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inside the printed version of this issue of Metalworking News, you’ll find a free ticket to attend Machine Tools Africa 2020. If this event wasn’t already in your calendar, then you now have no excuse not to attend. The event will be held at Expo Centre, Nasrec Johannesburg from 12-15 May 2020, and it is the single biggest trade exhibition for the metal working related industries on the African continent.

Not only is this an opportunity to see first-hand, locally (normally one needs to travel to Europe and the like to experience the latest technologies on offer), the changes happening to the way we approach manufacturing, but it is also a vital opportunity to network with your fellow manufacturer – the chance to exchange ideas, possibly work together. That alone could be priceless for you. I’d encourage you to take your employees along too, you never know what you might inspire.

There will also be free-to-attend seminars hosted by the South African Institution of Mechanical Engineering, where top industry experts will present topics covering the latest innovations, industry trends and future technologies. Combined with the ATI Skills Zone, where the future of skills development will be in the spotlight, the exhibition has something for everyone.

It’s still too early to predict the consequences of what has now been called the COVID-19 outbreak, but world markets have (as of going to print) shown their fears with indices such as the FTSE 100 and the Dow Jones plunging to their biggest single-day losses in years in late February. For scale, for the Dow, 24 February 2020 marked its third-worst points drop in history. While the outbreak has yet to be declared a pandemic by the WHO (again, by the time of going to print), clearly markets believe it is, and they are insulating themselves.

Metalworking News spoke to Jacob Harpaz, President and CEO of the IMC Group, and he prudently draws our attention to just how significant a role China plays as one of the biggest economies in the world:

“Following a bad year in 2019, this year has not started off positively, especially with the Coronavirus making an impact not just on China but the whole world. If you consider that China consumed 35% of the world’s machine tools in 2018, and this figure will be similar for 2019 but on reduced units, although China did recover slightly in the last quarter, you get a clear idea of what influence China has on world economies. This is compared to 9% for the US, 8% for Germany and 7% for Japan.”

“Now with the Coronavirus the population of China are being instructed not to go to work, and rightly so, until the world comes up with a solution for the virus. The impact is two-fold. China is not consuming and China is not manufacturing for the rest of the world.”

What this means is losses and regressive economic growth, worldwide. But what cannot be disputed is that this kind of situation, although terrible in every way, presents opportunities for those prepared to look for them. If China is not manufacturing – someone else must. Why can’t we seize this as an opportunity? We’re good at it. Yes, we have challenges but ‘n boer maak n plan’. And a reliable source has informed us that there is already a massive steel processing order headed South Africa’s way.

One thing that is really exciting for the Western Cape and manufacturing there in particular is this: Following President Cyril Ramaphosa’s announcement during his Sona address that municipalities in good financial standing will be allowed to procure their own power from IPPs, the Western Cape is wasting no time getting its ducks in a row so that it can as soon as possible free itself from Eskom’s shackles – a battle the Cape Chamber of Commerce has long been championing.

Engage with your fellow manufacturer. Find out what opportunities they envisage, and share yours with them. In a way, being as insular as it is, is what has made China the global economic giant it is. We can learn from that inward-looking approach.
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Apprenticeships: They’re good for everyone

According to the US Department of Labour, in FY 2018 more than 238,000 individuals nationwide entered the apprenticeship system and 23,400 more were registered in apprenticeship programmes across the nation. At least 3,229 new apprenticeship programmes were established nationwide in the same year.

It is important to note that they include apprenticeships across a range of industries, not just manufacturing. Within our industry, national organisations dedicated to technical training, such as SkillsUSA, offer myriad opportunities for career development. Various state-wide programmes offer similar services. These programmes are a good start, but more needs to be done. The US lacks a nationwide apprenticeship programme and could benefit from one.

In Germany and Switzerland, apprenticeships are the accepted norm. In fact, Switzerland’s three to four-year programmes graduate specialists who possess a mastery over any CNC machine. The benefits are obvious and numerous. A country’s economy is provided with a sustainable and skilled future workforce, manufacturers maintain productivity and their bottom line, and individuals enjoy gainful employment in a lucrative field where their specialised skills keep them in demand.

Apprenticeships keep the manufacturing industry strong and productive, and if they were a widely-accepted standard of practice, everyone would benefit. A nationwide programme essentially generates a beneficial ‘pay it forward’ situation.

Apprenticeships also help to mitigate any erroneous perceptions the public may have about the reality of working in the manufacturing industry. In Switzerland, for example, manufacturers host open houses where they invite the local community to their plants to show the next generation of skilled workers what manufacturing has to offer. A visit to a clean, high-end shop, with its impressive new technology, dispels that image of factory work as dark, dank, and dingy.

Not only are open houses a useful recruitment tool for apprenticeship programmes, they’re an invaluable opportunity for individuals to see the advantages of a career in manufacturing. First-hand exposure to the manufacturing environment gets them enthused about considering an apprenticeship. College isn’t for everyone, and an apprenticeship is cheaper and shorter than the traditional university education.

Individuals in an apprenticeship programme enjoy the best of both worlds: On-the-job training with classroom instruction. In a country with a standardised nationwide apprenticeship programme, hiring happens quickly because graduates are equipped with a machinist certificate that shows a potential employer their exact qualifications.

Apprenticeships send skilled workers down a stable career path that pays well.

Well worth the effort

Simply put, apprenticeships are worth the effort. Many employment sectors, including manufacturing, rely on apprenticeships to provide a skilled future workforce. And because so many industries depend on manufacturing, investing in apprenticeships is an investment in so much - individual workers, manufacturers’ productivity and bottom line, and the overall economy.

As exciting as the high-tech explosion is, it also poses a challenge. In the US, we don’t have a large enough pool of skilled workers who know how to operate machinery and tools. The situation will only grow worse if we continue producing such high-level machines and tools without devoting enough energy to training workers on how to keep pace with advances in technology. One solution to this obstacle? A nationwide US apprenticeship programme.

This is the viewpoint of Andreas Weber, President, Rego-Fix USA
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Bodor Laser looks to conquer the world

Based in Jinan, Shandong, China Bodor was established in 2008 and is among the top 10 laser cutting machine manufacturers in China. Initially the company began manufacturing CO2 lasers but has now turned its full attention to the manufacture of fiber laser cutting machines in its 27 000m² facility.

Bodor manufactures machines that are dedicated to cutting sheet and plate and those that are dedicated to cutting tube and others that combine both sheet and tube cutting. Machines manufactured for sheet and plate cutting are configured to have an open bed with a gantry cross beam, as is in the case of plasma or oxy fuel cutting machines, or a fully enclosed machine. The tube cutting machines are fully enclosed in the cutting area.

Bodor owns one of the biggest super factories in China - consisting of 27 000m² of production space and a large R&D centre. The Bodor marketing department has an office area of 3 600m². The company employs 1 750 staff, including over 350 R&D personnel.

Bodor’s main facility is in the Hi-tech Zone Jinan, Shandong and the company has offices in Shanghai and Shenzhen and branches in the Northeast, Southwest, Nanjing and Central Plains of China. Its offices are all over the country and there are nine overseas offices. These are in Germany, Russia, Turkey, the United States, Mexico, India, South Korea, Vietnam and Indonesia. The company now serves more than 150 countries and regions on six continents and provides a 24-hour service in 16 languages.

Bodor believes it competes with European and American counterparts with its unique technological advantages. The smooth cutting technology developed by the company - Bodor Genius - is an auto focus laser head that improves the cutting accuracy and product quality. Combined with the company’s Bodor lightning technology, excellent results can be achieved, despite the material quality. The machine software - Bodor 2.0 - is an efficient, simple, and inclusive operating system, which is able to meet different needs of customers for cutting. Bodor has also been listed on the New Third Board – China’s National Equities Exchange and Quotations - since 2016. Bodor has 16 patents, three software copyrights and more than 10 technical patents.

Products

The E-series of machines for sheet and plate cutting have bed sizes between 3 000mm by 1 500mm right up to the E8025, which has a bed size of 8 100mm by 2 500mm. Laser output on these machines are from 1kW up to 6kW.

The machines manufactured for sheet and tube cutting, the F-T-series, have bed sizes between 3 000mm by 1 500mm right up to the E6020T, which has a bed size of 6 100mm by 2 000mm. Laser output on these machine are from 1kW up to 4kW and pipe cutting capabilities are between 20mm and 200mm and for square tube 20mm by 20mm up to 140mm by 140mm. Rectangular tube dimensions are 20mm and maximum 200mm. Minimum
lengths are between 3 000mm and 6 000mm.

The fully covered P-series for sheet cutting has a working area of between 3 000mm by 1 500mm and 8 100mm by 2500mm and laser source of between 1kW and 12kW. The P3015 is the most popular fiber laser machine and features include a cast iron bed that lasts forever, cast aluminium crossbeam, Bodor Pro 2.0 operating system, auto focus laser head, touchscreen with double HD cameras, automatic nozzle changer, full protection cover, wireless remote control handle and two automatic exchange platform systems.

The S-series is a bigger version of the P-series that can be equipped with a 25kW power source.

The T230 is a tube laser cutting machine specialised in cutting various tube shapes and its automatic loading and unloading system makes operation easier and faster. Laser output on these machine is from 1kW up to 4kW and pipe cutting capabilities are between 20mm and 230mm and for square tube 20mm by 20mm up to 160mm by 160mm. Rectangular tube edge dimensions are 20mm and maximum 170mm. Maximum length of pipe or tube is 6 500mm.

Where possible Bodor manufactures its products with equipment supplied by Precitec, SMC Electric, Beckhoff, Neugart and Rexroth. Automatic nozzle changers are included and the operating system is the Bodor Pro 2.0.

Red Dot Design award

A recipient of a Red Dot Design award in 2018, the company’s plate cutting machine was described as: “The overall modelling posture of the product is composed, the lines are simple and tensile, and the design adopts the combination of white plastic sheet metal and black acrylic, and the metal is compared with the glass. It is the first machine tool to use glass reinforced plastic material, which is lightweight, fast, highly efficient, and has a long service life. The z-axis adopts an injection moulding process, which greatly improves the efficiency of production. Compared with ordinary CO2 laser cutting machines, it can save more space and gas consumption, the photoelectric conversion rate is high, saves energy and protects the environment.

The company had previously won the Red Star Award in 2016 for new products.

Cape Town-headquartered WD Hearn Machine Tools have recently announced that they have been appointed the agents for Jinan Bodor Laser, the worldwide operating, Chinese manufacturer of flat sheet and tube fiber laser cutting machines.

For further details contact WD Hearn Machine Tools on TEL: 021 5345351 or visit www.wdhearn.co.za
It’s all about high-feeds and high-speeds –

Jacob Harpaz, President and CEO of the IMC Group

New trends in advanced machining contribute to higher productivity and a reduction in cost per part.

In an exclusive interview before the South African launch of TaeguTec’s new and wide range of inserts and cutters Jacob Harpaz, President and CEO of the IMC Group, emphasised that both tooling manufacturers and machine builders were working together to satisfy their customers with this new train of thought in the industry. Harpaz accentuated that the technology is being applied to turning, milling, drilling, clamping, parting and grooving.

“Manufacturers are looking at saving time and money in their production operations. This is in overheads, manpower and machinery. They want the cost per part to be reduced, which will improve their bottom line. Every second makes a difference.”

“Companies like TaeguTec have taken heed of this call from industry and have introduced a new range of cutting tools designed to make the most out of manufacturing advances promised by the fourth industrial revolution. This new SFeedTec series of high-speed, high-feed cutting tools is intended to be fit for the era of Industry 4.0 and the smart factory that we are currently experiencing. I can’t spell it out enough of how the digital domain is impacting manufacturing and how Industry 4.0, or the Fourth Industrial Revolution, is influencing all decisions on productivity and costs within all environments, not just manufacturing.”

Elaborating his thoughts on world trends Harpaz said: “Just under two years ago I said by 2030 there will be big changes in the automotive sector, for example. The major OEMs are moving away from the internal combustion engine, which will mean much less metal removal will be required. There will be a wider use of composite materials and the introduction of 3D printing also means less metal removal. Look at the new Boeing 787 - there are now over 100 3D printed components being used in its assembly. We have to prepare for these changes,” explained Harpaz.

“But it is happening faster than we think. In 2018 the world had one of its best years ever but in 2019 it was a disaster as Governments, particularly in Europe, ramped up their obsession towards electric mobility. We all know that it is the future, as is autonomous cars, and it is having a huge effect on those of us in the metalworking industry.”

“Industry 4.0’s impact will not just come through sophisticated new technology such as sensors, process monitoring and acquiring machining data, but in the integration of factories and the supply and distribution of consumables used in manufacturing and products leaving the factory,” according to Harpaz.

I
“Look at the impact that a company like Amazon has had on sales and marketing through its digitisation platform. We have moved into an era of e-commerce and distribution and inventories with vending machines. Again Amazon are pushing the boundaries. Amazon Go is a new kind of store with no checkout required. They created the world’s most advanced shopping technology so you never have to wait in line. With their Just Walk Out Shopping experience, simply use the Amazon Go app to enter the store, take the products you want, and go! Fantastic for everybody.”

“Artificial Intelligence, including machine learning, is also having a huge impact. It is not great to say it but AI is going to replace humans. We are now being provided with big data to make informed decisions and increase our productivity. We should be calling it the Digital or Cyber Revolution and not the Fourth Industrial Revolution.”

“Following a bad year in 2019, this year has not started off positively, especially with the Corona virus making an impact not just on China but the whole world. If you consider that China consumed 35% of the world’s machine tools in 2018, and this figure will be similar for 2019 but on reduced units, although China did recover slightly in the last quarter, you get a clear idea of what influence China has on world economies. This is compared to 9% for the US, 8% for Germany and 7% for Japan.”

“Now with the Corona virus the population of China are being instructed not to go to work, and rightly so, until the world comes up with a solution for the virus. The impact is two-fold. China is not consuming and China is not manufacturing for the rest of the world.”

“Despite this we have to look forward and plan for our advanced machining revolution in our industry. Although we like to say as cutting tool manufacturers that we have been driving forward the higher speeds and higher feeds concept, we could not do it without the machine tool builders. And then there are the cutting fluids.”

“The machine tool builders are now manufacturing a new generation of CNC machines to cope with the faster speeds and feeds. You now require less torque to remove the same amount of metal as compared to a few years ago but in less time. Chip removal is also taking major leaps forward as is machine vibration and coolant adaption. MQL (Minimum Quantity Lubrication) can provide significant savings and improved performance in the right applications. Through coolant – coolant directed at the cutting edge through the tool, therefore there is no requirement for external coolant, is having a direct effect on cutting tool and tool holder life. More cost savings and on production time.”

“Cutting tools will have to adapt to remove less metal but at much faster speeds and feeds. The cutting tool can have a huge impact on productivity. Not every company can buy the latest machine tools but changing to our cutters means the tools can run at very high speeds with a minimum amount of downtime. TaeguTec’s new tools will enable machinists to perform metal cutting at a rate similar to that found in the woodworking industry,” said Harpaz.

Harpaz gave an example of how big savings per part can be made on faster speeds and feeds. The material costs are fixed at 22%, it is generally accepted that tooling costs are 3% and the other 75% are made up of overheads (23%), manpower (28%) and machining (26%). Because you are a good client, even if you got your tooling for free, he stated, you would not make any significant savings on the overall cost per part. But if you reduced your machining time per part, one cost that is flexible and not fixed, and time on the machine, such as setup, he continued, then you are realising real savings and this is where cutting tool and machine manufacturers are coming to the party by developing new generation products and advanced machining solutions.

Looking forward Harpaz believes that more cost savings will be achieved with the introduction of more advanced coatings of the tooling, as well as the material grades. “But this takes time with extended R&D taking place and cannot be introduced overnight.”

“Savings are also being made through vending machine systems. Industry 4.0 is not just about cutting process data, tool monitoring and sensors – it’s also about the most efficient supply and distribution network that you setup in your factory.”

“Industry 4.0 is also influencing our thinking in cutting tool development. For example, will a cutting tool be digitally enabled that it will be able to predict a possible spindle breakage? Yes, I believe so.”

“Although it is happening already, in future, your cutting tool supplier is going to have to be more of a solution provider, rather than just a hardware supplier. Better machines, better tooling and advanced software is all available. Now the individual or the company just has to contribute to the advanced machining revolution,” concluded Harpaz who has been with the IMC Group for nearly 50 years.

For more information contact TaeguTec SA on TEL: 011 362 1500 or visit www.taegutec.com
Thekwini Wire and Fasteners targets import replacement in automotive, lighting and general manufacturing industries with investment in a new Robomac R214 TF wire bender

Durban, KwaZulu-Natal-based light engineering company specialising in wire converting and processing Thekwini Wire and Fasteners, has recently invested in a Robomac R214 TF wire bender, manufactured by French company Numailliance. Retecon are the suppliers.

“We currently supply a fair portion of our production of wire components into the automotive industry. However, we noticed that some of the Tier 1 suppliers and OEMs are still importing components that we could manufacture if we had this machine. Also, there is a substantial amount of business that could be acquired from the non-automotive industry,” explained Bala Moodley, a Director of Thekwini Wire and Fasteners when asked why the company had purchased the new 5-axis CNC wire bender.

“Not so long ago automotive exhaust systems were essentially disposable. They required frequent repairs and wholesale replacement. Not so today. Modern exhaust systems last for years - the result of decades of research and development and continuous improvement on the part of exhaust component suppliers,” explained Moodley.

“Today’s exhaust systems consist of a lot of expensive parts. There are one or more catalysts, an oxygen sensor, maybe even a 2-stage muffler. There’s piping that’s not only shaped to clear underbody lines, but also may be made of premium metals, in some cases dual-wall tubing. There are sheetmetal underbody heat shields to prevent the exhaust from igniting dry grass.”

“What’s holding everything together? A few clamp joints and some welds. What’s holding everything up? A few pieces of rubber with some brackets. What’s keeping everything aligned? Those same few pieces of rubber and brackets. Failures are common and they range from cracked rubber to failed welds.”

“Nowadays, assemblers have a limited time to mount the exhaust system, so the fit must be perfect. Hanger brackets have critical dimensions and must be welded precisely to the exhaust system so that it will fit properly to the vehicle’s brackets.”

“The project is based around the supply of hanger brackets for an exhaust system, that our client Bosal manufactures, that will be used in the manufacture of the new VW Polo Vivo. However, we have also presented to Toyota South Africa Motors and they have shown interest in some components that they are currently importing.”

“We will be targeting the automotive industry mainly to localise the manufacture of more components and thereafter various other industries such as decorative lighting and general manufacturing.”

“We will be processing mainly low carbon steel components for the project with Bosal. However, we will be able to process medium carbon steel, stainless steel, copper and brass material in the future. Sizes will range between 4mm to 14mm.”
Victor takes CNC milling to the next level

Victor Taichung’s family of CNC machines is getting bigger. High performance machining/milling has just been taken to a new plateau with the arrival of the new Vcenter-AX630 vertical machining center for 5-axis machining and the Vcenter P76APC that can be installed with a 4th axis rotary table on each pallet with all connections integrated through the centre of the automatic pallet changer (no more of the cables getting tangled each time the table rotates).

Vcenter AX630 for 5-axis machining
- Roller cam mechanism
- Table diameter 630mm x 500mm mounted on the machine base
- Full 5-axis control equipped
- High rapid feed 48m/min with roller type linear motion guideways
- Trunnion type tilting table (B+C axes) fixed on machine base enhances structure stiffness
- Backlash-less roller cam drive mechanism rotated at higher speed further reduces cycle time
- BGT-PLUS BT-40 (BBT-40) spindle 12000rpm (15kW)
- Travel XYZ 700mm x 500mm x 500mm
- Load 300Kg

Vcenter P76APC vertical machining center
- APC mechanism seated on ground for high rigidity
- Pallet dimension 720mm x 400mm
- Pallet exchange time 15 seconds
- Control panel at right side for easy operation
- Linear scales and 4th axis can be installed
- 12000rpm spindle output 18.5kW
- BBT-40/30 tools
- Roller guideways
- X travel 760mm
- High rapid feed 48m/min

Contact us today!

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We pride ourselves on excellence.
producing exhaust brackets worldwide in the field of cold upsetting units that have become references associated with standard Numalliance Group, is Macsoft and Satime form company that along with manufactured by Latour, a large or short quantities. Of course our machine is fully CNC and automated so we can run the process extremely efficiently and cost effectively when manufacturing large quantities. Of course our machine is fully CNC and automated so we can run large or short quantities. “The Robomac, previously manufactured by Latour, a company that along with Macsoft and Satime form the Numalliance Group, is associated with standard cold upsetting units that have become references worldwide in the field of producing exhaust brackets.

An example of an exhaust bracket that can be bent on the Robomac R214 TF wire bender

The Thekwini Wire and Fasteners machine has a larger than usual capacity, capable of bending steel brackets up to 14mm diameter and to cold form the cone and ring at one extremity with the enormous force of 60 tons.

in short or large quantities. The machine processes exhaust brackets with cone and ring upset at one or both extremities, besides other components and can be used in flexible or fast production cells. “Our machine has a larger than usual capacity, capable of bending steel brackets up to 14mm diameter and to cold form the cone and ring at one extremity with the enormous force of 60 tons.” “The Robomac is a fully servo electrical 5-axis CNC machine and thanks to its very advanced user-friendly software can be programmed in minutes for making different exhaust hangers. It is also compatible with the usual CMM’s - Romer, Hexagon and Aicon - for automatic geometry correction. The software can take the usual STP, DWG, DXF formats for automatic programming. The machine can be easily integrated into fully automated cells with robot, press and optical devices for checking that the upset cone and ring fall within the required tolerances.”

About Thekwini Wire and Fasteners

Moodley established Thekwini Wire and Fasteners in 2009 when he did a management buyout from his previous employers, purchasing a division of the company. Moodley’s boss at the time became a 50% shareholder in the new company but he subsequently purchased the remaining shares in 2012. Moodley is much indebted to his boss and partner for the first three years of the business as he guided him through all aspects of running a business. The arrangement did ensure that Moodley’s business - Thekwini Wire and Fasteners - would start off with a bit of security as his previous employers with whom he had been with for 29 years, became his first client and was his only client for a few years. A drop in demand for the fasteners that Moodley was manufacturing and his desire to grow the business forced him to invest in new equipment and look for clients in other industries that were consumers of steel, aluminium and brass wire cut and formed components. “We operate in a highly specialised sector of the wire industry. We regard ourselves as a leading manufacturer of split cotter pins and wire forms. Thekwini Wire and Fasteners are suppliers of steel, copper, brass, aluminium and stainless steel wire of various grades to the cold heading and fastener manufacturing industries. Our capabilities include wire for the cold heading industry, shaped wire for the fashion industry and straight wire for various other applications. We also offer our products in zinc, nickel brass and copper plating, which we outsource.” “Our coiled wire and wire forms are used in other
applications in the automotive industry such as the seats - listing and frame wire - and headrests, also used as high tensile quick link bailing ties, used in the manufacture of belt buckles and our fasteners are used for high voltage lines, to give you a few examples. We also manufacture split pins from 1.6mm to 13mm in ferrous and non-ferrous wire."

Moodley has had his son - Patrick Moodley - working in the business since 2010, who is now a Director of the company. This forms part Moodley’s succession plan. When the company was established in 2009, during tough economic times in South Africa, Moodley only employed four staff. He now employs 28 staff.

Thekwini Wire and Fasteners is a member of NAACAM (National Association of Automotive Component and Allied Manufacturers), SAWA (South African Wire Association), DAC (Durban Automotive Cluster) and is a Level 1 BEE contributor.

Looking ahead
Proficiency in 2D and 3D CNC wire bending has the business looking deeper into the automotive industry for appropriate applications that require bent wire components with accurately machined features, those that can be substituted for import replacement, and applications outside of the automotive industry.

"By and large, businesses don’t shape themselves, customers shape a business. That is, customer needs drive decisions about the equipment, capabilities and processes shops bring in-house. As a result, an increasing number of them are looking beyond conventional processes to alternate manufacturing technologies that complement their existing equipment. After all, the goal is to deliver whatever product the customer requires in the quickest, most cost-effective way possible."

"We at Thekwini Wire and Fasteners have done it the other way. We have invested in the latest high-tech equipment and are now offering existing and new customers an alternative."

For further details contact Thekwini Wire and Fasteners on TEL: 031 902 7097 or visit www.thekwiniwire.co.za
Somta Tools’ new PVD coating plant and polishing and honing machine delivering benefits to more applications than just their own tooling

Life span and speeds and feeds of gear cutting tools, piercing punches, moulds, dies, dental inserts, broaching blades and inserts will all benefit from the technology that is associated with Somta Tools’ second coating plant that has now been commissioned.

Somta Tools have invested in a USA-designed and manufactured PerformCoat PFC540 PVD coating machine. The machine has been developed in conjunction with OSG Japan and it will now allow Somta Tools to implement coating layers with adjustable properties for toughness, hot hardness, wear resistance, oxidation resistance and colour. These include mono, multi, nano and gradient coating structure.

**What is PVD coating?**
PVD stands for Physical Vapor Deposition. It is a process carried out under high vacuum and, in most cases, at temperatures between 150 and 500 °C.

**How does the PVD process work?**
In the PVD process the high purity, solid coating material (metals such as titanium, chromium and aluminium) is either evaporated by heat or by bombardment with ions (sputtering). At the same time a reactive gas (e.g. nitrogen or a gas containing carbon) is added. It then forms a compound with the metal vapour that is deposited on the tools or components, as a thin, highly adherent coating. A uniform coating thickness is obtained by rotating the parts at a constant speed over several axes.

Coating properties such as hardness, structure, chemical and temperature resistance and adhesion can be precisely controlled. PVD processes include arc evaporation, sputtering, ion plating and enhanced sputtering.

Benefits of PVD coating are that it only has a thickness of 0.003mm, it is harder than steel, it has ceramic properties and it follows the surface structure exactly.

“Our new machine was installed and commissioned in January 2020 with the assistance of PerformCoat to make sure that everything went smoothly. Some of these coatings that we are now capable of offering were previously not available in South Africa, with customers having to source them internationally, so Somta Tools is delighted to now offer these options locally. We are also inspired and delighted by the different colours we can now achieve with this new coating machine,” said Allan Conolly, Managing Director of Somta Tools.

“This high-performance and innovative thin film coating technology will optimise tooling for machining applications of turning, deep-hole drilling, tapping, hard milling, hobbing and shaping of aluminium components (soft and hard with up to 12% Si) and machining of titanium and stainless steel,” explained Conolly.

“In addition to coating our own tooling, Somta Tools coats gear cutting tools, piercing punches, moulds, dies, dental inserts, broaching blades and inserts of all different sizes for customers. Coating these items can improve their life span by 200% to 300% and when used in certain applications, can increase speeds and feeds by as much as 50%. Somta Tools can coat any component up to 600mm by 600mm by 650mm (WxDxH).”

“Gear cutting tools especially are more expensive than common cutting tools therefore cost savings on them are essential. Coating your gear cutter in the same way you do other cutting tools reduces wear by preventing direct contact of chips with the tool, reducing build up along
The high-performance and innovative thin film coating technology will optimise tooling for machining applications of turning, deep-hole drilling, tapping, hard milling, hobbing and shaping of aluminium components (soft and hard with up to 12% Si) and machining of titanium and stainless steel. In addition to coating their own tooling, Somta Tools coats gear cutting tools, piercing punches, moulds, dies, dental inserts, broaching blades and inserts of all different sizes for customers. Coating these items can improve their life span by 200% to 300% and when used in certain applications, can increase speeds and feeds by as much as 50%.

At the same time, Somta Tools commissioned their PerformDrag PFD550 polishing and honing machine. Referred to as drag finishing, this process increases the tool life and component finish quality by up to 80%.

The high hardness of a coating prevents abrasive wear on the tool, and the lower coefficient of friction reduces the heat and wear generated during cutting operations. Thermal stress on the tool is reduced due to the low thermal conductivity of coatings, which allows heat to be retained in the chip.

“At the same time, we commissioned our PerformDrag PFD550 polishing and honing machine. Referred to as drag finishing, this process increases the tool life and component finish quality by up to 80%.”

Machine Tools Africa 2020
“We are exhibiting at Machine Tools Africa 2020 where we will be able to explain the benefits to our customers. Additionally, we are going to introduce new tooling at the exhibition. This will include a HSS drill range, a solid carbide drill range, a VariCut range and a combo tap range. All of these tools will be coated in a rainbow coating to demonstrate the versatility and benefits of our high-performance coatings.”

For further details contact Somta Tools on TEL: 011 390 8700 or visit www.somta.co.za
Metal Chip Machinery adds Muratec equipment to portfolio

Metal Chip Machinery, a provider of precision electric CNC press brakes, welding, laser and plasma cutting machines has announced that the company has been appointed as the South African agent for the Muratec brand of machinery.

“Muratec is a well-known Japanese brand of equipment that has been associated with the metal industry since 1935. Muratec, which is synonymous with fabrication equipment, CNC turning equipment, industrial automation and reliability across an extensive product line, is a brand solely manufactured by Murata Machinery Ltd,” explained Malcolm Moriarty, owner of Metal Chip Machinery.

“Although there are some Muratec machines in South Africa, they have never formally been represented locally. In our portfolio of products that we offer we don’t represent anybody that manufactures sheet metal machinery such as CNC laser punch combination and turret punch presses, which Murata do,” continued Moriarty.

“The roots of the Muratec sheet metal machinery department can be traced back to 1970, when they joined up with the Wiedemann Division of the Warner & Swasey Company, a company that was established in Philadelphia, USA in 1916, and released the world’s first CNC turret punch press. After that, they have pursued product development and released new products one after another, including plasma arc combined machines and laser combined machines, and also construction of large-scale flexible manufacturing systems. Wiedemann still exists today as Murata Machinery USA.”

“Sheet metal processed products realise value by going through many subsequent processes of not only punching, bending and other machining, but also welding and assembly. Efficient creation of this value requires a manufacturing perspective with all processes taken into consideration. Muratec develop processing machines and systems based on such a perspective, and also offer recommendations for total optimisation of machining processes, including reviews of processes and methods, while sharing customer concerns. Through the pursuit of total optimisation, Muratec will continue to contribute to customers’ value creation.”

“Muratec introduced the world’s first servo driven punch press in 1994. Since then their industry leading technology has evolved to meet the next generation’s needs.”

Fabrication

“Built on the tradition of innovation and reliability, Muratec’s fabrication solutions enable sheet metal manufacturers the flexibility to rapidly integrate processes that improve productivity. Additionally, Muratec’s turret punch press and fiber laser machines pair seamlessly with intuitive material handling automation to deliver turnkey systems driven by efficiency.”

“The M2048TS is a servo-driven punch press within the Muratec 22-ton machine series. Incorporating the latest ram drive design, this machine is simpler and more rigid than similar models on the market. With this technology, it allows for high production speeds with energy efficient operation and reduced maintenance costs. The M2048TS is designed with a large turret, which provides more stations for greater flexibility and increased productivity. This machine provides an economical solution to parts production requiring punching, forming, tapping, and deburring operations.”

“With a 200kN capacity and a servo motor driven ram the machine processes sheet sizes of 1 250mm by 2 500mm.”

“Completely unlike traditional drive systems, the Motorum Series, of which the M2048TS punch press is part of, adopts a Murata original ram drive with a toggle mechanism driven by a servo-motor. This series provides users with optimised control of the ram shaft speed, low noise, and high-speed processing.”

“All machines in our Motorum series are developed with Murata Machinery’s HMI Intelligent Control Interface, which minimises operator setup to improve machine production time. Muratec also provide assistance for tool changes, turret load monitoring, scheduling, and tool maintenance, as well as other features that maximise the machine’s uptime. This high-speed punch press offers shorter production times, quieter operations, and greater turret capacity.”

“We will be concentrating on the turret punch presses and laser punch combination machines, although they do manufacture fiber lasers up to 6kW and press brakes.”

CNC turning

“Muratec also manufacture an extensive line of CNC turning machines The Murata Machinry Turning Division offers automated turning centers and machines with twin and single-spindle lathes, twin opposing spindle lathes and vertical spindle lathes, all of which are equipped with automated parts loading and uploading gantry robot system.”

“We will also have access to these machines and the automation systems and automated material handling systems that they manufacture.”

For more information contact Metal Chip Machinery on TEL: 011 476 7509 or 072 834 3164 or visit www.metalchipmachinery.co.za
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Denel announces exit from Aerostructures Manufacturing business

The process of exiting the greater part of Denel’s Aerostructures Manufacturing Business is now at an advanced stage with major steps put in place to minimise the impact on job losses within the company. This follows the mutual agreement by Denel and its customers to transfer the manufacturing of aircraft parts to alternative suppliers as the business was no longer sustainable for Denel.

The Divisional Chief Executive of Denel Aeronautics, Mike Kgobe, says the company has concluded consultation as required by the Labour Relations Act Section 189A with relevant stakeholders including Organised Labour and Representatives of Non-Unionised Employees. The consultation process was facilitated by a Senior CCMA Commissioner and will result in retrenchments based on operational requirements.

“We have really worked hard in trying to keep job losses to a minimum and some of the employees will be transferred to other positions within the Denel group while voluntary severance packages have been offered.”

Denel applied to both the Departments of Public Enterprises and Finance to wind up the business of Denel Aerostructures SOC Ltd in terms of Section 54 of the Public Finance Management Act. Formal approvals were granted during 2019.

The Denel Group Chief Executive Officer, Danie du Toit says the decision to wind up the company is in line with the broader long-term strategy to reposition Denel and return it to profitability.

The winding up of the Aerostructures Manufacturing business will not affect other businesses conducted by Denel Aeronautics at the Kempton Park campus. This includes the support given to the Rooivalk combat helicopter, the Oryx medium transport helicopter, the C130 transport aircraft together with the export business for the Cheetah multi-role fighter aircraft and Puma helicopter and various maintenance, repair, and overhaul (MRO) services provided to both the SA Air Force and other customers.

Revolution Machine Tools opens for business

In a development that has been described as the positioning of the equipment that the company sells, services and markets to the metalworking engineering businesses in South Africa, so as to become recognised and more distinguishable, Steve Andrews has opened up a company – Revolution Machine Tools.

“The company has a vast range of CNC mills and machining centers, including 5-axis, CNC lathes, surface and cylindrical grinders that we offer to tool rooms, production shops and general engineering businesses,” explained Andrews.

“Up until now they have been closeted in the EDM Shop name, which was previously known as Spark Erosion Equipment. As the name of the company suggests this is a specific area of metal manipulation and cutting and as a result nobody associates our range of CNC equipment that can shape, cut and remove metal with the company.”

“The anomaly has been heightened in the digital age that we now live in and the Internet of Things. Search words such as machine tools would never bring up EDM Shop even though we have tried hard to link them with the company.”

“In the end the frustration got to us and we decided to open up a new company with a more appropriate name.”

“We launched the company now in January 2020 and have put the international brands of Wele, Jyoti Huron, Paragon and Phoenix that we represent under the umbrella of Revolution Machine Tools, a name specifically linked and with connotations to the Fourth Industrial Revolution that is currently happening in the world.”

“Wele Mechatronic is a well-known Taiwanese manufacturer of horizontal and vertical machining centers (up to 5-axis), big vertical turning and milling centers and boring mills. They also have a shareholder association with the Jtekt Group, which includes Toyoda Koki, a subsidiary of Toyoda Japan.”

“Jyoti Huron is one of India’s largest tool manufacturers. Their line-up includes machining centers (up to 5-axis), turning centers, small vertical turning centers and turnkey machining solutions. The Huron part of the name originates from the acquisition of the 152-year-old French company Huron Graffestaden S.A.S., located in Strasbourg, France, by Jyoti in 2007.”

“Paragon Machinery is also a Taiwanese manufacturer. They have specialised in manufacturing grinding machines, both cylindrical and polygonal grinding machines. The company was established in 1968 and the company specialises in manufacturing all kinds of CNC and automatic grinders, such as centreless grinders, internal grinders, universal cylindrical grinders and ID/OD twin-spindle grinders.”

“Frank Phoenix International Corp. was established in 1990 and mainly manufactures and supplies the mould making related milling machines, lathes, grinders and conventional machine tools and their accessories. They are well-known for their bed type milling machines and flat-bed CNC lathes.”

“In future the new name will be synonymous with all of these brands and equipment while anything related to wire EDM and spark erosion will fall under the EDM Shop banner.”

For further details contact Revolution Machine Tools on TEL: 011 762 5231 or visit www.rmt.co.za
AMSA acquires South Africa’s only producer of heavy sections of long steel

The Competition Tribunal has unconditionally approved steel manufacturer ArcelorMittal South Africa’s (AMSA’s) acquisition of the manufacturing and production of the structural steel and rail business of Highveld Structural Mill (HSM), a subsidiary of Evraz Highveld Steel and Vanadium.

HSM, in eMalahleni, Mpumalanga, is the only company capable of producing heavy sections of long steel in South Africa.

Evraz Highveld, along with HSM, went into business rescue in April 2015 and ceased production owing to weakened global markets and reduced domestic steel demand, besides other factors.

However, HSM resumed operations in 2017 after it and AMSA concluded a contract manufacturing agreement for HSM to process blooms and slabs supplied by AMSA into heavy structural steel.

AMSA announced in April last year that it planned to buy HSM for an initial R150 million, plus a possible further R150 million, conditional upon it securing a long-term offtake agreement for supplying the mainline rail industry.

At the time, AMSA said the acquisition would ensure the country retained a regionally strategic steel-manufacturing capability.

The Competition Commission’s assessment of the proposed acquisition had determined that there would be no anticompetitive effects and it recommended that the tribunal approve the transaction.

The asset includes a state-of-the-art smelter plant capable of profitably producing a range of products including pig iron, ferro alloys and valuable slag by-products from fines.

The smelter plant boasts three modern open slag bath furnaces, as well as 10 pre-reduction or preheating kilns. There is significant flexibility in operation as it is possible to split the plant into different product streams. With an estimated ramp-up to full production in approximately 12 to 16 weeks, the lead time to market is significantly reduced when compared to the construction of a similar sized smelter plant.

The Iron Plant is situated in the ideal location in the heartland of South Africa’s mining and power producing hub and is also linked to national roads and highways, including the N4. The industrial park also owns a private rail siding linked to the major rail networks.
2019 a record year for
Volkswagen Group South Africa


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The Volkswagen Group South Africa (VWSA) plant in Uitenhage ended 2019 on a high note, achieving an all-time record for production in a single year. The plant manufactured a total of 161 954 vehicles in 2019, surpassing their previous record of 137 758 vehicles produced in 2011. This is the highest production volume the plant has achieved since it began manufacturing Volkswagen vehicles in 1951. VWSA manufactured 126 463 vehicles in 2018 and had forecast that it would ramp up output to 161 900 vehicles in 2019. This target was achieved and exceeded.

Of the 161 954 vehicles, 108 422 were manufactured for export and 53 532 were produced for the local market. The production volume consists of 131 365 Polos and 30 589 Polo Vivos.

VWSA also celebrated in October 2019, when it improved on its record for the highest production volume in a single month. The plant produced 16 453 vehicles, exceeding the previous record set exactly in October 2009, when the plant manufactured 15 131 units in one month.

“The production volume we achieved in 2019 is an important milestone for VWSA. This achievement is testament to the efficiency, commitment and excellence of our employees. I am grateful to every contribution they made in 2019 to reach this impressive number, and I look forward to more successes in the year ahead,” said Thomas Schaefer, Volkswagen Group South Africa Chairman and Managing Director.
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The do’s and don’ts of purchasing a laser cutting machine

The laser (CO2 and fiber) cutting machine has become the ultimate cutting tool for sheet metal in recent years. It’s also one of the most rapidly evolving technologies in metal fabrication and not so long ago you’d be hard pressed to find a fiber or disk cutting laser at a custom fabrication shop. Today they’re popping up everywhere. Some figures bandied about say that 28 machines were imported into South Africa just from China, last year.

Guenter Schmitz of TRM Supplies, a company that has specialised in the sourcing, importing, and installation of a wide range of new sheet metal machines, as well as offering service, support and repairs of the equipment, believes that the manufacturing industry in South Africa needs to be educated about the do’s and don’ts of purchasing a laser cutting machine.

“For most manufacturers, buying an industrial laser cutting machine is a major investment. It’s not just the initial price you pay, but the fact that the purchase will have a great impact on the entire manufacturing process. If the wrong equipment is chosen, you have to live with the decision for quite a long time. It is not unusual to see manufacturers keep a laser for seven to 10 years, before upgrading,” said Schmitz.

“Do you know the best way to go about purchasing a laser cutting machine? Even if you currently own one, how long ago did you buy it and what has changed since then?” continued Schmitz.

“Production managers are always on the line for costs. Whenever the economy takes a dip, the microscope comes out for a closer look at how an operation can be more efficient. For a custom fabrication shop, one way is to bring the laser cutting work that they were previously outsourcing – a big decision – in-house. What they do not realise is that along with this comes a multitude of learning curves and problems, mainly because of the lack of experience and know-how of the process.”

“But there will come that time when you have to ask yourself if it is time for the company to bring laser cutting in-house. This has to be considered even if the business relationship with the subcontractor is great. If the decision is made to bring laser cutting in-house, you may be put in a position where you need to justify why the investment needs to be made. The costs associated with subcontracting out the laser cutting are just the starting point for the justification. How much more productive will the manufacturing process be with in-house laser cutting? How does this affect lead times? From an expense standpoint, not only do you have the cost of the laser cutting machine, you have labour and consumable costs.”

“This scenario doesn’t involve a lot of risk and can work if you have some flexibility with lead times.”

“Lasers have become the true workhorses of metal fabrication, and they have never been more productive. They cut nests at unprecedented speeds, which has made material handling automation even more important. All the high cutting speed in the world may not dramatically affect overall cycle time if a laser sits idle for prolonged periods, waiting for operators to load sheets and unload parts.”

“Similar thinking also applies to edge quality. Edge quality is, of course, subjective. A fabricator will look at a laser-cut component and find that the edge quality is not very good. A welder, on the other hand, may look at the same part and see a smooth, consistent, high-quality edge. Regardless, the application requirements dictate what is considered a quality edge or not. A laser can finish a nest of components in no time flat, but what if those components need to be sent through a secondary operation?”

“To evaluate which machine is best for you, you must first understand your application and define your needs and limitations, all the while accounting for new opportunities and future goals. By doing so, you best match the system capability with your needs, allowing you to take full advantage of the productivity, versatility, and quality benefits that automated laser cutting has to offer.”

“For example, since the game-changing fiber lasers were launched they have made their mark on thin-gauge cutting and speed of cutting. Power sources on fiber machines have progressed rapidly and I believe you can even get a 20kW machine these days. All will be revealed at the forthcoming EuroBlech 2020 exhibition in Hannover, Germany in October 2020.”

“The thickness of the gauge that a fiber laser can cut is increasing but at what cost, both in quality and price? I am sure technology will improve but at the moment you must consider CO2, plasma or waterjet cutting, depending on the gauge thickness that you operate in. Each brings its own unique strengths to the table. Which begs the question: Which process is right for you? Or do you even need to go the laser cutting route? Depending on the component volume, a stamping press,
a traditional turret punch press or a high-definition plasma system may deliver the lowest cost per component."

The pitfalls of buying cheap

"These are normal business decisions and manufacturing practice that I have explained. However, South African manufacturers are notorious for buying cheap when investing in capital equipment. It is a generalisation, but I have been around long enough to give an informed opinion. Other than monetary issues, when manufacturers offer reasons as to why they are looking at purchasing a laser cutting machine, they mention control. Ask yourself these questions to see if you fall into this category:

- How many times have we lost business because of late delivery?
- Have we ever had to reject components because of poor quality?
- How would it help our image if we had our own laser cutting capabilities?"

"Once they have said yes to these three questions and the decision to invest in a laser cutting machine is made, then they go and dig themselves in deeper by buying cheap. As a manufacturer, you

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have numerous sources from which to purchase a laser cutting machine. There are dealers that specialise in used equipment and original equipment manufacturers that offer state-of-the-art cutting equipment and even refurbished machines that may not have the production prowess of new machines, but can still perform much more efficiently than machines of a similar age with no rework done to them."

"Ask the supplier questions about service availability. Today's fiber technology does not require as much maintenance as compared to CO2, but when a machine goes down, you'll want it back up and running as soon as possible. Find out about parts availability and delivery to fix your machine if there is a breakdown. We are working with technology and things do go wrong. This is not taking the human element into the equation. Again, a laser cutting machine that can't cut because of a damaged part just doesn't cut it."

"Also be aware that laser cutting machines from OEMs that are recognisable in the industry typically have higher resale values."

**Technical quality and backup service**

"As the name suggests, CO2 laser uses a gas mixture based on carbon dioxide. The mix of CO2 and other gases, commonly nitrogen and helium, is electrically excited to create the beam. Solid-state lasers come in fiber or disk varieties and are available in the same power ranges as their CO2 counterparts. Like the CO2 variety, the name is descriptive, identifying the laser’s beam origin as a solid, either an extruded glass fiber or a small crystalline disk. Both have a rare-earth element suspended, or doped to use the industry term, in the solid matrix that is excited by diodes to emit light in wavelengths from 900 to 1 070nm (commonly called 1µm)."

"From a facilities standpoint, solid-state lasers do not require nearly as many resources as their CO2 counterparts. Beyond the simplified beam delivery system, possibly of greater value is the modest floor space requirement. These days, fiber lasers from eight to 10kW require just 20 per cent of the floor space of CO2 lasers of similar power. Add the fiber laser’s electrical efficiency, which is three to five times better than that of CO2 lasers, and the hourly operating costs are much less than those of CO2 technology."

"As fiber laser technology has rapidly advanced over the last several years, it can be hard to distinguish what is important when considering a high-power fiber laser. There are more things to consider than the highest kilowatt rating or the fastest advertised feed rates. Putting an entire package together for your success involves many areas of evaluation and can be challenging."

"You have to consider the body and table, as well as the stability of these two fabricated items, the laser source, laser cutting head, air compressor, air cooling dryer and filter, the CNC system and many others. These are the standard items on a fiber laser and can be sourced easily, like many of the fiber laser manufacturers that have emerged in recent years. 15 years ago there were probably less than 20 OEM manufacturers of machines and the industry was dominated by a couple of manufacturers of fiber lasers, amplifiers and modules. The market has opened up and there are now many more manufacturers of these power systems, as well as the cutting systems. The software providers and CNC control manufacturers have exploded."

"The end result is that virtually anybody with a bit of know-how can manufacture a fiber laser cutting machine. Who knows how many there are now? I estimate that in China there could be over 300."

"This has led to the market being flooded with cheaper options, relatively speaking, and herein lies the problem. Everyone wants to gain market share and you now have a host of new one-man agencies and representatives who have little knowledge about the process, have no back-up service, don’t carry spares and just sell on price. Daily we get calls from companies that have gone with the cheap option and their machine has broken down and now they want us to fix it. Well, their machines are still standing still."

"Besides the power and cutting systems and the CNC controls, there are a whole host of intricate operating features that make up a laser cutting machine. These include the laser cutting heads, the nozzles, the diode modules, fiber block, digital power supplies and digital control electronics, to name a few. Then there are the safety aspects."

"Technology in this industry over the last 25 years has been many changes. It’s not just a case of buying from Alibaba and then plugging in and playing!"

"Big technology implementations are demanding. When investing huge sums of money in fiber laser cutting machines with elaborate material management setups, you expect an advantageous ROI. However, in the new rush to install these super-fast cutting machines, you might be discovering that navigating such an implementation project is more than you expected."

"Like buying a CNC machine tool or your dream car, you need to be educated and informed about your capital expenditure. Deal with those that have the know-how, experience and services and resources to back them up."

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uality tools and machinery are the backbone of the South African manufacturing industry which is why Machine Tools Africa 2020 has been designed to showcase the very latest technology developments, machinery, products, services and solutions in this innovative sector.

Machine Tools touch every aspect of our lives from cell phones to cars, heart monitors to food processing equipment, computers to coffee machines – almost everything that’s used on a daily basis at work and at home.

Taking place at Expo Centre, Nasrec in Johannesburg from 12-15 May 2020, the exhibition will bring machinery alive through the daily demonstrations and interactive displays. On view will be equipment in machining such as turning and milling, grinding and drilling, as well as all types of sheetmetal machinery including fiber laser, plasma cutting, bending and punching and presses. Also exhibiting will be various suppliers of tooling and CAD CAM software who are an integral part of the successful engineering shop, as well as suppliers in the additive manufacturing, automation and control industries.

Close to 80 companies will be exhibiting at Machine Tools Africa 2020. These companies will mainly be the local machine tool suppliers together with their international principals. Whether you are a job shop, service centre, production business or just a general engineering business there will be machines, software, tooling and accessories on display that could enhance your business.

As a value-add for visitors, the Seminar Theatre, hosted by the South African Institution of Mechanical Engineering (SAIMechE), will see top industry experts presenting topics covering the latest innovations, industry trends and future technologies. These seminars are free to attend.

Another visitor attraction will be the ATI Skills Zone, where the future of skills development will be in the spotlight. Developed in partnership with the Artisans Training Institute (ATI), this area will be a fully functional workshop where learners will demonstrate trade skills learned at ATI including electrical, instrumentation, welding, and fitting and turning, amongst others.

The South African Capital Equipment Export Council (SACEEC), representing the capital equipment and project sector both for new projects and for the aftermarket, has partnered with Machine Tools Africa and will be supporting the ‘new products and technologies’ walk-way with its demarcated stands.

Also committed to the show is the South African Institute of Welding (SAIW), a non-profit technical organisation dedicated to furthering standards in welding-fabrication and related technologies.

Opening times
Machine Tools Africa 2020 will take place from Tuesday 12 May 2020 until Friday 15 May 2020 and will be open from 09h00 to 17h00.

Entrance ticket
A free entrance ticket is in this issue of Metalworking News. If more than one of you are attending from your company you can register in advance on the Machine Tools Africa 2020 website.

Snapshot of the exhibitors

The following is a selection of some of the exhibitors taking part and a description of what you can expect to see on their stands.

› Amada (UK) Johannesburg Branch Hall 6 Stand J18
   As one of the market leaders in the supply and support of state-of-the-art machinery to the South African market for over 35 years, Amada is once again proud to demonstrate technology that not only provides the total solution, but also gives a technological advantage with total peace of mind.

   The 020 Machine Tool Show will see the latest in fiber laser technology, which incorporates the latest variable beam technology together with an Amada built power source to guarantee repeatability and reliability. With machines only being as efficient as the operator, Amada will couple this with an automatic sheet manipulation system as well as a parts removal and sorting system, which ultimately reduce the human intervention.

   To complement this solution, there will also be a servo driven turret punch press - demonstrating the reduction in running costs as well as reduced maintenance costs. The bending side of the offering will incorporate the new electric servo bender for small part / high-speed bending, the mid-range 7-axis hydraulic bender, as well as the top of the range bending machinery with automatic tool loading / unloading.

   To show the simplicity and ease of machine integration, we will be holding software demonstrations throughout each day.

   

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B&R Metrology Solutions Hall 6, Stand B10
B&R Metrology Solutions specialises in supplying cost-effective metrology and measuring equipment for the manufacturing industry. They will exhibit an exciting portion of their product range including Coordinate Measuring Machines, Video measuring, portable scanning arms and more from reputable brands, including LK Altera, Renishaw, Nikon Metrology, Mahr and many more.

Bystronic South Africa Hall 6 Stand B9
Bystronic South Africa are suppliers of sheet metal fabrication solutions and metal processing equipment. The focus lies on the automation of the complete material and data flow of the cutting and bending process chain. Bystronic’s portfolio includes laser cutting systems, press brakes, and associated automation and software solutions. Comprehensive services round off the portfolio.

Without giving too much information away, as Bystronic South Africa is looking to surprise its visitors who attend the exhibition, they will have a new laser on display, three press brakes, one of which is new to the product range, a tube cutting configurator, storage solution options, deburring and finishing systems and software demonstrations.

DC Auto-Motion Hall 6 Stand J9
DC Auto-Motion prides itself on supplying various automation companies as well as machine tool companies with THK LM Guide linear bearings and ball screw products, providing sound technical advice and product know-how. DC Auto-Motion will celebrate 10 years in business in April, commemorating a decade of high-quality products and service excellence. DC Auto-Motion will be showcasing a variety of THK’s linear motion products, from the world’s pioneering LM Guide, to precision ball screws, as well as some automated demonstration equipment. DC Auto-Motion will also be featuring some of their other products that they represent such as rotary encoders from Fritz Küberl Germany, linear guide and telescopic slides from Rollon Italy and couplings and machine elements from NBK Japan.

Duncan Macdonald & Co Hall 6 Stand G7
Besides manufacturing and distributing Tapmatic cutting fluids Duncan Macdonald & Co also distributes products such as machine lubricants and coolants, tapping attachments, taps and dies, carbide cutters, deburring tools, snaplocks, multi spindles and end mills.

The company will be demonstrating the Grippex automatic bar puller for CNC lathes, which is a cheaper alternative to more expensive bar feeders.

The company’s new Tapmatic TapWriter will also be on display. The TapWriter allows you to mark your work piece while you are machining it without the need for a secondary marking operation. Part numbers, date codes and even logos can easily be created with this unique dot-marking tool. Tapmatic TapWriter utilises standard engraving software, but unlike engraving, dot-peen marking does not require the use of delicate cutting tools and high-speed spindles.

The company will also have on display Diatest measuring equipment, environmentally friendly cutting fluids and a range of end mills and taps.

Elkana CNC Services Hall 6 Stand A1
Elkana CNC Services is a privately-owned business who offer maintenance, service and installations on various CNC equipment. Elkana CNC Services is also a representative of the Chiron Group, a Swiss manufacturing company that specialises in the development and manufacture of CNC vertical milling and turning machining centers, as well as turnkey manufacturing solutions.

The focus will be on the new service concept called LifetimeSolutions. This service concept is primarily aimed at the different phases in the lifecycle of machines and equipment. These phases form the framework for the services. From knowledge transfer, maintenance management, service agreements, retrofits and modernisation through to smart services for digital manufacturing, depending on the customer’s needs and the life-phase of the machine.

Fanuc South Africa Hall 6 Stand D1
Fanuc South Africa will be exhibiting three new products. The Fanuc Series Oi-F Plus is the latest model of the Oi CNC series, which has exceeded 1.3 million cumulative shipments worldwide, and supersedes the popular Oi-F. The Oi-F Plus now includes iHMI, Fanuc’s new user interface which has been designed to be extremely easy to use. Intuitive menu icons, high-visibility design and animated features take the head-scratching out of complex machining operations, making accessing even the most
sophisticated programmes and functionalities straightforward. Users already familiar with iHMI on Fanuc Series 30i-B will find it very easy to use the 0i-F Plus. The operator interface hardware has also a new modern design with a dark theme.

The production monitoring system Fanuc MT-Link I is a PC software that connects machines in the factory by collecting, managing and making various information about the machines visible.

Not only can it connect machines with Fanuc CNC’s, but also other peripheral devices like PLCs and others. In addition, it contributes to make the machine IoT ready. Information from various sensors can be connected and data can be collected.

Also look out for the new type of collaborative robot - Fanuc CRX-10iA - a completely new level of industrial robots working hand in hand with manufacturing workers.

Grinding Techniques Hall 6 Stand A36

Founded in 1981 in Chamdor, Krugersdorp, Gauteng, Grinding Techniques has developed into an important force in the industrial abrasive market. Known as the biggest local abrasive manufacturer in Southern Africa, they have since 2014 become an important part of the global Tyrolit Group, one of the world’s leading manufacturers of grinding and dressing tools and a system provider for the construction industry based in Austria.

This year at Machine Tools Africa, they will showcase an array of application specific vitrified and resinoid bonded products. From precision grinding to specialist cutting and grinding operations, you will find a selection of application solutions driven to add value to your business.

Visit their stand for an impressive display of gear, surface, saw sharpening and centreless grinding wheels. On the smaller spectrum of wheels, you will find a range of internal cylindrical grinding wheels, segments and specialised diamond and CBN grinding wheels. A variety of coated abrasives, including flap discs and abrasive belts, to assist in achieving optimum surface finish will also be on display.

Perfectly positioned to serve and supply the abrasive market, Grinding Techniques offer realistic minimum quantities with competitive production lead times, technological expertise and attractive prices – a complete package focused on service and customer satisfaction.

Guhring Hall 6 Stand G1

Everything from a single supplier, Guhring produces over 1 500 tons of carbide every year, making the company one of the largest carbide producers worldwide. Guhring produce a comprehensive range of standard tools on a large scale. Customised and client-specific bespoke solutions complete Guhring’s offering.

Guhring manage over 600 projects every year with the responsibility for designing new tools, upgrading or converting machines and production lines, problem solving expertise with a comprehensive worry-free package and service that revolves around tools. Guhring’s sales network consists of more than 900 tool specialists across the globe.

Guhring provide advice and service regarding any tool-related matter and together with their customers, they implement highly efficient solutions every single day.

On display will be the company’s Guhring Tool Management. Guhring acts as the central logistics partner or as the cooperation partner for the entire tool management process, everything tailored to your needs. The TM tool dispensing system is a continuous development within Industry 4.0.

You can also find out about Guhring’s reconditioning services of regrind, recoat and reuse, thus reprocessing constant performance over the entire service life of the tool. In over 50 service centres worldwide Guhring’s tools are refurbished back to their original quality. As the inventor of the first carbide layer Guhring has been developing new coating types and coating technologies for tool application for over 40 years.

Hi-Tech Machine Tools Hall 6 Stand C12

Hi-Tech Machine Tools will exhibit various Mazak CNC machines ranging from a standard 2-axis lathe, Integrex (Mill-Turn) machine to a 5-axis simultaneous milling machine. Featured on the Mazak CNC machines will be Open Mind hyperMILL CAM software and Albrecht tool holders used on the live demonstration parts which will be running through the duration of the exhibition.

Mazak CNC machines are of Japanese origin. Mazak manufactures vertical and horizontal CNC lathes, vertical and horizontal machining centers and laser processing machines. Mazak CNC machines feature the Mazatrol Smooth Series Controller. The Smooth G & X Controller boast a 19” capacitive touch screen to make daily functions quick and easy. The Smooth controller can utilise both Mazatrol and ISO(G-Code) programs making programming for any operator each and functional.

Open Mind hyperMILL CAM software originates from Wessling, Germany. HyperMILL is a modular and flexible CAM solution for 2.5D, 3D and 5-axis milling as well as milling turning and machining operations such as high-speed cutting (HSC) and high-performance cutting (HPC), with everything integrated in a single interface. The special applications for milling impellers, blisks, turbine blades, tubes and tyre moulds complete the range of functions available in hyperMILL. hyperMILL can be used as a standalone system using hyperCAD-S or hyperMILL can run as an add-in for Solidworks or Autodesk Inventor.
Albrecht Precision Chucks, based in Wernau, Germany manufacture keyless drill chucks for manual milling and turning machines. Albrecht have also designed a keyless CNC drill chuck for modern applications and demands. When utilising milling tools for high performance and heavy-duty machining, Albrecht has the APC and Ultra chucks which use a 1:16 worm gear to pull the special collet on a 1.25 degree taper into the holder ensuring high clamping force for peace of mind and increased vibration dampening. When hard to reach areas and 5-axis strategies are needed, Albrecht can offer the 5-axis Slim Line, XXL Extensions and Micro Chucks. The Pin-Lock feature which mechanically secures the Weldon notch in the collect enables even better security when milling difficult to machine materials.

Lead Machine Tools Hall 6 Stand B12
Lead Machine Tools was founded in 2011 and has since built a reputation throughout South Africa as a high-end, B-BBEE Machine Tools merchant, supplying high-technology machine tools and accessories. Lead Machine Tools has carefully selected hi-tech suppliers from Europe, USA, Taiwan and Japan to cover a wide range of machine shop, job shop and production requirements. They are continually improving the product range to keep up with the constantly evolving technological manufacturing world.

Lead Machine Tools stock a large variety of CNC accessories, CNC tooling, conventional machines and related equipment. For quotations or advice please don’t hesitate to contact one of our professional sales engineers.

On display will be a Sino VMC-850P and VMC-640HL vertical machining centers, a Hwacheon Cutex 160B MC with driven tools and a robot with a Renishaw Equator making it an integrated cell and a Taili 100T injection moulding machine.

Machine Tools Online Hall 6 Stand E3
MTO are suppliers of new and used quality machine tools for both the engineering and sheet metal fabrication industries. As of 2020, Machine Tools Online has been appointed the official agent for Yawei machinery. Established in 1956, Yawei has grown into one of the leading manufacturers of high-end CNC sheet metal processing machine tools in China.

On the stand will be a Yawei PBC series 220T x 4100mm CNC press brake with a Delem DA-66T control and a Yawei HLE series 3KW fiber laser, featuring a 1 500 x 3 000mm cutting area with an automatic pallet exchange table. Both
machines have already been sold to Regrade Masters in Johannesburg.

If you are looking for the right quality machinery at the right price, make sure to visit our stand at this year’s Machine Tools Expo!

**Mecad Manufacturing Hall 6 Stand C8**

Mecad Manufacturing is the only local, complete engineering software provider with global market-leading products and world-class support in various locations across the country. Servicing industries ranging from mining to aerospace to medical. Increasing productivity and visibility throughout the design-to-manufacture process and across the shop floor. Controlling everything from CNC plate processing machines through precision machining equipment to hi-tech robots.

Besides optimising your productivity, Mecad Manufacturing is passionate about providing decision support systems that turn your procedures from cost-cutting processes to revenue-generating tools, in order to maximise profitability. This would not be complete without the ability to control quality and reverse engineer products. But, guess what ...

Mecad Manufacturing will exhibit its six main software solution partners: Sigmanest, Mastercam, SolidWorks, Robotmaster, CIMCO and Verisurf. Technical and sales personnel will be on the stand to analyse your needs and provide you with the right solutions for your business.

**Metal Chip Machinery Hall 6 Stand J11**

Metal Chip Machinery supply, install, commission and maintain capital equipment and provide the spares and consumables necessary to ensure that your asset need not stand idle. Metal Chip Machinery are agents for European and Asian manufacturers of cutting, forming and chip removal equipment as well as tooling and accessories. These include HSG Lasers, Muratec, Kaltenbach, CoastOne, Gerradi and Buffalo Machinery (Microcut) amongst others.

On display will be two CoastOne electric press brakes, a 2kW HSG fiber laser and a display of Gerradi tooling.

**PBS Machine Tools Hall 6 Stand E1 and E2**

PBS Machine Tools’ stand will revolve around the concept of the smart factory, showing off productivity tools that can ensure you run at the highest possible production rates, whilst being connected to view your machines status.

The machines on display will include TongTai machining center and lathes with increased rapids, higher productivity and improved a focus on cost: performance ratios. The company will also have a variety of models from our supplier base in order to show potential customers that PBS is your go to solution, whether you are in mass production or the jobbing environment. These include CNC lathes and tube and pipe bending machines.

The TongTai VMC VP series has a direct drive spindle, 48m/min rapid on X/Y/Z, pre-loaded linear guides, tool life management and large machining ability and tapping capacity. High speed machining at a reasonable cost solution.

The TongTai TE2500MB CNC lathe has dual spindle with driven tools, allowing users to optimise cycle times as well as complete jobs in one set up.

Adding to this, carefully selected; automation, machine accessories and productivity tools for the modern engineering shop.

**Pilot Tools Hall 6 Stand A4**

Pilot Tools are manufacturers of tungsten carbide cutting tools and mining blanks. Pilot Tools was established in 1939 by Mr. James Morrison, the late grandfather of the current directors and shareholders, the Morrison brothers. His aim was to create a focused, niche manufacturer of quality tungsten carbide metal cutting tools and hard rock mining and construction buttons, tips and inserts. The company will have a range of their products on display.

**Puma Machine Tools Hall 6 Stand H6**

Puma Machine Tools was established in 2001 after an opportunity arose when we were offered the sole agency for the Machine Tool Division of Daewoo Heavy Industries from Korea. In the interim, a name change took place and the machine tool section is now being manufactured by Doosan Machine Tools in South Korea. They are one of the leading manufacturers of CNC machine tools for lathes, machining centers and horizontal boring machines.

Their range of such machines are used in
FIBER LASERS
Simple, inexpensive, compact
- Variety of materials
- Enhanced productivity in thin sheets
- Low investment and operating costs
- Simple to operate
- Simple design and short installation time

DURMA
AD-R PRESS BRAKES
Fast, stronger, accurate with new design

PLATE ROLLING MACHINE
SECTION ROLLERS
SHEARS
PLASMA CUTTERS
BANDSAW
IRON WORKER
PUNCH/LASER

HYUNDAI WIA
Advanced Production
Machine Tools

From unique design to production and after-sales service, HYUNDAI WIA’s machine tools are the tools for higher productivity and higher precision.

Other machines available:
- CNC punching machines
- Variable rake swing beam and mechanical shears
- CNC plasma cutting systems
- 3D angle processing centers
- Plate roll benders
- Profile benders
- Iron workers
- Band saws
- Corner notchers

LM1800 Multi-axis Turning Center - 673mm turning length

L280 Turning Centers - from 720mm to 1000mm turning length

F400/500 Machining Centers - from 1000mm x 460mm to 1200mm x 300mm table size

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Retecon's variety of products include vertical and horizontal equipment to the metal working industry in Southern Africa. The main displays on Puma Machine Tools’ stand will be CNC metal removal sheet metal and pipe manipulation equipment.

These will include on the metal removal side a Doosan DNM 5700 vertical machining center with XYZ travels of 1,050mm by 570mm by 510mm, a Doosan LYNX 2100LSY turning center with a turning length of 550mm and swing of 600mm, a compact CNC turning center – the Doosan LEO 1600 with a turning length of 300mm and swing of 320mm and a Doosan GT2100B horizontal turning center with a turning length of 562mm and swing of 390mm.

On the sheet metal side Puma Machine Tools will have a JFY 3kW fiber laser and a JFY 3100 pressbrake with a 100 ton bending force and width of 3,100mm. They will also have a Cosen bandsaw on display.

- **Rapid 3D Hall 6 Stand A11**

  Rapid 3D supplies and supports additive manufacturing (3D printing) solutions from EOS. EOS is the global technology and quality leader for high-end solutions in the field of additive manufacturing (AM). Rapid 3D was founded in 2004 and has an experienced and expert team ready to assist you in leveraging AM technology for your business. Solutions covering verticals such as aerospace, automotive, industrial manufacture and more. Rapid 3D can supply AM solutions for the production of parts in metal and polymer as well as full processing solutions.

- **Retecon Hall 6 Stand J8, Stand H5, Stand H1, Stand K8, Stand K10**

  With over 50 years of experience Retecon is a leading supplier of machine tools, accessories and measuring equipment to the metal working industry in Southern Africa. Retecon’s variety of products include vertical and horizontal machining centers, turning centers, large boring mills, profile cutting and drilling lines, grinding machines, laser cutting systems, bending machines, punching and forming machinery, automatic sawing equipment, roll forming and tube bending machinery, manufacturing lines for tubes, presses, measuring equipment and much more.

  The Retecon stands will have a Trumpf 10kW laser, a Trumpf 4kW laser, a Trumpf Trubend 7036 press brake, a Trumpf Trubend 3100 press brake, a DMG CMX 50 U, an AgieCharmilles CUT E 350 wire cut, a Weber deburring machine and various small machines for general industry.

  The DMG MORI CMX 50 U is a 5-axis milling machine with XYZ travels of 500mm by 450mm by 400mm and a table load of 200kg. The AgieCharmilles CUT E 350/AgieCharmilles CUT E 600 range puts efficiency at the touch of your finger with a smart, easy-to-use human-machine interface (HMI) and onboard technologies that streamline your job setup, improve your cutting speed, improve your surface finish, protect your valuable workpieces, and ensure your process robustness.

  On the Trumpf side there will be on display two fiber lasers, one equipped with a 10kW TruDisk laser and the other with a 10 TruDisk.

  The Trumpf TruBend Series 7000 press brakes consists of two models: The TruBend 7036 has a press force of 36 tons and a bending length of 1,020mm. Its usable installation height is 295mm. The Trumpf Trubend 3100 press brake features a press force of 110 tons and 3,000mm of bending length in a space-saving design. It comes standard with a 2-axis backgauge, with the option to expand to a 4 or 5-axis backgauge.

- **RGC Engineering Hall 6 Stand G6**

  RGC will have a full interactive Measurelink statistical process control system (SPC) setup, showing the latest in integration of digital measurement tools. This will include micrometers, vernier’s, height gauges and other small tools. RGC will also be showing the ability to integrate this with other capital items like 3D coordinate measurement machines (CMM), vision machines (2D and 3D optical measurement machines), Surftest (surface roughness tester) and others.

  On the Marposs side RGC will be showcasing some of the state-of-the-art solutions for production inspection requirements, manual hand held inspection gauges, in line bench measuring fixtures and fully automated in line inspection systems for specific custom inspection requirements including Real Time SPC.

  RGC will be showcasing a range of GOM Atos Core scanners in various setups and measuring volumes as well as the portable Tridip system that measures coordinates of 3D objects quickly and precisely, showing capabilities of 3D digitising, deformation analysis, CAD overlay and full inspection. Live demonstrations will be done at the stand.

- **Simteq Engineering Hall 6 Stand E10**

  Simteq enable clients to know what to make, how to make it and check that is was done right.

  Their computer aided engineering (CAE) specialists have a passion and understanding to integrate simulation technology into real-life problems, engineering challenges and manufacturing uncertainties.

  Simteq Engineering makes businesses profitable and competitive by taking costly trial-and-error design and manufacturing processes of products into the virtual world.
With their team of expert engineers and their simulation and analysis technology, they make it simple to solve and prevent manufacturing and in-service problems of parts, assemblies and systems.

Simteq train, support and sell to our customers in these technologies and also provide specialist services in a number of highly specialised areas, where the industry may still lack the experience or access to the technology, such as manufacturing processes (weld, forming, additive), blasts, crashes, structural analyses, fluid flow, multibody dynamics.

Simteq is the local business partner of MSC Software, who is part of Hexagon’s Manufacturing Intelligence initiative to develop smart factories. MSC Software is one of the 10 original software companies who developed simulation technology to help NASA to put mankind on the moon.

 › Somta Tools Hall 6 Stand C9

Somta Tools’ theme and emphasis is on making manufacturing better, through all the new solutions that they have to offer the industry in South Africa.

Somta Tools will be focusing on the exciting new solutions that they have for extending the life and performance of wear components with all their new coatings that they can now offer. Customers products such as gear cutters and piercing punches with the new coatings will be on display. Somta Tools will also be showing some of their standard tooling as well but more the application products like reamers, UDL Drills, solid carbide roughing, finishing, VariCut and hi-feed end mills as well as solid carbide end mills for aluminium and also a few of the different specials that they make for some customers like nut taps and sugar grooving inserts.

Somta Tools are also launching a new multi-purpose range at the show, including an HSS drill range, a solid carbide drill range (one with internal coolant and one without), a 4-flute solid carbide high performance end mill, a HSSE OSG hand tap, a HSSE OSG spiral point and spiral flute tap. All of them are made to be able to machine into all different types of steel hence multi-purpose. All come with a new uniquely coloured coating specifically suited for this. The solid carbide drill range and all the taps have an uncoated option as well as a coated option.

Somta Tools will also be exhibiting a range of OSG’s tooling including some 15xD and 20xD HSS-Co drills with...
WXL coating for steels, cast iron and cast aluminium (TDXL), a new one pass thread mill with egIAs coating (AT-1), some HSS forming taps with multilayer TiCN coating for general steels, stainless steels and aluminium (R-XPF), some NEW 3xD and 5xD 3 flute carbide drills with internal coolant and EgiAs coating that allows high-feeding of 1,000 mm/min process in steel and cast iron (ADO-TRS), some indexable tooling, as well finishing ball nose cutters (PFFB) and others.

Somta Tools will also have on display clamping systems from sister company Vischer & Bolli and toolholder systems from industry partner D’Andrea.

Somta Tools will also have a Haas VF2 on the stand on which they will be machining big blocks of M200, 304 stainless steel and H13 hardened steel with some OSG products, including some powder metal forming taps with side through coolant and multi-layer TiCN coating for high speed tapping in general steels, aluminium, stainless steels (A-OIL-XPF), some 2xD carbide drills with EgiAs coating for flat drilling applications (ADF-2D), some carbide end mills with WXS coating and multi-flute with super radius for hardened steels up to 65 HRC and stainless steels (WXS-CRE) as well as the new multi-purpose spiral flute taps, coolant feed carbide drills and 4-flute solid carbide high performance end mills.

Spectrum Machine Tools Africa Hall 6 Stand A20

Spectrum Machine Tools Africa specialises in sheet metal and metal removal machines. Spectrum Machine Tools Africa is the sole distributor in South Africa for various brands such as Durmazlar Makina (Durma), Hyundai Wia, Tamsan Compressors, Mikropor, Metalix CAD/CAM software as well as other products complementing the products delivered by Spectrum Machine Tools such as press brake tooling, laser and plasma cutting consumables.

On display will be a Durmazlar AD-R 30135 press brake with the new DT 15 control and aluminium back gauge and new generation servo motors. The machine has 3,000 mm width, a 135 ton bending force and a 4th-axis.

The company will also have a range of press brake tooling and laser consumables on show.

In addition, Spectrum Machine Tools Africa will have on display a Hyundai Wia KL 2300A CNC turning center with a 355 mm turning diameter and a 440 mm turning length.

Stillam CNC Programming Solutions Hall 6, Stand B11

Stillam CNC Programming Solutions, the sole appointed authorised reseller of Alphacam, Edgecam, Radan, and WorkNC for Hexagon Manufacturing Intelligence. Stillam will be partnering with several machine tool dealers to showcase their software products driving CNC machines on the dealers’ respective stands.

They will also be displaying Alphacam, Edgecam, Radan and WorkNC in their booth with live demonstrations and a dedicated support desk for their customers attending MTA 2020.

Talmac Machine Tools Hall 6 Stand C6

Talmac Machine Tools are suppliers of Prima Power (lasers, punching and bending machines), Gasparini (press brakes and shears), Omera (presses, ironworkers and trimming machines) Millutensil (feeding lines), Norda (press automation), Kinetic (plasma cutting and drilling), Bigstone (bandsaws), Rolleri (press brake tooling).

On display the company will have a Prima Power Combi Sharp, an integrated punching and laser cutting at an affordable price. Combi Sharp combines unbeatable punching performance with the latest in fiber laser cutting, expanding the productivity of the highly versatile integrated manufacturing concept to a new customer range. The optimised cutting head and collimator, fiber and cutting parameters, deliver a very high cutting quality up to 8mm material thickness.

Talmac will also have a Faccin variable geometry plate roll up to 40mm, on display. Thanks to the special configuration of HAV electronic plate bending rolls, the machine’s three rolls move independently - the top roll moves vertically, the lower rolls horizontally - allowing you to adjust, as required, the centre distance between the lower rolls and the distance between the bending points, as is the case on a press brake with a variable opening lower die. By reducing to the minimum the centre distance between the lower rolls, the HAV series bending rolls obtain excellent traction of the sheet. In addition, by minimising the length of the straight part, they offer better quality pre-bending. The maximum centre distance between the lower rolls instead, makes it possible to produce a huge rolling capacity.

A Rolleri grinder for sharpening tools will also be on display.

TH Machine Tools Hall 6 Stand F8

TH Machine Tools specialises in used, reconditioned and new fabrication, manufacturing and engineering machines, including press brakes, guillotines, plate rolls, metal workers, lathes, milling machines, drilling machines, bandsaws and more.

TH Machine Tools supplies the engineering industry with good quality and value for money machine tools, services and
spares. All machines go through a thorough commissioning process before leaving the floor, and a reliable team of specialised technicians attends to all after sales services and maintenance. The company will have a range of the machines they market on display.

TRM Supplies Hall 6 Stand F9
TRM offers products in the field of sheet metal machines for the following industries: Sheet metal, air-conditioning, rail and road transport, vehicle manufacturing, mining and engineering, structural and architectural steelwork, advertising display manufacturing and toolrooms.

WD Hearn Machine Tools Hall 6 Stands J12, J13, J14, J15, J16
WD Hearn is one of largest CNC machine tool suppliers in South Africa providing highly experienced technical support and quality after sale customer service wherever your business is situated. WD Hearn was established in 1937 and presently has branches in the four major cities around the country. WD Hearn is consistently up to date with the latest worldwide machine tool developments and current technology market trends. We make a point of understanding all customers' needs to ensure that professional and customer-specific advice is given to all job shop and production requirements.

With just over 300m² exhibition space spread across five stands, WD Hearn Machine Tools are going to showcase five models of Leadwell CNC machines: The T-8XL linear way turning center, the V-50L vertical machining center, our best seller, the V-30i vertical machining center, the T-6iL compact turning center and the V-42iF vertical machining center.

Renshaw probing systems will be operating on some of the machines, including the Renishaw Blue Laser and the new Renshaw APC toolsetter for lathes.

The machines will have the following controls on them: Siemens 828D 15.2” touch screen control on the V-50L, Siemens 808D control on the T-6iL and Siemens 828D Basic on the V-42iF - so a complete mix of Siemens low to mid-range controls.

On display will also be Nikken 4th-axis rotary tables and angle heads.

On the EDM Wire side there will be two machines: Mitsubishi MV-2400S WEDM with D Cubes control and Mitsubishi EA-125 EDM CNC with 20-position electrode changer and Erowa C-axis.

There will also be a LK TC-710 Drill Tap Center with BT30 tooling and a LK CMM 10.76 with a Renishaw Revo Head. Included on the measuring side is a Starret HB400 shadow graph and an AMV300 video measuring system.

Other machines include a DMG CKE 6150Z flatbed CNC lathe and a Kent KGS-84AHD surface grinder.

There will also be a Bodor P3015T 3kW combination fiber laser with a 6m with tube attachment.

A new series Flow waterjet machine - Mach 100 with a 3 000mm x 2 000mm cutting area - will be doing demonstrations.

Renshaw will also be present on the stand and will exhibit many products including the OMP40, NC-4, OTS, TS-27R, the Sprint probe, APC, RMP60, a couple of Equators and LK TC-710.

Other companies that are exhibiting but did not submit any information at the time of going to print include Additive Manufacturing Solutions, AR Industrial, Artisan Training Institute, Baypac Solutions, Birla, Chemical Solutions, CNC Professional Machine, Colturn, CTSA, Dongguan Winstech, Dromex, Elquip Solutions, Flexilube, FEW,HMR, Hytorc, Magnum Machine Tools, Pinnacle Welding, Redman Engineering, SA Argus Laser, Samsung Machine Tools, Serr Synergy, Shanghai Yingin, Skok Machine Tools, Somo, Trotec Laser, United Power, Universal Earthing, Yanzhou Metal Forming, Yomi Supply Chain, Yongda Precision and Yunnan Shenkun.
**ROBODRILL** High Speed Machining Centre

- FANUC 31iB5, 5 axis Nano CNC Control
- Easy to use iHMI interface with touch screen
- AI Contour Control look ahead as standard
- Easy Conversational Programming with Manual Guide
- Optional high speed Direct Drive 4th axis
- 54 m/min Rapid Traverse
- Full 2 Year Mechanical & Electrical Warranty

**ROBOCUT** High Precision Wire EDM

- 5 axis wire EDM
- FANUC 31iWB CNC control
- Large 15 inch touch panel with USB I/O
- Advanced power conservation functions
- Faster cutting & better surface finish
- Fast air jet Automatic Wire Feed
- Optional Fully Submersible Rotary Axis
- Full 2 Year Mechanical & Electrical Warranty

**ROBOSHOT** High Precision Plastic Injection Molding Machine

- From 15 to 450 tons
- Fully electric driven machine
- AI Mold protection
- Backflow Monitor
- Pre Injection Function
- Bad Part Reject Function
- Full 2 Year Mechanical & Electrical Warranty

**i Series Robots**
Intelligent robots for any application, including:

- Arc & Spot Welding
- Machine Tending
- Palletizing
- Materials Handling
- Sealing
- Pick and Place
- Collaborative Robots
- Scara Robots

**FANUC South Africa**
011 392 3610  www.fanuc.co.za  sales@fanuc.co.za
Johannesburg  |  Durban  |  Port Elizabeth  |  Cape Town
Because Marnic Precision Engineering machines a large portion of its precision-machined components for the aerospace and defence industries, which require tight tolerances, the word precision in the company name is a prerequisite. It might also service clients in the medical, mining, power and energy, automotive, food and beverage, petrochemical and agriculture industries, but to a lesser extent. Prevailing circumstances in the aerospace and defence industries could see the company give more attention to these other industries though.

Marnic Precision Engineering is a machine shop that has successfully served aerospace customers for over 25 years. In fact, this market represents a large percentage of the work that currently flows through the Benoni, Gauteng business. That said, it is becoming more challenging to serve that industry because of the turmoil in an industry that is dominated by the state-owned enterprise Denel, explained Martin Potgieter, a Director at Marnic Precision Engineering.

“From his small one-man one machine shop the company has grown to 35 staff, offering a multitude of high-tech services. Something that we are very proud of and we intend to emulate Dad so that he looks at us proudly.”

Amongst the milling machines that Marnic Precision Engineering has are four Quaser MV 204 II vertical machining centers.

Christa and Pottie Potgieter of Marnic Precision Engineering, who together established the company in 1989.
Many South African aerospace companies are single source suppliers of components and assemblies to the likes of Saab, Boeing and Airbus to name a few. In addition, South Africa also has a long track record of producing full aircraft and complex aircraft systems from for instance the Rooivalk helicopter all the way to general aviation aircraft such as the Sling, to building aircraft under licence, such as the Dassault Mirage. South Africa also has a very mature research and development agenda through which the country has become a globally recognised leader in key technological offerings such as titanium beneficiation, air traffic management, avionics and electronic warfare systems and UAV’s, to name a few.

Relatively speaking the industry in South Africa is not huge, but is at the same time demanding. The Denel companies that serve the industry have been under pressure to make money because overall the Denel Group has been draining state resources. Denel Aerostructures is one area that the new management that was appointed in 2019 has now decided to exit and wind up. The aerostructure manufacturing business was just no longer sustainable for Denel, according to Denel’s media releases.

“This has a knock-on effect to many of the Aerostructures’ suppliers, first, second and third-tier. The positive out of this recent announcement is that Denel has reached an

At the moment aluminium machining makes up 70% of Marnic Precision Engineering’s material usage
agreement with its customers to transfer the manufacturing of aircraft parts and components to alternative suppliers. Hopefully those alternative suppliers are South African companies. Fortunately, we are not really exposed to this development but it is an example of the turmoil in the industry.”

“It is sad to see especially after all the announcements in previous years about Aerostructures’ big work packages from global manufacturers that it was involved in and was negotiating for.”

Marnic Precision Engineering was established in 1989 by Pottie Potgieter. The business has grown from the backroom of the Potgieter’s family home to the current facility in Van Wyk Road, Brentwood Park, Benoni. In between the company occupied two factories in Howard Avenue in Benoni for 20-odd years before it became too small for the company’s needs. This also coincided with Marnic Precision Engineering winning big contracts to supply non-conflict components for the defence industry in South Africa and internationally.

Prior to starting Marnic Precision Engineering in 1979, at the age of 26 Potgieter purchased a conventional lathe, which he installed at his home and worked on it in his spare time to earn extra revenue. Two years later he was able to afford to purchase a second machine and this time it was a Bridgeport milling machine, which is still operational today.

Potgieter’s extra mural machining activities were
formalised in 1985 when he registered a company PM Engineering. Due to the growth of the operation he had to move from the backyard room to a 250m² factory, which he would later purchase, in 1989. At the same time he registered Marnic Precision Engineering and took on a partner. Two years later Potgieter purchased his partner’s shares and became the sole member.

By 1994 Marnic Precision Engineering’s staff had grown to 16 and the following year Potgieter purchased the 400m² factory next door and soon filled it with machines after purchasing a machining operation that had gone into liquidation. The increased capacity would open new doors for Marnic Precision Engineering. 1995 continued to be a good year for Marnic Precision Engineering as one of the new clients that the company acquired would become the company’s biggest client. The client is a globally leading
defence and security electronics provider, based in Germany. This company has two South African manufacturing sites, both of them being their biggest manufacturing sites outside of Europe. This client is still a loyal client today.

Marnic Precision Engineering would continue to grow and in 2003 acquired Jawo Engineering, a manufacturer of precision components for the aircraft and defence industries. As a result of the purchase Marnic Precision Engineering would also acquire CNC machines and more conventional machines.

Changing of the guard
The family run business began its potential handover to junior members of the Potgieter family in 2006 when elder son Jacques Potgieter (37) joined the company. It took some time before younger son Martin (36) also joined the family business. Martin studied Mechanical Engineering at Tukkies University before spending a number of years in the design department of a communication and information technologies company. It was there that he became familiar with ProEngineer design software and when he decided to join the family business in 2015 he was able to bring a new dimension to the company, namely a design department.

“The move to our new facility in Brentwood Park five years ago was traumatic but also exhilarating. We built our 2 400m² factory from scratch, a greenfield opportunity that allowed us to design and construct the building as we wanted the layout to be. You could say we have two distinct bays now – one housing our conventional and Wire EDM machines and the other all our CNC equipment,” explained Martin Potgieter.

“A separate building houses our semi-automated welding department, which we only commenced with in 2019. The extra building was constructed originally to rent out but with our expansion into welding it does not look like that is going to happen.”

CNC milling capabilities
“We now have a total of 25 CNC machines. On the milling side we have 18 machines and we can process workpieces up to 2 000mm by 1 000mm by 800mm. Besides normal milling processes our machines are doing thread cutting, tapping and complex surfacing with a bore roundness accuracy of five micron and a positioning accuracy of 10 micron.”

“The last time we purchased new equipment for the CNC department was in 2017 when we purchased a Doosan DNM 650 vertical machining center with XYZ travels of 1 270mm by 670mm by 625mm, a 22.4kW motor with 8 000rpm.”

“That same year we also purchased three Fanuc RoboDrills. All three are the Fanuc α-D14iA5 series, which are compact machining centers with XYZ travels of 700mm by 400mm by 330mm, a working table space of 850mm by 410mm and a table load of 300kg.”

“Other milling machines that we have include four Quaser MV 204 II vertical machining centers and a DMG MORI DMU
70 eVolution, which is a 5-axis simultaneous machining center with XYZ travels of 750mm by 600mm by 520mm and a table weight of 350kg. The CNC Quasers have XYZ travels of 1 020mm by 600mm by 560mm and a table weight of 1 000kg."

“We also have two Johnford VMC 850 vertical machining centers at our disposal.”

**CNC turning capabilities**

“We do not have as many CNC turning machines as compared to the CNC milling machines. Even so we are well catered for with seven machines of various specifications. We can process workpieces with an OD of up to 550mm, a swing of 500mm and between centres, a length of 1 500mm. Bore roundness accuracies are five micron and concentricity 10 micron.”

“Among the CNC lathes we have a Mazak Quickturn Nexus 200 and an Okuma 270E.”

“On the conventional turning machines side we can accommodate workpieces of up to 650mm OD and 2 500mm between centres.”

“We have five machines in our EDM wire cutting department and here we can accommodate workpieces up to 300mm.”

“Other capabilities of material removal or processing include surface and cylindrical grinding with accuracies of two micron and then we also have conventional milling.”

“In total we have 40 machines setup between the CNC bay and the conventional bay.”

“With all this type of equipment you would think that we are a mould and die manufacturing shop but we certainly are not. We have the capabilities but in the history of the company we have not made any moulds for injection moulding, for example. Our business is about precision components with tight tolerances. Additionally, we do not process long runs of the same component like a production shop.”

“However, we do run small batch production runs when required to.”

**Temperature-controlled inspection**

“With the types of industries that we manufacture components for, which are shipped directly to the assembly line, our clients expect first-time quality from us. There are no incoming quality checks or receiving inspection routines. The onus is on Marnic Precision Engineering to get it right first time, all the time. They simply rely on us.”

“Temperature is the single largest source of measurement error. Control it, and your CMM or gauge should meet all performance criteria. Dimensional control is an important part of manufacturing, yet those trying to achieve precision measurements often forget the single largest source of measurement error: Temperature.”

“In most shops, temperatures change over time and space. One part of the shop might be warmer or colder than another, and the temperatures within different areas can even change at different times of the day. As temperatures change, so will the measured values of critical dimensions. And as manufacturing tolerances get tighter, it’s not only important to consider your machine or gauge’s ability to resolve to smaller values, but also how temperature may affect your measurement results.”

“Information gleaned from the inspection department is distributed to the machine tool operators and they act or make adjustments accordingly. Therefore, it is even more critical that your inspection results are correct. The machining process employs the power of accurate dimensional data to provide true process control.”

“For this reason, when we built this building in 2015, we made provision for a centrally located temperature-controlled inspection room. Various micrometers, height gauges, optical
comparators and hardness testers are housed in this room but the heart-beat of it are our two CMMs."
“The one is a Mitutoyo Euro-C-A9106 and the other is a Wenzel LH 54, which is equipped with a Renishaw Revo probe system to give us 5-axis capabilities.”

Reverse engineering
“We have the capabilities to reverse engineer components and assemblies. We can provide prototypes for clients, with all the testing and analysing done, before production begins. The steps followed usually consist of analysing the component function, measurement and material analysis, 3D modelling with Mastercam, manufacturing followed by measurement, testing and verification.”
“We are also able to carry out stress analysis and finite element analysis tests.”
“Other normal fabricating, finishing and assembly services are also offered.”
“We do process most materials. At the moment aluminium machining makes up 70% of our material usage. Additionally, we will not just make one component and supply. We rather make a few of the same component and hold them in stock so the client is not kept waiting when he next orders. The numbers vary because of the specialised types of products we manufacture or the components that we machine.”

Future
“Currently Dad is handing over to Jacques and myself. He is reducing his involvement but we still rely on his advice heavily. From his small one-man one machine shop the company has grown to 35 staff, with 29 on the shopfloor, offering a multitude of high-tech services. Something that we are very proud of and we intend to emulate him so that he looks at us proudly.”
“You can never be happy with the equipment that you have on your floor. Even though we have 5-axis machining and CMM inspection, we don’t have live tooling yet or additive manufacturing capabilities. It is something for the future. As is digitalisation and the move to integrated, data-driven manufacturing.”
For further details contact Marnic Precision Engineering on TEL: 011 421 7832 or visit www.marnicsa.co.za

Marnic Precision Engineering don’t just machine one-offs. They have stock on the shelf for clients
ENSIS 3015 AJ
High-precision fiber laser processing of thin-to-thick materials without additional machine setup

Following the success and technological breakthrough with the ENSIS fiber laser, AMADA now presents the ENSIS range in 3, 6 and 9 kW derivatives of this fiber Laser. The ENSIS range uses variable beam control technology developed by AMADA enabling modulation of the laser beam as a function of sheet thickness, changing the beam shape to cut material/thickness utilising a single lens for the entire range of materials and thicknesses which reduces machine setup requirements.

Ease of operation – intuitive AMNC 3i numerical control, large front and side access sliding doors and a high capacity automatic nozzle changer are further features ensuring machine setup is reduced to a minimum.

The 9 kW variant introduces AMADA’s Auto Collimation system, to provide unrivalled beam spot control – this allows very high speed piercing, fast cutting rates and vastly improved bevel angles on thicker materials – 1 second piece on 25mm mild steel.

- Full range cutting capability without the need to change lenses
- Rapid feed rates: 170m/min, of the fastest in class
- New hydraulic rack drive ensures high speeds and smooth operation
- Energy saving - ECO Cut and reduced power consumption

HG 1003
Press Brake With Automatic Tool Changer

Triple or quadruple your number of bending setups per day. An Automatic Tool Changer (ATC) performs tool changes quickly and precisely - eliminating costly delays associated with manual tool changes. The ATC is equipped with 18 magazines for dies and 15 for punches – providing the flexibility to accommodate rush jobs seamlessly. Now, complex tool layouts can be precisely loaded in three minutes or less.
Leadership isn’t attained through compromise. It’s achieved when excellence is the only noteworthy benchmark. Amada’s ongoing commitment to maximise your productivity has resulted in machines that set the global standard for speed, precision and performance.

Unwilling to settle for anything less than the optimal fiber laser source, Amada became the first manufacturer to produce its own fiber laser - teaming with JDSU to develop the AJ fiber engine. Unlike other fiber lasers on the market, Amada’s AJ series of fiber lasers and punch/fiber laser combination machines are engineered as fully integrated systems. This comprehensive design approach optimises the inherent benefits of fiber laser technology to ensure maximum productivity and accuracy.

Despite the crowded field of fabrication equipment manufacturers, it’s really quite simple. Only one company name is synonymous with leadership.

LC 2515 C1 AJ
Punch/Fiber Laser Combination
Equipped with an innovative Multi Purpose Turret, the LC 2515 C1 AJ is a revolutionary punch/fiber laser combination machine that maximises productivity while eliminating secondary operations. The C1 AJ features a highly efficient 2kW fiber laser that achieves faster cutting speeds and a wider range of cutting capabilities compared to a CO2 laser.

LCG 3015 AJ
Fiber Laser

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Despite the company now being recognised as a full systems OEM provider of underground mining equipment that includes continuous miners, shuttle cars, battery scoops, roof bolters and feeder breakers, the manufacturing of parts, and refurbishing and repair of these components and machines, constitutes the major portion of the company’s production capacity.

Unfortunately, much of the news about South African mining in recent years has been negative. Since its peak in 1980, when it contributed 21% of the country’s GDP, mining in South Africa has been overtaken by the finance, government, trade and transport industries. However, it continues to be a critical economic activity as it is the country’s sixth largest economic sector.

It was not so long ago that mining, gold in particular, was the number one revenue and foreign currency earner in South Africa. Gold is now only the fourth biggest selling commodity in South Africa, with coal, platinum group metals (PGMs) and iron ore all bringing in more money than gold. Iron ore is having a stellar time thanks to massive international price increases caused by the dam wall that broke in Brazil leading to Vale suspending production at one of the biggest iron ore mines in the world. This fuelled worries about iron ore supplies and this led to massive price increases. Gold is in the sunset period of its lifetime in South Africa. And it is becoming less and less important in the overall mining industry of South Africa.

With demand dropping for gold and the cost of mining gold has risen dramatically in South Africa, coal has replaced gold as the number one commodity mined in South Africa. According to Stats SA coal contributed 25.4% of total mineral sales in 2019, making it the most important mineral in the South African mining industry, South African coal production edged up by 0.5% in 2019, following on from a 0.4% rise in 2018.

However, the South African mining industry requires a revitalisation to regain its lustre.

Helping to put the shine back into the South African mining industry is J.A. Engineering, a company that has seen significant growth in the last couple of years and believes there is still opportunity in the mining industry.

“We’re living at an exciting time with the endless opportunities that technology and manufacturing evolution are affording us. Our imagination is the only restriction,” said Van Wyk.

J.A. Engineering carries a healthy stock of spares for gearboxes.

CEO Danie van Wyk and Sales Director Reuben Mabumda
long way off getting to the required figures. World demand for coal fell for the first time in two years in 2019, according to The Guardian (quoting a report from the International Energy Agency). European countries and the United States continue to replace coal-fired power plants with renewable alternatives, driving down demand. It remains to be seen, however, whether this is the start of a long-term trend. Coal is currently the main source of our South African energy requirements and it will remain so for some time,” believes Danie van Wyk, CEO at J.A. Engineering.

“J.A. Engineering has over 30 years of experience as a leading South African manufacturing engineering business that offers advanced engineering solutions to the coal mining industry. The company history reflects this with the development and manufacture of our battery scoops last century. Battery powered mining vehicles were introduced in the 1980s, but it is only in recent years that large-scale adoption of the technology is being considered. Our battery powered scoops improve the rate of coal clearance in underground mining. The flameproof battery powered unit, which complies fully with SANS 1654, features an innovative mechanism that allows for easy battery changeover. It is designed to be used in typical low seam coal mining applications either for a utility clean-up or as a production support machine,” explained van Wyk.

“We believe that J.A. Engineering now has approximately 80% market share for battery scoops in the South African coal mining industry. It was the company’s first venture into the manufacture of a mining vehicle. We have subsequently designed, developed and manufactured five other machines for the coal mining industry. These include two variations of continuous miners, shuttle cars, roof bolters and feeder breakers, all of which are powered by grid electricity or large generators. We now have a significant number of...
battery scoops, continuous miners, shuttle cars and feeder breakers that we currently support, and that operate as production machines in drill-and-blast environments. They are manufactured in various configurations and specifications according to customer requirement. These could include AC, DC, height, bucket length, ground clearance, payload, load capacity and many other variables.”

“All our machines have an African feel to them in that they are named after wild life. Our JAE42 continuous miner, which we introduced in 2016 is known as the Wildcat and our JAE Twin Roof Bolter, which we introduced in 2018 is known as the Honey Badger. We are also developing our JAE Caracal Shuttle Car with advanced driver assisted features. We are in the final stages of design for our Low Seam Continuous Miner the JAE38 Wildcub.”

“The paw of an African wildcat has also been incorporated into our logo representing our belief in sustainable mining solutions in the South African context.”

**Engineering solutions provider**

“All of the OEM equipment we manufacture has evolved from what was the original core focus of the company and still is – innovative engineering solutions and manufacturing of gearbox, as well as the refurbishing and repair of these products. Our experience in this field made us realise there is a market for designing, developing and manufacturing our own OEM equipment, specifically for use in South African underground coal mining.”

“It is a challenge because the mining industry does not believe that South African companies can be innovative and manufacture a product that we believe is superior to what is being imported or assembled locally.”

“This misconception, we believe, we have overcome, and has evolved into us now exporting our first machine to Australia. Our Wildcat JAE42A continuous miner, which has a high local content of 90%, is currently being shipped down under where it will be final assembled and brought into operation in May 2020.”

“Our client in Australia has developed a disruptive technology for all other mining methods and is poised to fundamentally change the nature of the mining of coal. Penetrated Block Extraction Mining System (PBE) is a remote-controlled underground mining technology that utilises military standard inertial navigation and guidance systems integrated with advanced positioning and situational control systems.”

“With PBE, coal is remotely mined in an environment where personnel are not exposed to the mining hazards of rock fall, dust or gas emissions. PBE requires much lower capital investment than other mining methods and is a high productivity system with much lower mining costs than other methods. The system is also referred to as a punch mining system.”

“While the Wildcat JAE42A continuous miner has the high cutting force essential to cut through South Africa’s hard coal, it will be deployed..."
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in Australia’s softer-coal environment, which could well result in enhanced performance. Roof-bolting will not be required for the punch mining system, as people will be located away from the vulnerable areas."

“Diversifying J.A. Engineering’s design success into hard-rock mining and taking on more opencast mining challenges are options the company is now considering.”

“We’re living at an exciting time with the endless opportunities that technology and manufacturing evolution are affording us. Our imagination is the only restriction,” said van Wyk, who also emphasised the company’s extensive repair and rebuild capability. This includes the electrical and mechanical upkeep of underground equipment and surface mining blasthole drills, rope shovels and walking draglines.

Facility in Jet Park, Gauteng

“We have a very well-equipped 8 000m² head office facility in Jet Park, Gauteng that comprises engineering, administration, machining, assembly and dispatch. 2015 was a big year for the company because we doubled our factory space by purchasing the 4 000m² building next door and we also purchased a company that was doing the majority of our
smaller CNC machining work. Along with the purchase came Goodway and Feeler CNC lathes and four big Kafo horizontal and vertical boring mills. Four TOS W100A machines have all now been through an extensive rebuild and refurbishment, including the electronics, to upgrade them. “Our machining capabilities are limited to the size of our machines and any larger components that we need to be machined is shopped out to a local company that has the machines to satisfy our requirements. Our manufacturing strategy has always been to form strong bonds with our local suppliers. With our partners, we manufacture everything, from pins and gears to steel structures, with the main import being...
The high local content of J.A. Engineering is reflected by direct imports amounting to a mere 9.7% of procurement spend, with the main import component brought in from the company’s Australian partner, and electronic control systems provider.

“Our local content may vary between 80% to 90%, depending on what we manufacture. All our castings and forgings are sourced locally, for example, as well as our plate and material that we machine from solid. Large housings for the gearboxes will also be outsourced locally.”

“Besides the CNC department we also have an extensive range of conventional lathes and mills. The nature of our business is not high production runs but more focused towards specific componentry, including shafts, used in gearboxes and large traction planetaries.”

“The receiving department is a very integral operation in our repair and rebuild division. All equipment or large componentry that we receive has to be dismantled and captured, inspected to see if we repair or replace with new and then decisions and work allocation are communicated to the other departments.”

“As previously said, we are very committed to local content and this has resulted in us being able to offer product and services cheaper than our international competitors. Even though we are constantly looking at ways of improving quality and reducing costs, the gap is narrowing. Last year I attended the EMO 2019 exhibition to look at new technologies such as robotics and data collection to improve our efficiencies and deliver a solution for the lowest cost per ton for customers.”

“Government needs to address the local manufacture and beneficiation situation, especially in the steel industry, if it wants local companies to remain competitive and create more employment opportunities.”

Employee partnership

“J.A. Engineering has put a great emphasis on equipping and providing our employees with the tools to be more efficient and productive. And by tools I don’t just mean in the physical sense. Training and thereby equipping our employees with the knowledge tools for the job has made our operation more efficient because each employee understands what is expected of him or her and the outcomes of understanding their input to their work situation and actions. This has only been achieved by constant communication and an understanding from both sides - a partnership.”

“I have been with the company for 16 years and have worked in every department so I have a good understanding of what is required. With a workforce of 206 it is important to harness the synergy throughout the whole company and extend that synergy to our local supply partners with an indirect local employment of more than double that of JAE to the benefit of the overall enterprise.”

“In business, when a department becomes too insular, rarely communicating with colleagues in other areas from whose insights they could benefit, it’s known as creating a silo. This can happen in any business when different divisions become so focused on their individual goals that they neglect to share observations and expertise, or fail to create a channel of communication that would be helpful to the business as a whole. In most instances, each department would benefit from eliminating the walls that separate them.”

Long known for both designing and manufacturing new gearboxes, as well as its gearbox repair service, J.A. Engineering is a stronger company because of the close relationship it has with its employees and local suppliers. Part of the OEM division’s success strategy is to remain at the leading edge of new developments in coal mining equipment manufacturing, whether that involves new materials and designs for producing better, stronger machines, or the latest machining technologies for producing better quality components more quickly. By sharing the knowledge gained in each area with the other, the company is able to streamline its internal operations while providing customers with a depth of institutional knowledge that is constantly evolving and expanding.

Another milestone in the company’s history took place in 2014 when it put into place a B-BBEE structure which included ownership. The company is now 30.5% black owned and 20.1% black female owned, which enables it to comply as a Level-3 contributor.

For further details contact J.A. Engineering on TEL: 011 397 3237 or visit www.jae.co.za
Mill 4-11” – One tool for all applications

The Mill 4-11” Series is specially engineered to achieve excellent performance in regards to surface quality as well as higher metal removal rates in shoulder milling applications. Its unique design allows you to apply the tool in multiple passes (step down) with outstanding results. From roughing to finishing operations, Mill 4-11” is applicable in a wide range of workpiece materials: steel, cast iron, stainless steel, non-ferrous materials, and high-temp alloys.
In the mid-1960s, four-wheel drive (4x4) vehicles, caravans and trailers weren’t as common as they are today. In fact, you probably would have had trouble finding an experienced mechanic to work on your vehicle, caravan or trailer. Today it is a different story. Every OEM automotive manufacturer has a number of 4x4 vehicles to choose from, caravans are aplenty, with some even having a double rear axle configuration to assist with the load and tow-ability. Modern day trailers are manufactured in many configurations according to purpose.

Trailers are manufactured for the transport of goods, animals - game and domestic - such as horses, livestock, boats, luggage, off-road and many more special purpose configurations. These trailers are manufactured in various styles such as flat-bed, drawbar, dropside, tipper and box type to name but a few. If you can imagine it, you could probably have one manufactured.

Over and above these ‘small’ trailers I have mentioned there is a whole host of heavy-duty trailers that are a little bit more complicated to manufacture because of the heavy-duty conditions that they work under.

Critical to all trailers are the axles. Remember it all rides on the trailer axles. When building your own utility trailer there are many elements that need to be taken into account. Elements such as suspension type, load capacity, mounting position, hub face distance and track width. These are just a few of the more practical elements. Others include whether you need to include brakes because the load is over 750kg and other regulatory rules.

The GVM (Gross Vehicle Mass) of the trailer starts with the axle rating. By law all axles must have a tag specifying the maximum load it can carry. You can upgrade the axle to a heavier load carrying capacity - within the capability of the
trailer - and if you go more than 750kg you will have to fit an axle that has brakes. This would also require a new overrun hitch, or coupler as it is more commonly known, to operate the trailer brakes. Once this has been done you will need to re-roadworthy the trailer, specifying an upgrade in GVM and register the trailer at your local authority. Generally speaking, it is good practice to look for trailer axles with more capacity than you need.

If you drill down even more you can look at the type of suspension to accompany your trailers axle - are you going to go with leaf springs, coil springs, torsion, rubber compression, axle-less, trailing arm or walking beam. There are many different types of suspension systems, but just a few that are really common. The leaf spring and torsion types are the most common.

South Africans love to go on leisure excursions (camping and caravanning) at unusual locations and settings. Generally, these excursions will involve off-road travelling. Their 4x4 vehicle has been adapted and of course their trailer or caravan has to be as well. One of the main elements to upgrade is the axle.

Taking you on a smooth, comfortable and safe ride with your trailer or caravan is Burquip, a Cape Town-headquartered company that has its manufacturing plant in Jet Park, Gauteng. It’s not a heavy hauling, heavy fabricating manufacturing plant - the maximum load capacity axle that the company manufactures is a six ton low-speed version that is usually used on a trailer carrying livestock or game.

Burquip has been a leading manufacturer, importer and distributor of trailer axles and related components throughout the Sub-Saharan Africa market for over 35 years. They cater for every need from high-speed trailers to heavy-duty agricultural trailers and everything in between.

Going all the way back to 1985, manufacturing was originally located in Cape Town but moved to the Johannesburg area in 2003. It was located in Sebenza, Gauteng initially but demand and growth forced the company to move to its current 2 400m² factory over 10 years ago. At first the factory housed manufacturing, assembly, storage and sales but space restrictions soon mandated the company to add a further 4 500m² under-roof store as well as an adjoining sales branch.

Speaking to the Office Manager, Gerard Barnard, he had the following to say: “I am responsible for the manufacturing side of the business and need to balance and control the ongoing pressure that manufacturing and assembly is constantly under. This is one reason why we are continually looking at how we can improve our efficiencies. Currently we are going through one of those periods. For example, the hub assembly area is doubling in size and all the equipment we use in this department is being refurbished and upgraded.”

“In addition to running a full manufacturing facility, we also import a number of components to supplement our manufacturing line. All of our Goodway CNC lathes and an Argo CNC mill are working full time, day and night. The Goodway machines have been supplied by Skok Machine Tools, in the machining department.
Tools and we are using Mastercam as our machining programme."

"Over and above our standard range of axles, we are also able to design and manufacture any special or custom-made requests. This all forms part of our value offering to our customers. The CNC machines are therefore machining a number of different components at any one time."

"These include spindles and stubs for our rubberide axles. There are several ways you can use rubber for suspension yet still achieve load sharing. One of the desires for using a rubber suspension is that it allows the axles to share the load when the road is not flat and level while offering vibration damping."

"All of our hubs and drums that we use on our axles, as well as the braking systems, are German engineered and are of the best quality you will find anywhere in the world. With the scale of our operation and the amount of product that we are turning over we cannot afford to damage our reputation. It is never ideal to import but if we can’t find the right local supplier then we do not have much of a choice. This is not to say that we have given up looking locally."

"The steel bar is sourced locally from Macsteel. We then do all the necessary machining before they go to the assembly department. There is a considerable amount of technology and safety critical criteria that we have to take into account during our manufacturing and assembly operations. This includes all the sub-components and sub-assembly. You are probably looking at a minimum of 20 components that make up an axle."

"A big plus in our sub-assembly department was the introduction of a robotic welding system that is now an integral part of our workforce and has provided many safety and productivity benefits to our manufacturing facility. When you rely heavily on the accuracy and reliability of your machinery for your finished product, you want to be 100% confident in the system solution implemented. Not only can the product quality have a significant boost but the increased productivity allows for additional output."

"We have three bandsaws that are dedicated to cutting non-standard lengths to accommodate the number of special requests we get. We have a design department in Cape Town that uses SolidWorks to design these customised axles. The variations include capacity of the axle and various customised features that are specified by customers. We can produce axles that are customised to fit into almost any application. On the machining side we use Mastercam."
Completed trailer axles

Bearsings and grease coming together in the hub assembly department

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department we have also had to rearrange our crane system. It will not help if you have a forklift crashing into the bed of the laser.”

“We have never had these types of metal processing machines before. They might not be directly involved with the manufacture of components for trailer axles but there are a whole host of accessories for trailers that we will be manufacturing and selling in future. It is early days but the plans are now well advanced.”

“We are looking at mudguards, light boxes, toggle latches, drop side hinges, chevron plates, licence disk holders, strikers, spring bolts, brackets, plates and number of other trailer accessories. All of these require sheet metal to be cut and bent. Of course, we will look at other accessories as well.”

“We have been in the process of designing an extensive range of rolling chassis that have been specifically designed and engineered to withstand harsh South African conditions.

Burquip have recently invested in a new Bodor fiber laser system that has been installed at its Jet Park factory. The fiber laser that Burquip purchased, supplied by WD Hearn, has a bed size of 4 000mm by 2 000mm. The company plans to manufacture a whole host of accessories for trailers in future.

The range comprises of a wide variety of standard designs available to suit almost any industrial trailer requirement.”

Burquip believe the rolling chassis will provide numerous advantages to trailer builders and manufacturers such as:

• Limiting the need for additional manufacturing machinery required reducing labour costs
• A decrease in offcut and wasted material further reducing costs
• Quick reaction time to satisfy their customer requirements
• The Chassis easily bolts together reducing turnaround time

“For those trailer builders and OEMs seeking a custom solution, Burquip can easily and quickly supply designs to suit customer requirements.”

“Part of Burquip’s vision is to be a one-stop shop for all your trailer building requirements. We currently supply the market with a wide-range of trailer components, accessories and spares.”

“Products from leading European manufacturers who are represented on an agency basis supplement our wide range of manufactured products.”

Currently Burquip employs over 100 staff in total, which includes the head office in Cape Town and sales offices in Cape Town, Pinetown, Pretoria and Johannesburg. The company also has distributors across Southern Africa.

For further details contact Burquip on TEL: 021 907 1900 or visit www.burquip.co.za
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Cutting tools that cut out vibrations

How to say no to vibrations in machining?

Vibrations in machining are generally an unavoidable part of the metal cutting process. They have a forced or self-excited nature and always accompany a cutting action. Machining vibrations are referred to as “chatter,” highlighting their specific nature, which inheres in every processing where chips are formed. Even if cutting is considered as stable, it does not mean that vibrations do not take place. In this case, the vibrations simply remain on a level that provides the required machining results, and is considered as a “no vibration” operation.

In fact, vibrations in cutting are a damaging factor that reduces performance. Manufacturers make every effort to diminish vibration and, ideally, bring them to a level that provides the required machining results, and is considered as a “no vibration” operation.

Cutting Geometry

The right tool geometry makes cutting action smooth and stable. The geometry strongly influences cutting force fluctuations, chip evacuation and other factors, which are connected directly with vibration modes. ISCAR’s tool design engineers believe that the cutting geometry can considerably strengthen vibration dampening of a tool and have developed interesting solutions accordingly.

ISCAR’s various indexable inserts, exchangeable heads, and solid carbide tools feature chip-splitting cutting edges. Such an edge may be serrated or have chip-splitting grooves. The chip splitting action causes a wide chip to be divided into small segments, resulting in better dynamic behaviour of a tool during machining, and vibration is stabilised.

In rough machining, extended flute milling cutters remove a large material stock and work in heavy conditions. Significant cutting forces acting cyclically generate vibration problems. When using chip-splitting indexable inserts, it is possible to tackle these difficulties. Mills with round inserts, a real workhorse in machining cavities and pockets, particularly in die and mould making, are often operated at high overhang that affects rigidity and vibration resistance of a tool. Problems with cutting stability occur when the overhang already exceeds three tool diameters. Applying serrated round inserts with a chip-splitting effect redresses this situation and substantially improves robustness (Fig. 1).

A skillfully defined tooth pitch is an effective way of taking the dynamic behaviour of a cutting tool to the next level. ISCAR’s Chatterfree family of solid...
carbide endmills (SCEM) was designed on the basis of a pitch control method. The family features a variable angle pitch in combination with a different helix angle. This concept ensures chatter-free milling in a broad range of applications.

The FinishRed series of solid carbide endmills features chip-splitting geometry coupled with variable pitch flutes (Fig. 2) that provide surface finish when machined according to rough machining data.

The principles of vibration-proof cutting geometry, which demonstrated their effectiveness in solid carbide endmills, have been applied to the design of exchangeable multi-flute milling heads made from cemented carbides in the Multi-Master family.

**Chatter-Free Drilling**

Chatter in drilling leads to poor surface finish and accuracy problems. In Iscar’s SumoCham family of assembled drills with exchangeable carbide heads, the double margin design of QCP/ICP-2M heads substantially increases tool dynamic stability.

If vibration occurs when a drill enters material, it may cause serious damage and even breakage of the drill. The SumoCham-IQ family of HCP exchangeable carbide heads (Fig. 3), intended for mounting in the bodies of standard SumoCham tools, can ensure reliable self-centring capabilities. The key is an unusual concave profile for the head cutting edge reminiscent of a pagoda shape. This original cutting geometry enables high-quality drilling holes of depths of up to 12 hole diameters, directly into solid material without pre-drilling a pilot hole.

The “magic pagoda” features another ISCAR innovation: The LOGIQ3CHAM family of latest-generation drills carrying exchangeable carbide heads with three teeth to ensure higher productivity. The steel drill bodies have three helical flute that weaken the body structure when compared with a two-flute assembled drill of the same diameter. In order to improve the dynamic rigidity, the flute helix angle is variable. This design principle in combination with the pagoda-shaped cutting edge provides a durable chatter-proof solution for stable high-efficiency drilling.

**Tool Body Material**

An assembled cutting tool comprises a body with mounted cutting elements such as indexable inserts or exchangeable heads. Choosing the right body material presents an additional option for forming a chatter-free tool structure. Most tool bodies are made from high-quality tool steel grades, for which the material stress-strain behaviour is similar. However, in some cases tool design engineers have identified successful material alternatives to improve vibration strength.

The Multi-Master, an Iscar family of rotating tools with exchangeable heads, provides a range of tool bodies, referred to as shanks, produced from steel, tungsten carbide or heavy metal. A steel shank is the most versatile. Tungsten carbide with its substantial Young’s modulus provides an extremely rigid design, so carbide shanks are used mainly when milling at high overhang and machining internal circumferential grooves. Heavy metal, an alloy containing around 90% tungsten, is characterised by its vibration-absorbing properties, and heavy metal shanks are most advantageous for light to medium cutting operations in unstable conditions.

**Anti-vibration tools for deep turning**

A typical tool for internal turning or boring operations comprises a boring bar with a mounted insert or a cartridge carrying an insert. The bar is the main factor in the dynamic behaviour of a tool. Stiffness of a bar is the function of the bar overhang to diameter ratio, and large ratios may be a reason of tool deflection and vibrations, affecting dimensional accuracy and surface finish during machining.

Iscar has developed three types of boring bar to cover a wide range of boring applications: Two integral (from steel and solid carbide) and one assembled, having a vibration dampening system inside.

The steel bars enable stable machining with the overhang up to four diameters. Exceeding this value can induce vibrations due to steel’s elasticity characteristics. Changing the bar material from steel to a more rigid solid carbide ensures efficient vibration-free boring with the overhang of up to seven diameters. However, further increasing the boring depth is also limited by the material stress-strain behaviour. In order to clear this overhang barrier, Iscar developed the ISOTURN Whisperline family of anti-vibration cylindrical bars. The bars carry interchangeable boring heads for indexable inserts of different geometries and have inner coolant supply capability. The main element of the bar design is a built-in vibration-dampening mechanism to provide “live” vibration damping during machining. This enables effective boring with the overhang from seven to 14 diameters (Fig. 4).

A vibration-dampening unit is used also in Iscar deep grooving and parting tools. The unit is in a tool blade under the insert pocket. Each blade is pre-calibrated by Iscar for optimal performance for a wide range of overhangs, but end-users can complete fine tuning calibration themselves if needed.

Cutting tool manufacturers have a limited choice of means in the abatement of machining vibrations, with only tool cutting geometry, tool body material, and maybe a cutting tool with built-in vibration-dampening device at their disposition. Considerable skill and ingenuity are required to make a chatter-free tool with these limited resources. It is feasible, however, and Iscar’s solutions highlighted in the above examples affirm the possibilities.
The 26th edition of the International Sheet Metal Working Technology Exhibition, EuroBLECH 2020, will take place from 27 to 30 October 2020 at the Hanover Exhibition Grounds in Germany. The show organisers, Mack Brooks Exhibitions, have now announced the expansion of exhibition space for EuroBLECH 2020 with the addition of a ninth hall for the first time in its history. This reflects a further increase in exhibition space compared to the previous event in 2018, which covered a total of 89 800m².

“Around nine months ahead of the show the demand for stand space continues to be very strong”, explained Evelyn Warwick, Exhibition Director of EuroBLECH, on behalf of the organiser Mack Brooks Exhibitions.

“With the directly neighbouring hall 26, we are now able to offer additional stand space for the exhibition to meet the demand of exhibitors to display their latest machines in the various technology sectors. The additional hall will host exhibitors of joining technology, as well as surface and tool technology, which have previously been located in hall 13. The ninth hall is giving us the possibility to assign stand space to additional exhibiting companies within the entire sheet metal working technology chain represented at EuroBLECH. The growth to a ninth exhibition hall reflects the increasing demand for stand space at the leading industry event and offers even more capacity for businesses to present their innovations to an international audience”, continued Evelyn Warwick.

Currently, more than 95 000m² of net exhibition space have been booked or reserved at the world’s largest sheet metal working technology exhibition. This represents an increase of almost 6% in stand space compared to the previous show in 2018. The biggest exhibitor countries include Germany, Italy, Turkey, China, Switzerland, the Netherlands, Spain, Belgium, Great Britain and the USA.

Smart sheet metal working key focus for this year’s show
For EuroBLECH 2020, the main topics represent the latest industry trends, including smart sheet metal working as well as automation and digitalisation of the manufacturing chain, with the objective to increase output and efficiency. For exhibiting companies in this industry sector, it is a vital time to present their machines, systems and solutions for networked manufacturing to an international audience.

Every two years, the world’s largest sheet metal working technology exhibition attracts top industry professionals from all over the world. The show targets specialists at all management levels in small and medium-sized companies as well as large enterprises from all key industry sectors. Featuring an enormous amount of live machine demonstrations, EuroBLECH is renowned with international sheet metal working professionals as the most important event to find smart solutions and the right machines, equipment and materials for their companies. A total of 56 307 international trade visitors attended the previous show.

EuroBLECH 2020 will be occupying halls 11, 12, 13, 14, 15, 16, 17, 26 and 27 at the Hanover Exhibition Grounds in Germany. The exhibition is the ideal platform for exhibitors to present their conventional machines and systems as well as latest technologies. The EuroBLECH exhibition profile is clearly structured and covers the entire sheet metal working technology chain: Sheet metal, semi-finished and finished products, handling, separation, forming, flexible sheet metal working, joining, welding, tube/section processing, surface treatment, processing of hybrid structures, tools, machine elements, quality control, CAD/CAM/CIM systems, factory equipment and research & development. The organisers recommend companies interested in exhibiting to reserve their stand space as soon as possible in order to be placed within their respective technology sector.

The latest exhibitor list as well as further information on the exhibition is available at www.euroblech.com
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BAE Systems and Renishaw to develop 3D printing capability for the defence and aerospace sector

BAE Systems and Renishaw have signed an agreement to work together on the development of additive manufacturing (AM) capability for the defence and aerospace sector. The collaboration is designed to help improve performance, reduce costs and speed up manufacturing processes on future combat aircraft.

As part of the Memorandum of Understanding (MoU), the framework has been laid for the two companies to bring together expertise in AM to maximise the application of this emerging manufacturing technique. The agreement also opens up opportunities for joint research and development.

The MoU was signed by Andy Schofield, manufacturing and materials strategy and technology director for BAE Systems, and Will Lee, chief executive at Renishaw, during a visit to the former’s manufacturing facilities in Samlesbury, Lancashire. The site is already home to several Renishaw AM machines, which form part of a 1,000m² New Product Development & Process Development Centre (NPPDC), where the latest emerging technologies and processes are explored and tested for application into aircraft design and manufacture.

BAE Systems began research into AM techniques more than two decades ago, and is currently using the technology to make production-standard components for the Typhoon fighter aircraft. AM is also applied in the rapid prototyping of new technology concepts as part of a drive to deliver Tempest, a capable, affordable and exportable next-generation future combat air system.

Says Schofield: “AM has and will continue to deliver significant benefits to our sector. Renishaw is a world leader in this technology and we’ve been impressed with the quality of parts produced on its machines. This agreement allows us to create a more open and collaborative environment to share ideas and knowledge. In an era of fast-developing technology and challenged budgets, collaboration and innovation are absolutely essential in order to retain cutting-edge capability.”

Lee adds: “We already have a great relationship with BAE Systems, developed over many years through the application of our metrology products, and have more recently worked with them on evaluating and understanding the performance envelope of our AM systems. We’re delighted that they have been impressed with our systems, and this, together with our vision for AM development, has led to the strengthening of our collaboration.”

Guhring and Chiron mill their way into the record books

Guhring and Chiron have set a ground-breaking record: Machining 1,000 cubic cm of steel alloy (16MnCr5) in 60 seconds, which equates to a metal removal rate (MRR) of 8kg of steel per minute. The record was set on a Chiron FZ 16 5-axis machining center using a Guhring RF 100 Speed P tool - a roughing cutter specially adapted for machining steel, high-tensile steel and cast iron.

RF 100 Speed P has a 48° helix angle with unequal cutting-edge partitioning that is said to ensure a soft, quiet cut and smoothness in machining. This capability reduces the load on the machine and increases the MRR performance. In addition, the optimised chip gullet with a deep flute in the front cutting-edge area, brings about improved chip evacuation when ramping and helical plunging.

Under HPC (high-performance cutting) conditions, the entire length of the cutting edge was used with a small cutting width (5% to 15% radial depth of cut). Feed per tooth was 0.5mm during the record attempt. With four teeth, this meant 2mm feed per revolution.

This performance should be of interest to companies that have large quantities of steel to cut, including the tool and mould-making industry, where mainly high-tensile steels are found, but primarily aerospace, where lightweight components made of solid material with a material removal rate of up to 96% are produced. Of course, the special cutting-edge geometry can also be put to good use in the automotive industry.

Further cutting data from the successful record attempt, which deployed a 20mm diameter cutter (HSK 63) included: 450m/min cutting speed, 7162rpm spindle speed, 1.2mm radial depth of cut (6%), 63mm axial depth of cut and 14324 mm/ min feed speed.

For further details contact Guhring Cutting Tools South Africa on TEL: 087 015 0200 or 041 372 2047 or visit www.guhring.com
The industrial robot manufacturer Fanuc and the automotive group BMW AG have signed a framework agreement for the supply of 3,500 robots for new production lines and plants. Fanuc robots will be used in the production of current and future generations of BMW models. The first robots were installed at the end of 2019. Further robots will be used at German and international production sites of the BMW Group in the coming years.

Fanuc winning this project is an important milestone as a strategic partner of the BMW Group. The robot manufacturer is continuously investing in research and development as well as in the expansion of its service network to support its customers all over the world. Various Fanuc robot models will be used by the BMW Group in the future, including newly developed ones that have been tailored to the customer’s individual requirements. The robots will be primarily used in body shop construction and for the production of doors and bonnets. In cooperation with manufacturers of hose packages and traversing axes, Fanuc is rounding off its range of supplies to the BMW Group by providing peripheral components.

With over 110 robot models in the range, Fanuc offers the widest range of robots for industrial applications worldwide. These include particularly powerful types such as the M-2000, which can safely carry loads of up to 2.3 tons and move them flexibly via its six axes. The company is not only successful in the automotive industry: More than 600,000 Fanuc robots have already been installed worldwide across a wide range of industries.
Quaker Chemical Corporation and Houghton International have combined to create Quaker Houghton, a global leader in industrial process fluids to the primary metals and metalworking markets.

A strategic combination is formed
The combined US$1.6 billion revenue company employs 4,000 associates serving 15,000 customers worldwide. Quaker was founded in 1918 and Houghton in 1865.

“We are rooted in companies commonly acknowledged as authorities in industrial fluids and valued experts in customer processes,” said Michael F. Barry, Chairman, Chief Executive Officer, and President of the new company. Barry, who previously served Quaker Chemical in similar capacities, went on to say: “Our similar cultures and values, combined with the talent and resources we bring to Quaker Houghton, create exciting opportunities to deliver innovative solutions that will help our customers’ operations run even more efficiently and effectively.”

The company’s combined breadth of product and service offerings can be found in end-markets such as aerospace, aluminium, automotive, machinery, can manufacturing, industrial parts manufacturing, mining, offshore, steel, and tube and pipe industries.

With its expanded products and services portfolio, the company expects that cross-selling opportunities will facilitate continued above-market growth. Specific products the company offers include metal cutting and forming fluids, corrosion protection fluids, specialty hydraulic fluids, and steel and aluminium rolling oils. In addition, Houghton customers will benefit from Quaker’s strength in specialty greases, high-pressure die-casting, mining specialties, surface treatment and bio-based lubricants, while Quaker customers will now have access to Houghton’s heat treatment quench products, offshore hydraulic fluids, metal finishing products, and a broader metal removal fluids portfolio.

“Our foundation will be the same customer-intimate operating model that has been key to the success of our customers. Moving forward together, we will draw upon our rich history and shared expertise to enhance our product and service offerings and continue to deliver value-added service expertise to our customers,” said Barry.

The company expects to achieve significant cost reductions as a result of the combination and has increased its estimate of cost synergies to US$60 million from US$45 million. The cost synergies are broad based and are expected to come from three major areas of asset optimisation, logistics and procurement and operational efficiencies. The cost synergies are expected to be fully realised on a run-rate basis by the end of year two with US$20 million being achieved in year one, US$45 million in year two and the full US$60 million in year three, reflecting 100% achievement as the company exits year two.

No announcements have been made as to who will represent the new company in South Africa.

32.BI-MU from 14 to 17 October 2020
at fieramilano RHO, Milan, Italy

From 14 to 17 October 2020, fieramilano Rho will be the stage for the 32nd edition of BI-MU, the most important Italian exhibition dedicated to the industry of metal forming and metal cutting machine tools, additive and digital manufacturing, robots and automation, enabling technologies and subcontracting. It is the only trade show in Italy related to the sector that has a real international appeal.

Promoted by UCIMU-SISTEMI PER PRODURRE, the Italian machine tools, robots and automation systems manufacturers’ association, and organised by EFIM-ENTE FIERE ITALIANE MACCHINE, 32.BI-MU will present a renewed technological index of products, covering all solutions regarding the factory of the future and a lot of new entertainment and thematic insight projects, conceived to make the most of the presence of the operators attending the exhibition.

Metal forming and metal cutting machine tools, additive manufacturing, robots, automation, auxiliary and enabling technologies, subcontracting, powertrain and fluid-power systems, mechatronics, surface finishing treatments, tools, components, equipment and accessories, metrology and welding, IoT, Big Data, analytics, Cyber Security, Cloud Computing, Augmented Reality and system integrators, vision systems, software, solutions for industrial material handling and warehouse management: These are only a few of the technologies on show at 32.BI-MU.

After over 60 years of exhibition evolution following the technological transformation of the sector, today BI-MU is more and more a meeting point between production systems and digital world.

The programme of approaching events and the information concerning participation and details of the exhibition is available on bimu.it.
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Artificial intelligence (AI) monitors machine tool drives

Researchers at Karlsruhe Institute of Technology developed a system for automated monitoring of ball screw drives in machine tools.

In mechanical engineering, timely maintenance and replacement of defective components in machine tools is an important part of the manufacturing process. In the case of ball screw drives, such as those used in lathes to precisely guide the production of cylindrical components, wear is determined manually.

“Maintenance is therefore associated with installation work, which means the machine comes to a standstill,” says Professor Jürgen Fleischer from the Institute for Production Technology (wbk) at the Karlsruhe Institute of Technology (KIT).

“Our approach, on the other hand, integrates an intelligent camera system directly into the drive, which enables a user to continuously monitor the spindle status. If there is a need for action, the system informs the user automatically.”

The new system combines a camera with light source attached to the nut of the drive and artificial intelligence (AI) that evaluates the image data. As the nut moves on the spindle, it takes individual pictures of each spindle section, enabling the analysis of the entire spindle surface.

Artificial intelligence for mechanical engineering

Combining image data from ongoing operations with machine-learning methods enables system users to directly assess the condition of the spindle surface.

“We trained our algorithm with thousands of images so that it can now confidently distinguish between spindles with defects and those without,” says Tobias Schlagenhauf (wbk), who helped development the system.

“By further evaluating the image data, we can precisely qualify and interpret wear and thus distinguish if discoloration is simply dirt or harmful pitting.”

When training the AI, the team took account of all conceivable forms of visible degeneration and validated the algorithm’s functionality with new image data that the model had never seen before. The algorithm is suitable for all applications that identify image-based defects on the spindle surface and is transferrable to other applications.

Trumpf Hüttinger acquires microwave tech firm HBH

Trumpf Hüttinger, laser and machine company Trumpf’s high-tech division, has acquired HBH Microwave, based in Stutensee, Germany.

This acquisition adds semiconductor-based, solid-state microwave generators to Trumpf Hüttinger’s technology portfolio. These devices are used in industrial heating, drying, and plasma applications, as well as in communications and radar technology.

The energy required for Trumpf’s CO2 lasers is supplied by RF generators from Hüttinger, while generators manufactured by Hüttinger create plasmas for displays and other applications.

“This acquisition gives us a real boost in the trending field of microwave power generators,” said Rafał Bugyi, managing director of Trumpf Hüttinger in Freiburg, Germany.

“In the plasma processing market, which is an important area of our business, there is a noticeable trend toward higher frequencies in the microwave range. This gives us a solid basis for making a calculated transition from the vacuum-tube-based magnetron to solid-state microwave power generators.”

Plasma generators operating in the medium and radio frequency range are used in thin-film coating applications and processes. Plasma generator applications include the large-area coating of glass and foils, as well as the deposition and ablation of materials on semiconductor chips, data storage media, displays, and solar cells.

The acquisition will also enable Trumpf Hüttinger to expand its business in the particle accelerator market. Medical applications that involve particle acceleration include radiation and particle beam therapy for the treatment of cancers.

“By combining our expertise in microwave technology with that of Trumpf Hüttinger in industrial manufacturing, we will gain access to much bigger markets,” said Guido Bauman, HBH Managing Director.

Terms of the deal were not revealed. HBH Microwave was founded in 1999 and currently employs 50 people at its headquarters in Stutensee.

For more information contact Retecon on TEL: 011 976 8600 or visit www.retecon.co.za
Amada America Inc., a supplier of precision sheet metal production equipment and related systems, has expanded its customer coverage in the US with the opening of a 17,652 m² manufacturing facility near High Point, North Carolina. A 5,760 m² technical centre is also under construction on the campus and should be completed in the US spring of 2020.

Amada America’s Chief Operating Officer, Mike Guerin, summarised Amada’s goals and strategy for the US investment, which will be in excess of US$80 million and will add 200 jobs when the campus is complete. “This is our third manufacturing location in the US and our first in the Southeast,” Guerin said. “It is part of our overall strategy to be closer to customers as our business with them grows.”

Guerin cited the unwavering support of Yukihiro Fukui, CEO of Amada America, for the expansion of Amada’s manufacturing capabilities into the Southeast, which constitutes about one-third of Amada’s press brake business in the US.

“Amada is one of only two press brake suppliers to manufacture its products in the US. The company’s other locations are on the West Coast, where the Japanese-based parent company, Amada Co., Ltd., first ‘landed’ in 1971 while establishing its presence in North America. Amada has grown from a manufacturer of bandsaw blades 73 years ago to a global supplier of punch presses, press brakes, laser cutting systems, software, and tooling. The company now operates in 70 countries.”

“This is a cutting-edge facility in terms of its capitalising on IIoT tools to monitor productivity and performance. The completion of the High Point facility brings our total manufacturing capabilities under roof in the US to about 55,742 m²,” said Patrick Medlin, Amada America’s Chief Manufacturing Officer.

The High Point plant will manufacture a new product line of high-precision press brakes as well as automation for laser systems for the US market.

“The industry’s quick acceptance of our fiber laser systems for enhanced throughput has also increased the need to remove downstream bottlenecks in materials handling and bending. That is why we developed our new line of press brakes to help customers increase total throughput.”

The Hybrid Retrofittable Bending (HRB) series of press brakes manufactured at High Point feature automated tool change (ATC) capabilities and integrated bend sensors. They are designed for variable lot sizes and complex tool layouts. Quick tool setups achieved by ATC can triple or quadruple the number of setups performed each day and allow an operator to seamlessly introduce rush jobs when required.

For further details contact Amada JHB South Africa on TEL: 011 453 5459 or www.amada.com
Ford 3D printed development helps to thwart thieves

As car security systems become ever more advanced, thieves are targeting car parts instead, including alloy wheels.

One method to deter them is to use locking nuts (one on each wheel) that need a special key to loosen them. However, even these are vulnerable, leading Ford engineers to use 3D printing technology to develop next-generation locking wheel nuts.

Together with additive-manufacturing specialist EOS, Ford has created locking nuts with contours that are based on the driver’s voice. Like an iris scan or a fingerprint, a person’s voice can be used as a unique biometric identification.

Engineers record the driver’s voice for a minimum of one second, saying something like “I drive a Ford Mustang”, and use software to convert that singular sound wave into a physical printable pattern that is then turned into a ‘circle’ and used as the design for the locking nut’s indentation and key.

With the geometry in place, the nut and key are designed as one piece, then 3D printed using acid- and corrosion-resistant stainless steel. When finished, the nut and key are separated, with a small amount of grinding required to make them ready for use. The design also includes second-level security features that prevent the nut from being cloned or copied.

The unevenly spaced ribs inside the nut and indentations that widen the deeper they go prevent a thief from making a wax imprint of the pattern, as the wax breaks when it is pulled from the nut.

If not using the driver’s voice to create the contours, the nuts could feature designs specific to a vehicle, such as the Mustang logo, or use the driver’s initials. The design could also take inspiration from a driver’s interests. For example, by using the outline of a famous racetrack.

Raphael Koch, Ford Advanced Materials and Processes research engineer, said: “Some alloy wheels can cost thousands to replace, but these unique rim nuts will stop thieves in their tracks. Making wheels more secure and offering more product personalisation are further proof that 3D printing is a game-changer for car production.”

Bloodhound unveils plans to ‘steam’ into history

The Bloodhound Land Speed Record (LSR) team has confirmed plans to challenge for the world land speed record using a rocket powered by concentrated hydrogen peroxide. This will be used alongside the F-35 jet-fighter engine when the Bloodhound LSR car attempts to reach speeds above 800mph in South Africa in the autumn of next year.

After Bloodhound’s successful high-speed testing programme in the Kalahari Desert in November 2019, when the car reached a speed of 628mph, the vehicle has now returned to the UK Land Speed Record Centre, Bloodhound’s base in the Gloucestershire Science and Technology Park, to be prepared for the next phase of the project.

Data analysis of the high-speed runs will be used to confirm its revised configuration, alongside research into minimising the environmental impact of the project. The main change to the car in preparation for the land speed record runs will be the addition of a rocket, supplied by Norwegian rocket specialist Nammo, to provide the extra thrust.

As part of a research programme for the European Space Agency, Nammo has designed a compact zero-emission rocket to be used as a launch motor to put small satellites into space. The size and power of this rocket makes it ideal for use with the Bloodhound LSR car.

The Nammo rocket uses concentrated hydrogen peroxide (water with an extra oxygen molecule - H2O2) as the oxidiser. This is pumped at high pressure through silver gauze, which acts as a catalyst, causing it to decompose into super-heated steam (at 600°C) and oxygen. The steam and oxygen are channelled through a nozzle to generate thrust. There is no fuel ‘combustion’ and therefore no flame nor any chemically harmful waste generated by the rocket.

Work is also underway to optimise the auxiliary power unit needed to pump the rocket’s oxidiser. Rather than the originally specified 550bhpV8 internal-combustion engine, this will be an electric motor and battery pack of comparable power, using recently developed technology.

The Bloodhound team (www.bloodhoundlsr.com) is also exploring the possibility of running the Rolls-Royce EJ200 jet engine on bio-fuel instead of Jet A fuel, further reducing the environmental impact of operating the car.
At DMG MORI’s traditional open house held in Pfronten, Southern Germany from 11 to 15 February 2020, the global machine tool manufacturer stressed digitalisation and automation.

Areas of particular focus were on end-to-end connectivity as the standard for all machines, updating of existing versions of the Celos machine interface, the new customer portal my DMG Mori, and the cooperation with US software provider Tulip as an entry into digitalisation.

Among more than 40 machines on show there were three world premieres: The DMC 65 H monoBLOCK universal, horizontal-spindle machining center, the modular PH Cell automated pallet handling system and the Lasertec 400 Shape for laser texturing.

DMC 65 H monoBLOCK
The DMC 65 H monoBLOCK combines the flexibility and ergonomics of a 5-axis vertical machining centre with the productivity and process reliability of a horizontal machining center. Optimal chip evacuation makes the machine particularly suitable for reliable machining of aerospace structural components.

Those working in the mould and die sector will benefit from the possibility of machining deep holes up to 550mm, while contract manufacturers will appreciate the flexibility provided by the swivelling rotary table that allows the use of workholding towers as well as full 5-axis machining of components weighing up to 600kg.

PH Cell pallet system
The PH Cell automated pallet handling system with a footprint of just 10.7m² will be demonstrated feeding a DMU 65 monoBLOCK machining centre. Pallet loading from the side provides good accessibility to the working area. The system is of modular design and offers a high degree of flexibility.

The basic version can accommodate up to 12 500mm by 500mm pallets, 16 400mm by 400mm pallets or 20 320mm by 320mm pallets over three or four levels. The system can be expanded by a second module, making up to 40 pallet storage spaces available. The second module can be retrofitted without the need for any additional footprint. A separate and optionally rotatable set-up station allows ergonomic workpiece preparation while machining is in progress.

Lasertec 400 Shape
The Lasertec 400 Shape expands the DMG Mori machine and thermo-symmetrical gantry design ensures precision and outstanding texture quality at three times the speed of other models in the range. A large variety of textures in reproducible quality can be machined with functional features such as high gloss, scratch resistance or water-repellence.

Automation solutions
In total, 15 automation solutions were on show including the new PH Cell on a DMU 65 monoBLOCK, a DMC 90U duoBLOCK with PH-AGV 50 automated guided vehicle pallet automation system, and a CTX beta 1250 TC with Robo2Go Vision.

The PH-AGV 50 offers flexible automation with free access to the machine and an intelligent safety concept for human-machine collaboration. The Robo2Go Vision is a further development of flexible robot automation and enables direct loading of Euro pallets. Using a new 3D camera, it recognises workpiece positions without the need for racks or to restack the parts.

Additive manufacturing
The demands placed on additive manufacturing technology are constantly changing. DMG Mori is taking this into consideration in the further development of its Lasertec 3D hybrid, Lasertec 3D and Lasertec SLM series. Principal areas of interest are the availability of the machines, their productivity, component quality and occupational safety.

As a highlight in Pfronten, the company presented the Lasertec 125 3D hybrid, launched in November 2019. Based on the sturdy monoBLOCK series, it is designed for parts measuring up to 1 250mm in diameter by 745mm high and weighing up to two tons. The rigid machine construction and high dynamics of the machine enable accurate, reliable, cost-effective complete machining of complex 3D parts.

A key selling point of laser deposition welding is the possibility of changing between two materials quickly under CNC. Hard surfacing to reduce wear can be specifically carried out in one area and corrosion-resistant welding to prevent environmental impact in another.

For more information contact Retecon on TEL: 011 976 8600 or visit www.retecon.co.za
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Reliable helpers at the machine: Fanuc makes automation easier thanks to new functions

Robots are irreplaceable in modern production.

Fanuc has already installed more than 590,000 industrial robots worldwide. The versatile machines perform important tasks throughout production. It has never been easier to automate a processing machine with a robot and therefore making production highly productive and efficient. This applies in particular to automation with the QSSR package developed by Fanuc, which stands for Quick and Simple Start-up of Robotisation. This package facilitates the connection of a robot to a machine tool as well as setup and subsequent operation. Fanuc has created a standard interface for this and is demonstrating the solution in several applications, for example for Robodrill and Robocut.

Collaborative in the front row
With a total of seven exemplary applications, the CR series of collaborative robots from Fanuc were presented at the recent EMO 2019. All models of the series from the smallest CR-4iA to the CR-35iA are in use.

The use of CR robots in conjunction with mobile platforms were on display. Here Fanuc works with a standardised interface in order to be able to combine Fanuc robots with any platform. CR robots also serve as demonstration models for the Hand Guidance Function, with which robots are programmed by moving the TCP manually and the operator entering the required path or target points at the touch of a button. Mounting the Easy Attachment Unit on the wrist of the robot is simple. The hand guidance function is suitable for all Fanuc robots and is sufficient for simple tasks. For more complex tasks, the programmer uses the handheld iPendant or the iRProgrammer, a programming interface for Smart Devices.

For MTBs and system integrators, a new software function offers an interesting simplification: Users can programme the robot movement of an automated machine via the CNC interface and do not need to familiarise themselves with the systematics of a teach pendant.

Fanuc has also simplified the simulation of programmed sequences in the machine and robots with an assistance function in Roboguide. This new function enables a synchronised representation of Roboguide for the robot movement and CNC guide for the programme simulation of the machine.

The EMO premieres
The M-10iD/12 and M-20iD/25 robots were on display for the first time at EMO. The M-10iD is used on a demo cell for loading and unloading, the M-20iD in a deburring cell. The productivity enhancing properties of the robot also include its exceptionally high-axis speeds and repeat accuracy, which set standards in this robot class. The rigid design of the robot results in very good positioning and repeatability accuracy. The M-20iD/25 also has these features. Combined with a force-moment sensor, Fanuc’s own sensor, M-20iD/25 shows its strengths in a cell in which robot parts for Fanuc robots are deburred.

The processing cells as well as the automatic loading and unloading are usefully supplemented by robot-automated washing cells. The robot can either handle the workpiece to be cleaned or, in suitable cases, the washing nozzle. Fanuc showed a small washing cell at EMO. The LR Mate 200iD/7WP used is ideally suited for handling tasks in narrow workspaces and for integration into machines. The standard protection class is IP67, optionally the LR Mate is also available in IP69K.

For further information contact Fanuc South Africa on TEL: 011 392 3610 or visit www.fanucsa.co.za
Kitamura Machinery’s Mycenter-HX300iG/400 expands the company’s small-footprint HMC offering, providing heavy-duty cutting, accuracy and reliability. For its size, the machine is still designed with a large work envelope, with a maximum workpiece diameter of 500mm, a maximum workpiece height of 745mm, and XYZ axes measuring 460mm by 510mm by 560mm, respectively. A 400mm table option offers additional workholding possibilities.

The 22kW, 15 000rpm, 40 taper, direct-drive, dual-contact spindle is said to be capable of handling a variety of exotic materials. A 20 000rpm dual contact spindle is also available.

The fully integrated fourth-axis rotary table, equipped with an integral drive motor, enables rapid indexing speeds of 150rpm (54 000 degrees per min.) reducing out-of-cut time, eliminating backlash and providing positioning accuracy of ±2 arcseconds.

An expandable 50-tool automatic toolchanger allows for the addition of up to 200 tools as needs change. The ATC is fixed-pot, which ensures that tools are always returned to the same pot and that the next tool to be used is kept in a stand-by pot. A 1.3-sec. tool-change time contributes to the reduction in overall cycle time made possible by the machine, the company says.

The Mycenter-HX300iG/400 provides positioning accuracy of ±0.002mm with 67-million-pulse encoder technology for better finish accuracy. To accommodate a variety of metal cutting requirements, the machine offers rapid traverse rates of 60m/min, ballscREW cooling, and 10nm optical linear scale feedback in the linear axes.

For further details contact WD Hearn Machine Tools on TEL: 021 5345351 or visit www.wdhearn.co.za
The new STA Synchro Tap Adapter was designed specifically for ER collet chucks and driven tools and allows for synchronised thread cutting and forming to be achieved with all suitable machines. The STA Synchro Tap Adaptor with quick change saves considerable time and optimises tool life.

Used with ER collet chucks and driven tools, and manufactured to ISO 15488, Synchro Tap Holders are the best way to dramatically increase tool life in a rigid tapping environment.

The tension and compression length compensation, (+/- 0.15mm) in combination with radial dampening effect, compensates small synchronisation and location anomalies and dampens excessive forces acting on the tap. This allows the tap to cut more efficiently, decreasing torque loads and increasing production. Testing shows an up to four times increase in tool life.

Some advantages of the STA Synchro Tap Adapter include:
- Minimum compensation on tension/compression; reduction of the pressure on the thread flanks;
- Compensation of the synchronisation error, while reversing the spindle; higher life time of the taps, less number of tools required; reduced risk of tool breakage; and better thread quality.

Synchro Tap chucks not only increase tool life in rigid tapping, but they can also be used for high speed Synchro Machine Taps with two- to three times the cutting speeds of normal taps.

For further details contact Duncan Macdonald & Co on TEL: 011 444 4345 or visit www.macduck.co.za

Guhring’s MTMH3-Z Drifter series of helical drilling thread-mill products are capable of thread milling in material up to 66 HRc. The Drifter series combines core drilling and threading in a single operation.

The MTMH3-Z Drifter is suitable for wet or dry cutting, and features two oil grooves on the shaft to provide optimum cooling, as well as a left-cutting geometry that stabilises performance during climb milling. With a shank diameter from 3mm to 12mm and a neck relief from 5mm to 40mm, the thread milling series is suitable for creating threads from M2 to M16 on a material range that includes all steels and stainless steels, cast and graphite iron, aluminium, and titanium alloys. To simplify the process for end users, Guhring has also developed its CNC Guhro thread-mill software that is free to download for customers.

For manufacturers more inclined to use traditional threading methods, Guhring has the Pionex series of taps. This tapping line incorporates a polygon shape that generates 30% less torque. The Pionex thread-formers are based on a newly developed powder metallurgical cutting-tool material that demonstrates a higher wear resistance than previously attained.

Pionex taps include 45° helix geometry with a reduced rake angle, back tapering and improved relief. The latest Pionex is available with metric threads in course or fine pitch, as well as UNC, UNF and BSP, in all diameter and pitch variants with a complete line of special thread designations available upon request.

Matching the performance of the Guhring drilling and threading lines is the newly developed SpyroTec series of twisted HSS and HSCO countersink tools. As a "world first", the SpyroTec countersinking series incorporates novel spiral-fluted geometry with convex cutting edges. The benefit of this geometry design is that the 90° countersinks can cut virtually all material types with improved concentricity, precision and performance, reports Guhring. In addition, the axial and radial forces that occur during countersinking operations are reduced by more than 60% due to the newly developed geometry of SpyroTec cutting edges. The convex radii of the cutting edges combine with the variable helical pitch to provide stable, low-vibration, low-noise and high-performance countersinking.

Another point of note is that the specially designed TiAlN coating ensures higher wear resistance and a high-temperature hardness that guarantees longer tool life for nearly all materials and applications. The standard SpyroTec programme is available in 14 dimensions that range from 6.3mm to 31mm diameter, with a 90° countersink that conforms to DIN 335 form C. SpyroTec is available with a number of shank lengths and, for the purposes of convenience, box sets with a range of diameters are also be offered.

For further details contact Guhring Cutting Tools South Africa on TEL: 087 015 0200 or 041 372 2047 or visit www.guhring.com
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It seems to be the future - companies and manufacturers looking to design and manufacture machinery that can produce parts in one-hit – a combination of punching, laser cutting and automation.

The Prima Power Combi Genius comes with servo-electric punching and two different performance suites; Pure meets the targets of efficient production with attractive price level and Dynamic offers the best productivity and highest performance on the market. Both of them can be equipped with the whole range of options.

The Combi Genius combines the benefits of punching performance with the latest in fiber laser cutting, raising the productivity of the highly versatile integrated manufacturing concept to a new level. Numerous improvements have been made to automation range, sheet position axis and process monitoring for reliable unmanned production.

As the laser source, a new Prima Power CF fiber resonator of either 3kW or 4kW can be chosen to provide higher speed and quality cutting results. The optimised cutting head, collimator, new transfer fiber and factory tested cutting parameters ensure higher cutting speeds and better quality. As standard, three auto adjusted high pressure assist cutting gas lines are included for less setup.

Combi Genius has new advanced systems for monitoring of laser processes to secure unmanned production. Laser Plasma Monitoring (LPM) follows the cutting process quality and restarts the cutting if any problems appear. Lens Condition System (LCS) monitors the cutting lens condition, informs the operator and stops the process before any further damages occur.

The control unit has one or two displays, and the whole punching–laser cutting process is easy to monitor from the upper display as four cameras have been installed in the cell.

Prima Power’s programming system and cell control work in perfect combination and can be linked to the factory ERP system. Operator’s daily life is made easy by using innovative Tulus MUPS application, which informs what, when and how different tasks should be performed. Further innovations are new TaskLoader for easy programme selection with bar code reader and ToolID system for punching tool verification during setup.

The new Easy Access concept with a movable machine table makes manual loading of all size sheets convenient.

As standard, Combi Genius has two work chutes. One 300mm x 400mm chute for fast sorting of smaller work pieces and an 800mm x 800mm chute for larger components. From the chutes the parts are brought next to the machine for manual removal or onto conveyor systems. A 500mm x 500mm work chute is available for removing punched parts. Both part sorting chutes can be equipped with a pallet sorting device under the table.

Available maximum sheet sizes for the Combi Genius are 1 250mm x 2 500mm, 3 000mm x 1 500mm and 4 300mm x 1 500mm. The corresponding names are Combi Genius 1250, Combi Genius 1530 and Combi Genius 1540. Maximum punching force available is 30 tons, sheet weight 250kg, punching speed 1000hpm and tool rotation speed 250rpm.

The Combi Genius 1530 Dynamic version is complemented with the Compact Express automation and new Prima Power CF4000 fiber laser source.

The turret of the Combi Genius can be customised and optimised for any requirement. Simultaneously, a record-breaking number of 384 tools can be inserted in the turret. Combi Genius features the Intelligent Ram, which shortens tool change time and increases the number of tools in turret, especially index tools, and can be equipped with Multi-Tool® stations to further increase the number of tools. Up to 300 kN servo-electric punching force can be selected for the ram. The machine is equipped with CF series 4 kW fiber laser, developed and manufactured by Prima Power, and the LSR Loading and Stacking Robot for the automatic material handling up to stacking of workpieces onto pallets. A new hole check system increases process reliability in unmanned production.

For more information contact Francesco Tallarico of Talmac Machine Tools on 072 265 1323 or visit www.talmac.co.za
Kennametal’s KOR 5 end mill enables higher feed rates for roughing

Representing the latest innovation in high-velocity aluminium roughing is the KOR 5 solid carbide end mill. Designed for maximum productivity in aerospace machining, with this five-flute end mill table feed rates increase up to 66 per cent compared to commonly used three-flute tools Kennametal says, redefining productivity for aircraft manufacturers and their suppliers.

KOR 5 is aimed at removing large amounts of metal and getting it away from the work zone as quickly as possible. A tapered core, variable pitch design and 35-degree helix serve to eliminate chatter and tool deflection, the company says. Through-tool coolant flushes chips away while reducing heat. The tool’s chip splitter pattern is designed to break up long chips to avoid recutting, while also contributing to better surface quality.

The tool has the potential to become the new standard for machines utilising CAD/CAM tool paths. KOR 5 has more active contact points versus a 2-fluted or 3-fluted end mill because it is a 5-fluted end mill, which creates improved stability and eliminates chatter on even the heaviest cuts. Applying the tool with low radial engagement, but high depth of cut results in much higher metal removal rates than traditional methods. To assure predictable, no pull-out performance at maximum feed rates, the KOR 5 is available with Safe-Lock shanks.

“Slotting, deep pocketing, dynamic milling—whatever your aluminium application, KOR 5 can do it faster,” said Thilo Mueller, Manager for Solid Carbide End Milling.

For more information contact Kennametal South Africa on TEL: 011 748 9300 or visit www.kennametal.com
The new Mitsubishi MV4800-S Advance Type M800 is now capable of 20” submerged cutting. The auto-threading system’s optional casting creates a removable 12” insert that when removed increases the maximum workpiece thickness to 32”. The option includes tank wall extensions and upper head skirts to contain the cutting splash created by the workpiece extending above the maximum submerged level.

**MV4800-S Advance Type M800 includes several new features:**

- Mitsubishi M800 CNC control - with intuitive operation using a cell phone like 19” touchscreen on an ergonomic tilt / swivel mounting system.
- The Advance Pendant Box - This thin tapered design, with a 3.5” LCD touchscreen, provides operators with more functionality at the machine, minimizing set-up time.
- New software functions help operators with a set-up checklist and enhanced maintenance screens to keep track of operations. All-new common-shape macros reduce programming time by as much as 88%.
- Smaller fluid tank and built-in 55 lb. wire spool system has reduced the machine width by 16%, saving valuable floor space while providing for longer unattended machine time.
- Thermal Buster is a temperature stability system that uses several sensors to monitor to the temperature of key areas of the machine casting and synchronizes them by circulating chiller dielectric fluid through them.
- The wire EDM machine also features Mitsubishi’s Cylindrical Drive Technology: The round magnetic shaft of the linear motor creates a 360° magnetic flux for a revolutionary, no-contact design. This provides smooth, friction-free motion without the cogging inherent in other linear motor designs. The larger air gap between the shaft and forcer minimises heat output and the effect of metallic shop dust on the system.

For further details contact WD Hearn on TEL: 021 5345351 or visit www.wdhearn.co.za

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**Additive manufacturing capability for CAM software**

OPEN MIND Technologies AG has announced it offers an additive manufacturing (AM) capability option in hyperMILL CAM software to support 3D printing/additive processes. hyperMILL together with AM also provides efficient hybrid processing with simultaneous additive and subtractive processing on one machine.

For highly complex 5-axis simultaneous processing, hyperMILL Additive Manufacturing enables an array of flexible options for Directed Energy Deposition processes (DED) and Wire Arc Additive Manufacturing (WAAM). Both laser-based powder nozzle machining heads and WAAM can be controlled using hyperMILL Additive Manufacturing for selective material deposition, as well as conveniently programmed and automatically simulated for collision avoidance.

Alan Levine, Managing Director of OPEN MIND Technologies USA, Inc. said, “As an early adopter of driving forward the implementation of integrated process chains, OPEN MIND has optimised hyperMILL Additive Manufacturing technology to boost the efficiency, precision and process reliability of additive and hybrid manufacturing.”

Using Powder Bed Fusion (PBF) and any necessary rework, hyperMILL supports the full potential of AM. “If 3D printed parts do not have the desired surface finish, or has support structures that have to be removed, the parts, including hard-to-reach areas, can be machined after being printed using 5-axis cutting processes,” Levine said.

hyperMILL now enables users to perfectly program the cladding and milling together. True-to-detail additive and subtractive simulation as well as stock tracking between the individual process steps offer the greatest possible reliability.

Key additive applications include repair of damaged components, cladding of additional surface skins, or creation of new components from a substrate. This also creates totally new options for combining different materials, such as when high-quality material layers have to be applied to carrier materials.

For further details contact Hi-Tech Machine Tools on TEL: 011 608 0088 or visit www.hitech.co.za
Designed specifically as an entry-level flat-bed laser system, the HD-FO fibre laser manufactured by Turkey-based Durma is a compact, competitively priced and easily transportable machine designed specifically to accommodate sheet up to a maximum size of 3000mm by 1500mm. The maximum sheet weight is 575kg.

The HD-FO can be specified with a Durma fibre laser power source of 1kW or 2kW (the focus length is 125mm, and focusing is automatic). Moreover, the machine offers the easy loading and unloading of sheet via a quick-opening front door, without the need for a shuttle table.

Cutting capacities for the 1kW laser are: 8mm for mild steel, 4mm for stainless steel, aluminium and brass and 2mm for copper.

The corresponding capacities for the 2kW laser are 12mm, 6mm and 3mm respectively. Axis strokes are 3080mm by 1530mm by 125mm for the XYZ axes respectively, with maximum axis speeds of 90m/min in X and Y (30m/min in Z) for a maximum synchronous speed of 127m/min and a synchronous acceleration of 14m/sec². The positional accuracy and repeatability are ±0.05mm. Control is via a Siemens Sinumerik 840D SL system with a 19” touch panel, a Durma operator interface and a complete cutting database for all standard cutting applications; this includes the cutting parameters for most frequently profiled materials and common thickness ranges, although operators can fine-tune the parameters to optimise the cutting quality for certain materials.

For further details contact Spectrum Machine Tools South Africa on TEL: 011 865 4090 or visit www.spectrumafrica.co.za

Durma introduces entry-level fiber laser
Yamazaki Mazak’s newly developed fully simultaneous 5-axis machining center, the CV5-500 has been designed specifically for customers engaged in, or aspiring to 5-axis machining. The machine, which is being brought to market at a competitive price point, has a high-rigidity bridge construction with a fully supported trunnion table.

A newly developed 12 000rpm spindle, capable of a peak performance of 18.5kW and 119.4Nm, makes the machine suitable for a wide range of materials. The machine benefits from a compact footprint, and it can be easily automated with a side-loading door and robot interface. Mazak’s CV5-500 is equipped with SmoothX CNC, the 5-axis version of the company’s Smooth technology.

Alan Mucklow, managing director - UK and Ireland sales division, says: “The CV5-500 is set to become one of our flagship machines. Crucially, customers were heavily involved in the R&D process, to ensure the end product is equipped to deliver stand-out performance across a range of vertical markets, including both the subcontract and motorsport sectors.”

“Ultimately, we feel this is the most compact fully simultaneous 5-axis machining center on the market, with a price point that offers a real opportunity for those with the ambition to move into more complex machining processes,” he continues.

SigmaNEST V20 now available from SigmaTEK

SigmaTEK Systems, a specialist in developing CADCAM software solutions for the fabrication industry, has released V20 of its flagship SigmaNEST product portfolio. V20 is a substantial release, introducing many features in all areas of the product, with continued emphasis on user experience, optimising material utilisation, and data management.

A newly developed SigmaTEK launcher provides a common, customisable desktop platform from which users can easily access core SigmaTEK products, as well as eco-system applications such as licence manager, database utilities and help resources. The launcher also displays a live social media feed to ensure users are fully up-to-date with the latest product information, trade shows and educational webinar schedules.

“From grassroots racing to Formula One teams, the motorsport sector is one of the UK’s most varied industrial subsets, and presents those working throughout the supply chain with some incredibly demanding engineering challenges. For many in this sphere, however, shop-floor space is often at a premium. In these instances, the CV5-500 represents a versatile machine that can tackle these engineering challenges head on, from an ultra-compact footprint,” adds Mucklow.

“High-mix work - both in terms of component type and sector - remains the order of the day for many subcontract markets in 2020. However, we feel that more and more companies are looking to either expand or commit to their first investment in 5-axis machining over the coming months. The CV5-500 is perfectly placed to meet this appetite.”

The CV5-500, a bridge construction 5-axis vertical machining center with a fully supported trunnion table that provides high-rigidity for high-accuracy machining, made its debut at EMO 2019 and was one of the most popular machines on the Mazak stand, based on machine enquiries. It is also designed to deliver high-speed, high-accuracy machining and ease of operation. The CV5-500 defines a new standard for 5-axis machining offering exceptional value, says Mazak.

For more information contact Hi-Tech Machine Tools on TEL: 011 608 0088 or visit www.hitech.co.za
SigmaNEST enhancements include support for part priority nesting, nesting of filler parts, and nesting of mini-sheets or mini-nests. User efficiency continues to be a focus and a newly devised CAD Import Plus module is available that does not require a local CAD installation to import a variety of file formats, including SolidWorks, Solid Edge, Creo, Inventor and NX. In addition, SigmaNEST 20 adds feature recognition (drilling, partial-depth pockets, bevels) for STEP files.

Significant profiling enhancements see the introduction of novel bevel capabilities, such as advanced tool-path generation and rule-based corner transitioning. Users can now import part files with complex bevels and apply NC directly to the 3D model in an interactive 3D viewer to ensure safe and accurate tool-path generation, and better program verification.

Further SigmaNEST developments include expanded support for the Trumpf TruMatic 1000 Fiber punch-laser machine, laser pre-cutting for creating complex threaded holes on combination machines, and the use of raw sheet edges as the part edge with greatly improved height detection and probe cycles near the sheet edge.

The challenge of delivering an accurate quote is fundamental to the success of a project. V20 delivers SigmaQUOTE, a newly designed integrated job quoting tool that replaces SigmaNEST’s previous Jobs module. SigmaQUOTE is powered by SigmaMRP, so it leverages the product’s quoting functionality, allowing users to manage companies and contacts, generate quotes for new projects, and turn quotes into work orders for production within SigmaNEST.

Additional improvements to the SigmaTEK 3D suite of applications for tube, bar stock, 3D models and sheet-metal forming include the ability to convert multi-piece common line gores into a single no-kerf, common line part within SigmaDEVELOP, a 3D system for standard ducting and HVAC geometry. SigmaUNFOLD flattens 3D patterns and allows them to be manipulated for cutting and bending operations, while an automatic slit-creation option adds a slit to an otherwise solid part so it can be unfolded into a flat pattern that can be processed on either profiling machines or press brakes.

For SigmaBEND, V20 includes a newly devised radial menu with shortcuts for editing the tool stations, back gauges and the part itself, as well as improved sequencing and back-gauge options. In addition, the introduction of a manual station-generation tool allows for easy manual tooling set-up. SigmaTUBE generates nests and NC code for tube and pipe cutting on laser and plasma machines, and V20 includes support for new inventory profiles, and tab and notch enhancements.

SigmaTEK has also developed applications that drive the continuous workflow of data throughout the shop floor. For example, V20 delivers updates to ‘Colour Offload’, a tool that uses colour-coding to track parts by next operation, with the ability to filter by program status and document management capability. SimTrans is a transaction manager which links SigmaNEST with other business systems. Users can leverage SimTrans automation to create or load parts, manipulate orders or update inventory in real time. V20 adds transactions for managing jobs and provides the ability to receive email notifications for regular status updates or invalid parts.

For further details contact Mecad Manufacturing on TEL: 012 645 4300 or visit www.mecad.co.za
A newly developed range of press brakes has been introduced by Bystronic that can be customised to suit a user’s requirements in terms of process speed and flexibility. The modular Xpert Pro series comprises three models, plus a variety of optional extras.

The Classic Edition is intended for prototype manufacture and job shops producing small batch sizes. With the Performance Edition, medium-sized companies can produce parts in larger series, while the Dynamic Edition is suitable for companies needing even more speed to handle batch sizes of 1,000 parts or more. Bystronic says the machines will be among the fastest on the market, with bend speeds up to 20mm/sec.

Press capacity ranges from 100 to 320 tons, enabling sheet up to 15mm thick to be processed, while bending length is either 3 or 4m. Companies that require even more flexibility can connect two machines together to bend longer parts.

Thanks to the variety of configuration options, application possibilities are extensive and an Xpert Pro can be flexibly adapted to new requirements through straightforward retrofitting of optional modules. For example, if at some point a company wants to bend complex shapes in addition to rectangular parts, it can retrofit a back-gauge with from two to six CNC axes.

Manufacturers that have already invested money in bending tools want to reuse them when they purchase a new press brake, but this is not usually possible when changing supplier as there are almost a dozen different tool systems on the market that are incompatible with each other. However, this problem has been solved by the Xpert Pro range as the machines have been designed so that tool systems from other suppliers can be used. An automatic tool changer is also available as an option.

Bystronic’s patented dynamic crowning compensation system ensures bend accuracy and consistency by automatically adjusting the curvature of the beam during the bending process. The latest generation of pressure reference technology carries out corrections in real time based on closed-loop feedback from sensors.

For even higher process reliability and repeatability, an angle-measuring system called LAMS is available as an option to compensate for spring-back and deviations in the thickness of the sheet being bent, which can be as much as 10%. Correction data for that particular material can be stored and transferred to other machines, even those not equipped with LAMS, to avoid tedious manual corrections.

Last but not least, ByVision Bending software determines the optimum process for every material thickness and bend angle. Convenient offline programming enables data to be imported without interrupting production.

For more information contact Bystronic South Africa on TEL: 010 410 0200 or visit www.bystronic.co.za

GF Machining Solutions controls sparks to improve EDM wire life

Spark Track software is GF Machining Solutions’ latest EDM monitoring system that adjusts the rate and intensity of sparks along the length of the wire and, in doing so, prevents heavy wear from occurring at any point on the wire, extending its life and preventing breaks.

At the heart of the innovation is GF Machining Solutions’ generator technology - specifically its ISPS (Intelligent Spark Protection System) module - which identifies the intensity and location of sparks along the wire and, when necessary and required, adjusts current and voltage rates to prevent any concentration of wear. Spark Track provides real-time spark distribution information to manufacturers, enabling them to push their EDM machines to the limit.

Says Martin Spencer, managing director at GF Machining Solutions UK: “The ISPS module eliminates wire breakage regardless of machining conditions and, as such, makes wire EDM processes more reliable and secure.”

Spark Track solves problems such as wire oscillation, which can occur when machining different heights and tapered surfaces and, in turn, lead to wire breaks and damaged workpieces.

Says Spencer: “Superior wire-cutting performance is achieved when discharge distribution along the wire is as uniform as possible. Spark Track enables this to occur.” ISPS and Spark Track, working in combination, not only prevent wire breaks, they also (as a consequence) eliminate time-intensive resets and reduce the amount of time an operator has to devote to a given job.

For more information contact Retecon Machine Tools on TEL: 011 976 8600 or visit www.retecon.co.za
The South African launch of TaeguTec’s new and wide range of inserts and cutters were presented by Jacob Harpaz, President and CEO of the IMC Group. Harpaz emphasised to 320 delegates that clients were looking to improve the productivity of their equipment and reduce the cost per part and the only way you can do that, in this age of advanced machining that is feeding into Industry 4.0, is to increase the feeds and speeds of your CNC machine cutting process.

The TaeguTec SFeedTec range on the turning side includes SFeed-Turn (Hush-Bore, Pos-S-Turn, Rhino-X-Turn, Rhino-M-Turn, Cool-Burst, Turn-SFeed and Sfeed-Rush), on the parting and grooving range SFeed-Clamp (Cut-SFeed, Face-Rush, Quad-Rush, Quad-l-Rush, Mini-l-Rush and a T-Clamp CBN insert), on the holemaking side SFeed-Drill (Solid-3-Drill, Drill-SFeed, Drill-Rush and Modu-R-Drill) and the milling SFeed-Mill range (Mill-SFeed, Tang-SFeed, Mill-Rush, Chase-4-Mill, Chase-8-Mill, Chase-V-Quad, Chase-12-Mill, Chase-4-Finish, Nan-Rush, Chase-4-Feed, Chase-10-Mill, Ceramic-SFeed and Maxi-Slot).

“Cutting tools will have to adapt to remove less metal but at much faster speeds and feeds. The cutting tool can have a huge impact on productivity. Not every company can buy the latest machine tools but changing to our cutters means the tools can run at very high speeds with a minimum amount of downtime. TaeguTec’s new tools will enable machinists to perform metal cutting at a rate similar to that found in the woodworking industry,” said Harpaz.

Below is a selection of the 320 delegates that attended the seminar.

For more information contact TaeguTec SA on TEL: 011 362 1500 or visit www.taegutec.com
Widia Novo tool assemblies can now be imported directly into Mastercam

The Widia Novo online platform, which is available in the UK from Industrial Tooling Corporation (ITC), now allows tool assemblies to be directly imported by users of Mastercam, credit to a newly formed collaboration. The partnership between Widia and CNC software developer Mastercam provides a solution that enables information importing from Novo directly into Mastercam 2018.

In the past, manufacturers may have complained of having to search through large and complex catalogues to find related tools, then having to request or build assemblies from scratch for use in systems such as Mastercam.

With the integration of Widia Novo and Mastercam, end users save significant time searching for the desired tools and building 3D tool assemblies that can be brought directly into the CAM software for easy use by most machine shops. Accurate tool definitions are a critical factor in modern CAM applications, and tool-path algorithms take advantage of these definitions to provide safe and efficient motion. In addition, the models imported from Widia Novo help to generate accurate in-process stock models that can be leveraged in subsequent operations. Chris Merlin, director of portfolio commercialisation at Widia, states: “One of the promises of digitisation in manufacturing is greater precision and speed through effective data use. This is where integration is a must. Users want their systems to work together seamlessly via simple solutions, without extra effort on their part. By connecting Mastercam and Widia Novo, users can effortlessly join cutting-tool data with machining data. The 3D models, drawings and starting parameters are easily available for validation and programming processes. All this leads to less misapplication of tooling solutions, more optimal machining strategies, and increased productivity with better quality in the manufacturing environment.”

For more information contact Widatech on TEL: 087 150 3266, email: info@widatech.co.za or visit www.widatech.co.za

Submerged Wire EDM – AccuteX

The AU-1440iA Z800 submerged wire EDM is engineered to process large as well as smaller parts with accuracy, speed and convenience. The machine’s X axis capacity of 1 378mm with 800mm in Y and Z enable it to handle workpieces up to 1 791mm x 1 062mm x 782mm in size.

The machine structure, designed via Finite Element Analysis (FEA), includes a Meehanite cast honeycomb-type base, highly-ribbed column mounted with oversized UVZ axis and a reinforced lower-arm to increase stiffness. To maximise durability, the 148mm U and V axes are protected in a cabinet located above the working area. All castings are stabilised to ensure maximum strength, reliable high precision and long durability when machining heavy workpieces. The rigid structure and 20mm C1 Class U-V ball screws provide repeatable precision at the high flushing pressures necessary for high-speed cutting.

A precision hardened-stainless-steel workpiece-mounting table offers easy accessibility and is designed to function as a standard clamping system, permitting a wide range of workpieces to be fixedtured quickly and accurately. The worktable can also accommodate any commercial clamping system.

AccuteX’s automatic wire threading (AWT) system enhances machining speed by accomplishing fast submerged rethreading at the break point. When wire breakage occurs, rethreading takes place without dielectric drainage/refilling, resulting in spark-to-spark times as low as 15 seconds. The system also includes a scrap wire disposal unit.

A 64-bit Windows CE Based PC CNC system drives machine axes via closed loop, direct coupled AC servomotors, with eight millionths resolution confirmed by a Heidenhain linear glass scale feedback system. The patented structure of the machine’s Hiwin linear guideways reduces up to 90% of friction and vibration to produce unwavering accuracy of motion. Resulting positioning accuracy is ± 5 micron and repeatability ± 2.5 micron in X & Y.

The AccuteX AU-1400iA Z800 EDM enables shops to easily process both large and small parts ergonomically and efficiently. The machine’s two stage automatic tank door, unparalleled cutting speed and accuracy assure maximum flexibility and productivity.”

For more information contact EDM Shop on TEL: 011 762 5231 or visit www.edmshop.co.za
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