but they spent hours with us going through the options, then we had a day at the showroom viewing demos. We were sold. It was obvious that the build quality was second to none. Like for like, the Haas machines stand head and shoulders above the rest."

Chris Edmondson opted for two VF-2 vertical machining centres. While one has recently been traded in for a new Haas, the

other has run every day since the company began.

Aerospace is the largest industry served, but CPL also work hand in hand with companies such as Teledyne Defence and Space to develop products used in space, telecommunications and the Ministry of Defence. CPL is also well respected in the motorsport industry. Orders vary from one off prototypes to batches of thousands and everything is designed using CAD/CAM package Edgcam.

Investments have been made in a further nine Haas machines over the past few years, including six Super Speed vertical machining centres. These high-performance CNC machines are built for speed, with a 12,000 rpm spindle, 24+1 pocket side mount tool changer and 35.6 m/min rapids.

Chris Edmondson concludes: "The Super Speed machines are superb. They have improved our cycle times by tenfold. All our programming is completed offline so we simply load the programs in and press 'GO'. We can run an extra shift overnight, unmanned without any worry. What I like



most about the machines is that, old or new, the controls are the same. The buttons are laid out and labelled identically and this consistency helps our operators enormously.

"Whenever we get a new machine in, we have half an hour with the trainer to show us any improvements, then we're cutting metal."

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Modern programming and control software cuts milling times by a quarter

David Watt, owner of subcontractor DW Engineering, has trebled the size of his business since the beginning of the decade, with most of that growth taking place last year, which saw a doubling of turnover.

He puts this success partly down to winning contracts for machining batch sizes up to 10 times larger than previously, which he largely fulfils using four Hurco vertical machining centres (VMCs). Orders are now frequently received for thousands-off rather than hundreds.

New work in the electronics and gas detection sectors has been won, as well as in the resurgent oil and gas industry, while 80 percent of throughput is repeat business, some of which has been retained practically since the company was formed.

A further contributor to increased turnover and indeed profitability is Adaptipath high speed machining software, which includes novel routines for rest material removal, in the latest version of Hurco's WinMAX conversational control. Program cycles are significantly faster, especially when pocket milling.

Established in 2005 in Blantyre, Scotland, the subcontractor started using Hurco equipment from the outset with the purchase of a machining centre of nominally half-metre-cube capacity and two CNC knee-type mills.

Together with a Hurco VM10 machining centre acquired five years later, these four machines were subsequently traded in for three of the machine tool builder's latest VM10i VMCs. One arrived in 2018 and was joined by two more this year. Additionally, there remains on the shop floor a smaller Hurco VM1 with 4th axis purchased in 2009, as well as a bar-fed Hurco TM8 CNC lathe that was installed six years later.



Comparing the performance of the nine-year-old VM1 with that of his three modern, slightly larger capacity Hurco VMCs, David Watt referred to an aluminium housing for an electronics industry customer that he has produced in two operations on both types of machine.

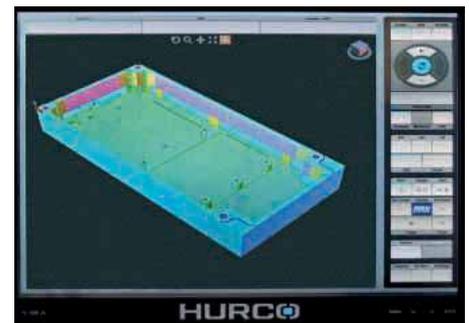
On the earlier model running a previous release of WinMAX programming software that included Ultipocket milling routines, total cycle time was 165 minutes. That was before Hurco introduced Ultimotion software to control axis movements on its machines, without relying on hardware-based motion control. It has helped to reduce the cycle time for producing the electronics housing to 120 minutes, a saving of more than 27 percent.

Contributing especially to this increase in efficiency is Adaptipath pocket milling software with its new rest machining routines. The conversational pocketing feature is a module within Ultipocket in WinMax 10, mirroring that used in high-end CAD systems. It smooths the motion of the tool path and keeps chip load between a user-defined maximum and minimum, improving surface finish and extending tool life.

In addition to the two standard pocketing cycles involving inward and outward spiralling of the cutter, Adaptipath includes two extra rest machining routines, zig-zag and 1-way, both of which involve alternate periods of climb milling. The amount of material encountered by the cutter is controlled, often allowing a full depth of cut rather than peck level milling, for higher metal removal rates that David Watt says can be up to double.

With rest machining, a larger diameter tool than usual is used after roughing to

remove most of the remaining unwanted material efficiently, followed by a finishing pass that automatically swaps the tool for a smaller diameter cutter able to reach areas of the feature that the larger rest milling tool was unable to access. David Watt considers this to offer a six to eight-fold speed increase compared with previous machining methodology.



Looking back at his company's progress over the past 14 years, he says: "The variety of materials we are asked to process is vast, ranging from stainless and mild steels through titanium, copper, bronze, brass and aluminium to PTFE, PEEK, acetal and nylon. Accuracies routinely achieved are ± 0.1 mm but some parts have drawing tolerances down to ± 10 microns.

"We have never needed a CAM system to prepare programs for the Hurcos, as their on-board conversational software is so powerful at creating the cutter paths and there is no need for post processing.

"If any particularly complex geometry is included in a CAD model supplied by a customer, we use AutoCAD or SolidWorks to produce a DXF file that WinMAX imports directly."

He concludes: "The Hurco machines, which continue to evolve and improve, have supported our diverse work and underpinned our success. They are key to our ability to offer top quality work, quick turnaround and competitive prices."

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Mazak to offer ActiveEdge tooling with VCN-530C machining centre

Mazak has partnered with Rigibore to incorporate the ActiveEdge boring bar system into its VCN-530C machining centre. The ActiveEdge technology is an auto-compensating boring bar system that allows extremely high bore tolerances to be held on a machine automatically. The boring bars, which are manufactured in the UK at Rigibore's headquarters in Cornwall, are being made available as an option on Mazak's high productivity VCN-530C machining centre.

ActiveEdge tooling has a separate drive mechanism integrated into the rotating tool which can be adjusted to within individual microns of accuracy on a wireless closed feedback system. The tools enable multiple critical diameters to be machined simultaneously, significantly reducing cycle times and increasing process efficiency. Typically, ActiveEdge users are working within a tolerance of circa 0.002 microns on bore diameters.

ActiveEdge has a number of advantages,

including its ability to enable machine operators to meet critical tolerances without removing the tool from the machining envelope and stopping the manufacturing process. As a result, machine uptime, productivity and operator safety are improved and scrap is reduced due to the system's highly accurate cutting.

Alan Mucklow, managing director UK and Ireland, says: "We recently showcased the ActiveEdge technology at our 'Manufacturing Solutions NOW' Open House in our European Technology Centre and got a fantastic response from customers working in boring bar applications. The VCN-530C is a high productivity vertical machining centre that is specified by machine users who want ultra-fast cycle times with no compromise on accuracy."

He continues: "Boring bar work has often slowed cycle times due to the need for extremely high tolerances and manual adjustment by the operator. The option to



specify the ActiveEdge technology with the VCN-530C offers Mazak users working in boring bar applications the ability to maintain cycle times whilst improving the accuracy of the cut, due to the simple and precise wireless adjustment of the cutting tool during the process. The combination of the VCN-530C plus ActiveEdge is a step-change for boring bar work."

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The next generation of deep hole drilling machines

At EMO 2019, Tibo introduced its new gun drilling machine. It was not only eye-catching for the visitors, but the machine has a lot of new technical ergonomic and visual features to offer.

The newly introduced progress bar, together with the triple signal lamp, enables the operator, with one quick view, to see how far the drilling process has advanced. Especially in a multiple machine operating environment, he can quickly react on process failures and in the process reduce the non-productive time of the machine.

The HMI has been newly designed with its intuitive operable 15" touch panel offering an easy-to-use programming environment and clear supervision of the drilling process. Features like storing different drilling programs, the usage of multiple user accounts with different levels of user rights or the remote access are included in the standard setup. The traversable control panel enables the operator to easily reach all components and always supervise the process from the most suitable position.

Similar to a smartphone, all relevant parameters can be easily changed on the touch panel by entering numbers or by moving sliders. The interactive user guidance directly shows improper entered values, highlights critical parameters and helps the operator with hints depending on the values entered.

In case of process problems, all error messages are being clearly listed. In the



workshop the user manual is not always quickly available. On your Tibo machine you can read the operating manual directly on the screen and search for keywords.

The control archives all actions, changes and inputs in order to be able to quickly retrace processes in case of malfunction. Drilling programs can be created offline in the office and downloaded to the machine using the existing network environment.

If authorised by the customer, Tibo can establish a direct link from its headquarters to the machine. In case of problems or

malfunction, a first diagnosis can be performed. We can give hints to the operator or correct programming of the machine. Separate Tibo software visualises performance charts and process data or, optionally, data can be integrated and visualised in an existing control system.

What is technically new on the machine?

Most obvious is the new design of the machine enclosure. The machine itself has been redesigned with focus on ergonomics. All components can be easily reached to reduce set up time. The two new LED light bands inside the machine improve process surveillance possibilities.

To optimise setup time, the drill bush holder and clamping cones are spring loaded. By means of a bayonet lock this ensures a quick exchange of those two components. In addition, the back guidance of the drill has a quick-change system as well.

For removing the steady rest for the gun drill and the workpiece, part of the linear motion system can be easily removed.

The chip box cover can simply be opened without unscrewing or removing any locks. The tail stock is now being moved by a ball screw drive and this opens new operating modes of the machine. The tail stock can be programmed and moved by the NC program to any given position depending on the workpiece. Since there is no manual



adjustment needed, setup time is significantly reduced. With the possibility of storing 500 programs there are almost endless possibilities.

To increase the safety of the drilling process, Tibo has installed a new hydraulic collision control. The oil supply is constantly monitored to automatically stop the drilling process in case of a detected malfunction. Machine damage and drill breakage will be prevented.

Tibo installed a camera system for chip or process monitoring. On the touch panel screen the operator can see if and what kind of chips are coming off the drilling process and can adjust the drilling parameters if needed.

Of course, Tibo has kept its modular machine concept and machine lead times are 4-6 months. Even custom designed machines can be built quickly and cost effectively by using our modular system. Tibo guides you through the development process and your ideas combined with our knowledge of deep hole drilling will lead to the most suitable solution for your drilling challenge.

Made in Germany and used throughout the world

TIBO Tiefbohrtechnik GmbH is a company with operations throughout the world that has specialised in the design and production of modular deep hole drilling machines.

Founded in 1994 and with its headquarters in the town of Pfullingen in Baden-Württemberg to the south of Stuttgart, today it is one of the leading suppliers of single-spindle and multi-spindle gundrilling and BTA deep hole drilling machines for a broad range of applications.



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- Short delivery time

Modularity. Performance. Precision.

CoroDrill DS20 indexable drill from Sandvik Coromant

The CoroDrill® DS20 from cutting tool and tooling system specialist Sandvik Coromant is the first indexable drill concept capable of producing hole depths up to 7xD. The drill, which includes completely new designs for both the body and inserts, provides users with reliable, predictable chip control and outstanding penetration rates in all 4-7xD applications.



Replacing the existing CoroDrill 880 and CoroDrill 881 tools, 4-5xD CoroDrill DS20 indexable drills provide tool life improvements of up to 25 percent and productivity gains up to 10 percent, depending on workpiece material. The 6-7xD variants represent an entirely new capability range of indexable drills from Sandvik Coromant. To complement the introduction, the company is releasing a new Modular Drilling Interface (MDI) that acts as a coupling between the drill and adaptor. Available in Coromant Capto® and HSK shank types, the MDI provides high precision, excellent centring capabilities and reduced tool inventory.

CoroDrill DS20 indexable drills are both versatile and cost-efficient, increasing tool life and productivity in nearly all workpiece materials compared with current best-in-class concepts. No pilot drilling is needed.

"Among the most important factors when drilling to depths of more than 5xD is controlled cutting forces, secure chip evacuation and high centring capabilities," explains Håkan Carlberg, senior R&D engineer for indexable drilling at Sandvik Coromant. "Going from a 5xD to a 7xD drill, the theoretical difficulty increases approximately three-fold due to an increased inclination to bend. Designing a CoroDrill DS20 7xD drill requires careful



consideration for around 50 parameters that all depend on each other. The outcome is improved process security through lower forces and lighter cutting, particularly at entry. In turn, users achieve lower cost per hole, the ability to drill deeper and reduced sound levels."

The drill body is strong and fatigue-resistant with higher levels of stiffness than ever achieved before, while chip flute shapes are individually designed for each drill size and insert. This combination of factors leads to less vibration, predictable wear patterns and increased tool life. In addition, next-generation 'double-step' technology reduces entry cutting forces by up to 75 percent compared with CoroDrill 880 tools to improve centring capabilities. Strong insert design and bulk strength provide extra toughness, with four true cutting



edges provided on both centre and peripheral inserts.

Regarding the new MDI, double centring with high fitting accuracy enables good run-out precision and optimal repeatability. Here, flange and surface contact between the drill body and nut provides increased stability and promotes hole quality. One size can be used for several drill diameters. CoroDrill DS20 indexable drills are available from 15 to 65 mm in diameter with a selection of shank types, insert sizes, grades and geometries to suit all material types and applications, including those found across the general engineering, automotive, oil and gas, pump and valve, and aerospace sectors.

For more information, visit www.sandvik.coromant.com/en-gb/products/corodrill_ds20/

Educational support, extensive R&D investment and strong customer partnerships ensure the development of machining technologies that change, lead and drive the future of manufacturing. Sandvik Coromant owns over 3,100 patents worldwide, employs over 7,900 staff and is represented in 150 countries.

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CNC deep hole drilling with milling

CHETO was officially established in 2009, when the founders started a project to fully develop a deep hole drilling and milling machine tool, up to seven axes, that is specialised for the mould making and energy industries.

This project started when a group of highly experienced technicians accepted a challenge to develop a prototype for a multitask machining centre. After extensive research and an information exchange between those who have manufacturing experience and those who have the scientific knowledge, the base for this machine project was clearly defined.

Since then, a continuous improvement and investigation allowed CHETO to offer the market a versatile product with high levels of accuracy and reliability. This concept quickly positioned the company as a world-renowned brand. With machines sold in four continents, it is our goal to keep improving and innovating to offer a highly competitive and value-creating product.

Optimising the process is our goal and

CHETO machines are able to perform several operations with a single setup and the highest levels of precision. The company builds time saving machines to enable its customers to reduce their manufacturing costs.

Today, the market recognises CHETO machines as a world-renowned brand for deep hole drilling. With machines sold in four continents, its goal is to keep improving and innovating its products.

CHETO's quality policy is based on the principle of satisfying customers' needs and expectations, rooted in a balanced negotiation. It is committed to fulfil clients' requirements, as well as to continuously improving the effectiveness of its quality system.

CHETO machines provide tool changing systems to rapidly and easily exchange between deep hole drilling and milling processes with a customised structure to increase milling capacity. Active control software is dedicated to deep hole drilling, tapping and milling with the ability to, in a



single click, translate and rotate coordinates while the latest generation of numerical controls, digital servo-drives, linear slides and high-precision roller guides are featured.

Additional benefits include the ability to filter and cool the cutting fluid, adjust the pressure and flow to meet the tools requirements and to deep hole drill with gundrills at high pressure.

CHETOCORPORATION, S.A.

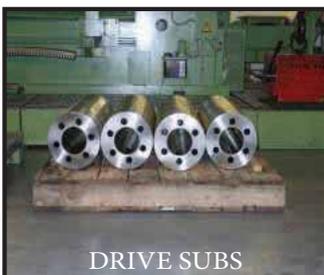
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- ▶ **CNC Gun Drilling/Deep hole boring** Block work/off centre: 2.00mm – 80.00mm dia x 2000mm deep (or 4000mm from both ends) workpiece weights up to 20 tons
- ▶ **CNC Turning:** 600mm dia x 4000mm between centres
- ▶ **CNC Honing:** 25.00mm – 250.00mm bore x 4000mm deep (on or off centre)

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How deep hole drilling differs by what metal is used

by Andrea Rodney, director, Hone-All Precision Ltd

One of the questions that often comes up is why Hone All invests in so many different types of deep hole drilling machines, tooling and equipment?

The reason is that requirements vary greatly within our sector and differing materials have unique personalities and characteristics. Many would-be DIY drilling enthusiasts find that they end up with oversized bores, holes that run off excessively, or broken drills.

This isn't because they are bad 'engineers', but because drilling relatively small diameter holes into metals can be tricky. Here are some ways in which the metal used affects the approach taken to deep hole drilling:

In deep hole drilling in metal the aim is to cut, rather than tear, the metal. When incorrect speeds or feeds are selected, chatter can occur adversely impacting the accuracy and surface finish of the bore being drilled. Avoiding chatter requires a careful balance of speed, clearance, and swarf extraction.

Metals have different properties that make them suited to different purposes. Some of them are easy to cut and some, such as titanium, are prone to tearing.

However, differences between the properties within materials means that each metal is unique in terms of hardness, quenching behaviour and tensile strength. Throw a gun-drilled hole into the mix and you can have a match made in heaven or an ugly mess. It pays to get the set up correct.

Mild Steels are easier to machine than some alloy steels which are completely unrecognisable in terms of hardness and tensile strength. In terms of gun-drilling, the harder the material, the better it is as it is easier to control size and achieve a better surface finish in materials with a higher tensile strength.

The key is to always ensure that your feed and speed parameters are accurate and applicable to the tensile strength of the particular material you are machining. Stable machine beds and support for the drill and component are also crucial to safely transfer any vibrations.



It's often thought of as one of the easiest metals to work with. However, aluminium also comes in a wide variety of forms and each has its quirks. Pure aluminium is soft, ductile and with a low density and low corrosion risk. For these reasons, aluminium is a popular choice for many applications. It is this softness that makes precision drilling of pure aluminium uniquely challenging.

Problems can occur if swarf becomes wrapped around the tool. Like long strings, these then block coolant flow which could result in a tool failure and result in a scrapped component.

Alternatively, just like steel, add a mix of alloys into aluminium and the tensile strength increases and machining is made easier.

The medical industry is one area that is increasingly using titanium. This has raised some challenges for deep hole drilling as the metal is incredibly hard and has low thermal conductivity. It is also very prone to tearing, rather than drilling.

This means that anyone attempting to

machine titanium needs to be an expert in feed and speed ratios. Tools also need to be precise and strong and, even with generous coolant, used at slow speeds to reduce the build-up of heat.

Titanium also likes to be machined in a steady and formulaic way and quality can be ruined by feed interruptions.

Anyone who works in deep hole drilling, boring, honing, or CNC machining needs to have a deep understanding of different metals and how to get the best out of them. When metals are shaped, cut and drilled, it also helps to have the best machines. This is why Hone-All always invests in the latest precision machinery so it can handle a wide range of projects for its customers at exacting tolerances. To learn more, the company can offer a free guide by contacting them.

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Celebrating 90 years of precision engineering

May 2019 represented a huge milestone for Mollart Engineering as the company celebrated 90 years since the original business was formed.

The A.J. Mollart Engineering Company originally started trading in 1929, operating from rented premises in Thames Ditton. During this period of 90 years, the company has been under successful stewardship of three generations of the Mollart family, servicing a huge array of customers across the globe and across all sectors. During the Second World War, the company was a key supplier to the Ministry of Defence in respect of the war effort.

The business has evolved over that time, developed new processes and solutions and entered into new markets. Today Mollart Engineering is a global business that has a leading reputation for the specialist design, development and build of deep hole drilling machines, cutting tools and provision of state-of-the-art precision manufacturing and associated services. It operates from sites in Chessington, Surrey and Resolven in South

Wales, with factory premises of over 70,000 sq.ft.

Its dedicated staff are committed to customer solutions, which together with long-standing customer relationships, has helped Mollart Engineering to hit this magnificent milestone.

The company's Drillsprint range of machines are available with light or medium duty capabilities to cover a wide range of deep hole drilling applications. Centre-line drilling of holes from Ø2 mm to Ø50 mm, to depths of 3,000 mm and, with one to eight spindles, means it is able to offer solutions to meet every need.

The full machine table feature on these machines provides the additional flexibility for fixturing to enable offset hole drilling. Auto loading options range from single belt to fully integrated robotic and gantry systems.

Mollart offers a range of BTA deep hole drilling machines, capable of drilling Ø18 mm to Ø150 mm from solid and counter boring to Ø200 mm. A variety of



drilling depths are available to 4,000 mm with single and twin spindle machines available.

BTA machines can be configured for push boring / pull boring, counterboring and trepanning in a wide range of materials from aluminium through to Inconel 718.

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You know the drill, or do you?

For engineers and manufacturing professionals, drilling is a basic skill that many will know. However, mastering this basic and using the right components for efficiency, safety and accuracy, is something that requires deeper consideration, explains Marcus Schneck, CEO of norelem

Drilling is a skill that most people pick up from a very early age. Quite often, it's through DIY at home, or at school during woodworking and design technology classes on the national curriculum. Of course, drilling a hole is not hard. The tricky bit is doing it fast, safely and with precision, while still protecting the drill and tool life. As seasoned engineers and manufacturers will know, these skills are the key to efficiency and higher productivity, while reducing materials wastage, capital costs, and maintenance costs.

Safety is paramount. To safely drill any workpiece or metal, the piece must be secured to a stable work surface before drilling. If not, the workpiece can be sent flying from the force of the drill bit. Operators must also take care with clothing, as any loose clothing can be quickly caught by the spinning drill bit and pull operators towards the drill. A quick look back through history will show plenty of workplace accidents have happened due to unsafe drilling practices.

On productivity, the UK's manufacturing sector is showing warnings of slowing down. As productivity is considered an important driver of improved living standards over the long term, this is a worrying sign. If productivity does not rise, companies cannot pay higher wages as they cannot produce higher revenues with the same or fewer resources. To ensure that workers are drilling as safely and efficiently as possible, there are several standard components that should be considered.

Getting jiggy with drills

A key area where many design engineers can reduce downtime and save on machine costs is by utilising standardised drilling jigs. By doing so, this removes the need to design bespoke drilling jigs and toolmaking, and these jigs can suit a wide range of applications, even for small-scale production runs.

Drilling jigs from norelem are available in nine different sizes and have been developed to simplify operation. Fixing pins are attached to the support plate of the jig,



which enables quick and easy positioning of the part for machining. The drill and supporting plates can be changed quickly too, so the jig is immediately available for another part to be machined.

The jigs are also designed with the safety of the user in mind. All norelem's jigs have a pair of cones at the ends of the pinion shaft. These work in opposition to the powerful and consistent clamping mechanism at the top and bottom. As a result, the drill plate cannot fall onto users' hands when the part to be machined is changed. The clamp will hold the workpiece and drill plate securely, even in the case of vibration.

Round and round

Another area where drilling jigs can help engineers with speed and efficiency is when transverse holes in round bars are needed.

The key problem with drilling transverse holes in round bars is that the drill bit has a tendency to slip either side of the perfect centre point. Also, the process of finding the centre of the bar can be time-consuming and laborious. This task requires measurement, cutting and marking the bars by hand, as well as bespoke tooling for the

desired size of hole. If the hole is not centre, then the part must be scrapped and the process has to be started all over again.

To solve this challenge, drilling jigs designed specifically for cylindrical parts are now similarly available from norelem. These jigs ensure engineers have a quick and easy means of drilling common sized holes efficiently and accurately. They consist of a DIN 6348 drilling jig and can be supplied with either index drilling discs with 16 common drill bush diameters, or with drilling bush holders.

The cylindrical drilling jig also uses a V-block with an adjustable stop to hold the bar in place. Therefore, setup is easy and can be done without any prior technical knowledge. Additionally, all parts for the jig can be ordered and supplied at a later date. A clamped part can be drilled, reamed, counterbored and tapped, using push-in bushes.

Drilling straight as an arrow

Following on from drilling true transverse holes is the challenge of drilling repetitive holes. Here, the issue is being able to drill as straight and true as possible, while

maintaining stability and consistency. To overcome this, drill bushes can provide standardised boring operations in machine and plant construction.

By using drill bushes, the drill is guided directly into the drilling jig. This means drilling positions do not have to be repeatedly measured or marked out. The component ensures the drill runs straight and the results are consistent due to the fixed penetration angle. By simplifying and optimising the drilling process, engineers do not need to worry about materials wastage and it minimises the chance of mistakes.

Evacuate and protect

A final consideration when looking at your drilling operation is how to effectively evacuate the waste chips that are produced during drilling, and also protecting users.

Flexible, modular hoses are now commonly available and can be attached to a central extractor system or industrial vacuum cleaners. Once attached, they can be positioned next to drilling machinery to extract chippings, which can be potentially damaging. Designed for maximum versatility, users can lengthen or shorten the hose length as required using modular extensions, and they can be free hanging up to 100 cm without the need for support. Users can also bend and manipulate them, enabling precise positioning, while a range of nozzles and accessories can be combined for effective extraction.

They can also hold protective shields in place to guard against users from accessing the drill. Again, this helps minimise workplace accidents.



Drilled to perfection

As with all engineering applications, drilling is a skill that takes time and practice to hone and perfect.

However, with the emerging skills gap, it is clear that it is becoming harder to pass on the expertise and knowledge that seasoned engineers have accrued. As a result, productivity and critical safety knowledge is being lost.

To that end, as well as the effective transfer of knowledge, it is imperative that the engineers of today and tomorrow have the optimum tools and components that can help them in their jobs.

norelem Normelemente Bau- und Vertrieb GmbH was founded in Stuttgart in 1958. Since the relocation to Markgröningen, the company has seen

constant growth and it offers an extensive and comprehensive range of standard elements. norelem is an internationally orientated company with a total of six subsidiaries worldwide.

norelem has the 45,000 components in its complete engineering reference guide, THE BIG GREEN BOOK, to help with any engineering application and design. norelem is a world-leading manufacturer and supplier of flexible standard parts and components for mechanical engineering. The company supplies more than 45,000 standard products relating to standard machinery and operating elements, as well as automation components.

'Green Means Go. Find it. Get it. Go.' is norelem's strapline, epitomising the company's dedication to customer service. 98 percent of norelem's parts are available from stock, with on-site technical support for products available. To help keep production on the go, orders placed with norelem before 3 pm are dispatched on the same day.

THE BIG GREEN BOOK is both norelem's ideas catalogue and reference book. It is the definitive 'go to' guide for standard engineering components. THE BIG GREEN BOOK combines product information, specifications, and technical information in one single source. Created using a logical sequence of article numbers based on stages of production, it contains best practice references, advice, and guidance.

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ITC furnishes woodworking business with productivity gains

Like many small businesses, Woodcut Ltd, T/A Woodcut Components, was founded by one man with an ambition from a double garage. Now, some 15 years after its inception, the woodworking specialists offer a complete variety of wooden products, furniture, commercial interiors, specialist machining services and even products for the defence industry.

The growth curve for the St Austell business really took shape when the business acquired its first CNC routing machine in 2012. It was this acquisition that opened new opportunities for the seven-employee business. However, it was cutting tools from Tamworth cutting tool experts Industrial Tooling Corporation (ITC) that really enabled the company to maximise the potential of the machine. As Woodcut Components managing director, Richard Bate recalls: "We bought our first flatbed CNC routing machine back in 2012 and it opened the floodgates with work immediately flowing in. Despite being new to CNC routing, we have a range of other machines such as edge banders, panel saws, planers, lathes, spindle moulders and more and, from our wood machining experience, we knew that the tool life and performance was poor. Luckily, I discussed the situation with another local business and they recommended ITC cutting tools. We called ITC and we haven't looked back since."

The Cornish manufacturer switched out the existing cutting tools for ITC's range of 180-20 straight flute solid carbide tools: "We instantly noticed that the ITC tools



were a lot sharper, the geometries were more suited to our materials and the tool life was exceptional. We immediately benefitted from reduced tooling costs and changeovers based on the prolonged tool life of the ITC range. Added to this, the surface and edge finishes were far superior and didn't require any secondary hand finishing," Richard Bate explains.

As the small business has evolved, so has the workload and the materials it is processing. Once again, the technical experts from ITC have been on hand to support the South West manufacturer. Richard Bate continues: "Materials continually evolve as do our customers' needs. Now, we are machining laminated MDF, fire retardant MDF, composite worktops and compact grade laminate. Many of these materials have extremely abrasive characteristics and this makes machining extremely challenging. If you don't have the right tools, it can also be costly."

About a year ago, Woodcut Components received an order for acoustic ceiling tiles for a commercial customer that wanted the

tiles manufactured from a laminated fire retardant MDF board that was a specified Euro Class A material grade. The existing solid carbide tools were inappropriate for the abrasive grade and machining characteristics of the board, so Woodcut Components once again called upon ITC and its technical sales engineer Sally Hunt.

Richard Bate says: "The job order was for over 300 tiles, each one measuring 1,200 by 600 mm that had to be cut from 10 by 4-foot boards with lots of 10 mm wide grooves in each tile. The machining time for the entire project was over 3 weeks and we knew that to get the job finished on time and to the quality required, we had to once again investigate new tooling strategies. Luckily, Sally from ITC introduced us to their 2102 Series of PCD tipped cutting tools.

"At the start of the project, we applied our existing solid carbide routing tools, but the abrasive nature of the material would burn-out a tool after machining five tiles. We knew that the tooling costs and time constraints would be costly without changing to the ITC range of PCD tools. Sally recommended the 2102 Series and we bought 10 tools, we only needed 5 to finish the entire project. The tool life was phenomenal. We went from one tool for every five tiles with carbide to 50 tiles with the PCD tool; it increased our tool life by 10 times. We machined the dimensions of the 12 mm thick tiles and the 10 mm wide groove features with an 8 mm diameter PCD tool from ITC and the results were staggering."

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Productivity and quality boost with CERATIZIT's MaxiMill 271 milling system

The ability to achieve cost-effective, secure, milling, with added process flexibility is now a reality thanks to the development of CERATIZIT's MaxiMill 271 indexable insert milling system. The extremely soft-cutting MaxiMill 271 tool system can be used for a wide variety of applications and offers a range of effective options to produce high quality surface finish. Further advantages are that the design of inserts and cutter bodies also enhance tool life and aid effective removal of swarf from the hot zone.

MaxiMill 271 is designed and therefore best suited to, applications where face, slot and chamfer milling are required. To ensure maximum performance, the cutters can be specified with either a 45° approach angle or as a high-speed tool with a 17° approach angle combined with the options of fine and coarse pitched cutter bodies to provide maximum application flexibility. Further extending the MaxiMill series to meet market expectation, CERATIZIT has added a 12 mm insert system to the range. The advantage of these smaller inserts is that a

greater number can be used, which in turn results in longer tool life and higher chip removal rates.

A key feature of the MaxiMill inserts is that they have eight usable cutting edges, making the system extremely cost-effective. In addition, the cutting-edge design delivers a sturdy and robust interface between the insert and material being cut, consequently achieving high cutting speeds and the highest levels of process security. The inserts form part of the story with the cutter bodies also playing an important role. As such, extremely tight tolerances are demanded to ensure the MaxiMill 271 milling cutters produce the best face and concentricity properties. With the irregular pitch of the insert pockets the cutters also achieve extremely quiet machining, which when combined with the precision ground



Masterfinish geometry of the indexable inserts will deliver outstanding surface finishes. The availability of inserts, with a variety of geometries, covering ISO categories P, M, K and S also means that MaxiMill 271 can be applied to a wide variety of materials and applications.

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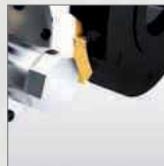
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Diamond tooling for machining hard materials

Tooling manufacturer HORN has introduced a Chemical Vapour Deposition (CVD) diamond-tipped tool system, DDHM, for cost-effective drilling and countersinking of sintered carbides and ceramics of hardness up to 3,000 HV. It enables short throughput times, high surface quality, lower costs and more flexibility within the production process as well as long tool life.

As they allow machining to take place on conventional milling and turning centres, the tools do away with costly and time-consuming grinding and eroding processes. There is also an opportunity for savings in capital plant, as investment in expensive new machinery can potentially be avoided.

Due to its ability to machine carbide punches and dies efficiently, the DDHM system is particularly well suited to manufacturers in the tool and die making sector. However, the tool also offers advantages in other areas, including the medical, aerospace and automotive industries as well as in punching, forging and forming technology.

The CVD-D-tipped drills can be used for producing holes in solid material to a maximum depth of ten times the diameter.



They are of two-edged design and are available in diameters ranging from 2 mm to 10 mm. All versions feature an internal coolant supply.

For chamfering and countersinking, Horn offers the CVD-D end mill from stock with diameters of 3 mm and 6 mm and with flank angles of 15, 30 and 45 degrees. The 3 mm version has five teeth while the 6 mm version has six.

Broaching with internal cooling

Horn has launched a new broaching tool range, N117, whose holders allow coolant to flow through the insert seat as well as to the side for efficient cooling at the point of cutting. In addition, the geometries have been optimised for use in broaching machines and for turret broaching on a CNC lathe.

The targeted cooling reduces wear on the tool, increasing its life and improving the quality of the workpiece surface. Due to the internal coolant supply, lowering of the temperature is ensured even when taking deep cuts. In addition, the stronger flushing action improves chip removal, reducing the risk of their accumulation.

The ability to carry out broaching on a lathe offers users several advantages. It represents a cost-effective alternative to conventional broaching and can be used on virtually any turning centre. Machining can be carried out in a single clamping without having to refixture the workpiece. Additionally, the broaching process allows geometries of any type to be produced, from gears, keyways and helical cuts through to curved features.



Horn Cutting Tools Ltd, Ringwood, is the wholly-owned UK subsidiary of Horn S.A. Luxemburg, a leading European supplier of grooving tools and a leader in precision grooving technology. The company was incorporated in the UK in 2008, having previously traded as Horn UK since 1995.

The Horn group of companies is led by Paul Horn GmbH, based in Tubingen, near Stuttgart, which has been developing and producing grooving, side turning and slot milling tools since 1969.

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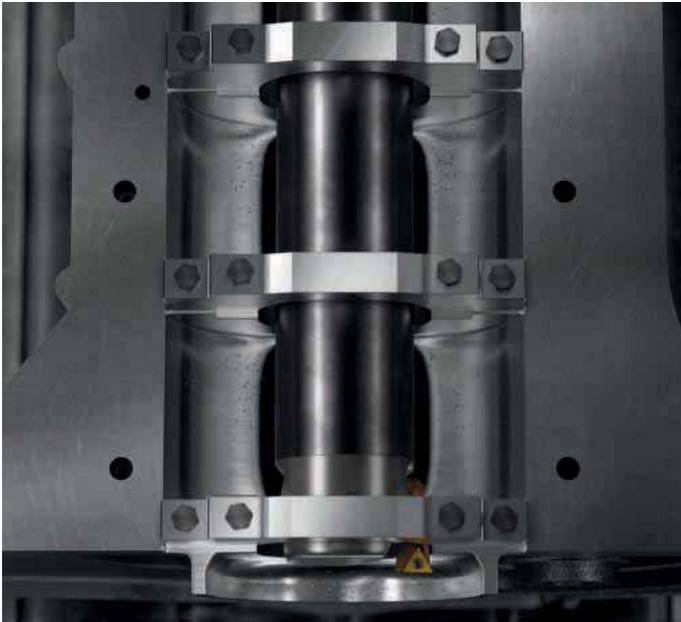
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New damped CoroBore 825 improves security and productivity

Cutting tool and tooling system specialist Sandvik Coromant is releasing a new generation CoroBore® 825 damped fine-boring tool. The system makes use of Silent Tools™ technology, with dampers dimensioned specifically to suit every adaptor size in the assortment and deliver maximum performance for the user. This solution not only elevates process security where vibration issues are frequently encountered, such as when machining with long overhangs, it improves productivity as cutting data can be increased substantially.



Among the principal differences in the latest generation tool is the change of boring head material, from steel to aluminium. In addition, the head has been shortened so that the damper comes closer to the cutting edge, which is beneficial for process stability.

"Internal channels are utilised to deliver coolant directly to the cutting edge, which is another factor that contributes to improved surface finish, higher penetration rates and greater process security," says Jenny Nilsson, global product manager at Sandvik Coromant. "The new generation of tools will provide optimum performance and stability with one standard adaptive item on the machine tool side, to bridge the tool into a steep taper, HSK or Coromant Capto® spindle. Further extensions will reduce stability and performance."

The CoroTurn® insert carriers for the new tools have entering angles at 92-95°. This design increases stability due to reduced tool assembly deflection, making it possible to approach the bottom of a blind hole without engaging a bigger part of the cutting edge.

CoroBore 825 is ideal for all fine-boring applications, covering diameters from 19 to 167 mm (0.748 to 6.575 inches), while a new assortment of cartridges can be utilised for back-boring applications. During back boring, the same internal coolant flow to the cutting edge is offered as with conventional boring. For ease, the complete tool comprising adaptor and insert carrier is delivered as a kit using a single product code.

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Automation takes centre stage for XYZ Machine Tools

ROBO-TEND very well received at customer events

XYZ Machine Tools unveiled its ROBO-TEND mobile machine tool automation system to customers at two customer days, held in September, at its Devon headquarters and Nuneaton Technical Centre. Both events were well attended with the new system receiving a very warm reception, with strong interest among companies looking to increase productivity and reduce overheads. The events highlighted how ROBO-TEND re-calibrates the thought processes surrounding automation, bringing it within reach of a much wider audience.

Key to ROBO-TEND is its ease-of-use and affordability. The system can be used with any of XYZ Machine Tools' Siemens controlled machining centres or turning centres and can be relocated within the factory to where it is needed, subject to machine having an auto door and interface, giving even greater versatility and efficiency. The user simply wheels the trolley-mounted robot up to the machine, the component loading trolley is then attached and billet/component size input to the control interface. It is in fact so simple you will wonder how you managed without it. Costs are also addressed, making it appealing for small to medium subcontract machinists who would not normally consider automation as being viable. The cost of ROBO-TEND is calculated from just



£2.00/hour, meaning that automation is now fast, straightforward and affordable for all. If the system is purchased outright payback is possible in just a few months of operation.

Nigel Atherton, managing director of XYZ Machine Tools, says: "In developing ROBO-TEND the brief was to create a simple, easy-to-use robotic automation system that would appeal to a wide range of customers, especially those who may not have considered automation as an option previously. Therefore, it was pleasing that many of those in attendance recognised this, with comments that it was one of the simplest systems they had seen." In addition to simplicity, the design brief also addressed affordability and with hourly costs calculated from just £2.00/hour, automation from XYZ Machine Tools is now fast, straightforward and attainable for a much wider audience than previously thought.

ROBO-TEND makes use of a drawer system for component storage, with each drawer holding a maximum of 90 kg of material, with a maximum billet height of 120 mm. These parts are then transferred to the machine by a Kuka robot, all of which is controlled from a Siemens interface with conversational touchscreen control, making programming and operation straightforward. The ROBO-TEND system can be used with any of XYZ Machine Tools' Siemens controlled machining centres or turning centres, with the advantage of being able to be relocated within the factory to



where it is needed, subject to machine having an auto door and interface.

Nigel Atherton concludes: "Machine automation is not new, but what we have created in partnership with Adelphi Automation and the reception it has received, confirms that ROBO-TEND brings a new approach to automated machine tending. Once we have installed the first few systems, I am confident that we will see significant growth from this product, as it enables customers to make significant cost savings and productivity gains by operating machines un-manned for full shifts or even 24/7. The only manual intervention being to restock the raw material in the part storage system. Even here the system allows for a second drawer system to be pre-loaded and simply slotted into place to further improve setup time and logistics."

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Meet your new team member

Machining centre automation halves labour cost

Roemheld equipment chosen for workholding on robotised VMC

Predominantly a contract machinist of turned parts requiring a significant amount of milling and drilling, Rousant Sherwood Manufacturing uses more than a dozen CNC lathes, mainly from Nakamura, Japan. However, for expediency some parts are mill-turned on Vertical-Spindle Machining Centres (VMCs), including a line of three Topper machines built in Taiwan, one of which was automated last year to increase production efficiency.

The economic benefit has been dramatic, as the machine now works practically autonomously, so one operator rather than two is able to attend all three Toppers. It has halved the labour cost content of producing a range of stainless steel load cells for a manufacturer of weighing equipment. Different types of load cell are produced in the other two Topper VMCs and there are plans to automate these as well.

As with many automation initiatives in the factory, adaptation of the VMC was the brainchild of Ray Haywood, who owns the subcontracting firm. It is a prime example of how an existing 3-axis machining centre, formerly manually loaded and unloaded in this case for Ops 1 and 2, can be configured for automation at a reasonable cost. Conversion was carried out by Andy Packman at specialist integrator, Projex Design which happens to be located on the

same industrial estate in Henley.

Workholding equipment supplier Roemheld UK was chosen to supply a range of hydraulic items to fulfil the project. These include: an MC100Z concentric vice and a block cylinder that acts as a tailstock to secure the component between centres for Op 1; a pair of swing clamps to hold the component for Op 2; rotary unions for both pre-existing, pneumatically-operated indexing heads to feed the hydraulics to the fixtures without tangling the hoses; a hydraulic power pack.

Its actuation is sequenced by signals from the controller of the robot, which has been programmed to execute component handling.

As is often the case with Ray Haywood's equipment purchases, he surfed the Internet to research a hydraulic workholding solution, initially for Op 2, and approached a number of potential suppliers. The response from Roemheld UK was prompt and efficient, added to which the hydraulic swing clamps were deemed to be of high quality, so the order was placed.



The original plan was to use a 2-jaw chuck to hold the component for Op 1, but the Roemheld engineer came up with a better solution based on a hydraulic vice and tailstock, which were also duly purchased.

With the help of Projex Design, the cell was configured so that, in addition to loading, transferring and unloading workpieces, the robot automatically opens and closes both VMC doors, which were suitably modified, making the manufacturing process fully automatic.

The machining sequence

At the start of a day's production, the robot opens the VMC's doors, picks up a 67 mm diameter by 180 mm long, cylindrical stainless steel billet weighing 8 kg from a table at the front of the machine and places it in a horizontal orientation in the hydraulic Roemheld vice, which executes a soft close. The tailstock advances so that its centre pushes the billet to an end stop at the back of the jaw, whereupon full clamping pressure is applied.

With the part now held securely in position and free to be rotated through 360 degrees by the left hand indexing head on which the vice is mounted, Op 1 consists of milling two diametrically opposed flats along the length of the billet, drilling and chamfering three holes through the flats and drilling and grooving two blind holes on either side such that the web thickness is to within ± 0.05 mm, which is the tightest



drawing tolerance. To achieve it, the depth of each blind hole must be controlled to ± 0.025 mm. The component is then indexed through 90 degrees for a small pocket to be milled.

After opening the doors, the robot picks

up the part-machined component and transfers it to the Op 2 fixture, mounted on the second indexing head on the right hand side of the VMC table, where the workpiece is secured by the Roemheld swing clamps. A fresh billet is loaded into the vice so that its

Op 1 cycle can be completed with Op 2 on the previous part while the doors are closed.

Op 2 comprises drilling and tapping a blind hole in one end face of the billet and drilling two holes at an angle through the small pocket on the side so that they intersect internally. The entire cycle takes just over one hour to complete.

When the robot opens the doors again, the hydraulic pressure is released, the finished part is moved from the Op 2 fixture to the component tray, the part-machined Op 1 workpiece is transferred to the Op 2 position, a new billet is loaded into the Op 1 fixture, the doors are closed and the cycle starts again.

The process continues with minimal operator intervention throughout the day, although it is possible to run the process manually, for instance to prove out an alteration to the machining sequence.

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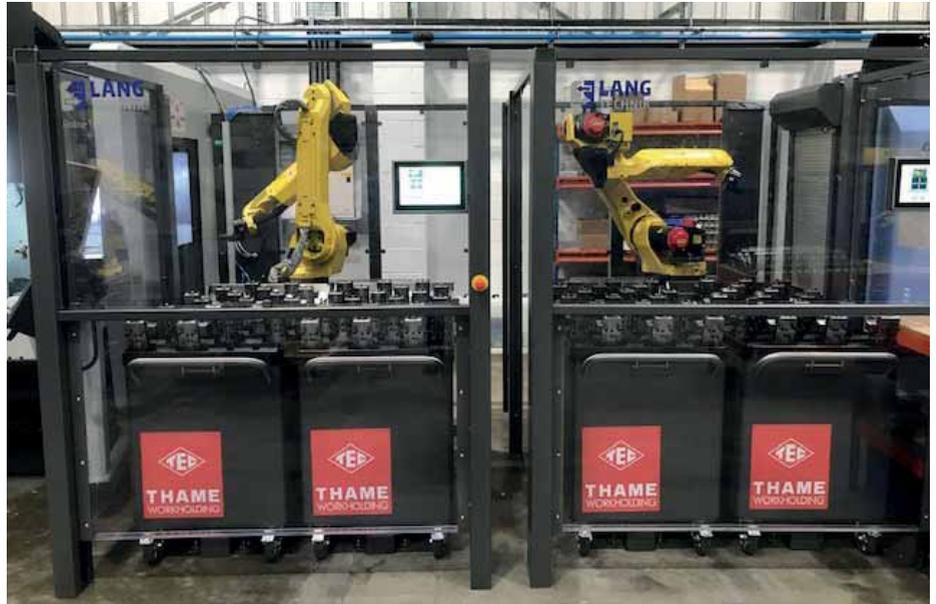
Robo-Trex makes light work of lights-out milling

UK manufacturing lags behind the productivity performance of fellow members of the G7 group and also that of other major global economies. Lack of investment and the shortage of skilled staff are widely considered to be major contributing factors to this lamentable situation. In addition to being regarded as an effective means of UK manufacturers achieving productivity improvements, the implementation of advanced automation technologies, invariably helps solve business' skills shortages.

Hertford-based Qualiturn Products Ltd is a prime example of a forward-thinking business that has achieved world-class levels of productivity by embracing the use of automation systems and developing efficient new working practices.

Established in 1974 and now run by second-generation managing director, Nick Groom, Qualiturn Products Ltd has grown to become one of the UK's leading suppliers of precision mill-turned components. In 1990, the pioneering company became one of the first subcontractors to operate its mill-turn machines in a 'lights-out' manner throughout each night shift. The use of bar-feed systems and other advanced production aids means that since that time, the business has operated 24 hours a day, seven days a week, 365 days a year, with only daytime staffing.

Prompted by the success of Qualiturn Products Ltd's 24-7 production of precision turned components, in 2014 the company established Qualimill, a subcontract milling division that embraces similar, highly-efficient, lights-out operating methods. Just as the application of advanced technologies facilitated a



lights-out mill-turn manufacturing regime, the implementation of advanced automation aids, such as the Lang Robo-Trex system, supplied by Thame Workholding, has enabled Qualimill to operate milling machines 'lights-out' and has helped the division to become an extremely successful subcontract manufacturer of milled components.

To help satisfy, the ever-rising demand for Qualimill's output the company recently moved into much larger premises and has installed several additional, innovative production aids in the impressive new facility. The most recent of which is a second Robo-Trex advanced robot automation system. The productivity gains made possible by the use of Qualimill's first Lang Robo-Trex robot systems was a major factor in the decision to purchase the second system that now feeds a Doosan DVF 5000 machining centre.

Qualimill's two Lang Robo-Trex robot systems each use two trolleys that act as mobile storage mediums. The trolleys are loaded with multiple vices that hold workpieces that are ready to be loaded into the machine by the systems' robots. The robots pick workpieces from the trolleys, loads them into the machine tools, and when they are fully machined, returns them to the trolleys. When filled with machined parts, each trolley is removed and a

replacement loaded with multiple workpieces ready to be machined is added.

Working unattended and fed by the Lang Robo-Trex systems, the company's machining centres run throughout the day. Before the end of each day shift the Robo-Trex trolleys are replenished with full consignments of workpieces, enabling each machining centre to run unmanned throughout the night.

Robo-Trex trolleys are available in 2 sizes, the smaller version has a capacity of 30 vices, max. part size 120 x 120 x 100 mm, while the second, larger model has a capacity of 42 vices, max. part size 120 x 100 x 70 mm. The Robo-Trex system is able to handle four automation trolleys. Therefore, depending on part size, the available storage capacity increases to 120/168 vices.

The patented, edgewise mounting of the system's vices ensures maximum space utilisation, while accessibility to the clamping devices allows workpieces to be exchanged, without removing the vice.

An intuitive, easy to operate touch panel enables easy control of the automated system and, as external access to the trolley is possible, production remains seamless as machining cycles do not need to be interrupted. Control of the zero-point clamping system can be performed either pneumatically through the machine tool, or mechanically through the system's robot.



Nick Groom explains: "Increasing demand from our mill-turn customers motivated the launch of our Qualimill division. To ensure that we were able to replicate the success of our Qualiturn operation, when setting-up the new division where possible we put into operation advanced automation systems and applied similar efficient working practices to those used in our mill-turn operations.

"Soon after the formation of Qualimill, in an effort to gain maximum milling efficiencies, we looked for an advanced technology that would allow lights-out running of an existing CNC milling machine. We found the ideal answer in the Lang Robo-Trex automation system from Thame Workholding. Having been impressed by the outstanding performance of our first Lang Robo-Trex robot system, to help satisfy ever rising requests for our milling work, we recently purchased a second system.

"Our decision to launch Qualimill and to employ highly efficient production technologies has been validated by the division's great success. Our new Lang Robo-Trex automation system now feeds a recently purchased Doosan DVF 5000

machining centre and further extends our highly efficient lights-out production capabilities.

"By releasing the full, latent productive potential of the machine-tools they serve, our two highly-efficient, automatic handling systems release our skilled staff for more technicality demanding work. In addition, our Lang Robo-Trex automation systems are helping us to speed-up our production throughput and to reduce our lead times. They also enable the generation of cost-effective quotes and help us to attract further new business."

Gareth Barnett, sales manager for Thame Workholding, adds: "In addition to providing industry with a wide range of cost-effective, standard workholding systems from several of the world's leading manufacturers, we also design and manufacture bespoke solutions in-house. Our vast experience and expertise in all aspects of workholding allows our staff to fully understand our customers' needs, then to provide optimum, cost-effective solutions.

"Our grasp of Qualimill's brief, relating to the division's quest for efficient lights-out working, enabled us to recommend the



Robo-Trex automatic handling system with great confidence. Now that the company's first system has delivered on all of the promises we made, we were delighted to recently receive an order for a second system."

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Demand for cobots set to rocket

According to Markets and Markets' recent research report "Collaborative robots market by payload capacity, industry, application and geography, Global Forecast



to 2023," the cobot market is expected to be worth \$4.28 billion by 2023, growing at a compound annual growth rate (CAGR) of 56.94 percent between 2017 and 2023.

This growth, in part, is attributed to the demonstrable high return on investment rates and the relatively low price of cobot technology that is driving demand amongst small-to-medium sized enterprises.

The market for cobots, with a payload of 10 Kg and over, is expected to grow the fastest between 2018 and 2023, attributed mainly to the expected demand for relatively high payload capacity cobots in the automotive, electronic, machining sectors.

The market for cobots with such a high payload capacity is evolving and is occupied by a few manufacturers. A relatively new entrant to the market is Doosan Robotics, part of the Doosan Group, who have recently appointed Leamington-based, Mills CNC, as its UK and Irish distributor.

Peter McCullough, product manager for Doosan Robotics at Mills CNC, says: "Cobot technology is developing at a rapid pace.

Improvements in the human:machine interfaces on the latest cobots make them easier to use and the use of sophisticated sensor technology means that they are inherently safe."

Assembly and pick and place applications accounted for the largest and second largest markets for cobots in 2016. This is expected to continue in the future owing to the inherent flexibility of cobots and their ability to perform a range of different operations and tasks via easy re-programming and the quick change of end effectors.

The automotive industry held the largest share of the global cobot market in 2016 and was mainly used to perform assembly operations as well as production line 'pick and place', quality inspection, packaging, palletisation, machine tending and other material handling tasks.

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Optimising materials handling efficiency through automation

The logistics and supply chain sector forms a huge part of the UK economy and, in return, supports a plethora of other businesses, of all sizes across many sectors. From supermarkets to retail outlets, corner shops to ecommerce retailers.

As consumer demand increases, aligned with the UK's population growth, the incremental demand upon the logistics and supply chain market dictate that business owners must review operational processes to ensure that they are best placed to manage predicted explosive market growth, in what is fast becoming an extremely competitive arena.

Considering market growth and increased consumer demand, it is only logical to assume that automated robotic processes shall increase in their adoption within the logistics and supply chain market, to attend materials handling tasks, such as picking and packing and palletising.

Such is the competition being faced by business owners, especially SME's, the need to react efficiently and effectively to changing market trends is imperative to commercial success. Small firms have smaller profit margins, compared to larger corporate businesses with larger logistical infrastructures, sometimes as low as one to three percent and any actions that can improve productivity will result in cost reductions which can then be channelled back into the business with investment in capital or further investment in automated processes. Ultimately these cost savings will eventually be passed on to the customer, allowing businesses to maintain a competitive advantage.

By implementing automated robotic applications within a supply chain, manufacturers are able to diversify their operations. Ecommerce dictates that products are available to consumers to order 24/7 and keeping up with demand is critical. Though the costs associated with staffing a supply chain operation, aligned with a 24 hours a day, seven days a week, 365 days a year ecommerce presence, is costly. Finding employees with the right skill sets who are willing to work unsociable hours is a challenge, not to mention the costs associated with compensating said



employees, by way of expensive shift allowances.

This is where business owners should consider investment versus return, when contemplating the implementation of automated robotics and how by future proofing their operations, they can continue to be of value to their customers in the future, by providing a service that shall not become obsolete and minimise the effects of obscure market trends.

There is a misconception that robots are taking jobs. This is not the case. In many cases robots are undertaking tasks that are either too dangerous or stressful for humans to complete within a manual handling application. Consider bending, lifting, twisting, pushing, pulling. Actions all necessary within a manual handling environment. Operators who might have once undertaken such rigorous tasks can be upskilled to robot programmers or be placed elsewhere within an operation where they can make best use of their skills and qualifications. This provides cost savings, added value and promotes job longevity away from non-ergonomic tasks.

Implementing automated robotics can even attract a higher calibre of employee, experienced in Human Machine Interface (HMI) and the management of automated systems and robotics. The primary skills that are needed to fulfil traditional, industrial tasks, are no longer deemed as desirable to

our millennials, who don't want to work in many of the key industries that drive the UK economy. Technology has significantly changed the materials handling environment of even a generation ago. Modern logistics and supply chain environments of today will require an unparalleled degree of technical awareness, consider software and integrated hardware solutions.

The age of digital transformation is here and the evolution of the retail ecommerce market dictates that business owners must invest in the right tools to keep up with sector growth. Lost productivity can be the difference between sink, or swim and, in order to maintain a competitive advantage in the UK's 'real-time' economy, businesses must incorporate data driven automation into their organisational structure and business strategy, in the context of Industry 4.0, the Internet of Things (IoT), cyber-physical systems, emerging technologies, advanced data analytics and semi-autonomous decisions enabled by Ai.

Embracing automated robotics as an operational value-add makes economical sense, operationally more so.

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Automated loading and unloading of machining centres

Following the launch earlier this year of the manual Swift Klamp HSK workholding system for use on machining centres, 1st Machine Tool Accessories has introduced a new robotic loading and unloading arrangement based on the same principle. It was demonstrated at EMO 2019 on the stand of Kitagawa, for which 1st MTA acts as sole sales and service agent in the UK and Irish markets.

The automatic system, which maximises spindle uptime, uses a deeper clamping head to accommodate the low pressure, 35 bar, hydraulics and a mounting plate with dedicated adapter to suit the 3-, 4- or 5-axis vertical-spindle or horizontal-spindle machining centre. Pneumatic detection of correct seating of the head ensures accurate machining and elimination of scrap, while air blow from the underside prevents swarf from entering the mechanism during exchange.

As with the manual Swift Klamp system, the automated variant is available in HSK-A40, HSK-A63 and HSK-A100 sizes.

Depending on the equipment, skills and requirements a potential customer may have, a package is configured by 1st MTA that may include a workpiece stocker, a 6-axis industrial robot with gripper, the Swift Klamp workholding system with head, multiple workholders, control unit and pump and an engineered interface to the machine tool comprising electrical control circuitry and plumbing of the hydraulic and pneumatic channels through the table as well as a tombstone if necessary.

The Swift Klamp system uses a rigid HSK face-and-taper interface, normally used for holding cutting tools, to provide a high precision, secure, low interference, quick-change method for clamping workpieces. It is characterised by high resistance to bending forces generated by metalcutting operations.

Sitting on top of the interface are multiple options for holding the workpiece, including a vice, flange clamps and side clamps. Alternatively, a dovetail interface with compact clamping surface allows enhanced



tool access. Billets must be pre-milled with a slot to match the holder profile using a solid carbide cutter provided specifically for the purpose. Steel or aluminium blanks in various sizes pre-machined with a dovetail can also be supplied.

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Ford Dagenham automates operations with seven Universal Robots

Ford Dagenham has invested in seven UR10 Universal Robots from RARUK Automation to automate the previously manual task of applying fasteners to engine blocks. The fasteners are now applied automatically to engines that arrive on the production line every 30 seconds, across a 24-hour, three-shift operation.

The engine manufacturing plant at Dagenham is iconic among UK automotive facilities. Employing around 1,830 people, this 44-acre site produces around 750,000 diesel engines every year for passenger cars and vans. Current products include Duratorq TDCi engines, 1.4, 1.5, 1.6, 1.8 and 2.2 litre, for models that include the Fiesta, Focus, B-MAX, C-MAX, Grand C-MAX, Ecosport, Transit and Transit Connect.

Until recently, the task of securing exhaust manifolds to engine blocks using M8 studs and nuts, as well as different types of barrel nut, was performed by an employee operating an electric screwdriver tool. However, to help improve cost efficiency and reduce RSI, the company identified the

process as a suitable candidate for automation. As up to six studs and nuts require application on each engine block, the potential savings were notable.

With Universal Robots already operating successfully elsewhere in the Ford plant portfolio, the team at Dagenham contacted UK sales and support agent, RARUK Automation. Factors influencing Ford Dagenham to invest in seven UR10 Universal Robots included speed of installation, ease of programming and price.

All seven Universal Robots were up and running at Ford Dagenham by December 2018. With regard to process configuration, a vibratory bowl feeder is deployed to offer up individual fasteners, which are blown through a tube using compressed air to an escapement. From here, a dedicated screwdriver tool bolted the flange of the Universal Robots picks up the fastener and runs it down the thread in the engine block to secure the exhaust manifold in position. Development of the process and application was fully supported by RARUK Automation, including training.



Although renowned for their collaborative operational capabilities, the UR10s at Ford Dagenham are currently being deployed as 'cohabitant' robots rather than true cobots. This has avoided the need to reorganise and recertify the production line from a safety perspective, saving time and cost.

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Kawasaki Robotics & SynthoTec scoop industry award

Warrington-based Kawasaki Robotics has won the prestigious Supplier Partnership Ancillary Machinery Award at the 2019 Plastics Industry Awards which were held in September.



Presented by former EastEnders actor Shaun Williamson, the award reflected the partnership which Kawasaki Robotics and leading plastics moulder SynthoTec Ltd enjoyed as the latter set about upgrading parts of its production process.

Located in Malvern, Worcestershire, SynthoTec is one of Europe's premier producers of injection-moulded ultra-high precision components. The company has recently installed a Kawasaki RS20N robot, which has allowed it to boost production, cut costs and achieve a significant reduction in waste material in one of its most important manufacturing processes.

Already a heavy investor in state-of-the-art mould tooling, software and moulding machinery, the SynthoTec management team, led by managing director Graham Ward, actioned a desire to further automate and install a new robot in the company's bearing cage demoulding cells.

"We targeted a new robot as we wanted to move the production cell forward to a new concept and a 6-axis robot enabled us to greatly simplify the cell," explains Graham Ward.

Jon Hart, project engineer at SynthoTec, says: "We had a detailed list of objectives which we shared with Kawasaki Robotics

early on. We needed to achieve significant cost savings across our demoulding cells from improved throughput. We also wanted to reduce the physical size of each production cell, because floor space is at a premium and we needed a robot that was straightforward to install, programme and manage ourselves. Additionally, we had a desire to do our own training and systems

integration on the new robot: to evolve our own way of doing things. And we wanted a robot supplier that recognised our existing in-house skills, was prepared to brief us accordingly and then let us get on with the job of installing, commissioning and using the chosen equipment ourselves."

From Kawasaki Robotics' viewpoint, the detailed brief from its customer led to the selection of the company's RS-20N robot, in standard form. It offered the required high speed in every axis, could demonstrate repeatable accuracy to within +/-0.04 mm across each axis for the lifetime of the robot and could also be stopped instantly, should it be required, this being of importance to SynthoTec for operational reasons. Despite the long reach of the Kawasaki RS20N, the compact overall dimensions of the complete unit allowed SynthoTec to meet a primary design brief of reducing the overall width of each of the demoulding cells on the shop floor by at least 1 m per enclosure.

SynthoTec's operations director, Wayne Williamson says: "Our list of critical criteria that ended in the selection of Kawasaki Robotics as our chosen partner was very specific. Key elements included a guaranteed reduction in cycle times for the process, competitive pricing that included a full support programme with no hidden costs, being able to reduce the physical size of each cell and being able to load and unload completed pallets without stopping the production cycle. An additional advantage was the provision of all necessary



initial and ongoing training for our project staff at no extra cost."

Ian Hensman, sales manager for Kawasaki Robots, concludes: "SynthoTec were clear from the start about both their application objectives and their desire to manage the project to completion themselves. It was immediately obvious to us that we could be completely confident in their ability to commission and install one of our robots, with our team simply providing the equipment, together with oversight and detailed infill, as and when required. It is unusual for a customer to want to do this themselves, as our many integrators will confirm. We were delighted that the SynthoTec engineering team proved to be more than capable of fully integrating our robot into their production processes, with minimal requests to us for clarification and guidance. Between us, we took this project from 'first-meeting' to 'up and running' in just 25 weeks. Kawasaki Robotics is delighted to have received this Supplier Partnership Award because it typifies so many of the applications we work on with our customers. We see this award as a credit to the team at SynthoTec as much as we do to ourselves."

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Ethernet robot cable from igus enables fast and reliable communication

igus has introduced a family of Ethernet/CAT5 chainflex cables, the CFROBOT8.PLUS, designed specifically for 6-axis robots. Suitable for torsion angles up to ± 360 degrees, the cables have been tested in-house for several years and remain running fault-free for more than 15 million cycles.

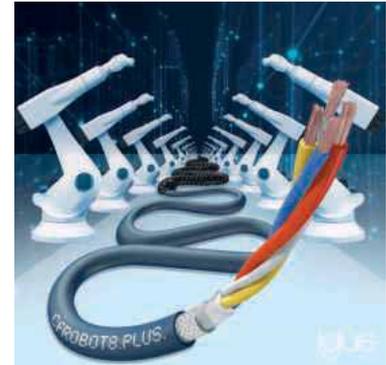
The number of robots used in manufacturing is growing rapidly. According to the estimate of the International Federation of Robotics, IFR, more than 3 million industrial robots will operate worldwide by 2020.

Justin Leonard, the-chain director at igus, says: "The probability that the communication of the future will be dominated by industrial Ethernet is high. We have been working on the development of robot Ethernet cables for more than five years. The in-house tests are still ongoing to determine the expected maximum service life. However, we expect the final results in a few years."

The CFROBOT8.PLUS has been tested for torsion at ± 360 degrees in the igus triflex e-chain series for 3D motion with over 15 million cycles. The result is that the electrical features of Ethernet communication work faultlessly to ensure reliable communication between the robot's axes, controller and superordinate systems. igus is the only manufacturer worldwide to provide a guarantee of 36 months for its complete chainflex cable range, including the new CFROBOT8.PLUS.

Based in Northampton in the UK and with global headquarters in Cologne, Germany, igus is a leading international manufacturer of energy chain systems and polymer plain bearings. The family-run company is represented in 35 countries and employs 4,150 people around the world. In 2018, igus generated a turnover of 748 million euros with motion plastics, plastic components for moving applications.

With plastic bearing experience since 1964, cable carrier experience since 1971



and continuous-flex cable since 1989, igus provides the right solution based on 100,000 products available from stock with between 1,500 and 2,500 new product introductions each year. igus operates the largest test laboratories and factories in its sector to offer customers quick turnaround times on innovative products and solutions tailored to their needs.

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Make short production runs more efficient with motion systems from Rockwell Automation

MagneMover LITE system uses independent carts to move payloads and now offers five-times greater carrying capacity supporting larger applications.

Manufacturers are customising products to meet more targeted consumer demands. As a result, they must contend with shorter production runs and more frequent changeovers, which takes time away from producing products. The MagneMover LITE system is helping make these higher-SKU operations efficient by moving payloads faster in a more flexible way than traditional conveyors do today.

Now, Rockwell Automation has updated the MagneMover LITE system that rapidly moves products in carts along a motorised track. The flexible system can now move heavier products and support larger-scale applications. It also reduces downtime because it allows for changeovers with the push of a button and no mechanical intervention.

New wheeled cart options give users

five-times greater carrying capacity than sliding carts. The single- and tandem-wheeled carts can carry payloads of up to 2.5 kg, 5.5 pounds and 10 kg, 22 pounds, respectively. This allows producers to scale up from one product size to another without the need for multiple machines to produce and package their product varieties.

Using Ethernet-enabled motors and Ethernet-based node controllers to replace serial communications allows users in high-volume industries to improve layout flexibility and run hundreds of carts per path while requiring fewer node controllers. The MagneMover LITE system is ideal for larger applications using long paths with high switch and cart densities.

Neil Bentley, director of product line management at Rockwell Automation says: "Machine builders and manufacturers that have seen how this technology can reimagine manufacturing, assembly and packaging operations have been eager to



do more with it. That's why we enhanced the MagneMover LITE system. It supports bigger payloads, it delivers even better performance and it can scale applications up to previously unseen sizes."

Rockwell Automation works with manufacturers, machine builders and system integrators to continuously develop advanced, smart manufacturing technologies, solutions and the know-how to meet its customers' business requirements.

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Innovative ideas turned into innovative machines

Loesch T-P-L in Darmstadt, Germany is a source of ideas as well as a supplier to major machinery manufacturers. At its in-house production facility, complex parts which require a high level of know-how are machined with ultimate accuracy. Here, a Mazak VCN 530C vertical machining centre stands out for its particularly high efficiency. Thanks to the addition of a 2-axis CNC rotary table from pL LEHMANN, the setup can machine parts on five sides using five axes.

Michael Loesch, managing director of Loesch T-P-L, says: "We are more than just a metal-cutting service provider. We are best described as an innovative partner of various renowned enterprises, primarily supplying ideas, developments and our own products."

He emphasises that his relatively small company, with a staff of ten, relies on almost 70 years of experience in the development and manufacturing of high-precision mechanical parts and components and that a lot of time and effort is also invested into innovation. The company has been participating in several research projects conducted by universities and major partners from the industry, implementing the insight gained from the projects into market-ready products.

Its product range covers three main areas: testing equipment for the automotive industry; in particular specific components for engine and brake system test benches; handling devices and components for plasma powder and laser cladding; measuring and testing equipment for the pharmaceutical, cosmetics and chemical industry. "Our know-how in these areas is extensive and we not only apply it to the manufacture of parts, but also to their mechatronical requirements," continues Michael Loesch. He adds: "Of course, metal cutting is an essential core competence because all complex, important parts are manufactured in-house."

Mazak dominates production

The company's ground floor houses six CNC machines, all made by Mazak. Michael Loesch explains: "We've had close ties with this Japanese tool machine manufacturer since 1979. Back then, my father, the founder of our company, ordered the first Mazak lathe. Further lathes and machining



centres were added over the years and we have always happily relied on Mazak's technical advice, delivery and customer care."

Naturally, the latest addition to the machine pool, a vertical 3-axis machining centre of type VCN 530C, was procured from Mazak as well. However, this unit was then extended by a CNC rotary table combination from pL LEHMANN to facilitate machining along five axes. Loesch T-P-L decided for this setup for reasons of production efficiency, something that must always be kept in mind even though corporate structures are very flat and efficient. Using 5-axis milling and drilling technology, Michael Loesch has realised the benefits for many workpieces from across the entire range of customers. In general, all parts can be manufactured on a 3-axis machine as well. However, this requires special clamping fixtures for angled surfaces and bores and multi-sided machining always requires the re-clamping of parts in different positions. This costs time and is detrimental to accuracy. From a technical and economic point of view, 5-axis machining is without alternative.

However, a machine originally designed with five axes was not an option for Michael Loesch: "Rocker-mounted rotary tables are usually rather small, or we would have had to spend a lot of money for a correspondingly larger machining centre. Such a solution also entails interfering edges which require a

raised fixture for the workpiece or at least long tools. Both of these reduce stability, promote vibrations and ultimately reduce precision and machine performance. Moreover, a 3+2-axis solution is less expensive while offering a greater flexibility. For us, the Mazak VCN extended by the Lehmann rotary/tilting table is the perfect solution. It even leaves enough room to accommodate two more vices on the machine table, thus providing further clamping options for simpler workpieces or the sixth side."

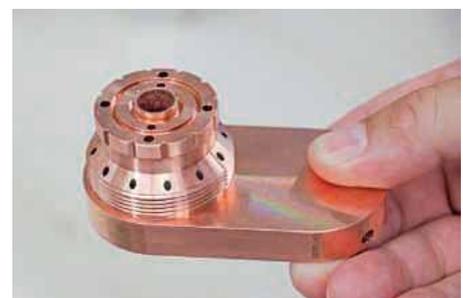
With the Mazak VCN 530C, Michael Loesch and his team of metal-cutting experts are convinced to have found the vertical machining centre, of its range, with the highest productivity. Cycle times are very short thanks to the high federate, 42 m/min, excellent acceleration/deceleration and quick tool changes, 2.8 seconds. Durable linear roller guides ensure consistent machining accuracy along all axes. The machine was specified with a 40 x tool magazine, a 18,000 min⁻¹ high-speed spindle and a Knoll 70 bar high-pressure system, reducing machining times for deep-hole drilling by up to 90 percent.

To the Loesch team, the 1,300 x 550 mm table was of particular importance as it can fit the CNC rotary table from pL LEHMANN and still provide enough space for two vices of size 125. Supported by the rotary table specialists from Switzerland and German sales and service partner IVO Oesterle, the

team selected the 2-axis model T1-510520.RR TOP2. Michael Loesch says: "The Swiss quality won us over at the first presentation. With regard to performance and suitability for digitalisation and Industry 4.0, we did not consider any of the alternatives." 3D-CAD data of the CNC rotary table were submitted to the team beforehand, so a matching workspace concept could be worked out in the in-house CAD system.

The 2-axis LEHMANN rotary table T1-510520.RR TOP2 is 711 mm long, 301 mm wide and 250 mm high. It clamps workpieces of up to 340 mm in diameter. "That's more than enough because we mainly process small to medium-sized workpieces up cube edge dimensions of about 150 mm," explains Michael Loesch. A torsionally rigid overall system was a key requirement, so the decision was made for a clamped counterbearing. He continues: "Besides copper, brass, aluminum and bearing metals, we often process stainless steels which cannot be roughed without this option." To this effect, clamping torques of max. 800 Nm in the 4th axis and up to 4,000 Nm in the 5th axis were a convincing feature."

Also, precision is a core value at Loesch. The indexing accuracy Pa specified by pL LEHMANN of +/- 17 arc sec and +/- 21 arc sec, 4th and 5th axis, as well as the average repeat accuracy Ps of +/- 2 arc sec, correspondingly, was verified by the metal-cutting experts on site using a calibration cube. The result even exceeded the specifications.



In practice, the high positioning speed of the rotary/tilting table is another great benefit. Michael Loesch adds: "If feasible, we use one single tool, e.g. a chamfer milling cutter, to execute all operations in sequence, rather turning and tilting the workpiece than repeatedly changing the tool."

To Michael Loesch, programming with the Mazatrol SmoothG is another highlight: "In the past, 3+2 machines could only be programmed for 5-axis operation using G-Code, a tedious procedure if workpieces are complex. Now, we can use the Mazatrol programming system which I think is very user-friendly." This needed some intensive up-front cooperation between pL LEHMANN and the Mazak control system developers, but the result was well worth the effort. Michael Loesch continues: "I can now program our VCN 530C with its 2-axis rotary table just like a 5-axis Mazak Variaxis. This reduces the programming effort to a fraction of the time." Productivity gains immensely, particularly for single and small-series parts, production lots at Loesch usually range between 20 and 200 pieces.

Michael Loesch is very satisfied with his investment: "Thanks to the Mazak VCN

530C and the 2-axis rotary table from pL LEHMANN and the other options we specified, we have achieved significant time savings and reduced the effort required for re-clamping, thereby freeing up our machine operators to take care of other tasks."

With his next plans, the innovation-minded entrepreneur targets automation. In the future, the VCN shall be fed by a handling automat. The machine is already prepared accordingly. The pL LEHMANN rotary table offers media channels to facilitate the remote control of automatic clamping systems.

Michael Loesch concludes: "The force clamp on the rotary table is already pneumatically controlled and the two vices on the machine table will then be converted from manual to hydro-pneumatic operation. This will allow us to fully machine all six sides without any manual intervention." He is sure that such a machine concept is the future.

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A revolution for the Testit clamping force measuring device

Better value, more technical benefits

For manufacturers to optimise production processes, it is important to consider user feedback on product functionality. Hainbuch, the clamping device manufacturer, has done just this, developing a fully updated version of the Testit clamping force measuring device for external and internal clamping.

For Hainbuch, six years after the product was launched, the complete re-design has enhanced the electronics whilst enabling the company to offer an even more attractive price point. The new generation of clamping force measuring device is now made up of two parts, the test module or measuring unit that changes depending on the specific measurement application and the IT module or basic unit. Combining the different variants makes for an extremely flexible solution that can measure almost anything.

The innovative product update can be used on multi-spindle machines, turning centres and machining centres. Furthermore, the system incorporates an additional module for measuring and recording the insertion force of hollow shank taper toolholders. The Testit works as a modular system with plug-and-play functions that communicate via the impressive new software that can be viewed on a 10" tablet, on a USB stick or as a download.

Two products instead of one

The Hainbuch Testit was only previously available as a complete unit and users bought one Testit for external clamping, another for internal clamping and depending on requirements, other features for different sizes or specific applications. The costs to end users were prohibitive and Hainbuch has taken steps to rectify this. Now, customers only need to purchase one basic unit or IT module, regardless of whether they need to measure the external or internal clamping forces or pull-in forces. The test modules are then added to the basic unit that also fits the specially designed versions of the measurement modules. This means that costs are significantly lower when compared to



alternate measuring devices available on the market. For customers buying two or more devices, costs are almost cut in half. With the plug-and-play function, each measuring unit can be detached from the base unit with just three screws, allowing customers to swap-out features quickly, just as customers are used to doing with Hainbuch clamping modules.

To retain process stability, precision and productivity, regular monitoring of the clamping and draw force is essential. Today, no one can afford to manufacture with just theoretical values. Nobody wants to have workpieces rejected because the clamping force is too low or have part deformation if the clamping force is too high? Likewise, detecting the lubrication and contamination status can also prevent costly and unscheduled maintenance. In any case, DIN EN: 1550 specifies that static clamping force measurements are to be carried out at regular intervals. The new Testit device measures and records the clamping and draw forces, even in the case of special versions.

Software handles more data

The program for visualising the measured values has three display variants that can be viewed via a tablet. The speedometer display or a bar graph or line diagram for displaying the measuring force changes under speed. An integrated administration database allows users to select their current



clamping device and their machine tool. All data is maintained and clearly presented in the database and the measured values are archived as PDF and CSV files. In addition to the language selection of German and English, French is now also available and other languages will follow.

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Versatile clamping module for automated machine loading

SCHUNK has developed the VERO-S NSE-A3 138 automation module specifically for automated machine tool loading as well as for applications in handling, assembly and automation technology. The clamping module is part of the extensive SCHUNK VERO-S modular system, which enables more than 1,000 possible combinations for efficient workpiece clamping. For process-reliable workpiece and clamping device changes, the automation component is equipped with a powerful blow-off function, which carefully cleans the bearing surface during the changing process. In addition, a spring-actuated cone seal prevents chips or dirt from penetrating into the changing interface.

High rigidity

An enormous pull-down force of 8,000 N or 28,000 N with activated turbo function and a high dimensional stability of the module body benefit the rigidity of automated quick-change solutions. Thus, even high tilting moments and shear forces can be reliably absorbed. Depending on the

application, the modules can be combined in any quantity. Centring inserts with flexible elements ensure positional orientation with a high repeat accuracy and maximum process reliability in automated operations. The repeat accuracy amounts to < 0.005 mm. Due to the conical fitting, the clamping pins can also be joined into the modules eccentrically, making this process incredibly easy. The actual clamping is done without any external energy supply via spring force; it is form-fit and self-retaining. This means the workpieces remain safely clamped in the case of a sudden drop in pneumatic pressure. A pneumatic system pressure of six bar is enough for opening the module.

Integrated anti-twist protection and media transfer

If the modules are used individually, a standard integrated anti-twist protection device ensures a stable position. By means of the integrated media transfer unit, fluids with permissible system pressures of up to 300 bar can be transferred, for example, to



control clamping devices using Plug & Work or to supply components for automated monitoring. As a part of the VERO-S modular system, the automation module benefits from a variety of combination options - from standard plates to SCHUNK TANDEM clamping force blocks, to mechanical vises from the SCHUNK KONTEC series.

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Leader says 'preparation isn't everything'

A centring vice from Leader Chuck Systems has been specifically designed to further enhance the productivity of multi-axis machining techniques. Part of Leader's ZeroClamp range, the 80 mm centric vice can be accurately secured to the machine tool's table, or any other workholding interface, either with the serrated multi-point clamping rail or via the zero-point clamping console, that uses HSK-like face and taper contact.

Specially developed forms on the jaws avoid jaw lift; they pull down as up to 17 kN of clamping pressure is applied to the workpiece. At this pressure, most materials can be securely held without any stamping or raw material preparation.

Mark Jones, managing director, explains: "This chuck negates the need to invest the significant capital required to purchase any material preparation equipment. All but high-tensile steel can be fixed without the lost time required to stamp billets and the holding pressure is great enough to allow full performance machining,"

Available with hard and soft jaws, the precise centre of the vice can be adjustable to +/- 0.02 mm and it can be quickly rotated by 90° in just a few easy steps. "This function makes even further use of the flexible machining capability of 5-axis simultaneous cutting technology," says Mark Jones. "While the simultaneous movements of the machine tool's axes can provide exceptional cutting performance in one setup, the geometric form of some components will not allow the machine to approach all five faces. With the ability to rotate the vice jaws at a right-angle, engineers can gain clear access to machine every design feature required."

Leader offers bespoke engineering support for its products, which is crucial for any engineering business that is new to 5-axis machining or looking to invest in high efficiency machining techniques. Mark Jones concludes: "It is easy to purchase a workholding solution that, on paper,



appears to meet the challenges of the manufacturing process. However, in its application this solution might not perform as required or expected. All of our staff are experienced engineers and the solutions they suggest will perform as specified."

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VISI gives flexibility for tiny and large mould components

Software optimises workflow for hot runner and injector specialist

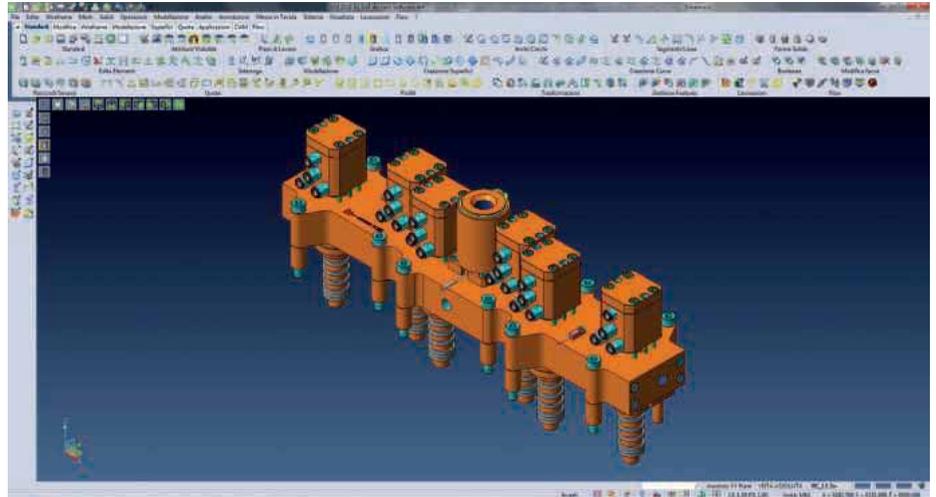
A hot runner and injector specialist for the mould and die industry uses a range of VISI CAD/CAM software to optimise its workflow, saying it is the most suitable solution for its working requirements.

"We use it for feasibility studies before the production phase and to formulate quotations for customers," says Sergio Pozzan, founder and owner of Injection Point S.R.L. "Information is better organised and errors minimised when moving from design to the machining phase, thanks to VISI's unique interface."

Being an integral part of its processes, VISI Modelling is used for design, VISI Flow to simulate plastic injection flow inside the mould and VISI Machining to program complex cycles. The company, based in Turin, specialises in the construction of hot runners from 8 mm diameter up to 2,300 mm centre-to-centre distances, 240V and 24V injectors and filtering systems for thermoplastics. As well as injector lines and direct injector groups, they also produce control units and filter nozzles for improving how melted thermoplastic is burned and to purify it from ferrous and non-ferrous materials.

Sergio Pozzan says: "I founded Injection Point in 2001 after considerable time in the industry as a project manager, production manager and quality manager. I was able to make use of my in-depth experience and apply it to hot runner design and construction, as well as to injectors for moulding thermoplastic materials. Now, using VISI, I can offer a widely tested product to the market which is capable of being used with the most up-to-date plastic materials, and is highly technical, ensuring customers can meet all production quality requirements."

Those customers are largely mould makers across a variety of sectors including



medical and automotive. Sergio Pozzan explains: "Our hot runners and injectors are used to produce medical products and therefore extremely small printed details as well as large products such as car bumpers."

This flexibility means they need to have a completely accurate knowledge of a diverse range of customer needs, and complete details about the required mould. Sergio Pozzan explains: "We must know the type of press that will be used, technical specifications of the final printed part, such as material and weight and any constructive constraints, so that we can customise our injection system to the correct size."

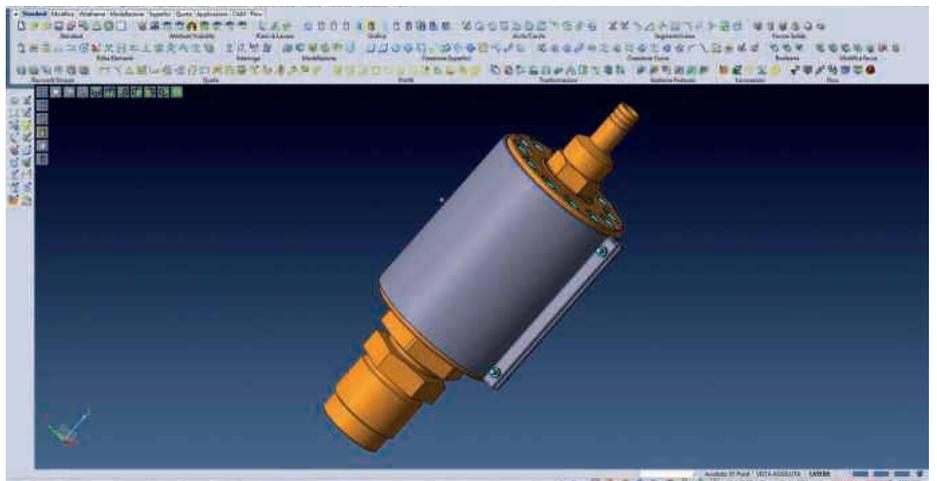
All their products are designed and machined using VISI, which he says they opted for because it is the most suitable software for them: "Simple, intuitive, and, above all, reliable." The company's first VISI solution was a modelling license which it

uses during the design phase. The second investment was the VISI Machining CAM module to program complex cycles for its two CNC machining centres; a Mikron VCE1250 with a Haas FANUC controller, and a Bridgeport VMC 1000 XP2 with Heidenhain control.

Sergio Pozzan adds: "And recently, VISI Flow to simulate plastic injection flow inside the mould completed our VISI suite. We use VISI Flow for all our internal simulations and also to offer an additional service to any customers who need it."

Injection Point's technical department is equipped with dedicated computers for design and he says they can work quickly and easily on both 2D and 3D projects: "Waiting times between a customer asking for an initial study, and our answer, is almost always within three days."

Operating with seven employees from an



800 sq m plant, the company works with partners to extend its market to a large part of Europe, the United States, Mexico, India and China. Export currently covers around 30 percent of its total revenue.

Sergio Pozzan states: "Despite the downturn that has hit our field globally in recent years, with the help of VISI, our products are always of the highest quality, meaning customers continue to have full confidence in us and we remain competitive with a good market share."

In conclusion Sergio Pozzan says, thanks to VISI, its customers can count on them for everything concerning mould construction, from the design phase through to the final mould testing: "We guarantee one of the fastest support services in the market, within 24 hours in Italy and 48 hours throughout the rest of Europe."

Exciting demo cases show the future of intelligent CNC production

Hexagon's Manufacturing Intelligence division showcased digital production solutions from its production software portfolio at EMO. The highlight of the booth was a demo case that took visitors through virtual reality, into the manufacturing processes of the future.

This year's EMO was themed: Smart technologies driving tomorrow's production. It showed how digital and real manufacturing worlds merge in the production of tomorrow and how smart technologies mesh seamlessly with each other.

Visitors to Hexagon's production software stand could use virtual reality glasses to see

the complete construction and production of a motorcycle saddle, starting with 3D scanning through a Hexagon measuring arm and reverse engineering.

Based on the 3D model, machining is optimally programmed in the EDGE/CAM CAM system. The subsequent NC code simulation on the virtual machine with NCSIMUL ensures a collision-free machining process. The final program can then be transferred directly to the machine and started with no loss of time when retracting.

The networking of these technologies

Andreas Seum, general manager of DACH Production Software, says: "Hexagon's Production Software business has a range of digital manufacturing solutions, which also incorporates detailed specialist knowledge of the CNC processes in the various industries."

"At EMO, we wanted to bring to life how we can help users not only develop complex and precise components in the shortest possible time, but also immediately transfer them to automated production. The consideration of the entire manufacturing



across the entire production chain, from design and engineering, and production to metrology, enables efficient, safe and future-proof processes.

process is a decisive criterion for increasing process reliability and productivity."

In the demo area on the stand visitors had the opportunity to get to know the extensive production software portfolio, with more than ten different software solutions, including EDGE/CAM, WORKNC, VISI, NCSIMUL and FASYS. The Get-Together Area on the stand offered space for exchange of experience and networking.

In addition, interested parties could register directly at the exhibition stand for individual visits to the completely newly established Production Software Experience Centre at Hexagon's Neu-Isenburg site, to see for themselves the future of intelligent CNC production, today.

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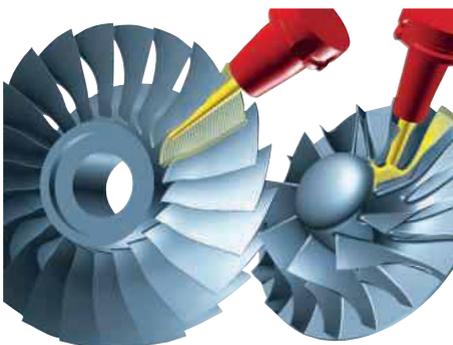


hyperMILL integrates turbomachinery design solution

OPEN MIND Technologies AG has announced a cooperative agreement with CFturbo to provide a complete design to manufacture workflow process to produce turbomachinery such as pumps, compressors, turbines, fans and blowers. CFturbo is acknowledged as an industry leader in the turbomachinery sector with its design software that takes businesses from conceptual design through to complete 3D model. The modern, powerful software platform for interactive design enables the end-user to start from scratch or re-design existing geometries like impellers, stators and volutes. Now, the collaboration with OPEN MIND Technologies will enable turbomachinery designers to take their design concept beyond the 3D model and through to complete CAM model for production.

CFturbo incorporates functions and menu options to convert its design output files into widely recognised design platforms such as AutoCAD, SOLIDWORKS, Siemens NX, Catia and Inventor. With the collaborative agreement, CFturbo users can now export design files into the hyperMILL® platform to generate CAM files for streamlined design to production workflows.

The collaboration will accelerate the product development and production processes for designer and manufacturers, while maintaining a high level of accuracy and consistency. The CFturbo software platform provides an integrated and streamlined approach to turbo machinery design that enables users to rapidly proceed from conceptual design through meshing and 3D CAD platforms and onward to CFD and FEA simulation, complete CAE



workflows, analysis and testing and validation. The cooperation with OPEN MIND now allows CFturbo users to go beyond simulation, analysis and test validation through to complete CAM NC programming for production purposes.

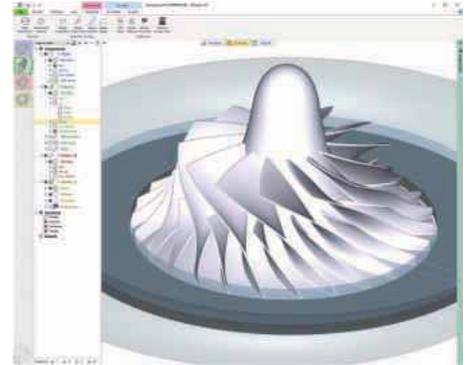
hyperMILL is a modular complete CAM solution for 2.5D, 3D, 5-axis, HSC/HPC and mill-turning processes as well as its special applications and highly efficient automation solutions. The CAM software provides technology-leading geometry analysis and tool path calculations. There are specialised routines designed for efficient programming and machining of these components on 5-axis milling or mill-turn machines. The multi-blade and single-blade turbomachinery solutions are embedded within hyperMILL that is applied to more broad-based milling, drilling and turning applications, allowing an all-in-one CAM system for turbomachinery developers. Robust CNC postprocessors are also provided to assure strong communication to machine tool controllers.

This partnership between CFturbo and OPEN MIND brings product, services, sales and technical teams together for a complete end-to-end software solution. Customers can work with each company to obtain tools, training and services from these industry experts. Both companies are well represented with direct employees and authorised resellers.

OPEN MIND expands functions in high-performance cutting module

OPEN MIND Technologies AG produces the hyperMILL MAXX Machining performance package, a powerful tool for high-performance drilling, roughing, and finishing. These modules within hyperMILL feature special machining strategies that allow users to gain maximum benefit from their machining centre and cutters. Two key enhancements have been added to the performance package. Perfect pocketing technology ensures more efficient pocket machining with high-feed cutters and high-performance finishing and roughing strategies are also available for turning.

OPEN MIND has implemented a new high-performance mode for turning/

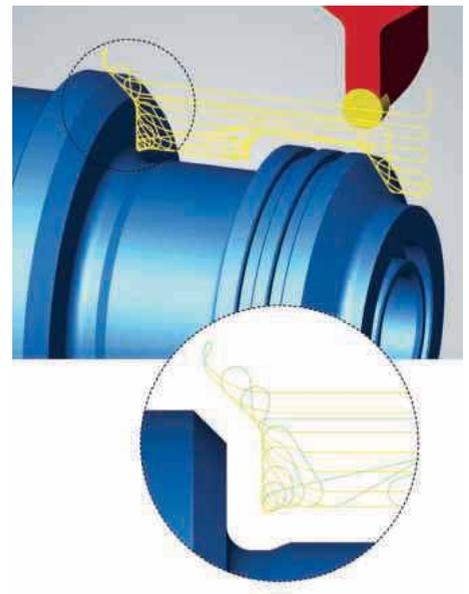


roughing. This was made possible by applying the proven concept of trochoidal milling to turning. Optimised connecting paths and fluent machine movements ensure high-performance machining. The user benefits from the special plunge behaviour of the insert in the material, which increases process reliability while reducing the manufacturing time.

Meanwhile, when it comes to finishing, OPEN MIND offers an innovative strategy to make optimal use of the special rollFEED inserts. The inserts' large radii enable enormous time savings for finish turning.

Expanded range of functions for barrel cutters

Another new feature is the "5-axis prismatic fillet finishing" strategy, which supplements the innovative strategies for the highly efficient machining of planes and



continuous surfaces. This strategy makes it possible to use barrel cutters according to the principle of high-feed cutters with plunging and pulling machining. The calculation of the optimal inclination of the barrel cutter is fully automated. This allows, among other things, high-quality transitions between different wall areas. This strategy perfectly complements the machining of deep pockets with barrel cutters.



Multi-surface machining

Multi-surface 5-axis machining with conical barrel cutters makes it possible to produce entire surface formations in a single job. The toolpaths are generated fully automatically using a surface selection; this eliminates the time-consuming step of creating cutting contours in the CAD beforehand. As a result, high-quality surfaces can be easily programmed and quickly produced for both free-form surfaces and planes.

Mill pockets more quickly

To ensure maximum speed and efficiency, hyperMILL MAXX Machining also features perfect pocketing technology for roughing. An intelligent algorithm fits the largest possible pocket into the area to be roughed and automatically generates linear toolpaths for high feed milling. Linear and contour-parallel toolpaths are optimally linked to guarantee rapid production.

Special retract movements reduce rest material in the corners.

Multifaceted applications for barrel cutters

hyperMILL offers a broad range of applications by supporting various barrel cutters. For example, a great deal of time can be saved by using barrel cutters during impeller or blisk production.

If the taper angle of the milling tool corresponds to the wall inclination, the barrel cutters can also be efficiently used for 3-axis machining. All machining is always carried out in an efficient, collision-free way at the highest level of quality.

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Hexagon Production Software is the world leader in CAD / CAM solutions. Our portfolio is completed by our software solutions for aiding the design and manufacturing process in specific sectors of the industry. The company's world-renowned products include ALPHACAM, CABINET VISION, EDGE CAM, Machining STRATEGIST, PEPS, RADAN, SMIRT, SURFCAM, VISI , FASYS, NCSIMUL and WORKNC, along with the production control MRP system JAVELIN.



HexagonMI.com

Major version update of robot programming software now available

Hypertherm, manufacturer of industrial cutting systems and software, has announced the release of Robotmaster Version 7.1. It is a major update to the completely redesigned and advanced architecture of its Version 7 software released last year. In total, this new robotic programming software contains more than 40 new features, 500 improvements and dozens of bug fixes.

Many of the changes, driven by customer feedback, are designed to continuously improve the software's CAD/CAM technology and automate programming, allowing customers to enjoy the best error-free robotic path in just one click.

Added features and improvements include the ability to automatically recognise weld joints embedded in CAD models which simplifies and speeds up programming, the ability to transform operations to reduce multiple manual selections and the option to modify operation geometry, a section of the path or the entire path, so the user can match the CAD model to the actual part when a mismatch exists.

Robotmaster can handle both simple and complex robotic tasks, from straightforward plasma cutting jobs, to deburring and additive manufacturing applications. Today, Robotmaster software is used on robots that drill airplane fuselages, polish automotive dies, cut material, support additive manufacturing and add value to a multitude



of processes at family-owned job shops around the world.

"Our goal was to revolutionise the way robots are programmed by creating software that is so intuitive anyone can use it," explains Garen Cakmak, leader of Hypertherm's robotic software team. "It enables customers to enjoy error-free task-based programming that takes collisions, singularities, joint collisions, and other robotic errors into account before running the program live on a robot. This in turn makes it possible to program new jobs without interrupting the robot, minimising downtime and instantly increasing productivity and profitability."

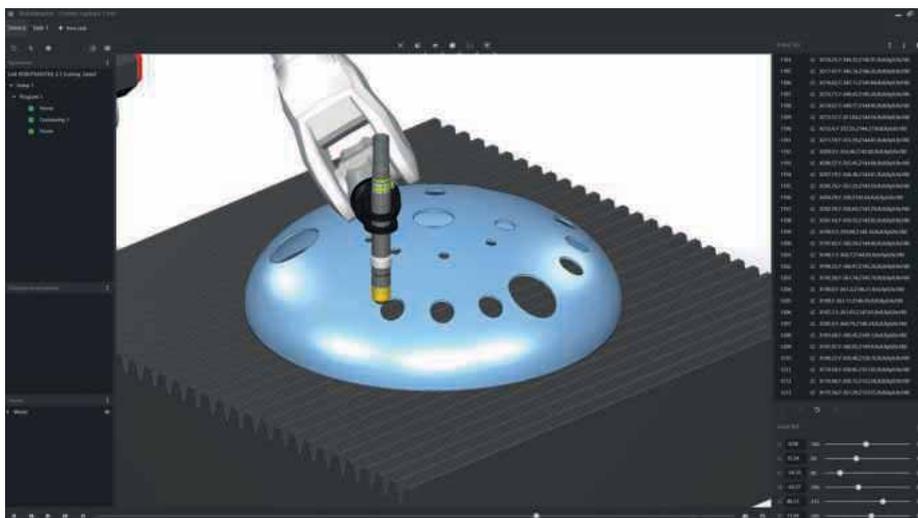
In 1968, Hypertherm founder Dick Couch and colleague Bob Dean discovered a way

to create a narrower plasma arc, capable of cutting metal more quickly and more accurately than ever before. Fifty years later, the founding principle of customer-focused innovation continues to drive product development at Hypertherm. And that spirit of innovation is one of the reasons why Hypertherm's plasma, laser, and waterjet systems, software, motion controls and consumables consistently perform in cut quality, productivity and cost-efficiency.

The company is 100 percent focused on developing, building and selling products that improve cutting. Not just any products, but some of the most reliable, most consistent, highest performing products on the market.

Hypertherm designs and manufactures industrial cutting products for use in a variety of industries such as shipbuilding, manufacturing and automotive repair. Its product line includes cutting systems, in addition to CNC motion and height controls, CAM nesting software, robotic software and consumables. Hypertherm systems are trusted for performance and reliability that result in increased productivity and profitability for hundreds of thousands of businesses.

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CGTech demonstrates VERICUT 9.0

Visitors to the CGTech stand at Advanced Engineering, held last month at the NEC in Birmingham, were able to see a demo of the new features in version 9.0 of VERICUT CNC machine simulation and optimisation software.

VERICUT software simulates CNC machining in order to detect errors, potential collisions, or areas of inefficiency. It operates independently but can also be integrated with leading CAM systems.

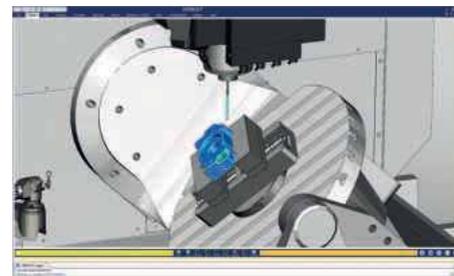
VERICUT 9.0 features several enhancements designed to increase power and improve efficiency: save time with instant access to viewing the workpiece, CNC machine, or both; use major functions, like Section, X-Caliper and AUTO-DIFF, in any view; easily switch between workpiece and machine views, layouts and docking arrangements and auto-configure VERICUT for optimisation with improved connectivity to tooling websites and cloud repositories.

"VERICUT 9.0's all new graphics display sets the bar for realism and streamlines user

actions in all views," says Gavin Powell, technical director at CGTech Ltd. "In version 9.0, there's more flexibility to display/hide machine and other components, enhanced section and better transparency. Most users will experience gains in performance, especially in VERICUT's free Reviewer app."

CGTech also demonstrated VERICUT's Force optimisation module at Advanced Engineering. VERICUT + Force provides an integrated simulation-optimisation solution that can significantly reduce machining times and improve cutting tool and machine life. All NC programs, new or old, can be optimised with Force to run as efficiently and safely as possible. Force is available for milling, turning and mill-turn machines.

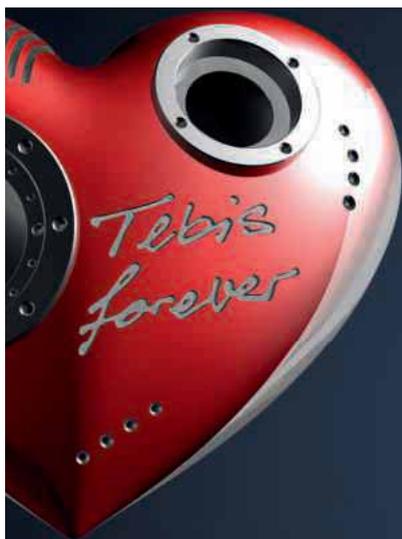
Alongside the standard VERICUT CNC simulation and optimisation solutions, CGTech presented the latest versions of VERICUT Composites Programming (VCP) & Simulation (VCS) Software. VCP now puts more power into user's hands and with more information available than ever before, part



programmers can generate and export part statistics directly from VCP. The addition of the all-new summary reports allows engineers to compare different layout strategies and feel confident the optimal design prevails.

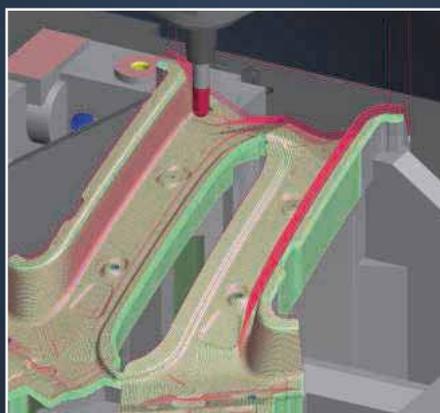
Gavin Powell concludes: "Companies now more than ever are realising the importance of simulation and the digital twin model. With VCS users can watch their parts come to life on their machine, leaving them confident that the intended design will match what is manufactured."

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 THE CAD/CAM EXPERTS

Digital twin and CAM automation capabilities at EMO'2019

Tebis, a specialist for CAD/CAM/MES and associated services for mechanical component, model, pattern, die and mould manufacturing, presented the latest developments and applications of digital twin and CAM automation with CNC process standardisation at EMO in Hannover.

With the combination of software, services and consulting, Tebis presented itself as a holistic solution provider. The highly automated CAD/CAM/MES system is being continuously renewed and developed for the growing needs of customers.

CNC machining safety and efficiency with digital twin technology

Customers' machines, tools and clamping devices are sophisticated and expensive. Fully utilising them and avoiding collisions and damages are critical for workshop operations. Tebis has been developing and offering the capabilities to allow customers to build digital twin models of these into Tebis CAM software. With digital twin models, Tebis completely simulates and checks NC programs against collisions to ensure the highest level of CNC machining safety. Different from other CAM packages, Tebis digital twin models are complete



mirrors of the physical machines, tools and clamping devices, including multiple machine heads, machine kinematics, tool change movements, toolpath links, machine control macros, etc. With all these simulated and checked in the virtual world, workshop managers and machine tool operators can

have the confidence to run the machining operations unattended, possibly overnight.

In addition, Tebis' MES solution ProLeiS provides customers with production planning and control tools. Machine and operation data on the shop floor can be acquired in real time and used for production planning and control. Managers can have a detailed overview of all manufacturing projects and operation status of all machines. With Tebis ProLeiS solution, customers can ensure delivery to their customers on time and cut costs.

CAM automation with process standardisation

Achieving consistent quality while ensuring CNC machining safety and efficiency is important to all customers. With CAM automation and CNC process standardisation, Tebis replaces traditional, repetitive manual programming steps by automatically accessing stored manufacturing data. The software evaluates the digital CAD part model and accesses structured images of the company's existing manufacturing environment and standardised manufacturing process data to calculate NC programs.

Tebis manufacturing data libraries include

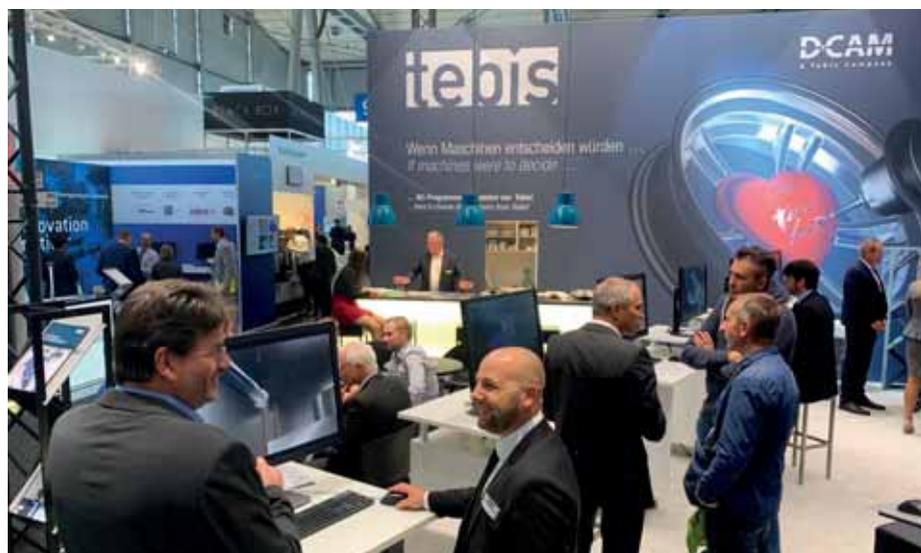


machine tools, cutting tools, machining parameters, machining features and machining process templates. All the information can be stored and managed across companywide computer network and possibly on the cloud. This allows the best machining practices to be shared among CAM CNC engineers. This is hugely beneficial to customers as this is very easy to use, and it reduces training time and relieves skills shortness.

NC automation with Tebis Automill

Tebis replaces traditional, repetitive manual programming steps by automatically accessing stored information: The software evaluates the digital CAD part model and accesses structured images of the company's existing manufacturing environment and produced manufacturing knowledge to calculate NC programs. Therefore, features and routings contain proven manufacturing knowledge.

The process library, in which Tebis brings together the digital twins, are all clamping devices in one environment. Based on the library, users quickly and easily define the clamping situation and can check it for



collision during the entire NC programming process.

Safety and planning in production

The digital twins of the machines, tools and clamping devices available in the company not only bring speed but also safety. Before NC processing, Tebis completely checks the NC programs for collisions with the CNC simulator. Thus, on the basis of the

virtualised manufacturing environment, only collision-tested NC programs come to the machine. Many customers also use the simulator as a planning tool with which they check in advance and prevent collisions.

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Okuma chooses ModuleWorks Hybrid CAM solution

Okuma has chosen the high-performance ModuleWorks Hybrid Machining component for its MU-V LASER EX Series of machines. The ModuleWorks software enables Okuma to offer fully automated additive and subtractive processes on a single machine for faster and more cost-effective manufacturing as well as repairing of parts.

ModuleWorks Hybrid Machining combines the industry proven ModuleWorks additive path planning and subtractive toolpath calculation components in a single software solution. Okuma and ModuleWorks worked in close cooperation to customise and optimise the software to utilise the full performance and potential of the Okuma MU-V LASER EX Series.

The fully automated solution comes with easy-to-use templates for fast parameterisation and job setup as well as integrated 3D simulation to verify the additive and subtractive toolpaths before machining. The advantages of the ModuleWorks software enable Okuma to offer simultaneous multi-layer Laser Metal

Deposition and use the full benefits of the flexible MU-V LASER EX Series to perform layering on geometrically complex shapes with steep walls. Sophisticated mathematical algorithms ensure optimal surface quality and decimate the amount of data to accelerate deposition and strengthen the overall machining process.

For subtractive machining and post processing, the ModuleWorks components empower the Okuma MU-V LASER EX Series with proven 5-axis and 3+2 axis milling cycles with support for all prevalent tools and holders. Advanced finishing features such as SWARF machining for side walls and flowline cutting for blade machining optimise the surface quality of the final product.

ModuleWorks is a leading software component provider for the CAD/CAM industry. With over 170 employees and 800-man years of software development, ModuleWorks' expertise in toolpath creation and simulation is recognised throughout the industry and its software components are already optimising the



performance and quality of over 500,000 installed seats of CAD/CAM software around the world. From standard products to exclusive development projects, the company works in close cooperation with you to bring your own vision of Industry 4.0 to life. Its comprehensive product portfolio and cutting-edge software components enable you to optimise your CAD/CAM solutions and connect to CNC/MTB systems to increase your competitiveness and help you get there faster.

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CMM provides racing accuracy

Motor Valley® UK, described as the “hub of leading technology” by the Motorsport Industry Association (MIA), is home to some of the most cutting-edge and precise performance engineering and manufacturing in the country.

Ideally placed in this region is Long Crendon-based, Good Fabrications Ltd or GoodFabs as they’re more widely known in the industry. A member of the Silverstone Technology Cluster (STC), over 75 percent of GoodFabs output is produced and supplied to Formula 1, with the other 25 percent manufactured for other racing categories including the World Rally Championships (WRC), Touring Cars and NASCAR.

Formed in 1982 by Steve Good, an ex-McLaren fabricator, for the past 37 years GoodFabs have earned an enviable, international reputation for designing, developing and manufacturing performance exhausts and manifolds for the world’s fastest machines at the very top levels of Motorsport. Each and every component on the car could mean the difference between winning and losing.

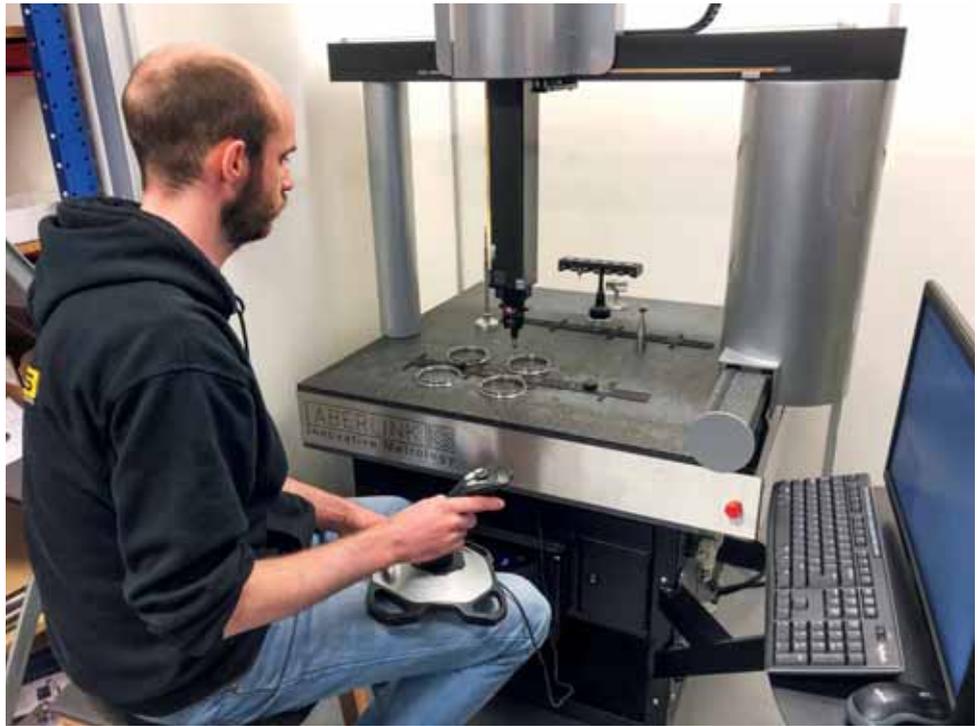
Working closely alongside race teams and engine builders alike, GoodFabs use Titanium, Inconel and other exotic high-end materials to produce bespoke and small batch parts using a combination of tube forming and pressing, tube bending, heat shielding, machining and fabrication.

In an industry where a quick turnaround on parts is a necessity, there’s little room to manoeuvre when such strict tolerances and accuracies need to be achieved. Customer requirements and expectations are high.

While already using an articulating arm for larger, less complex measurement routines, GoodFabs were prompted by customer requirements to seek out further, more accurate measurement solutions.

Paul Watson, process manager, explains: “A number of machined parts were subject to tighter and tighter tolerances due to the nature of the business and we needed an extra level of accuracy to meet requirements. Our articulating arm is fine for larger, more complete assemblies but we were not able to achieve the accuracy needed on much smaller components.

“For this reason, we decided to invest in a



CMM to ensure that parts were conforming to customer supplied drawings.”

Following a period of extensive research and a review of the available options on the market, GoodFabs attended a demonstration of Aberlink’s best-selling Axiom too CNC CMM at the headquarters in Gloucestershire.

The company was impressed by what it saw and so it placed an order for the highly-accurate Axiom too 600 CNC CMM complete with automatic indexing touch trigger probe and Aberlink’s industry standard, easy-to-use 3D measurement software, which the company offers free of any annual software subscription charges or maintenance fees.

It is now installed in a dedicated inspection room. Paul Watson continues: “The Axiom too CNC CMM and Aberlink 3D measurement software, with its graphical interface, is very easy to use. So much so that when our lead inspector was unfortunately unable to attend the training session, in just a few days he was able to pick up how to use the software from colleagues who did attend, an excellent demonstration of just how easy it is to use and how good the training was from Aberlink. In addition, due to the machine’s accuracy we can now measure components to much tighter tolerances.”

Paul Watson concludes on just how this investment will benefit GoodFabs moving forward and allow it to attract new business: “In general, if we think there’s a better service we can provide because there’s better software or technology available, then we’ll do that. We’ve invested heavily in the machining aspect of our company and the Axiom too CMM is another investment that will aid the business. We can develop and extend our machining capabilities because we know that the accuracies of what we produce is dead-on.

“The customer can design whatever they want, but achieving it isn’t always easy. The Axiom too CMM now allows us to highlight to prospective customers the tolerances that we can meet and, in the long-term, it’ll enable us to have more discussions about what we can produce. When we’ve talked to our existing customers about the CMM, they’ve seen the machine as a much welcome addition to our inspection capabilities.”

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UK launch of new Innovatest BIOS Brinell optical scanner

As the sole UK representative for Innovatest products, Bowers Group is pleased to announce the launch of the Innovatest BIOS Brinell optical scanner. This handheld optical scanning device can be easily connected to a standard laptop, tablet, or any device running a Windows 10 operating system and includes easy to install software providing an excellent way to measure Brinell indents in just a tenth of a second.

Martin Hawkins, UK sales manager for Bowers Group, says: "The Innovatest Brinell BIOS Scan system has been carefully designed to make the daily testing of Brinell indents faster, more accurate and more reliable. As all materials have different finishes; fast light adjustment is mandatory for Brinell indent measurement. The scroll wheel provides an ultra-fast way of experimenting with correct light setting, which can then be stored for the current application. The software supplied is easy to install and provides a fast and effective way to measure Brinell indents."

Suitable for Brinell indents of 10, 5, 2 and

1 mm, the BIOS features a camera and electronics built around a Telecentric lens with an adjustable direct LED light module. This enables the illumination of the shadowed areas around the indents, resulting in a crisp, high-resolution image.

Martin Hawkins continues: "The ability to quickly perform repeatable, high accuracy measurements is critical to maximise efficiency of Brinell measurements. The telecentric lens featured on the Innovatest BIOS Brinell optical scanner allows the highest possible accuracy to be achieved. Not only that, it's very easy to use; no special skills are required for operating the unit, meaning all operators can take advantage of the entire system."

The Innovatest BIOS Brinell optical scanner also allows results to be directly saved in a CSV file, which can be easily imported into MS applications such as Word and Excel for further static processing or reporting.

Innovatest has a fantastic reputation across the world as an innovative testing



instruments manufacturer, providing hardness testing solutions that suit both the customers' need and their budget. Manufacturing the majority of its high end and medium range hardness testers in The Netherlands, Innovatest's top quality products meet or exceed all applicable global standards such as ASTM, DIN-ISO, JIS, and GB, which is why Bowers Group is proud to represent Innovatest in the UK.

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Accessible, flexible advanced condition monitoring

SKF Enight ProCollect is a new portable vibration monitoring solution, designed to help companies adopt smart condition-based maintenance approaches, or for those seeking to extend their machine monitoring programs to a wider range of assets.

The solution incorporates an updated version of SKF's rugged QuickCollect hand-held sensor, together with SKF ProCollect, a totally new mobile app. Running on a standard iOS or Android device, ProCollect has been designed to simplify the collection, interpretation and communication of both operational and machine condition data. Furthermore, the new software links seamlessly to SKF Enight Centre, SKF's advanced, web-based monitoring platform.

Enight ProCollect is easy for non-specialists to use, allowing frontline operators and maintenance personnel to incorporate vibration monitoring tasks into everyday activities. For example, pre-programmed inspection routes can be downloaded from Enight Centre to a

ProCollect device, which will then guide the operator through the steps necessary to collect data. That data is then transferred automatically to the Enight Centre platform, where it can be analysed and visualised.

Despite its simplicity, Enight ProCollect doesn't compromise on the power of what it can do. Pre-programmed alarms can be used to help operators and maintenance staff to diagnose and fix common problems on the shop floor. The visualisation capabilities of the Enight Centre platform, meanwhile, allow companies to generate dashboards that provide an overview of plant performance.

It helps them to make better-informed maintenance decisions that deliver on their business objectives. Maintenance teams can use the platform's suite of advanced tools to spot trends, diagnose problems and conduct root-cause analyses. Users also have the option of a connection to SKF Remote Diagnostic Services, giving them



access to the company's global network of reliability experts.

Ownership of Enight ProCollect is as flexible as its use. Customers can opt to buy the solution outright or choose a subscription approach that provides all the hardware, software and support services they need for a fixed monthly fee.

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Apeks regulating quality with Mitutoyo

In the mid 1970s, two enterprising friends decided to combine their joint passion for diving and their knowledge of precision-engineering. Working at first in an archetypal location that has spawned some of the world's most successful business, a small domestic garage, the friends set about creating what have become some of the most respected diving regulators available.

Today the name Apeks, derived from a combination of letters from the founders' names, Ken Smith Ainscough and Eric Partington, has become a by-word for high-quality diving regulators. The company's early spirit of precision engineering and innovation continues, still based in the North of England, the company now operates from an impressive, purpose-built, design and manufacturing facility in Blackburn, Lancashire.

Every element of Apeks' regulators is designed and manufactured in-house. This remarkable level of autonomy gives the company total control over all of its R&D, production and quality functions and ensures that each of Apeks' regulators adhere precisely to design intent.

Given the vital function the company's diving regulators perform, reducing breathing gas to an ambient pressure and delivering it to the diver, absolute reliability is of paramount importance. Therefore, Apeks regulator's quality is assured by the painstaking in-process checks that are made at each stage of manufacture and also by the comprehensive final inspection routines the company's products undergo prior to dispatch.

Apeks' rigorous procedures comply with the highest standards under the European Quality Assurance System BS EN ISO 9001. In addition, the performance of the company's diving regulators has been tested by the world's leading authorities and they were the first such products to pass EN 250 and to be awarded the coveted CE mark.

The mainstay of Apeks' quality regime is its assortment of Mitutoyo profile projectors that are strategically situated throughout the



company's production facility and also in its QC department. As ever-growing global demand for Apeks' regulators had resulted in increased levels of production, the need for an additional profile projector recently led to the purchase of an advanced Mitutoyo PJA3010F-200 profile projector

The company's new vertical profile projector has a 200 x 100 mm XY range and a 380 mm x 250 mm table with built-in linear scales. The projector's easy-to-read digital counters are located near its 315 mm

diameter projection screen, whilst an accurate digital angle display facility eliminates the need to perform complex calculations.

The inspection data gathered by Apeks' assortment of Mitutoyo profile projectors is downloaded to Mitutoyo's MeasurLink software via the projectors' RS 232C outputs. MeasurLink links and manages the measuring results generated by Apeks' profile projectors into a common database of part information and statistical data. This data is shared across Apeks' entire manufacturing facility and is used to prompt corrective actions, for analysis purposes and for various reporting functions.

The feature rich, yet easy to use software provides Apeks with a safe and organised data warehousing system making quality related data available for viewing and examination by the company's production, engineering and managerial staff.

Simon Mercer, Apeks quality manager, explains: "Reflecting our commitment to safety, our investment in research and development and also our strict quality control regime, Apeks products consistently top independent performance tests throughout the world. The fact that we have total control over every aspect of our



manufacturing processes and quality control systems helps to make Apeks regulators the industry benchmark for quality and performance.

“Although we use a range of advanced material testing and inspection aids, we regard our collection of Mitutoyo profile projectors as our inspection ‘work-horses’. Our quality control staff use our profile projectors for tasks such as making regular in-process quality checks and for final inspection routines. In addition, our machine setters use them for duties such as checking the accuracy of first-off components before our machine operators continue a production run.

“Our Mitutoyo profile projectors are used to project the magnified silhouettes of our parts under inspection onto the projectors’ screens. This enables the dimensions and geometry of the parts under inspection to be precisely compared against pre-set tolerance limits. As our optical projectors are so easy to use and provide the levels of accuracy that we need, we ensure that our staff are skilled in their use.

“In addition to having the capacity and the precision specification to handle our

accurate components, it helps that our Mitutoyo projectors use non-contact inspection techniques. This is particularly useful when we are measuring components made from plastics, rubber and other deformable materials.

“As our projectors are able to instantly communicate their findings via Mitutoyo’s MeasurLink software to a common database, it helps us to quickly intervene when component features drift from nominal conditions. As the use of our Mitutoyo optical projectors and MeasurLink software has allowed us to refine our systems and reduce the time between the production of components and their inspection, we have been able to further reduce our already impressive scrap and rework levels.”

As a leading manufacturer of precision measuring equipment, Mitutoyo offers a range of innovative profile projectors that are available for assessing many types of workpiece. Profile projection techniques are particularly useful where a non-contact measurement method is deemed the most appropriate inspection approach. Each Mitutoyo instrument represents an excellent

investment in terms of productivity, versatility, quality of construction and service support. Mitutoyo’s latest generation of profile projectors feature a range of cutting-edge technologies, such as advanced digital read-outs and comprehensive analysis software, that provide excellent accuracy, functionality and ease of use.

Since 1980, Mitutoyo UK has earned a solid reputation by providing customers with the best products, the best service and the widest range of measurement solutions available anywhere in the world. Long-established links with national standards organisations, investing in the best people and the finest facilities and a belief in building strong customer relationships are the fundamentals that ensures the company remains at the forefront of measurement technology.

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Quality investment for McGreevy Engineering

Precision engineering company McGreevy Engineering has continued to invest in the organisation with the purchase of a high-performance Mitutoyo CRYSTA-Apex S CNC Coordinate Measure Machine (CMM) that supports manufacturing operations and allows it to meet global standards for key products.

Additional training of employees has also taken place to ensure the high standards of quality for its growing aerospace customers is maintained as well as allowing them to offer new product in this sector.

The company holds the SC21 Bronze award as well as AS9100, which is designed specifically for the aviation, space and defence industries and promotes continuous improvement and ensures processes are accurate and consistent.

Aaron McGreevy, managing director of McGreevy Engineering, says: “This is a key investment for McGreevy Engineering and as we continue to grow, it is imperative that we invest in our people and new equipment. Having been to the Paris Air Show earlier this year and met with some of our current

key customers, I view this as the next significant step for our business.

“Quality is such an important aspect in precision engineering and in particular the aerospace sector. We’ve reorganised the factory along with adding some internal structures to tailor the building for the CMM to ensure the right conditions are provided. Our continuing commitment to the quality of output is illustrated by this recent installation. I’m delighted with the end result and that we are up and running and making a significant difference to our customers.”

McGreevy Engineering specialises in precision machined components, 5-axis milling and multi axis turn milling.

A second-generation business, established in 1980, McGreevy Engineering specialises in precision machined components, with internal engineering capabilities to support 5-axis milling and multi axis turn mill machine tools.

With robust planning and scheduling procedures, McGreevy Engineering utilises advanced manufacturing technologies in a lean environment, producing products from



materials including titanium, Inconel, duplex and aluminium.

SC21 and AS9100 certified, McGreevy Engineering has the capability to support all engineering needs from rapid response to one offs and prototypes, guaranteeing complete customer support, accompanied by the benefits of continual company investment.

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Team FC deliver on customer's demands

A one stop shop for all fibre laser flat and fibre laser tube cutting requirements

FC Laser, the fastest growing precision laser cutting company in the UK, has made a further addition to its FC team. The LT7 fibre lasertube is the most complete and advanced lasertube available in the market today.

Virtually any shape can be machined on to both ends of a tube and along its length.

Entire traditional machining operations can now be laser cut, removing from the manufacturing process sawing, deburring, punching, notching, drilling and milling. Eliminating these multiple, traditional machining operations prevents potential accumulative errors associated with consecutive manufacturing processes and all of the associated handling and touch-time costs.

One of the key benefits of laser cutting tube is the savings users receive in direct labour and reductions in cycle times, 70 percent process time savings are not uncommon.

Also, the freedom from the restrictions of traditional machining processes, allows new levels of creativity and innovation which can revolutionise all aspects of production, from design, manufacture through to final assembly.

By providing a high-technology but cost effective solution, the LT7 fibre lasertube



simplifies production planning and job routing. Due to its inherent accuracy, it produces genuine production benefits in simplifying or eliminating welding jigs or even the welding process all together. The LT7 fibre lasertube requires no hard tooling and, if STEP files are provided, programming to cutting takes only a few minutes. This creates instant benefits when

producing prototypes or making design enhancements, as costs and delivery timescales are reduced.

The LT7 allows automatic tube changes while achieving maximum accuracy, adapting the cutting head to the real working conditions of the tube quality.

Quality is the most important factor at FC Laser. The focus is to ensure delivery of a



FC Laser - specialists in fibre laser tube cutting

solution that meets the customers' needs. This covers quick and on time deliveries, technical support to help reduce or even eliminate additional machining and welding processes and dedicated account management to ensure the requirements are always achieved.

Some of the key features and benefits of the FC Laser facility include:

- **Fibre technology** that offers the most productive and cost effective laser cutting solution compared to CO₂

- **Active Scan** compensates for potential errors induced by distorted tubes

- **Active Speed** adjusts parameters in real time according to the conditions of the tube creating superior cut quality

- **Active Marking** allows etching of part numbers, ID, order numbers or anything else for traceability

- **Active Weld** detection requires no mechanical adjustment. The LT7 detects weld positions using optical sensors and sets up accordingly.

Once you have experienced and seen the benefits of our lasertube solutions, you will never go back to traditionally sawn and machined tube production. The LT7 fibre lasertube maximises productivity and accuracy to deliver truly cost effective solutions.

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Excellence is the FC standard

The latest addition to the FC team, the LT7 fiber lasertube is the most complete and advanced lasertube available in the market today. As demanded by our customers' we aim to deliver a 'one stop shop' with the highest levels of attention to detail and service. We provide a high-technology, cost effective solution to traditional machining processes, satisfying demand by revolutionising all aspects of the tube fabricating process from design, manufacture through to final assembly.

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Some of the key features and benefits of the LT7

- ✓ **Fibre technology** offers the most productive and cost effective laser cutting solution compared to CO₂
- ✓ **Active Scan** compensates for potential errors induced by distorted tubes
- ✓ **Active Speed** adjusts parameters in real time according to the conditions of the tube creating superior cut quality
- ✓ **Active Marking** allows etching of part numbers, ID, order numbers or anything else for traceability
- ✓ **Active Weld** detection requires no mechanical adjustment. The LT7 detects weld positions using optical sensors and sets up accordingly.

With all these benefits its easy to see why excellence is the FC standard.

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TRUMPF machines help Purex bring fabrication in-house

Purex, which can boast over 30 years of supplying fume extraction systems unlike any other in the industry, has adorned its new production facility in Brough near Hull with a new TRUMPF TruLaser 2030 fiber 4 kW laser cutter, with BrightLine technology and two TRUMPF TruBend 3066 bending machines. The major investment came about after the company decided to rethink its previous outsourcing strategy for stainless steel enclosures and bring fabrication in-house.

The beauty of Purex fume extraction systems is that they recycle clean air back into the workplace after passing through an integral patented filter. As a result, the systems can be moved around as and when production lines are reconfigured. This concept contrasts greatly to a conventional fume extraction system, which is normally fixed into position as it needs to vent air externally. Moreover, no pipework or ducting is required with a Purex system, while the environment is also a clear beneficiary.

Typical applications for the Purex range of intelligent fume extraction units include food production lines, laser marking and cutting processes, electronics manufacturing plants and dental lab manufacturing facilities, to list but a few. Alongside a strong domestic market, the company exports worldwide. Indeed, a US subsidiary was opened in 2006.

Although operational since 1985, Purex received a major boost when it was acquired by Andy Easey and Trefor Jones in 2015.

"When we bought the company, there were 41 employees helping to generate a turnover of circa £8 million," says Andy Easey. "However, in just four years, we've grown to 68 people and will almost certainly turn over £12 million in 2019."

There are many reasons for this impressive growth spurt, not least investment in the sales team and more presence at industry trade shows. However, a big factor is the decision of Purex to invest in its own manufacturing capacity, with the company opening a new fabrication facility at Brough in 2018.

"For the past 12 years Purex had been

sourcing all of its stainless-steel cabinets from a supplier in Italy," explains Andy Easey. "However, with the company's growth in recent times, our supplier struggled to keep pace. We therefore decided to visit a number of subcontract laser-cutting services based here in the UK but could not find any that could match our

cabinets on the machine, we've probably only taken about 25 percent of the business from Italy," explains Andy Easey. "The reason is that we've found the machine to be excellent for new product development, which has opened up a number of new markets that are now taking up capacity."

Previously, Purex would design a new



existing supplier on price. We subsequently decided to take another route and, after a risk assessment, borrowed £1 million to open our own fabrication plant."

The next step for Purex was to source some suitable machines, namely a laser cutter and two bending machines.

Andy Easey continues: "I had worked with TRUMPF machines around 20 years ago and always remember their reliability. We did look at other suppliers but I had it set in my mind that the machines would be TRUMPF. This was confirmed when we made contact. They were very professional from the outset, providing a lot of good advice without any sales pressure. We visited the TRUMPF showroom in Luton and decided on the TruLaser 2030 4kW laser cutter.

The capability and versatility of the new TRUMPF TruLaser meant it has fulfilled a slightly different role than was originally anticipated.

"Although we are running stainless steel

product in the UK, send it to Italy for producing a sample, which would then be sent back to the UK for review, before being returned to Italy for another prototype and so on. The process in its entirety could take months.

Andy Easey says: "Contrast this to using the TRUMPF TruLaser and the difference is plain to see. We design it, make it, correct it and make it again. Our time to market is now just two weeks for a typical new product introduction, which is a huge competitive advantage. The laser is very easy to use, exceptionally fast and produces high-quality finishes."

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ADL: automatic loading and unloading onto a table



MTW: modular mini-towers

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Laser Sharp 2060

The new large-scale laser machine by Prima Power for heavy duty applications

The new Laser Sharp 2060 completes the Prima Power 2D laser line with a machine featuring a large work area, 6,070 x 2,045 x 120 mm with a conventional, robust construction made for heavy-duty environments. The machine design features a carbon steel, electro welded structure and a highly rigid and lightweight aluminium extrusion gantry carriage. It is perfect for industries requiring the processing of thick materials and medium to large size sheet metal.

The Laser Sharp can be equipped with fibre lasers up to 10 kW, providing a powerfully productive solution with best-in-class piercing time of less than one second.

This powerful performance does not compromise efficiency and profitability as the Laser Sharp offers low operating costs and reduced maintenance, thus combining high productivity with an excellent price/performance ratio.

The cost-effectiveness of the machine is further improved through a quick installation, without the need for special foundations and a footprint that is the smallest possible in respect of the machine capacity.

The new machine is sharp by definition on every material. The Laser Sharp fibre laser head is designed and developed by Prima Power for excellent cutting quality and dynamics on all materials and thicknesses, thanks to adaptive optics for the automatic management of the focal position and diameter. The certified mechanical structure



of the laser head meets the demands of even the highest cutting pressures, while the sealed and protected casing endures the harshest of environments.

Versatility is one of the Laser Sharp's key strengths. Suitable for medium and large size sheet metals and medium to high thickness materials, the machine covers a wide range of applications. Flexibly productive, the Laser Sharp can also include five suites of options to adapt it to differing applications and production patterns such as thin or thick sheet metal processing, intensive production rates and high accuracy demands. With SMART Cut, MAX Cut, NIGHT Cut and CONTROL Cut, the Laser Sharp is always tailored to the users' requirements.

Ease-of-use is a must in today's working environments. Integrated into the machine is the Group's own, Prima Electro, Open Laser 2D CNC control and the Tulus® Laser 2D HMI, keys to seamless, user-friendly



system operation. The optimised motion algorithms, dedicated to laser processing and embedded into the proprietary CNC, ensure that the Laser Sharp is highly accurate and repeatable in both cutting and laser head positioning.

As with all Prima Power products, the Laser Sharp is compliant with Industry 4.0 guidelines, helping Prima Power customers turn production sites into smart factories. This productive and reliable machine interacts with the factory and the whole enterprise, giving customers the ability to remotely monitor and control the production process for the highest efficiency.

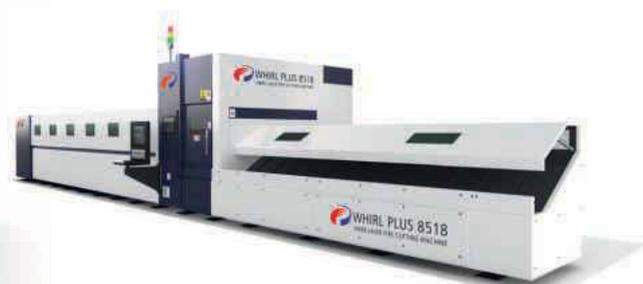
With this new addition to its product range, Prima Power can now better satisfy its customers' needs in respect of medium and large-sized sheet metals with a tough, productive, accurate and affordable solution, targeted in particular towards heavy-duty industries.

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50th anniversary finds gritter manufacturer going from strength to strength

If you find yourself driving behind a gritter or salt spreader in the UK this winter, there is an 80 percent chance it was bought or hired from Econ Engineering by the local council or highways contractor. The company is the largest British manufacturer of such vehicles, producing 360 units per year at its 88,000 sq ft factory, which opened in 1980 on Boroughbridge Road in Ripon, North Yorkshire. Additionally, it operates a growing hire fleet of currently more than 800 units which has boosted annual turnover to over £34 million, making the firm a major contributor to the local economy.

In fact, in its 50th year, Econ is experiencing an unprecedented order book, partly fuelled by recent harsher winters, but also due to the multibody products that allow customers to utilise one chassis for multiple tasks, such as road repair as well as winter maintenance, making the investment usable throughout the year.

The 220-employee company's dominance in the market is down to the premium quality of its products, with all design and manufacture carried out in-house including painting of components. Swiss supplier of sheet metal processing machinery to the business, Bystronic, is proud to have played a part in helping Econ, for nearly one-third of its 50-year existence, to maintain the high level of component accuracy that underpins its reputation for top quality.

The initial credit for this success story goes to the late Bill Lupton, who single-handedly started a business towards the end of the 1950s in a barn on his family's farm to make flail mowers and hedge trimmers to cut verges and hedgerows more efficiently. Exceptionally cold and freezing weather during the winter of 1962/63 brought England to a standstill, with many



being cut off for weeks. It inspired him to put his mind to developing the first salt spreading vehicle that would keep the country moving and the wheels of industry turning.

To manufacture them, he started Econ Engineering in the autumn of 1969 on an old brewery site in Ripon. By then, the M1 motorway had opened as well as sections of the M2, M4 and M6 and local councils, notably Lancashire and Westmorland, were expressing considerable interest in winter maintenance operations such as salt spreading and gritting to make driving safer.

Fast-forward 34 years and 2003 saw the second generation of Luptons, Jonathan and Andrew, take over running the company. They were instrumental in developing contract hire for gritters and snowploughs at a time when public spending cuts were making new equipment purchase difficult. Underlining their commitment to building up this side of the business, in 2005 they increased the fleet size through the acquisition of a major competitor, Municipal Hire Services.

It was in the early 2000s that the first Bystronic laser machine replaced a turret punch press and a plasma profile cutter for processing the majority of components made from mild steel plates. In addition to being used in the manufacture of gritting and salt spreading equipment, the

components also find their way into snowploughs as well as bodies for highway maintenance and road patching that Econ mounts onto lorry chassis, often Mercedes and DAF, supplied to clients' specification.

The laser machine, a ByStar 4020 with a 4 kW CO₂ power source supplied by Bystronic UK, greatly increased production efficiency and component accuracy. Sheet metal up to 4 m x 2 m could be processed on the machine, but its 4.4 kW and then 6 kW successors were able to accept sheet up to 6.5 m long by nominally 2 m wide but in practice use 1,830 mm wide stock. It is because Econ's sheet is cut from coil produced in Europe to meet the company's required steel specifications and that is the maximum size readily available in the UK. Larger body panels can be produced without welding and the productivity of smaller components is boosted by the ability to nest and cut more parts in one sheet, at the same time reducing the amount of wasted material in the skeleton.

The current laser machine, which was installed in 2014, works 24/7 processing up to 35 tonnes of steel a week into any of 87,000 different components produced in batch sizes ranging from 5- to 30-off and to an accuracy in some cases down to ±0.5 mm. With such a large variety of part numbers, extensive use is made of modern MRP software as well as colour coding of



components on the shop floor according to their material type, thickness and product type.

Bystronic's own Bysoft off-line programming software automatically nests the components for maximum sheet utilisation. It then produces the cutting plans, in this case up to 14 days in advance of scheduled production, to assist ordering of material, and monitors the manufacturing processes in real time. The effectiveness of these procedures is evidenced by an above-average Overall Equipment Effectiveness (OEE) of 63 percent, representing the proportion of time the laser is actually cutting metal.

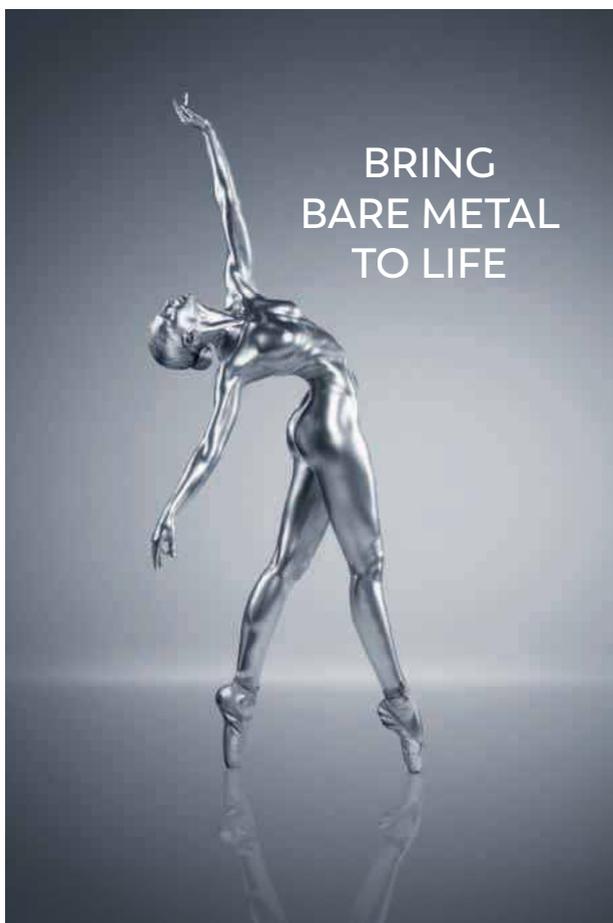
More than 70 percent of the output from the laser machine is folded. The press operators create folding programs for the three Bystronic press brakes on site directly at the machine controls. Two of the machines, installed around a decade ago and rated at 320 tonnes / 4.1 m and 150 tonnes / 3.1 m, are positioned side by side. They are used either independently or in tandem for bending very large components. In use also is an Xpert 40 tonne / 1 m press brake, which arrived in 2018 for bending smaller parts more efficiently and hence cost effectively. It can easily be relocated within the factory to where it is most needed.

Other equipment in use from the Swiss



manufacturer are a VR 10x4000 jobbing guillotine and, for deburring components, a belt grinder from German firm Weber, for which Bystronic acts as UK sales agent. The latter machine is used for removing sharp edges from laser-cut components and to descale them ready for shot blasting and painting. Every item of production equipment in the metal preparation area except for the sawing machines has been supplied by Bystronic.

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A 6 kW source to compete in all categories

“Over the years, the L5 has undergone continuous improvement,” states Pierandrea Bello, Salvagnini product manager. “This year it will be on show at Blechexpo with two important new features: the 6 kW high power density source and the compass system with an advanced, completely re-designed carbon fibre structure. These are particularly significant features, on show in Germany for the first time.”

The source completes Salvagnini’s range of 6 kW solutions. It is a major new feature, as when combined with the characteristics typical of the L5, it enhances its performance, guaranteeing better results on medium-thin materials, even compared to sources with higher power.

Pierandrea Bello continues: “This source offers a series of benefits compared to the previous one. The first and most obvious is that we have a 6 kW L5 available. The second, which derives exclusively from the source, is that we can increase our cutting speed over the widest range of applications of the L5, in other words medium-thin thicknesses, up to 6 mm. The third, linked to the specifications of the L5, is that thanks to its high cutting speed we can significantly improve cutting accelerations on thicknesses up to 4 mm. but that’s not all. The data we have gathered indicates that this new source will achieve performance typical of solutions with higher power levels. This occurs without any negative effects on performance with medium-high thicknesses due, also, to the contribution of the new

thunder nozzles developed internally to increase performance and quality when cutting thicker material under nitrogen.”

The release of the new compass system with advanced carbon fibre structure, on the other hand, follows that of the new trajectory planner and helps to further enhance the advantages obtained by the new source. The greater dynamics on medium-thin thicknesses do not affect the excellent precision of the L5 and, indeed, even improves performance thanks to the higher speeds achieved in rapid movements, which translates into an increase in productivity of up to almost 10 percent, depending on the type of nesting.

The system on show in Stuttgart also includes some technical updates which make the L5 even more efficient. The most interesting new feature is the new APM option, a compact, turn-key solution for cutting with compressed air: connected directly to the factory pneumatic supply. APM normalises the pressure, filtering and drying values of the compressed air, optimising it for cutting with air. Combined with the speed of the new 6 kW source, APM is used to cut a wide range of materials with air, maintaining a very high quality at much lower costs than conventional cutting with nitrogen. For example, on a 3 mm thick sheet of stainless steel, with a very similar cutting quality, it is possible to save over 10 €/h, of course depending on the cost of nitrogen.

The L5 is also equipped with new features.

The new Sheet Vision System (SVS) option allows customers to reuse the classic sheet metal offcuts that often populate workshops, creating a dxf to be used as the starting format for nesting new parts to be cut directly on the machine. The new and innovative nesting algorithms ensure shorter processing times, more orderly nesting diagrams and a better use of material, guaranteeing savings of between five percent and 10 percent. Finally, the Artificial Vision System (AVS) allows the edges of the workpiece to be aligned quickly or the possibility of referencing any machining already present on the sheet, without restrictions on shape.

The Salvagnini Group designs, builds and sells flexible systems and machines for processing sheet metal. Thanks to its global presence, the Group offers direct customer service in 35 countries around the world.

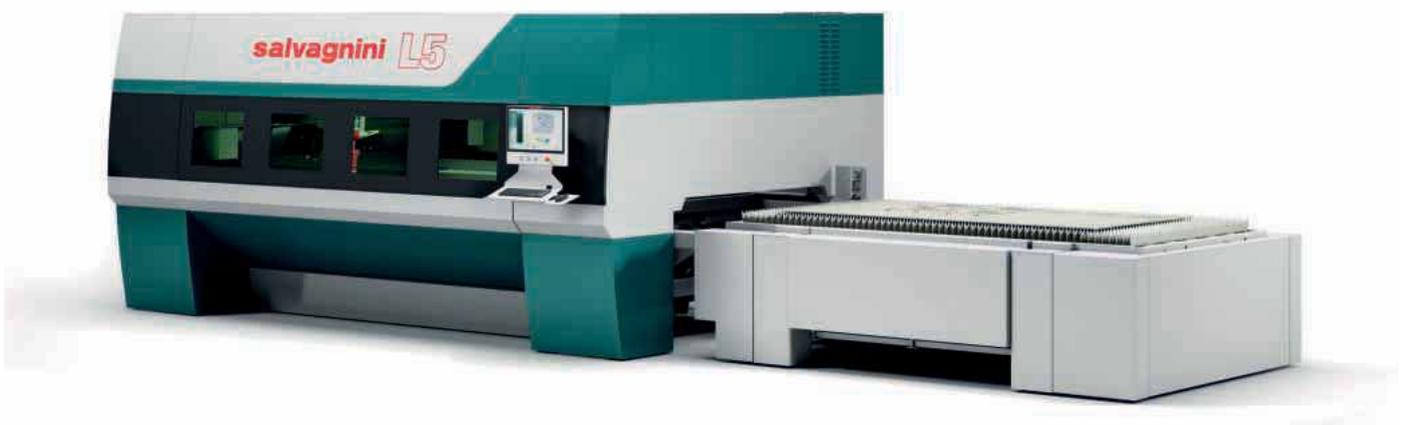
Innovation, competency, service. Three words that describe Salvagnini’s activity in the field of flexible automation and industrial machinery for processing sheet metal. The Salvagnini Group was designing, manufacturing, selling and servicing up-to-the-minute modular and flexible high-performance machinery and systems as far back as 1963. As a result, the company is able to offer the customers of today highly optimised and customised solutions.

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Enhanced stainless steel and aluminium processing

AMADA's new VENTIS-3015AJ is the first fibre laser cutting machine to feature the company's Locus Beam Control (LBC) technology, which improves both processing quality and productivity in stainless steel and aluminium. It works in combination with a newly developed, high-brightness, single diode module 4 kW fibre-laser oscillator

In conventional fibre laser cutting systems, energy density reduces as material thickness increases, leading to a lack of efficiency and the need for defocussing the beam. Conversely, the use of LBC Technology, which is a world first for the laser-cutting market, offers flexible beam pattern control matched to each application, while retaining high-efficiency cutting and high energy density. Defocussing is therefore no longer required. In short, LBC Technology can freely manipulate the laser beam to create an infinite number of locus patterns that are advantageous to cutting performance.

For manufacturers of conventional fibre-laser systems, the only way to negate

the loss of energy density is to increase the power output of the laser oscillator, but this comes at a cost, both in terms of purchase price and greater electricity consumption. In contrast the new VENTIS, with its specially developed, single diode module 4 kW oscillator and LBC technology, can reduce electricity bills by 30 percent.

LBC Technology equipped VENTIS-3015AJ has three primary functions: Productivity mode, Quality mode and Kerf-Control mode.

In Productivity mode, users can realise a significant improvement in throughput when cutting stainless steel and aluminium with nitrogen. For instance, when processing stainless steel, the VENTIS with LBC technology will prove twice as fast as using a conventional 4 kW fibre laser cutting machine, while aluminium will be 2-3 times faster. These performance levels can, reduce processing costs by up to 75 percent in some instances.

Quality mode, as the name suggests, improves surface roughness and resultant cross levels. Cut quality is assured by



reducing surface roughness by approximately 50 percent when compared with a conventional machine, while dross is minimised to less than 10 µm.

Finally, Kerf Control mode enables long-term stable processing during automated system operation. By controlling the locus beam, the kerf width can be controlled to 2.3 times wider than general fibre lasers.

Offering 3,070 x 1,550 x 100 mm in the X, Y and Z axes respectively, the new AMADA VENTIS is powered by the company's proprietary AMNC 3i control.

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Lantek and Danobatgroup develop expert software for the automotive sector

Especially designed for cutting processes in the automotive industry, new software makes it faster, more agile and more profitable to process pre-stamping formats (blanking).

The automotive industry, a highly automated sector in which technologies play a key role, is undergoing a new revolution. With the Industry 4.0 phenomenon and the arrival of smart cars, technological integration is no longer just an option for this sector and the companies supplying it, it is fundamental for survival. To maintain profitable, dynamic and flexible production, it is essential to be committed to innovation and to adopt new digital tools, as developed by Lantek and Danobatgroup.

Starting from the precept that digitalisation is the perfect moment in time for a complete change in the production processes in the automotive sector, Lantek and Danobatgroup, through their sheet metal transformation division, have worked together on developing software for processing pre-blanking formats that is specially designed for cutting processes in the automotive sector.

The objective of this collaboration is twofold: to solve the problems inherent to the sheet metal industry to achieve more efficient, competitive and flexible production whilst maintaining the highest quality levels; so that Lantek and Danobatgroup can reinforce their

positioning in the applications environment for specific sectors, such as the automotive industry, while helping customers in their transformation strategy towards becoming modern and intelligent companies.

Based on this collaboration, Danobatgroup customers will have Lantek software on their coil-fed laser blanking lines and all their machines. Its experience in the sheet metal industry will allow end customers to optimise processes and obtain the greatest return on machinery and software investments.

What is blanking and how does it work?

Blanking or metal stamping technology consists of a machining process where the sheet is cut using presses and specific cutting dies to produce certain metal parts.

The Lantek and Danobatgroup's blanking system application will be installed on all DANOBAT coil laser cutting lines. These lines have an unwinder that directs the sheet from the reel to a leveler, passing through feeder rollers to a cutting zone where one or more laser cutting heads make the cuts according to the programmed shape. Once cut, the format automatically goes to a stacker.

These lines normally process a large number of shapes and materials in steel or aluminum and increasingly in series or runs that need to be adapted to several configurations for the same car model. This

means that there are a very large number of dies to be managed. The plants must therefore have a lot of space for storing these dies.

This laser blanking system application helps to cut the pieces automatically and continuously, minimising the costs resulting from the investment in the press and dies and from adapting the building (pits, storage areas, special foundations, etc.). Costs are also significantly improved due to the time it takes to change the format of the pieces. It also helps to help reduce energy consumption compared with other alternatives and increases efficiency and flexibility levels while maintaining the highest quality levels.

Its use in the automotive industry

The new technological challenges that the automotive sector is facing, the need to have business alliances, the demand for shorter, customised and sustainable production cycles, optimisation, manufacturing tracking and the use of materials such as aluminum and new cutting and forming technologies are some of the trends for which solutions are required. Lantek and Danobatgroup have hence aligned their business strategy with an innovative vision to find the technical solutions that best suit the automotive industry, incorporating state-of-the-art technology and specialised software.

In addition to the cost benefits mentioned above, the laser cutting machine fed from the DANOBAT coil now offers multiple advantages derived from the use of the metal coil, especially valuable for a sector as demanding as the automotive sector, with significant savings on raw material due to greater use of sheet metal, constant production rates and a lower cost per piece. This new generation of equipment is a great step forward in parts production and standardising processes, as well as giving the highest degrees of flexibility for producing blanks.

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Rhodes Interform is flying high with helicopter machinery refurbishment contract

Rhodes Interform, a specialist in bespoke composite and metal forming machinery and part of Group Rhodes, based in the UK, has been awarded a contract to refurbish equipment used in the manufacture of composite helicopter rotor blades. This includes six hot platen presses, up to 10 m long, which were originally built by John Shaw, now part of Group Rhodes.

The cylinder's hydraulic seals on the platen presses were becoming worn, which was affecting the performance of the equipment. The machines are used to manufacture tail rotor and main rotor blades for emergency air/sea rescue and civil helicopters.

The contract will see Rhodes Interform supply and re-fit all the main hydraulic seals for 30-cylinder assemblies, along with carrying out a complete overhaul of the six Oilgear-Towler hydraulic power units. These units had signs of internal leakage, which was shown by reduced press speeds and pressures. All valves and pumps will require

stripping down, re-sealing and re-setting. Following refurbishment, the presses will be easier to maintain and more accurate in operation. Rhodes Interform's team of technical engineers will take each press individually out of production over a three-week period, in order to minimise downtime.

Peter Anderton, technical director at Rhodes Interform, says: "The fact that these presses have performed well for 35 years is testament to the quality of their manufacture. We will utilise the skills of our production and technical teams to ensure all equipment replaced is to the highest standard and expect the customer to benefit from major production efficiencies as a result of this."

Rhodes Interform, part of Group Rhodes, is a global manufacturer and service provider of hot and cold forming equipment for metals and composites. The company is a specialist in superplastic forming and diffusion bonding for both the aerospace



and automotive industries and for which the business has previously won Queen's Awards for both innovation and international trade.

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BLM coil tube bender helps K Coolers meet new challenges

Environmental and lifestyle changes within the drinks industry have brought fresh challenges and increased business to Preston-based beer pump and cooler specialists K Coolers. The company was founded in 1979 to refurbish electric beer motors, pumps, working as second tier suppliers to the brewing industry. It's success, which saw it deliver an 85 percent repair yield on pumps, saw it being approached directly by the big brewers to look at providing a similar level of service for beer coolers located in pub cellars, as the repair yield on those from competitors was as low as 50 percent.

Applying the same processes to refurbishing beer coolers as it used on the pumps, K Coolers raised the repair yield up to 85 percent and the result was a significant increase in business that facilitated its relocation to its current 24 000 ft² premises in 2006. Now established as a Tier 1 supplier for refurbished products, K Coolers had to manage two major changes within the drinks industry, the first being environmental with the phasing out of certain refrigerants together with the rise in popularity of 'ice-cold' beers and lagers. Both these required changes to the stainless-steel coils that sit within the cooler, which in turn placed greater demands on K Coolers' existing tube bending capacity.

Lee Worden, managing director for K Coolers, says: "The new R290 refrigerant required different tubes so all of these

required replacing as a smaller bore was needed for the new gas to be effective. Standard 3.8 to 4.8-metre-long coils used for standard beers and lagers also needed to increase to 10 metres in length to create ice-cold beer delivery, the knock-on benefit being the elimination of under-counter chillers in pubs."

To meet demand, the decision was taken to invest in a BLM 4-Runner tube bending system fitted with a motorised coil feed.

Lee Worden continues: "Without investing in the BLM 4-Runner, we would struggle to maintain throughput. The assistance we got and continue to receive, from BLM both in the UK and in Italy, has been superb which meant that we were bending tube within a couple of days of the machine being put on the floor. The BLM 4-Runner will be used to produce the evaporator coils and other pipework for the refrigeration system on the new coolers, handling the increased demand with ease."

Capable of bending tube up to 12.7 mm diameter, the 4-Runner initially straightens tube prior to it being processed, then it can achieve fixed and variable left- and right-hand radii to form three-dimensional serpentine, making it ideal for parts such as coils found in the refrigeration, air conditioning and household appliance



sectors. These complex forms are easily created thanks to BLM's VGP3D programming software, which enables all bends to be optimised in real time with full 3D simulation allowing production feasibility and potential collisions to be checked prior to parts being produced.

The 4-Runner has been designed with environmental considerations in mind and is part of BLM's All Electric range, which typically delivers 80 percent energy savings over conventional hydraulic-based machines. It is also quieter and with no hydraulics and therefore a much cleaner operation of up to 11 axes is achieved. If required, the 4-Runner can be specified with end-forming modules.

The high yield of K Coolers on its pumps and cooler refurbishment didn't go unnoticed by the brewing industry, which is renowned for 'sweating' its assets and making items such as coolers last as long as possible. However, even with K Coolers' expertise there is still a requirement to replace around 15-20 percent of coolers when they fail. This raised the question from its brewery customer: 'can you produce new coolers?'

Lee Worden concludes: "This request came during the period of change in terms of refrigerants, but once the industry had standardised on R290 as the refrigerant for beer coolers, we produced a batch of 50 brand new coolers for test at one major brewer. These ran without problem and we have now been appointed as their preferred supplier for refurbished and new coolers."

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New ATEX-certified drills deliver both productivity and safety to workers in explosive environments

Chicago Pneumatic has launched its first two ranges of ATEX drills that feature unique chuck protection to lower the risk of sparks, increasing the safety of industrial maintenance operators in potentially explosive environments. Delivering high power and performance as well as peace of mind, the new and cost-effective CP1114R and CP1117 pneumatic drills are ATEX certified to Group II Category 2G/D*, for use in environments where flammable gases and dust may be present.



"Our customers in the oil and gas industries continually strive to improve productivity and reduce the risks of accident in the workplace," says Harald Odenman, product marketing manager at Chicago Pneumatic. "Our new CP1114R and CP1117 tools enable them to do just that. The exclusive protection on the rotating chuck prevents the drills from being a potential ignition source, therefore increasing safety levels."

Potentially explosive atmospheres are caused by the presence of flammable gases, mists or vapours, or by combustible dusts, and are typically found in oil and gas, chemical, mining, vehicle paint spraying shops, foundries, flour mills and timber works. Any source of spark in these environments could cause a potentially deadly explosion.

Harald Odenman continues: "If there is a risk, it is important for operators to understand what level of risk there is, and the corresponding ATEX zone they are operating in. Then, they can choose equipment, including power tools, that are certified for use in that zone."

The new ATEX CP1114R reversible drill is ideal for various applications including drilling, tapping, reaming, honing, and mixing. These drills feature an easy-to-operate forward and reverse switch and have exceptional durability capable of running for 800 hours before maintenance. As a result, they provide a long service life enabling users to reduce their maintenance schedule and associated costs significantly. The drills are available in two different speeds of 500 rpm and 2,600 rpm.

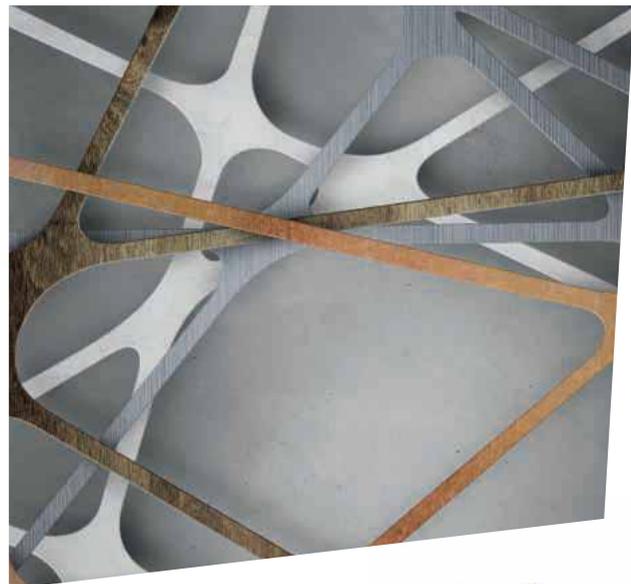
Chicago Pneumatic has also achieved ATEX certification for three models of its CP1117 drills, which deliver speeds of 500, 2,600 and 3,200 rpm for drilling different hole sizes. The CP1117 ATEX range is powerful and efficient, delivering 1 hp, 750 W. Moreover, these drills are designed with a strong and precise gearbox, allowing hard drilling with high durability.



The two ranges of ATEX drills provide the excellent level of ergonomics that users have come to expect from Chicago Pneumatic tools. Both ranges feature a comfortable grip, durable trigger and robust side handle to protect operators' wrists from torque effects, while delivering low vibration.

Additionally, the drills feature high quality Jacobs industrial chucks for accurate drilling. The motor is designed well in line with the chuck and drill bit, so the tool is precise and gives low level run out, lower than 0.10 mm for the CP1114R and under 0.15 mm for the CP1117, the value of which is measured at 25 mm from the chuck, allowing perfectly aligned drilling and tapping.

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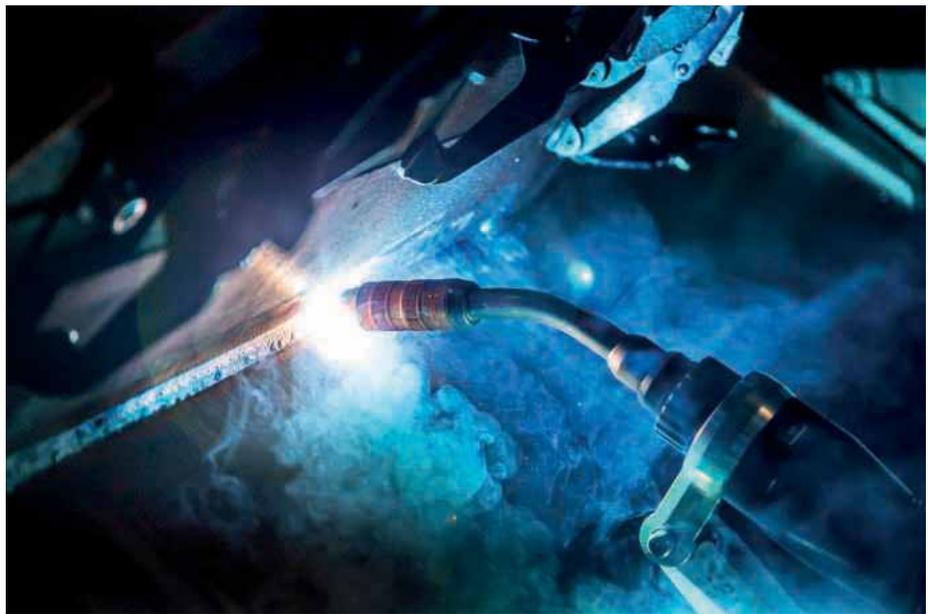
Long duty cycle and high level of productivity

The Fronius TPS 600i is a high-performance welding system that doesn't fail to impress, predominantly thanks to its long duty cycle. It can weld consistently at 500 A during mechanised operation. The TPS 600i delivers a high deposition rate and welding speed, reduced cycle times and improved productivity.

No matter whether you are dealing with crane booms, large construction machines, trucks, or rail vehicles, long weld seams and thick materials pose a challenge as far as joining technology is concerned. As is the case anywhere with large production quantities, it is important that the production line is always in operation in this context too. System availability, which is dependent on the duty cycle, is of crucial importance here. The technical design of the TPS 600i is fundamentally different from the TPS/i systems in lower power categories. With the more powerful power module, continuous operation is guaranteed for a long time. The TPS 600i achieves a 100 percent duty cycle at up to 500 A during mechanised operation, which is ideal for the combination of long seams and thick materials.

High performance power module takes care of reserves

The TPS 600i has a maximum welding current output of 600 A and allows for a



deposition rate of up to 13 kilograms per hour. The nature of the application determines whether this deposition rate gives rise to an increased seam volume or higher welding speed. If an even greater deposition rate is required, it is possible to combine two of the high-performance welding systems for tandem use. In all cases, the high output guarantees short cycle times and high levels of productivity. At the point at which other welding systems would have reached their limit, the TPS 600i still has reserves. Not to mention that the more

powerful power module means that the system is not susceptible to high ambient temperatures and it allows for reliable continuous operation and a long service life even when exposed to heat. Additional connections, to allow for the use of more powerful cooling units and an integrated SpeedNet distributor, for example, make it easier to incorporate the welding system into the production environment.

Flexibility, reproducibility and support

The TPS/i welding platform technology offers users plenty of benefits. The user can equip its welding system with process variants suited to a wide range of applications at any point. For instance, there is the option of adding LSC for extremely low welding spatter, such as in the case of steel applications, and there are various pulse characteristics too. This means that flexibility and cost efficiency are among the platform technology's benefits. The TPS/i boasts sophisticated control technology that brings about high-quality welding results and precise reproducibility. The system measures the actual data continuously throughout the welding process and control algorithms respond immediately to changes so as to maintain the desired target status. Everyday work is facilitated by the ease with which the TPS/i can be operated. The intuitive interface communicates with the user in 30 different languages, while the touch display is suitable for building sites and designed with



the user in mind. Plus, the international Fronius service network guarantees proximity to customers all around the world so that support can be provided in no time. This keeps downtime to a minimum in the event of any problems.

The latest in steel welding technology

Fronius Perfect Welding is broadening its product range. The welding technology specialist is launching a new version of its current power source platform, called the TPS/i Steel Edition. The Steel Edition has been optimised for manual steel welding and impresses with an attractive price/performance ratio. Users benefit from different characteristics for standard and pulse welding, as well as a WPS package containing welding procedure specifications that are certified in accordance with DIN EN 1090.

The TPS/i Steel Edition from Fronius is based on the current TPS/i power source platform. The welding systems have a modular design, can be adapted to individual requirements and boast impressive networkability and comprehensive communication functions. The powerful processors enable it to analyse and control welding processes with extreme precision. This ensures optimum results for a variety of welding tasks. The Steel Edition has been specially designed for manual steel welding. It has a variety of steel characteristics for both standard and pulsed arcs and users are therefore able to carry out welding tasks on steel workpieces from a material thickness of one millimetre and above.

A highlight of the new Steel Edition is the

Pulse Controlled Spray Arc (PCS) characteristic. This provides a particular advantage in the intermediate arc range; the smooth transition from a pulsed to a spray arc creates considerably less welding spatter, which in turn significantly reduces the amount of rework required. In addition, this characteristic features a focused arc that guarantees a deep penetration profile. It is particularly suited to small gaps, fillet welds and root passes.

Welding procedure specifications for standards-compliant work

The WPS package in the TPS/i Steel Edition contains welding procedure specifications for different steel grades, material thicknesses and filler metals. The WPS package eliminates the time-consuming and costly process of creating welding procedure specifications. This is particularly beneficial for companies that are required to comply with the European standard DIN EN 1090. Manufacturers of load-bearing steel constructions, for example, are obliged to use the specifications contained in the WPS package by the European standard.

In order to document the process and prove that the weld seams have been created in accordance with the certified welding procedure specifications, the TPS/i Steel Edition is also equipped with the WeldCube Light data recording and analysis system. The TPS/i records a wealth of information for each weld seam, such as time and duration and average values for current, voltage, wire speed, and power and saves them in the internal TPS/i data memory. Users can view the data using the TPS/i SmartManager and export it as a PDF.



This makes it easy to document all weld seams. Users can upgrade to even more comprehensive data management functions at any time with WeldCube Basic or WeldCube Premium.

Various power categories and a comprehensive range of accessories

The TPS/i Steel Edition is available in various power categories, ranging from 270 to 600 amperes. Numerous features ensure ease-of-use, such as a clear touch display that makes for simple and intuitive operation. The system can also be equipped with the Fronius JobMaster welding torch. The JobMaster welding torch displays the most important welding parameters on the handle of the welding torch and allows the user to adjust the settings on the handle itself. In addition, user management with cards or key fobs allows individual authorisations to be created, thus reducing errors caused by improper operation. The Steel Edition can also be combined with the K4 fume extraction torch, which removes welding fumes right at the point of origin. An optional dust filter makes it easier to use the welding system under harsh environmental conditions. The filter protects the system by preventing contaminants that hinder the function of the machine from entering the housing.

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ESAB launches first portable wire feeder with ip44 protection class rating for extreme durability

ESAB Welding & Cutting Products has introduced the Robust Feed Pro portable wire feeder, the first product in its category with an IP44 protection class rating, which means it is protected against water splashes from all directions, as well as solid objects larger than 1 mm.

The completely sealed Robust Feed Pro has a double-wall design with special impact zones made from a more flexible material to absorb more impact energy. All controls, power and gas connections are inside the case with a dedicated service cover, providing easy access to the electronics.

"The Robust Feed Pro is the only feeder on the market that you can leave outside in a heavy rain. A heat kit inside the units wards off condensation and keeps the wire dry," says Arne Lagerkvist, global product manager for heavy industry welding equipment at ESAB Welding and Cutting Products.

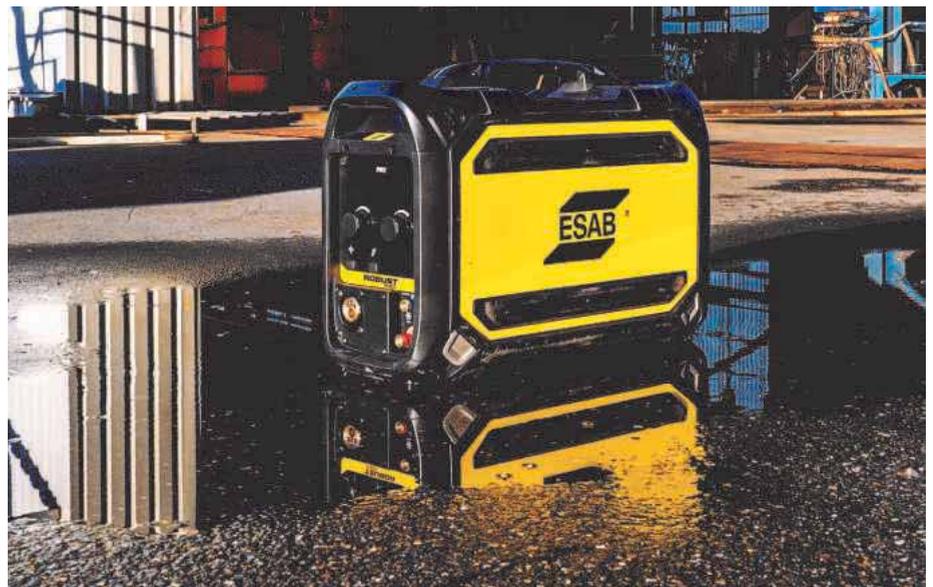
All cable connectors are protected inside of the feeder. There is a robust strain relief for the interconnection cables that makes sure there is no strain exerted on the cable connectors.

"You can drop this feeder and drag it through the mud by the cable and nothing happens. There is no strain or risk from shearing off a cable or hose connection," explains Arne Lagerkvist.

The Robust Feed Pro's extreme durability, portability and performance are particularly suitable for industrial fabrication operations such as marine and offshore, steel erection, structural steel fabrication, hard surfacing and cladding, repair and maintenance, pressure vessels and pipeline.

The Robust Feed Pro is compatible with ESAB's Warrior 500i, Warrior 400i and Warrior 400i MV power sources, allowing operators to adjust voltage and wire feed speed at the feeder. At outputs of 550, 500 and 400 amps, it has a duty cycle rating of 50, 60 and 100 percent, respectively.

The Robust Feed Pro accepts wire spools up to 300 mm, measures 595 x 250 x 430 mm and weighs 16.8 kg. It comes equipped with a new precision wire drive



system with enough power to handle up to 2.0 mm solid wire and 2.4 mm cored wire. ESAB minimised the footprint of the 4-roll drive stand while accommodating 38 mm drive rolls, which feature a quick-change design and is colour-coded for size clarity.

The system provides a large range of wire feed speeds (WFS), from 0.8 to 25.0 m/min, which offers the speeds necessary for solid wires as small as 0.6 mm solid wire and as large as 2.4 mm cored wire.

The front of the feeder has crisp, bright, large LED displays that are visible in strong sunlight, as well as backlit symbols that makes the unit easy to operate in dimly lit conditions. The front has control knobs for voltage and wire feed speed buttons for wire jog and gas purge. Inside of the unit there are controls for 2T or 4T operation, wire inch, crafter fill and a flow meter for setting accurate shielding gas flow rates.

The Robust Feed Pro also incorporates a switch to optimise arc termination for solid or cored wires. In the solid wire position, the switch activates Short Circuit Termination (SCT) technology, which sharpens the end of the solid MIG wire at the termination of a weld. By eliminating the ball that typically forms on the end of the wire, the feeder optimises the wire condition to promote a

positive arc start. SCT technology also eliminates the need for the operator to clip the wire. In an operation with numerous weld stops and starts, the time savings will quickly add up. To improve arc starts when using Flux-Cored or Metal-Cored wires, the cored wire setting enables burnback control.

The Robust Feed Pro has three comfortable handles, all are crane certified and two additional lifting points for best-in-class portability and manoeuvrability. The long top handle provides a way to lift the unit in its centre of gravity, with or without a spool inside. Handles on the front and back make it easier to move through manholes and smaller spaces.

For greater mobility, the Robust Feed Pro has an optional wheel kit that mounts on either the bottom or side of the feeder. To keep digital voltage and amperage meters oriented for easy viewing, the control panel can be rotated 90 degrees with the removal of two screws.

Arne Lagerkvist says: "Putting the wheel kit on the side of the feeder creates a low, flat profile that's more stable. In applications such as trailer manufacturing, the operator can easily move the feeder under low objects. In any setting, its low centre of

gravity enables pulling the feeder past obstacles and across uneven floors without risk of it tipping over."

ESAB redesigns psf mig/mag torches for enhanced industrial performance

The modernised PSF series of MIG/MAG welding torches from ESAB Welding & Cutting Products includes the new PSF 520W water-cooled torch. It features a 100 percent duty cycle rating at 500 A with both mixed gas and CO₂, to take on demanding jobs with wires up to 1.6 mm in diameter.

The PSF 520W features a dual-circuit cooling system that brings cooling water all the way to the seat of the gas nozzle, as well as to the conductor tube. The torch stays cooler and more comfortable in high-heat and high arc-on time applications, such as pulsed MIG welding and using large diameter Flux-Cored wires.

Additional benefits of reduced heat through dual-circuit cooling include better wire feedability, longer consumables life, a more stable arc, lower spatter adhesion, easier cleaning and less risk of shielding gas turbulence.

The PSF series also includes the PSF 420



W water-cooled torch, 100 percent duty cycle rating at 450 A and four gas-cooled models, the PSF 260, PSF 315, PSF 415 and PSF 515 with ratings from 225 A to 450 A at 60 percent duty cycle. Cable length options include 3, 4 and 5 m, while the front-end has been completely redesigned and the wear parts remain fully compatible with the time-proven heritage PSF wear parts. This

includes long-lasting contact tips made from a premium copper chromium zirconium alloy that resists wear so you can weld longer on a single tip.

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Profile projector ensures precision weld profiles for nuclear AMRC

The welding team at the Nuclear AMRC is using a Bathy SM300 GMR vertical profile projector to ensure the quality of weld profiles on sub-components used in nuclear applications.

The profile of a completed weld is very important to the performance of the weld in service. Welding profiles, therefore, must be thoroughly checked to identify any discontinuities through both visual and machine inspection, in order to evaluate acceptance or rejection depending on the acceptance criteria.

John Crossley, NDT technology lead at the Nuclear AMRC, says: "The accurate measurement of weld profiles is absolutely critical to the work we do. Everything we manufacture must meet the very highest levels of quality due to the extreme conditions that components are exposed to. Some of our welding work ends up as part of containment flasks at the Sellafield nuclear fuel reprocessing and nuclear decommissioning site, therefore accuracy and quality is very important."

Located on the Advanced Manufacturing Park (AMP) in South Yorkshire, on the border of Sheffield and Rotherham, The Nuclear Advanced Manufacturing Research Centre (Nuclear AMRC) helps UK manufacturers win work across the nuclear sector. The centre's manufacturing innovation capabilities and supply chain development services are open to all UK manufacturers, from specialist SMEs to top-tier OEMs.

A profile is taken of every weld using dental putty, which is manipulated to create an impression of the weld profile and then measured to ensure the quality of the surface finish that has been created during the welding process. The Nuclear AMRC uses a Bathy SM300 GMR vertical profile projector to ensure that the weld profiles meet the required criteria and surface finish requirements, which has a large travel range of 150 mm x 50 mm as standard, and a linear scale stage with 0.001 mm resolution.

John Crossley continues: "The Bathy profile projector is really easy-to-use and does exactly what we need it to. We trust it to deliver accurate, repeatable measurements, meaning that we can be confident in our quality procedures and pass this confidence onto our customers."

Typically imported via Bowers Shanghai, the Bathy SM300 GMR is a high-quality profile projector that is fully checked and calibrated to Bathy standards. It boasts a fine ground glass screen for clear image with cross hair lines and chart clips, built-in profile and surface illumination and a display-readout unit.

Each measurement is logged by the Nuclear AMRC and parameters for tolerances strictly met in order for the part to be accepted. If the profile of the weld is too convex or too concave it will be rejected. The weld profile must not exceed a certain level of concavity in order to be compliant with British Standards. For example, depressions in the welding joint can be a result of too much heat during the process and can make the pipe surface weak by putting additional stress on the join. It is, therefore, important that each welding profile is measured meticulously.

The welding team at the Nuclear AMRC develops advanced and innovative joining and cladding techniques tailored to the nuclear industry. Nuclear power plants require extremely high levels of



quality and assurances and many key components must be manufactured by joining together large sub-components in a way that is resistant to corrosion and that maintain material integrity under extreme conditions when in service.

Welding solutions are a complex task on this scale, with welded joints between thick-walled nuclear components often requiring over 100 weld passes using standard techniques. Then there is the repeated heating and cooling that the joint may be exposed to. This can have a significant effects on the properties of the material around the joint, potentially harming the long-term performance of the component.

The quality of joints and the surface thickness must be specified for fracture mechanic properties. Pipes are typically used as part of steam generator pipes and high-pressure feed line pipes, meaning they must meet tight tolerances in order to be deemed acceptable for use in these critical environments.

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Kemppi celebrates 70 years of innovation in welding technology

Finnish welding equipment manufacturer and software developer Kemppi has celebrated its 70th anniversary this year. Kemppi's many pioneering innovations have helped it grow from a small family business into a global welding technology leader that continues to drive the welding industry's development in the digital era and beyond. This year also marks the 100th birthday of the company's late founder, Martti Kemppi, who established the business with his brothers on 23rd May 1949. His hard work and courage to experiment led the company to revolutionise arc welding equipment in 1977 with the world's first welding power source to use inverter technology. Since then, Kemppi has continued to introduce industry-transforming innovations, including the world's first digital welding power source in 1993 and the first universal welding management software in 2014.

In addition to manual arc welding equipment and welding management software, Kemppi also provides welding safety gear and comprehensive automated

welding solutions to meet the growing needs around the world.

Today, Kemppi operates globally with subsidiaries in 17 countries and a partner network covering over 60 countries. It remains a privately-owned family company that is nowadays led by Martti Kemppi's grandchildren. Each generation has had its own part to play. While the first one grew the company and created a strong foundation, the second one expanded Kemppi abroad. The third generation is now building the company into a truly global corporation.

Kemppi's international growth has recently continued with the establishment of a new welding torch factory in Wuxi, China and through the acquisition of Italian welding torch manufacturer Trafimet Group S.P.A.

The 70th anniversary has been marked at customer events, organised by the company and its subsidiaries around the world, during the year.

Martti Kemppi was a man of many skills



with an entrepreneurial attitude. He encouraged experimenting without fear of failing, as he trusted that was the only way to create something new. Kemppi's foreign trade started in the 1950s just a few years after the establishment of the company. Internationalisation accelerated even further when Martti Kemppi's children Hannu Kemppi, Eija Vartiainen and Jouko Kemppi took the lead in the 1980s.

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AWS3 resistance welding system

Amada Miyachi Europe has announced the availability of the AWS3 Active Welding System 3, an integrated resistance welding solution that provides process control, monitoring and quality analysis. Available in either servo-motorised or pneumatic versions, the AWS3 can be used alone as a benchtop system or easily integrated into a production line.

The AWS3 Servo Motorised Active Welding System is available in a basic or an advanced version, with built-in remote services capabilities and can be combined with motor and welding controls. Featuring modular components that offer maximum flexibility, this solution is ideal for use in resistance welding of connectors, switches, cables, engine components, dashboard electronics and lighting components, as well as batteries, solar cells, and medical components.

The AWS3 facilitates integrated process control of all electrical and mechanical parameters, including current, voltage, power, time, force, velocity and position.

These systems feature an operating panel, a welding control, a motor control and one or two weld heads or weld pincers combined into one premium system that enables quick and precise parameter settings. Six adaptive process controls are available for duty cycle, closing time, squeeze time, weld force, process tools and parts conditioning.

Also available in basic or advanced configuration, the AWS3 Pneumatic Active Welding System includes an ISQ20 inverter, which controls pneumatic weld heads, pneumatic pincers, or compacting units. It offers automatic calculation and monitoring of critical values, programming of weld power and weld force profiles, as well as static and dynamic process monitoring. Displacement and force monitoring is available as an extra feature in the advanced configuration.

Both AWS3 versions feature an easy-to-use, well-designed, and intuitive multi-lingual user interface with an interactive user guide. The option to capture data on board or on a USB drive for



storing parameters, system configuration, data logging, screenshots and more, makes the system even more user-friendly.

Remote services allow customers to control multiple devices on-site and enable Amada Miyachi Europe experts to perform maintenance and provide technical service from a distance, minimising maintenance cost and ensuring maximum uptime.

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KEMPER extends its CleanAirTower series

KEMPER has expanded its CleanAirTower series, especially for air pollution control for sporadic welding. With the two CleanAirTower SF 5000 and SF 9000 models, the manufacturer of extraction units and filter systems has launched two general ventilation systems with storage filters into the market. Thanks to Cloud connectivity on the KEMPER Connect portal, all parameters can be monitored from anywhere at any time. KEMPER recommends the systems as a supplement to source extraction.

“Clean hall air for all staff in the entire production area is a real benefit for employers in the context of the shortage of skilled workers,” says Björn Kemper, CEO of KEMPER GmbH. “General ventilation systems as a supplement to source extraction protect not just the welders themselves, they are an important component for effective air pollution control.” With the extension of the CleanAirTower series, KEMPER now also offers a room ventilation solution for low fine dust loads.

Extraction solution for sporadic welding

KEMPER has expanded its filter tower series with two variants. Both variants are particularly suitable for air pollution control in small welding companies with sporadic



welding and low levels of welding fumes. Whereas the CleanAirTower SF 5000 has an extraction capacity of 5,000 m³/h, the CleanAirTower SF 9000 is capable of cleaning 9,000 m³ of air per hour. Thanks to the comparatively low height, they can also be installed in plants with low ceiling heights.

The use of replaceable storage filters results in lower investment costs for businesses than cleanable filters. As different filter media can be integrated in the systems, the new CleanAirTowers from KEMPER are also suitable for production environments beyond metal processing, such as those in the logistics sector.

Greater extraction capacity for higher welding fume levels

Both room ventilation systems function according to the layer ventilation principle recommended by the trade association. They capture welding fumes in a 360-degree radius at a height of 2.70 or 3.40 m respectively and separate even ultra-fine dust particles to more than 99.9 percent.

Employees can switch on a new TurboBoost mode if the concentration of hazardous substances is extremely high at times. This temporarily increases the extraction capacity by around 30 percent, which allows the towers to capture more contaminated air for a limited period of time and reduce welding fume ceilings more quickly. Even at the highest power level, the noise level is only 76 dB(A).

IoT capability simplifies processes

Thanks to the simple connection to the KEMPER Connect portal, the manufacturer realises energy- and process-efficient operation. The general ventilation systems network with the Cloud in just a few moments via a mobile wireless-based connection. All relevant data flows into the Cloud in real time. Users can intuitively put together individual dashboards and user interfaces.

The portal is able to control the CleanAirTower automatically, for example when the AirWatch air monitoring system from KEMPER measures high concentrations of hazardous substances that threaten to exceed legally prescribed limit values. The permanent recording and evaluation of relevant process parameters

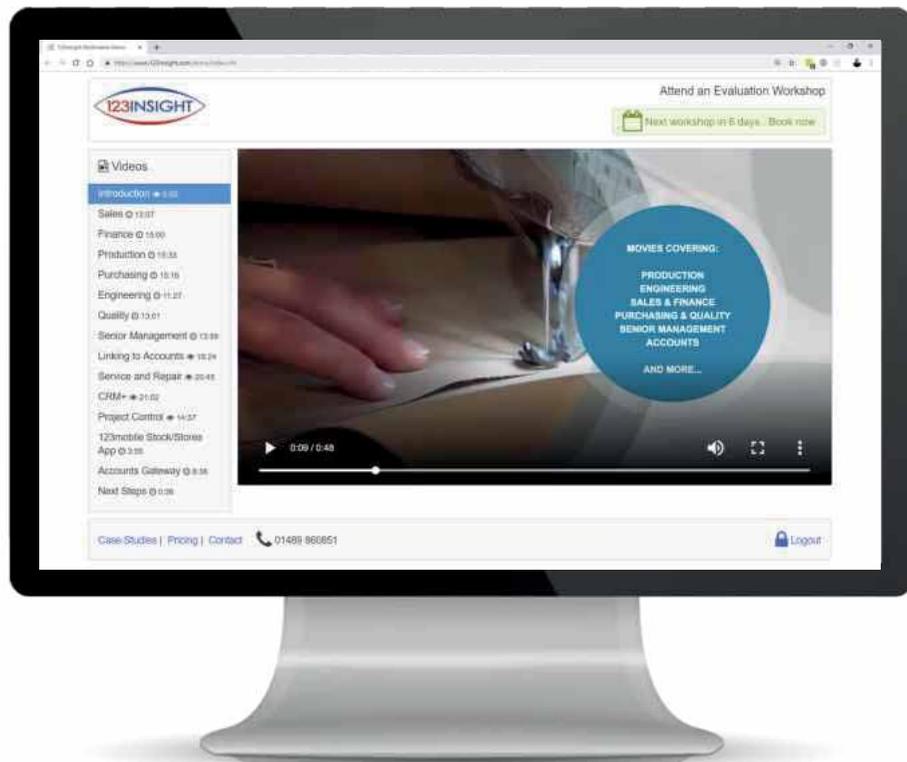


also enables predictive maintenance and even paves the way for Smart Maintenance. In the web-based IoT solution, service employees have full control over their general ventilation systems anywhere and at any time.

The CleanAirTowers are suitable as a supplement to source extraction during welding. They protect welders and employees at nearby workplaces, especially in cases where welding fumes are not completely captured or source extraction is practically impossible. The general ventilation systems also help ensure that companies act in accordance with the law within the framework of increasingly stringent legal regulations.

KEMPER is a manufacturer of extraction plants and filter systems for the metal processing sector. The medium-sized family-run business based in Vreden, Westphalia, is a technology leader with its highly efficient filter systems that filter even ultrafine dust particles from the air when welding fumes are generated. The product portfolio includes extraction tables for cutting processes and the entire accessory chain for industrial safety and air quality.

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