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VOLUME 13.2
May 2014

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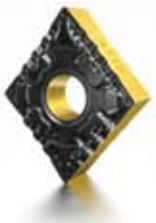
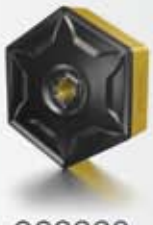
TURNING STEEL

GC4325
An edgeline performance out of the ordinary.



GC4315
With a wear resistance crucial for high cutting temperatures.

MILLING CAST IRON



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A weak Rand versus a strong Rand

Visiting a garden refuse collection site is an education in many ways. The sites are more than a collection point for garden refuse, which gets recycled and sold back into the community as compost. Additionally they have become a collection point for other materials that can be recycled, and a dumping ground for many old, unwanted items that are believed to be beyond repair. As a result they are generally busy because the recycling culture is, thankfully, growing in most of our communities. However, this can be disputed when you see the rubbish that has been willfully turfed at traffic light intersections, on main roads and at taxi ranks. In short it is disgusting.

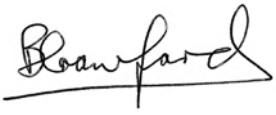
The old cliché of one man's rubbish is another man's bounty is certainly evident when you are compelled to do your 'chore' and visit your local dump, as we refer to them as. The hustle and bustle of employees and 'helpers' to see what the next load will reveal is an indication of the 'entrepreneurs' that have arisen because of economic realities, and for others out of shear desperation to try and eek out a living and put food on the table. With the price of scrap metal today it is no wonder, although in most cases this commodity is 'controlled' by certain individuals and jealously guarded.

The dump is, I believe, a situation which highlights the difference in wealth and education in society. Many an item you see offloaded could easily be donated to a worthy cause, books and clothes for example. But we are generally lazy and it is a real 'chore' to go out of our way and be a good citizen and deliver these items to a place that will benefit from them.

When I visited the dump recently I found an 'entrepreneur' puzzling over a Euro 20 cents coin. He had no idea about Europe, or the Euro as a currency, and if he could exchange it into South African money what it would be worth? The approximate conversion shocked him.

This brings me to my real point – dealing with Europe, and other countries, at the current level of exchange rate, is expensive and prohibitive. Broadly speaking only the exporters, visitors to our country and those wanting to invest locally, if there are any considering the political and labour unrest situation in South Africa, are smiling. I am no economist or industrialist but surely the benefits that are gained with a weak Rand are to the detriment of the many others that rely on imports. I believe that now even the 'cheap' imports from China are making local manufacturing more competitive. This is a positive spinoff but the cost of importing the equipment soon negates the brief advantage gained. We are a nation that relies heavily on imported capital equipment and manufacturers need to upgrade equipment regularly to be more productive. Additionally visiting international exhibitions to keep abreast of the latest technology is now out of the reach of many.

So my question to the authorities is what is their long-term view of the Rand? After all a strong manufacturing base is the life-blood of any industrialised nation.



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Manufacturing is the new IT career

Like many of our nation's citizens, a career in manufacturing made it possible for me to live the American Dream. When I was 17, I came to the United States to get my education. Thanks to wonderful mentors of my alma mater Fairfield University, I not only received a great education; I found encouragement and support to embark on a career in manufacturing. That career provided a path to lifelong learning and the economic freedom of a middle-class livelihood for my family.

Today, the quintessential dream of American society wanes in the shadow of one colossal untruth: that there are no jobs. The myths and misperceptions that feed the "no jobs" mindset center on manufacturing, where ironically, there are in fact many jobs — more than a half-million today — with still more to come over the next decade as 2.7 million Baby Boomers prepare to retire from our industry.

The last time I wrote a column in this magazine, I shared the misguided view Americans have about manufacturing, gleaned from a national study we conducted to learn why young people lack interest in the sector. Only 11 percent believe it is growing, and more than two-thirds think the problem is a lack of jobs, rather than the lack of skilled talent to fill the jobs.

Over 70 percent of Americans said they wouldn't recommend manufacturing as a career for their children, and we know it isn't even presented as an option in most of our nation's high schools. Why? We have a perception problem. Americans see manufacturing in "4D": dark, dirty, dangerous and dull. Ask anyone who doesn't already work in manufacturing to describe the picture in their head, and they'll prove my point.

It's time people know the truth: Not only are there jobs; there are high-tech, high-paying, safe, appealing jobs in industry that provide an entry ticket to lifelong careers and paid education after high school! Companies like Kennametal pay for training and education, so employees can go as far as their interests take them. Some of our company's best PhDs started as technicians on the shop floor.

We can forever change the picture of manufacturing in America for the better, if we are willing to rebrand ourselves and open our doors to young people, parents and faculty. We have done this at Kennametal with our Young Engineers Program, and I can tell you that among hundreds of students, parents and teachers we've reached, we have a new understanding.

Changing the national mindset proves more difficult. Yet if we know "manufacturing" is a dirty word to the majority of Americans, why not consider a new name that defines today's reality? A better label is industrial technology. Positioned as the "new IT," industrial technology is digitally-driven, smart production. It is the future of America, ripe with opportunities for a new generation digital-savvy talent.

We in industry must be the change, the catalyst partnering with high schools, career centers, technical institutions and community colleges to match young people with training and education that we need and they can put to work immediately, while earning great pay ($40,000 and up with benefits) and stackable credentials to apply toward further education, from associates' degrees to PhDs.

We also must advocate for policy change, to coordinate and leverage federal, state and interagency workforce programs that are accountable for results; to overhaul an education system that blindly promotes the conventional four-year college path, when it is driving more kids to arts and sciences programs than we have careers to support them. We cannot sustain a system that leaves jobless graduates (and parents) holding a ballooning bag of college-loan debts for which they don't have the means to repay.

This is our call to action, to reshape America's future with leadership in industrial technology, lifelong learning and innovation careers — the kind upon which this nation's greatest promise is built.

Carlos Cardoso serves as chairman of the Manufacturers Alliance for Productivity and Innovation (MAPI). He is on the board of the National Association of Manufacturers (NAM) and its Workforce Task Force, as well as the U.S. Manufacturing Council, where he chairs the Subcommittee on Workforce Development and Manufacturing Perceptions. ■

This is the viewpoint of Carlos Cardosa, Kennametal Chairman, President and CEO. This article was first published in the Manufacturing Engineering.

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cover story

Gear milling event

A first for Sandvik Coromant South Africa

Sandvik Coromant is to host a series of business seminars at its Productivity Centre in Jet Park, Gauteng. The first of these will take place from 18 to 19 June 2014. The first seminar will be a gear milling event entitled: Discover the capability of CoroMill®176.

The seminars will make available new advanced knowledge and production methods that will allow manufacturers to reduce cost while maintaining high quality standards.

Presentations and demonstrations will provide new product information, technical solutions and processes in a variety of metal cutting areas. The programme will include modern cutting tools and application techniques.

The guest speaker will be Henrik Nydahl, a global gear milling specialist based in Sandvik Coromant's head office in Sweden. Seminar sessions will take place 08h00-11h00 or 11h00-14h00 or 14h00-17h00.

Registration to attend the seminar is now open to manufacturers. To register visit http://www.sandvik.coromant.com/za/events_training/pages/gear-milling-event.aspx

Coromill 177 is a segment-built indexable hob with tangential inserts and a segment interface covering modules 10 to 18 (DP 2.540 to 1.411), with a polygon-shaped interface between the segments that ensures precision and high-torque transfer capability.

Grade GC3330 leads the way for cast iron milling

Sandvik Coromant takes cast iron milling to a new level with the launch of insert grade GC3330.

Cast iron milling is the next machining area covered by the new grades with Inveio™ from Sandvik Coromant. Having already introduced the game-changing grade GC4325 for steel turning, the innovative cutting tools supplier now introduces GC3330, a wear-resistant first choice grade for cast iron milling.

With predictable performance becoming increasingly

CoroMill® 176 is an innovative indexable insert cutter for productive gear wheel machining. It is a more cost-efficient alternative to regrindable HSS (high speed steel) tools. Its ability to reach higher cutting speeds combined with user-friendly insert changing will reduce cycle times and cost per component, making it the high productivity gear milling choice.

Coromill 176 is an indexable insert hob that can reduce cutting time by up to 70 per cent through the application of cutting speeds up to four times higher than conventional high-speed steel cutters and a large number of effective inserts.

Coromill 170 is a high-performance cutter claimed to reduce machining times for large gears, while the Coromill 172 disc cutter can machine in flexible non-dedicated machines, such as multi-task machines and machining centres.

important in many machining processes, GC3330 is meeting the needs of today's manufacturing. The consistent performance of GC3330 creates opportunities for manufacturers to increase machine utilization as well as removing a lot of metal in a short time without compromising tool life. Minimizing machining interruptions also enables secure unmanned machining.

Inveio – the innovation behind the latest innovation in material science

GC3330 is equipped with Inveio, the latest innovation in material science. The groundbreaking technology uses uni-directional crystal orientation. While the crystal orientation in conventional inserts' CVD alumina coating normally is random, GC3330 has controlled crystals lined up towards the

top surface. This is the secret behind the endurance, predictability and long tool life of GC3330.

Application area

The new insert grade GC3330 is the first choice for both dry and wet cast iron milling, from roughing to finishing. Covering a broad application area, Sandvik Coromant's new grade can be used in any cast iron milling operation for both grey and nodular cast iron materials. GC3330 is available for a variety of milling cutters for face-, shoulder-, profile-, high feed-, and parting and grooving milling.

Inveio™ – setting the standard for steel turning and cast iron milling

Sandvik Coromant has introduced new insert grades for steel turning and cast iron milling with Inveio; the technical breakthrough in material science that provides inserts with exceptional wear resistance and tool life.

In today's manufacturing, predictability is becoming increasingly important. Production that runs smoothly, without unexpected interruptions, opens the way for secure unmanned production and high machine utilisation; a cornerstone for profitable production processes.

Following the successful introduction of the insert grade GC4325 in October 2013, Sandvik Coromant now extends that assortment and introduces the new grades GC4315 and GC3330. All three grades feature Inveio that brings endurance, predictability and long tool life to the machining process.

The technical breakthrough

The performance of these grades is made possible by the Inveio uni-directional crystal orientation. Normally, the crystal orientation in inserts' CVD alumina coating is random. The breakthrough came when Sandvik Coromant found a way to control the crystals, making them all line up in the same direction – towards the top surface. These tightly-packed crystals create a strong barrier towards the cutting zone and chip.

The result is grades with incredible wear resistance and cutting edges that stay in shape for long times in cut. The long, predictable tool life of GC4325, GC4315 and GC3330 enables secure unmanned production with high metal removal rate.

Application area

GC4325 is the first choice grade for steel turning. When GC4325 reaches a limit in metal removal rate due to high speed and long time in cut, GC4315 withstands the high cutting temperatures that occur. GC3330 is the first choice grade for milling in cast iron materials.

Okuma, Partners in THINC vote Sandvik Coromant Partner of the Year

Sandvik Coromant has been awarded Partner of the Year by Okuma America Corporation, Charlotte, NC, a world leader in CNC machine tools, and the Partners in THINC. Okuma distributors ranked Sandvik Coromant the highest among the more than 40 THINC members.

Stellar customer service and an overall commitment to manufacturing productivity were cited as primary reasons for the number one ranking. Responsiveness to customer inquiries, as well as availability and involvement in distributor-sponsored events, were also mentions as factors in this unique recognition.

"Sandvik Coromant is a very highly respected supplier of cutting tools and machining solutions and this is validated by them receiving the highest overall rating from all of Okuma's Distributors in 2013. Congratulations to Sandvik Coromant for receiving the highest rating among all of our extremely valued Partners," said Jeff Estes, Director of Partners in THINC.

For further details contact Sandvik Coromant on TEL: 0860 101 008 or Mary-Ann Germishuys on TEL: 011 570 9615 or email: mary-ann.germishuys@sandvik.com or visit www.sandvik.com ■

Oerlikon Skyshield® is an all-weather short-range air defence system for protecting high-value assets

Rheinmetall to modernise South Africa's air defence capabilities, enabling protection of civilian assets and events

Rheinmetall AG of Düsseldorf has just booked another important order in the field of military air defence. The Republic of South Africa has decided to embark on a modernisation of its existing air defence systems. Including logistics and training services, the complete package is scheduled for completion by 2017.

The modernisation of the SA Army's twin 35 mm gun air defence artillery falls under a programme designated as Gbads Phase II. Gbads stands for ground based air defence system.

The SA Army currently operates twin 35 mm air defence guns acquired from Rheinmetall ancestor company Oerlikon. Reportedly, the army acquired 169 of these guns, along with 75 Superfledermaus fire control units (FCUs) in 1963. In 1990, 48 of these Mark (Mk) I guns were upgraded to Mk V status and the Superfledermaus FCUs replaced by Italian LPD20 radars.

Among other items, the contract encompasses the supply of Oerlikon Skyshield fire control units, which will substantially improve the performance and accuracy of South Africa's current twin-gun systems as well as significantly expanding the operational spectrum of its air defence capabilities. In this context, a number of guns will also be retrofitted with upgrade kits to accommodate Rheinmetall's state-of-the-art Ahead airburst ammunition.

Each Ahead shell is composed of 152 tungsten spin-stabilised sub-projectiles, which, when released, form a cone-shaped metal cloud, placed so that the target, whether aircraft, missile or bomb, flies into it and is destroyed. Each shell knows when to detonate because its electronic timer is programmed, as it leaves the barrel, by an electromagnetic inductor in the gun muzzle. These inductors are fitted to the Mk VII guns.

The new Skyshield technology will enable the South African armed forces to protect sensitive installations such as the House of Parliament, power plants, stadiums and other critical military and civilian assets from a wide array of aerial threats, including asymmetric terrorist-type attacks. Because Skyshield air defence systems can be transported without much effort, they can basically be deployed anywhere depending on the evolving threat situation. Ever since the 1980s, South Africa has fielded air defence technology from the former Oerlikon Contraves, which Rheinmetall took over in 1999.

Rheinmetall is one of the world's leading makers of sophisticated short-range air defence systems. In the field of gun-supported air defence it is the market leader as in fire control technology, anti-aircraft guns, integrated guided missile launchers and Ahead airburst ammunition.

Rheinmetall AG, through its Rheinmetall Waffe Munition subsidiary, owns 51% of South African company Rheinmetall Denel Munition (RDM). No details of any offsets or of any involvement by RDM in the programme have yet been released. ■

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New AGV line installed at VWSA

Cutting-edge technology is a first for the Uitenhage-based plant.

Volkswagen Group South Africa (VWSA) has installed an automated guided vehicle (AGV) line to replace the traditional roller conveyor used on the VW250 engine line. An AGV is a mobile robot that follows markers or cabling in the floor, or uses vision or lasers to follow a preset route. AGVs are most often used in industrial applications to move materials around a manufacturing facility or warehouse.

The line delivers new generation EA211 and EA288 engines, which are being introduced on a number of new models within the Audi, Volkswagen, Seat and Skoda ranges.

"What is most intriguing about the AGV is the fact it is a completely contactless system. It knows exactly where to go by following induction cables hidden under the concrete floor. The cables also give it enough power not only to drive the system but to lift a complete engine gearbox powertrain weighing roughly 150 kilograms." – Sarel Breitenbach: Manufacturing Planning and Plant Engineering (MPE) Manager

Older versions of AGVs are battery-powered, which means they need to be docked in a charging station at random intervals before being reintroduced into the production line.

The AGV vehicles were delivered by German company Daum + Partner and the installation took place during the annual shutdown. Similar AGV systems have been introduced at Volkswagen plants in Wolfsburg (Germany), Chattanooga (US) and China. The project was priced at R13.35 million. This however excluded equipment such as controlling systems, bolting equipment, gearbox filling equipment and infrastructure.

The Automated Guided Vehicle (AGV) replaces the old traditional roller conveyor on the VW250 line in Final Assembly.

The AGV is located at the Engine Sub-Assembly area in Final Assembly.

"The benefits the AGV project deliver are numerous. The biggest improvement has been in the area of ergonomics. For one, there is greater accessibility to the engine and gearbox from all sides, as the power train is on a turntable which can rotate to suit the operator," said Breitenbach.

The Engine dress-up process on the AGV line has been introduced as a fully integrated system and total process security, meaning that a powertrain will not leave a station unless all the bolts, which need to be tightened are tightened. Only then does it proceed to the next station.

There is also a lifting table on top, making it possible to accommodate different operator heights – the old conveyor system often saw operators climb on steel platforms for proper reach. The workstation has also been optimised and is now three metres in length, as opposed to 0.8 metres on the old system. This allows for better line-side supply of parts.

The project included aluminium rails for easier movement of tools, and lightweight carbon fibre arms to act as a torque reaction device, reducing the force exerted on operators' arms.

"The roof structure on the line is also suspended, with no columns obstructing the delivery of parts," added Breitenbach.

"It was an extremely tough task to have only three weeks to remove the old system and install the new one, and from day one start building 348 cars a day – that was the ask, but I am proud to say we achieved it," says Breitenbach.

Record production

VWSA says it should see record production at its engine plant this year. The engine plant production reached 110 708 units in 2012, growing to 151 269 units in 2013. This year, VWSA expects production to expand by a further 14%, to reach 172 873 units. Around 45 000 units of this number will be for the local market, while 46 765 units will go to China, 73 448 to India and 7 488 units to Malaysia.

Most of this year's growth is expected to come from India, which last year received 32 117 units from South Africa.

The VWSA plant produces four-cylinder petrol engines and operates a four-shift, seven-day production week, with the fourth shift running on the weekends.

Vehicle production at Uitenhage was a different story in 2013, with production dropping 8% from 2012 to 2013, to reach 103 378 units.

Production of the Polo for the export market dropped 2 000 units, to 52 388 units, with local Polo volumes down roughly 5 000 units, to 17 034. Polo Vivo production, which is aimed solely at the local market, declined around 2 000 units, to 33 975 units.

The forecast is for the VWSA plant to up vehicle production 6%, to 109 649 units, in 2014, with 46 890 Polos destined for the export market, as well as 25 411 Polos and 37 348 Polo Vivos for the local market.

The VWSA plant has decreased energy use by 20% since 2010, carbon dioxide emissions by 14%, waste generated by 26%, and water use by 40%. The new year sees some new projects to further reduce these numbers, including Phase 1 of a waste water reverse osmosis system, which will recycle effluent water to parts of the paint shop. The potential savings here are 53 829 cubic metres of water a year. ■

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Import duties increased on screws, nuts and bolts

The South African Revenue Service has hiked the import duties of certain screws, bolts and fasteners to level the competitive playing field for local producers.

The International Trade Administration Commission of South Africa (Itac) said in a statement that the South African Customs Union's collective market share declined from about 71% in 2010 to 47% in 2012, while production fell 18% during the same period.

The commission noted that the installed domestic manufacturing capacity was underused and had declined "considerably" – despite boasting the capabilities to manufacture the majority of products classifiable under the tariff subheadings concerned – and economically viable orders from customers were lost.

In an effort to renew the industry and provide a domestic advantage against imported products, Itac recommended an increase in custom duty on certain screws and bolts from 10% to 20% ad valorem.

The duty on hexagon nuts, excluding hexagon dome nuts, hexagon nuts with nonmetallic inserts, hexagon collared nuts, and hexagon self-locking nuts, were also increased to 20% ad valorem through the creation of a separate tariff subheading.

"The domestic [SACU] manufacturing industry is experiencing price disadvantages [because of] low-priced competition, especially from East Asia," Itac said, noting the price disadvantage experienced by the domestic producers.

The tariff support for the industry at the level of 20% ad valorem would improve its price competitive position in the face of stiff import competition.

Major fastener producer CBC Fasteners said in an application to Itac for an increase in the customs duties – a move supported by many smaller manufacturers – that the group was unable to recover manufacturing overheads at the current low levels of production and that there was "urgent need" for it and other SACU manufacturers to increase the volumes required to sustain critical mass.

Additional tariff support for the fastener manufacturing industry would improve its price-competitive position "without an undue cost-raising effect on industrial consumers".

"The support would restore profitability to the industry, enable it to use its installed production capacity and achieve economies of scale, [as well as] allow for further investment," Itac pointed out.

However, importers, including Bearing Man Group and National Socket Screws, raised objections centred on issues relating to the cost-raising effect of custom duties on downstream industries, uncompetitive prices and practices and the domestic product range.

The commission said it would review the duty structure three years from the date of implementation to assess the industry's performance in terms of production, employment and investment. ■

Hulamin seeks tariffs on aluminium sheet imports

Hulamin, Africa's biggest maker of fabricated aluminium products, has asked South African trade authorities to impose tariffs on aluminium sheet imports, mainly from Brazil.

While exports to Brazil attract a 12 percent duty, aluminium sheet imports from Novelis' South American business to beverage can maker Nampak in South Africa are exempt, Richard Jacob, chief executive officer of Pietermaritzburg-based Hulamin, said in an interview.

"This means we're undercut by a rival in our own backyard," said Jacob.

While declining to disclose the tariff sought by Hulamin, he said supporting analysis commissioned from consultancy Econometrix indicates it would be "near the 12 percent mark."

Hulamin, which lodged its application with International Trade Administration Commission of South Africa, is shifting sales of rolled aluminium products to sub-Saharan markets over the next seven years.

The company has invested 300 million rand in a recycling facility as regional demand for aluminium cans strengthens.

Hulamin's proposed 10 percent tariff on imports of semi-fabricated, rolled products was rejected by the commission in August 2011, according to Business Day.

In January, the National Union of Metalworkers of South Africa said BHP Billiton Ltd. may sell its Bayside aluminium smelter, which the world's biggest miner has earmarked for closure, to Hulamin.

Hulamin on January 16 said it started talks with BHP over the future supply of aluminium slab from the Bayside smelter's casthouse, where it sources a third of its requirement. ■

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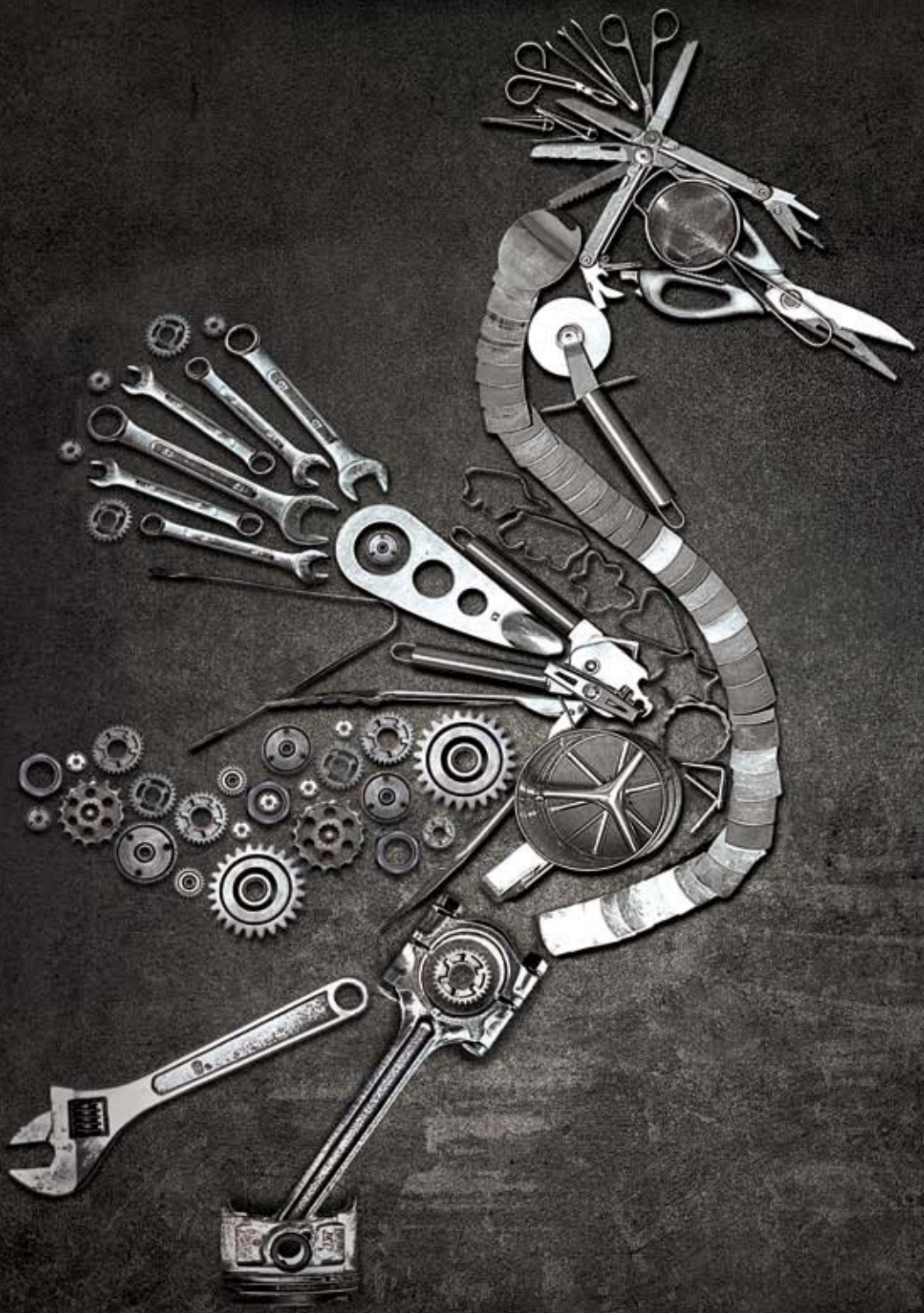

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Hall Longmore sold to privately owned Barnes Group following a successful conclusion to negotiations and final approval by the Competition Commission.

Murray & Roberts disposes of pipe, pilings and structural steel business

Murray and Roberts has disposed of its Hall Longmore pipe, pilings and structural steel business to the Barnes Group.

This follows the sale of its steel business in 2012 and the rolling stock manufacturer, Union Carriage and Wagon last year.

It had earlier said that there was a limited strategic fit between those businesses and the group's growth aspirations in engineering and construction.

It said that Hall Longmore's fixed assets were sold at net book value, and that this would be realised by the group over the next few months.

Hall Longmore was the only remaining company to be disposed of in Murray and Roberts' Construction Products Africa operating platform. The unit consists of firms that supply goods such as asphalt, manufactured concrete products and clay bricks.

Most of the businesses in Construction Products Africa were disposed of in June last year. The JSE-listed group said it was "pleased" with the outcome of the disposal and the value achieved.

"Hall Longmore is a world class facility. We are delighted with the acquisition, it's in good health and has an envious order book given current market conditions. It features up-to-date pipe mills and corrosion protection coating and lining applications. The companies pedigree is further endorsed by the American Petroleum Institute (API), ISO 9001:2008, BS OHSAS 18001:2007 and ISO 14001 certification," said Kenny van Rooyen, newly appointed managing director of Hall Longmore.

According to van Rooyen, Hall Longmore is amongst a handful of leading international steel pipe manufacturers capable of producing Electric Resistance Welded (ERW) pipe up to 610 mm diameter and to the American Petroleum Institute (API) 5L standard. Hall Longmore manufactured and supplied 720 kilometres of ERW pipe for the Durban to Johannesburg Transnet multi product pipeline to this standard.

The company is currently manufacturing and processing pipe for a number of water projects: Rand Water, Amatola Water, Umkhayakude District Municipality, Bloem Water and Medupi Power Station. The most recent contract awarded is for the Pilansberg Water Scheme. The project comprises approximately 43 km's of 950 mm diameter pipe for Pilansberg North and 43 km's of 1016 mm diameter pipe for Pilansberg South. The specification calls for spirally welded steel pipe coated with Sintakote® a fusion bonded medium density polyethylene and lined with a cement mortar lining.

"The company is committed to sustain the established upgrade and capacity building programme. This discipline has entrenched its position as the largest specialist manufacturer of large bore welded steel pipes, coatings and linings in sub-Saharan Africa," said Van Rooyen commenting further on the Hall Longmore facilities located in Wadeville and Duncanville.

As a result, Hall Longmore has enjoyed continued success with supplying pipe products to a number of large international and Southern African projects for the transportation of water, gas and petro-chemicals. To this end, Hall Longmore is committed to being a strategic partner in the growth of the South African economy. ■

Dorbyl: Naledi offers to buy minorities

Engineering group Dorbyl, whose shares were suspended on the JSE in November 2012, has announced that it had received a firm intention letter from Naledi Foundry to make an offer for all of the shares held by shareholders other than African Dune.

The saga of engineering group Dorbyl, which is suspended from the JSE, took another twist recently when the Industrial Development Corp-backed Naledi Foundries pitched an 80c/share buyout offer to take out the remaining minority shareholders.

Currently Naledi holds 54% of Dorbyl, while rival bidder African Dune Investments - a steel fencing specialist - holds around 42%. The offer is lower than Naledi's original 85c/share offer to minorities in early 2013.

Naledi has made its offer to all minorities except African Dune, which appears determined to hang on to its stake in Dorbyl. Even if Naledi does mop up the remaining minorities, there are a number of key resolutions that African Dune can block with its current shareholding, including the issue of new shares for cash.

Dorbyl has already highlighted efforts to recapitalise the company, which is critical to address the adverse audit opinion on its financial statements and lift the 16-month suspension on the shares.

The attempt to remove the remaining minorities might be aimed at allowing Dorbyl to quietly delist from the JSE and see Naledi and African Dune thrashing out an agreement out of the public eye.

Neither Naledi nor African Dune has officially articulated its intentions for Dorbyl, which holds a sprawling industrial property and substantial forge capacity.

Naledi offered 80c a share for each ordinary share and R1.50 to R1.60 for each preference share, or R3.81 million for all outstanding shares. Naledi is the controlling shareholder, holding 86 percent of Dorbyl's shares collectively with African Dune. Dorbyl said Naledi wanted to provide an exit mechanism for minority shareholders and then delist Dorbyl. ■

Pangborn Group signs representative agreement with Mondeco Solutions

Pangborn, a global leader in surface preparation products has appointed Gauteng-based Mondeco Solutions as its authorised representative for Southern Africa.

Mondeco Solutions, a company that has established itself as a fast growing independent equipment supply and service company for the foundry, forge, aluminium smelters, steel mill, steel fabrication, energy and minerals industries has recently been appointed the South African representative for the Pangborn Group.

Pangborn Group designs, manufactures and services wheel blast, air blast and other surface preparation machines, blast machine components such as blast wheels, parts and related products to serve a range of industries, including foundry and forge, metalworking, automotive and heavy truck, ship and rail, defense, and energy.

Further, the company is an industry leader in the surface preparation industry, with unique designs, applications, and best-in-class service and support. It serves automotive, shipyard, forge and foundry, energy, heavy duty, metal and metalworking industries.

The Pangborn Group includes leading brands - Pangborn, Pangborn Europe, Vogel & Schemmann, Berger Strahltechnik, Pangborn SES, and Pangborn China - and was founded in 2009, but with roots dating back to 1873 of its integrated brands.

"The experience Mondeco Solutions has amassed selling new equipment, providing equipment rebuilds and the highest level of customer service, will effectively increase the coverage of the Pangborn sales and service network while providing Mondeco Solutions a high-tech alternative to customers needing a more efficient solution to their surface preparation and blasting requirements," said Mondeco MD Peter Petersen.

"This increased coverage in South Africa will bolster the expanding coverage of Pangborn equipment while increasing the availability of Pangborn parts to a wider audience," Petersen commented.

"During the recent six months we have concluded sales of three Pangborn shot blasting machines to the South African market and these units are currently being installed and commissioned. Two of the machines are overhead monorail conveyor units whilst the third unit is a continuous shot blaster type TR3-11."

"We are excited to have joined the Pangborn team. Our high quality product offering, along with Pangborn's incredibly experienced staff, makes for a great team approach to servicing the customer base locally. Through our international partner agency agreements, we now represent a number of renowned companies that deliver a wide range of solutions for industry end-users."

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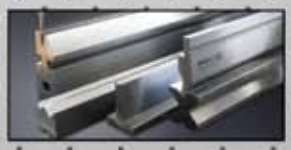

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Equipment designation boosts capital equipment suppliers

The recent designation by the Department of Trade and Industry (DTI) of valves and actuators for local procurement by State-owned enterprises (SOEs) and municipalities enables the industries concerned to revise their future recapitalisation plans, industry body South African Capital Equipment Export Council (Saceec) MD Sybil Rhomberg has said in an article in Engineering News.

According to the regulations contained in government's Preferential Procurement Policy Framework Act (PPPFA), issued in December 2011, DTI Minister Dr Rob Davies can designate certain products that all SOEs and municipalities are required to buy from local manufacturers.

In January, the DTI officially announced the designation of valves, manual and pneumatic actuators, electrical and telecommunication cables, as well as components of solar water heaters, for local production and content in the public-sector procurement system.

Davies signed the necessary authorisation in terms of his powers under the Amended Regulations of the PPPFA, and it became effective on March 3, 2014.

The designation policy instrument is one of a suite of policy levers designed to significantly improve support for domestic manufacturing.

The DTI says it is confident that the local production of designated products will stimulate aggregate demand and strengthen support for the local manufacturing sector.

"In the year ahead, the DTI will significantly increase designations and other procurement policy levers to support local manufacturing. This will be undertaken simultaneously, as the department deploys a range of other supportive and interlocking instruments to raise the competitiveness of South Africa's manufacturers. This will be done in close collaboration with business and labour," says Davies.

Further, Rhomberg says the designation of valves and actuators for local procurement will play an important role in securing the future of the entire local capital equipment supply industry.

"Many of the companies in the capital equipment sector have not undertaken recapitalisation plans since the late 1980s and this affects their competitiveness internationally," she points out.

Rhomberg explains that capital equipment suppliers will benefit, as their economies of scale will be significantly increased, in that they will be able to build equipment in larger volumes.

"Saceec also believes that there will be requests from SOEs and municipalities for companies to modify their product offerings, which will result in technological advances in companies' operations. This will be crucial in enabling local companies to expand their existing product ranges and introduce new ones," she enthuses.

Moreover, Rhomberg says the designation process will provide smaller companies with opportunities to upscale their operations, owing to the increased demand for local products.

"Designation will also enable new black-owned businesses to enter the market – at, perhaps, a lower tier – and to have a stable source of income, thereby providing opportunities for genuine transformation in the capital equipment industry," she highlights. ■

"In the year ahead, the DTI will significantly increase designations and other procurement policy levers to support local manufacturing. This will be undertaken simultaneously, as the department deploys a range of other supportive and interlocking instruments to raise the competitiveness of South Africa's manufacturers. This will be done in close collaboration with business and labour," says Davies

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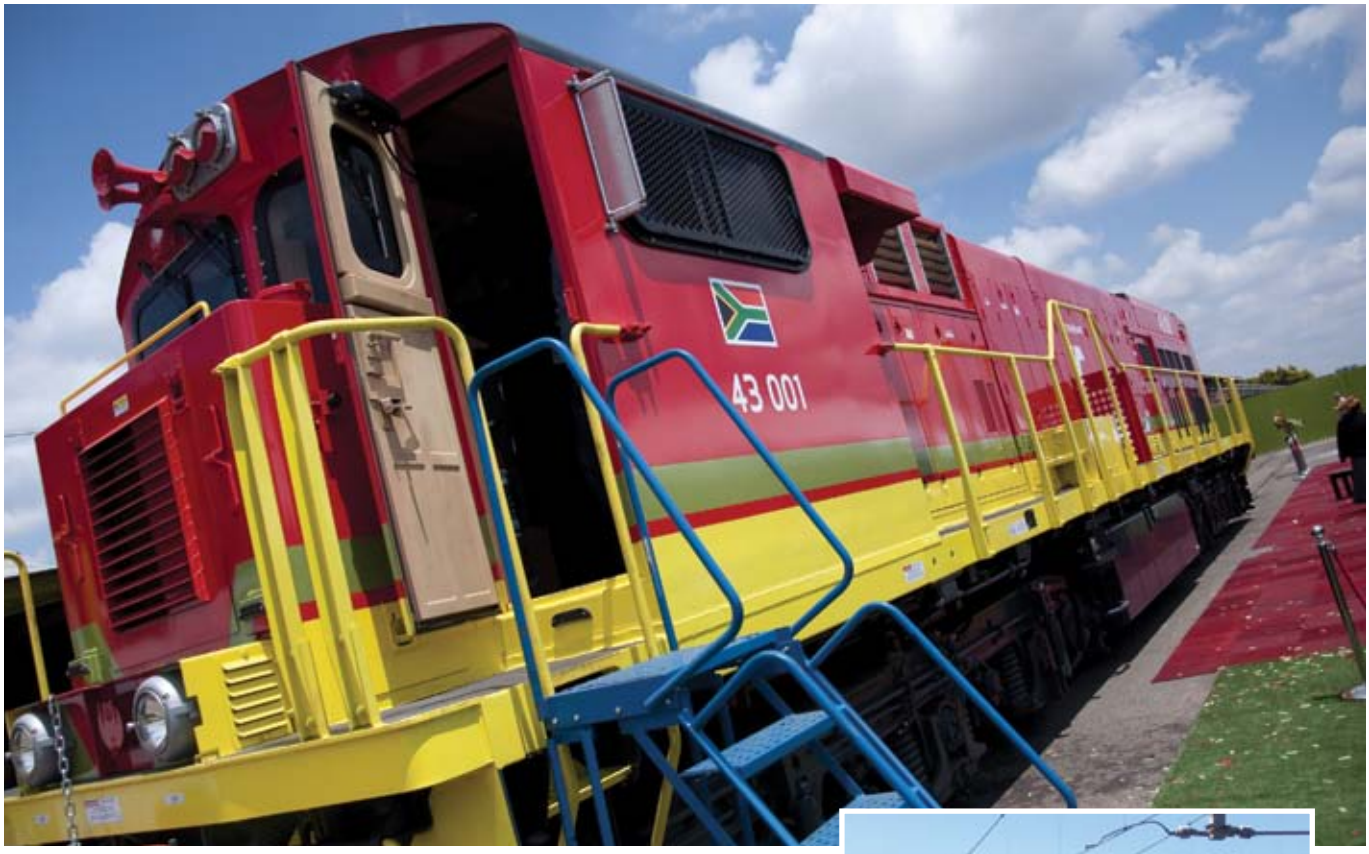

Transnet awards contracts for 1 064 new trains

The R50 billion contract is hailed as South Africa's biggest single corporate infrastructure investment.

Transnet is in the midst of a seven-year plan to expand the railways, ports and pipelines that move commodities for export by 2019. The total order of 1 064 locomotives was worth R50 billion, Transnet said in a statement.

It ordered 599 electric locomotives from China's Zhuzhou and the South African subsidiary of Canada's Bombardier, as well as 465 diesel trains from General Electric.

CSR Zhuzhou Electric Locomotive would supply 359 electric locomotives at a contract value of R14.6 billion, excluding hedging and escalation costs. Bombardier Transportation South Africa would supply 240 electric locomotives at a base cost of R10.4 billion.

General Electric South Africa Technologies would supply 233 diesel locomotives at a base cost of R7.1 billion and CNR Rolling Stock South Africa would supply 232 diesel locomotives for R7.8 billion.

The average base price for a single electric locomotive was estimated at R41 million, while a single diesel unit would cost R32 million.

"The multi-billion rand acquisition is South Africa's single biggest infrastructure investment initiative by a corporate," the firm said in a statement.

All bar 70 of the trains will be built in South Africa, Transnet CEO Brian Molefe said.

"This transaction is intended to transform the South African rail industry by growing existing small businesses and creating new ones. We are going to create and preserve approximately 30 000 jobs," added the transport boss.

After decades of underinvestment, South Africa is scrambling to modernise its rail network, which is currently mainly used for freight.

Commenting on why the contract was split among four companies, Molefe said "no single supplier would have the capacity or resources to deliver within the timelines envisaged".

Besides commercial, technical, black economic-empowerment, training and technology-transfer commitments, the successful original-equipment manufacturers (OEMs) had also met the Department of Trade and Industry's 55% local-content stipulation for the diesel vehicles and the 60% threshold for the electric locomotives.

But Molefe said some suppliers could well deliver localisation spin-offs of 65% or higher and stimulate a domestic railways reindustrialisation process, while creating the platform for the transformation of Transnet Engineering into an African rail OEM.

Transnet Engineering would invest R300 million at its facilities in Pretoria and Durban to facilitate the localisation programmes, while the OEMs had been given 90 days to finalise their arrangements with local suppliers, including private domestic suppliers.

The trains will mainly be used for transportation of general cargo. Delivery of the first locomotives was expected in 15 months and the last batch three years later. ■

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Strikes and port costs
‘threaten Ford SA’s expansion’

Labour instability is a potential handbrake to further investment by the Ford Motor Company in the expansion of its manufacturing capacity in South Africa as its seeks to take advantage of growth opportunities in Africa, according to local newspaper reports.

Stephen Odell, the executive vice-president for Europe, the Middle East and Africa, said that Ford had created a stand-alone Middle East and Africa business from the beginning of this year because this was a growth area in terms of population, wealth creation and wealth spread.

He said Ford wanted to be part of this growth and its South African manufacturing operations, its only plant in the region, was an anchor for this new business unit.

Decisions had to be taken about what products would be brought to the region and whence they would be sourced, he said, but clearly “there are sourcing opportunities” because a region’s requirements were normally sourced from within that region.

“There is an opportunity to consider South Africa in that pot of decisions,” he noted.

However, Odell said the automotive manufacturing and other industries were looking at the implications of the labour issues evolving and continuing in South Africa because businesses needed a stable environment.

He stressed that Ford was not ready to comment on when it would take any decision on where it would build products for the new region.

BMW South Africa said last year that it had been removed as a bidder for the production of a new model because of the strikes in the country’s automotive sector.

Jeff Nemeth, the president and chief executive of Ford Motor Company of Southern Africa, said it needed to continue to leverage its capital, human capital and supply base to continuously improve productivity and quality to ensure it was “top of mind” when the board of US-based Ford was making investment decisions.

He said Ford SA had a good relationship with its local union but there was a need to focus on a continuing drive for stability throughout the labour market.

He said Ford SA was pleased that Labour Minister Mildred Oliphant had announced a labour indaba to be held in June or July because it showed the government recognised the need for stability to attract foreign investment.

These comments follow an eight-week disruption to production in the motor manufacturing industry last year caused by back-to-back strikes in the motor manufacturing, motor retail and automotive component manufacturing, and vehicle transport sectors.

Jim Benintende, the president of Ford Middle East and Africa, said the company was projecting growth in sales in the new region to 220 000 units this year from about 200 000 units last year. He said South Africa and its prominence in the new business unit made it “a real gem” within the Middle East and Africa region.

South Africa is Ford’s second-largest volume market in the region after Saudi Arabia.

Odell said there was an opportunity for the automotive supply base in South Africa to localise more, even with the volume of vehicles being produced now by domestic original equipment manufacturers. This would reduce costs and remove some of the risk associated with the exchange rate of the rand.

Nemeth admitted that there were other concerns related to potential investments in South Africa apart from labour.

He said the harbours were some of the most expensive in the world and there had been talk of another steep increase in port tariffs. ■

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South Africa needs an innovative new approach to skills development to successfully stimulate economic growth and job creation

A new innovation-driven mindset about skills development in South Africa will be imperative to realise the goals of the National Development Plan. The NDP aims to eliminate poverty and reduce inequality by 2030. Addressing the 14th World Conference of the International Special Tooling and Machining Association (ISTMA) in Cape Town, Dirk van Dyk – a director of the Intsimbi National Tooling Initiative – a multi- stakeholder intervention in the Tool, Die and Mould manufacturing (TDM) sector of SA - said South Africa could realise the aims of the NDP by drawing on the energies and capacity of the country's people and by growing an inclusive economy. "South Africa will, however, have to overcome serious challenges with regards to future economic growth and job creation. The country currently contributes less than 0.7% of the world's manufacturing GDP while half of the country's youth are unemployed," says Van Dyk.

He emphasises that manufacturing needs to be the main driver of economic growth in South Africa over the next two decades if the country wants to turn the current dire unemployment situation around. South Africa will, however only be able to effectively stimulate manufacturing growth if it can successfully produce the new generation skills sets that are compatible with the manufacturing environment of the future.

"The reality is that only countries and companies that can attract, develop and maintain the highest skilled talent will show significant growth in manufacturing in the future. South Africa suffers a critical skills shortage despite a high unemployment rate and the country's emerging economy therefore needs to take a "hard look" at all aspects of its manufacturing capabilities," says Van Dyk.

He pointed out that globally manufacturing is changing due to growing information technology and virtual reality deployment, the use of more advanced materials and processes, higher levels of automation, shorter lead times, higher output efficiencies, green/environmental constraints and new modes of communication. "This changing environment requires more diverse skills sets from engineers, technicians and artisans," says Van Dyk.

With reference to skills development, Van Dyk says traditional in-house training programmes have become too expensive and that the manufacturing industry will in future require "Just-in-time" or "Plug and Play" employees that already have the required work skills, proficiencies and abilities demanded by the job. The focus will increasingly be placed on higher end skills as technology will make the manufacturing environment eventually a totally programmable system.

Van Dyk says a number of new drivers of change of future work skills are now coming into play. These are computational impact, the rise of smart machines, increasing human longevity - changing the nature of learning and careers- a new media ecology, super-structured organisations and globalisation. He emphasized that in order to succeed, the future workforce will need key skills such as the ability to determine the deeper meaning or significance of what is being expressed, social intelligence - the ability to connect to others, to sense and stimulate reactions and desired interactions, novel and adaptive thinking, cross cultural competencies and computational thinking or the ability to translate vast amounts of data into abstract concepts. The skilled employee of the future will also have to be new media literate and transdisciplinary with the ability to understand concepts across multiple disciplines.

The focus will increasingly be placed on higher end skills as technology will make the manufacturing environment eventually a totally programmable system

They must be equipped with a design mindset and the ability to represent and develop tasks and work processes for desired outcomes. They will need cognitive load management or the ability to discriminate and filter information for importance and understanding. Optimum cognitive functioning and virtual collaboration with the ability to work productively, drive engagement and demonstrate presence as a member of a virtual team will also be key pre-requisites of the skilled employee of the future.

Van Dyk says if the South African manufacturing sector wants to successfully develop the required skills for future growth and competitiveness, the sector needs to focus on the early attraction of talent as required by every manufacturing discipline. Manufacturing should furthermore put a high premium on sector specific investment through multiple entry point systems, modular qualification structures, full articulation between artisan, technician and engineering training, continuous incremental development, industry driven standards, sector driven demand planning and the effective warehousing of "work-ready" candidates. "Without a critical examination and an innovative approach to future skills development in the manufacturing sector the closing of the skills gap is unlikely and significant growth and global competitiveness will remain a pipedream," says Van Dyk. ■

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Metal and engineering unions seek increases of up to 20%, reject any multi-year deal

Unions in the metal and engineering industry would press for increases of between 15% and 20% during the 2014 wage negotiations, which formally kicked off on March 26, with a pre-bargaining conference. None of the unions were keen to pursue another multiyear wage deal and want the new agreement to be valid from July 1, 2014, to June 30, 2015.

The negotiations were being facilitated by the Metal and Engineering Industries Bargaining Council (MEIBC) and it was hoped that a new wage agreement would be in place by July 1.

The parties were due to meet again on April 16 to start negotiating, with employer organisations likely to push for another multiyear agreement and increases closer to the inflation rate. Inflation rose to 5.9% year-on-year in February and the South African Reserve Bank expected consumer price inflation to peak at 6.6% in the final quarter of 2014.

The current three-year wage agreement, which provided for staggered wage increases, from 8% to 10% for skilled and unskilled employees respectively, would expire on June 30.

The Chemical, Energy, Paper, Printing, Wood and Allied Workers Union (Ceppwawu), the National Union of Metalworkers of South Africa (Numsa), the South African Equity Workers Association (Saewu) and Solidarity all opened with demands for increases of 15% across the board. However, Uasa and the Metal and Electrical Workers Union of South Africa (Mewusa) were demanding 20% increases.

Numsa was also demanding a housing allowance of R2 500 to be paid to all workers, while Solidarity demanded R5 000, and Ceppwawu was demanding R1 000 a month, except in cases where the existing housing subsidy was more favourable.

Meanwhile, Mewusa said that, in terms of the housing allowance, companies should contribute 50% to employees' bond repayments, should they be eligible to acquire bonds.

By contrast, the Steel and Engineering Industries Federation of South Africa (Seifsa) continued to call for a multiyear agreement in its proposal to the MEIBC.

MEIBC general secretary Thulani Mthiyane told Engineering News Online that "some employers are talking about a three-year deal. This gives them the peace required in the industry for that period, as you can plan things without the threat of a strike".

However, he explained that the ultimate agreement on the period would depend on how the negotiations went.

Meanwhile, Seifsa and the National Employers Association of South Africa (Neasa) were also proposing a 50% wage reduction for new entrants. Neasa proposed that this reduction be applied only to new entries in respect of grades F, G and H and grade 1 in respect of the 5-grade system, while Seifsa proposed it be applied to "all existing scheduled wage rates" and "all new entrants at any level of work".

Seifsa stated that this change would stimulate the employment of workers in the sector, adding that the reduced schedule rate had to remain in place for a period of five years, and had to be coupled to an undertaking that no existing employees would be replaced by new employees.

Mthiyane indicated that there was a material gap between the opening stances of the unions and the employers, which was likely to slow the negotiation process. He did not discount the possibility of the negotiations extending beyond July 1, nor the possibility of strike action. ■

Trinitas on prowl for acquisitions

Trinitas Private Equity, an independent private equity fund, says it is looking to invest R200 to R300 million on acquiring stakes in about three mid-sized companies in the short to medium term.

A successful deployment of funds towards these acquisitions would put Trinitas closer to a position of fund-raising for a second fund.

Trinitas has to deploy 75% or invest R500 million of its current fund before considering a new fund. At the moment, Trinitas Private Equity has "deployed approximately R350 million of the R670 million fund," said Soteris Theorides, one of the founding partners of Trinitas. The fund closed in 2011 and is in its third year of investment.

Trinitas recently acquired a 70% stake in Auto Industrial Group, a leading manufacturer and supplier of automotive components for the major automotive assembly plants. Trinitas did not disclose how much it had acquired the Auto Industrial stake for.

"In most of our investments we have deployed somewhere between R50 million and R75 million," said Theorides. "What we liked about the company is its long established track record, with good growth prospects. It's been in operation for 45 years. It has an established management team."

The remaining 30% of Auto Industrial, which was previously wholly owned by ZF, a German company, will now be held by management.

Theorides said the plan was to further grow Auto Industrial and position it for more exports and new products.

Trinitas' other investments include Le-Sel Research, a contract manufacturer in the cosmetic and domestic consumer goods sector in South Africa, Mainstreet Holdings, a distributor of branded and non-branded general merchandise and One Property Holdings, which is involved in developing retail shopping centres.

One Property Holdings is also part of a management consortium holding a significant minority stake in Trudon, an advertising and search information publisher, which owns Yellow Pages. ■

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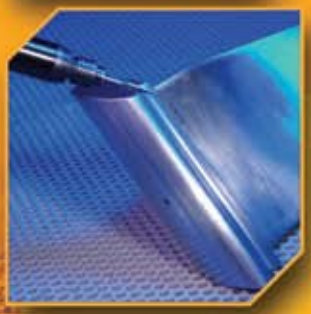

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South African mining industry in the spotlight at Electra Mining Africa

Machine Tools Showcase to run alongside Electra Mining Africa

The South African Mining industry employs over half a million people, is the biggest earner of foreign exchange in the country, and contributes about R20 billion directly to tax revenue. Mining also makes a far larger contribution - as a buyer of goods and services and as a supplier of inputs to other sectors of our economy and other economies around the globe. These figures highlight the importance of the local mining industry to South Africa.

The South African mining industry will take the spotlight at this year's Electra Mining Africa, from 15-19 September at the Expo Centre, Nasrec, Johannesburg. As Africa's premier mining, industrial, electrical and machines tools show, Electra Mining Africa is on the international calendar and has a proven record for being a strong catalyst for new investment opportunities with billions of Rands worth of equipment being showcased. The show attracts stakeholders from all over the world.

With increased exhibition floor space to accommodate the growing demand from exhibitors, this year's show will have a world-class line up offering visitors the perfect opportunity to compare and plan future capital equipment purchases as well as to view all the latest technology. Exhibitors can meet with people in the buying chain to discuss products and solutions.

"Influential decision makers from the mining, industrial, electrical and machines tools sectors are regular visitors to Electra Mining Africa. They travel from within South Africa, sub-Saharan Africa and from a large footprint across the globe," says Gary Corin, Managing Director, Specialised Exhibitions Montgomery, organisers of the show. "Regular faces are seen returning to the exhibition year after year and it's a time of industry reunions with vast networking opportunities as well as hub for purchasing decision-making."

Highly sought-after co-located conferences draw further interest from key industry representatives, who ensure that the conference dates are marked on the calendar well in advance.

Events taking place at Electra Mining Africa 2014 include a Surface Mining and Naturally Metallurgy Conference hosted by the Southern African Institute of Mining and Metallurgy (SAIMM) in the Black Eagle on 16-17 September.

The International Infrastructure & Investment Convention (IIIC) in association with Deutche Messe and the German Chamber of Commerce and Industry will be hosting an Infrastructure Conference in the Bateleur venue from 15-17 September. Clarion and Spintelligent will be hosting a Power Generation Conference in the Black Eagle on 18-19 September. All venues are at the Expo Centre and co-located with Electra Mining Africa.

In addition, the South African Institute of Mechanical Engineers (SAIMechE) will be hosting an exhibitor product showcase at the MAN Building, from 15-19 September. A Women in Mining workshop will also be taking place.

"We have also added other fun, interactive activities to ensure a memorable experience for visitors," says Corin. "The 4X4 track will test the best in driving skills, the gold panning and amazing race will give out exciting prizes, the golf carts will ensure ease of movement around the large exhibition area, a trip on the monorail will give a different view of the show, and we've ensured rest and relaxation with live bands for background entertainment and sizzling boerewors on the spitbraais," he says.

As mining grows in Africa with the continent already producing 74% of the world's platinum, 62% of cobalt, 54% of diamonds and 11% of oil, Electra Mining Africa is well-placed placed to stimulate trade in Africa in the mining, capital goods, and electro-technical sectors by facilitating access to international and local markets and investment opportunities.

"Many of our visitors to Electra Mining Africa are based in Africa and travel to the show to meet with exhibitors with the aim of sourcing new suppliers and seeing the latest products and services on offer," says Corin. "It's also an ideal place to network with peers and industry professionals and interact with specialists and technicians."

Electra Mining is also expanding its footprint into Africa with upcoming shows in Zambia and Botswana. The Copperbelt Mining Trade Expo & Conference (CBM-TEC) took place on 28 and 29 April in Zambia and Electra Mining Botswana is back at the Gaborone Fairgrounds in September 2015 after its successful inaugural event in September last year.

"Our broad portfolio of exhibitions continues to expand and future growth is expected from the further development of local trade exhibitions as well as building our international partnerships and expanding our African footprint," says Corin.

Electra Mining Africa is organised by Specialised Exhibitions Montgomery, a member of the prestigious Montgomery Group and a member of the Exhibition Association of Southern Africa (EXSA). Electra Mining has accreditation from UFI, which is the Global Association of the Exhibition Industry. This means that the event is audited according to strict standards.

Machine tools to be showcased alongside Electra Mining Africa 2014

Machine Tools Showcase takes place once every four years and it gives an opportunity to metalworking equipment, tooling and related equipment suppliers and manufacturers to showcase their machines, products and services. The show takes place at the Expo Centre, NASREC, Johannesburg, from 15 – 19 September 2014.

The show is expected to have a remarkable display of new and emerging technologies that will continue to revolutionise the manufacturing world. These innovations, coupled with traditional equipment, offer solutions to all manufacturers who seek increased productivity and lower cost.

For further information contact Specialised Exhibitions TEL: 011 835 1565 or email veda@specialised.com or cwood@specialised.com or visit www.electramining.co.za ■

Agni fires up furnaces to start production at first ever black-owned steel mill

Jubilation was palpable on site at Agni Steels SA as the company fired up its Inductotherm furnaces to start production at its R400 million, state-of-the-art steel mill in the Coega industrial development zone (IDZ).

Agni Steels' venture is the first ever black-owned steel mill in the country and is a testament to the value of the Minerals Beneficiation Bill passed in 2011.

In celebration of the milestone, the Agni Steels India directors were in South Africa to oversee the momentous "switching on" moment. Shenbagavalli Ramji, Chinasammi Sakthi and Kugalur Ilangovan, the sons of the original Agni Steels India founders and directors, R. Krishnamurthy, M. Chinnasami and K. Thangavelu, were in South Africa to mark the occasion – and to ensure that everything ran according to plan.

The firing-up of the plant is the fruition of over eight years of hard work that started as "a dream," Ramji said. The trio from India are young entrepreneurs following in their father's footsteps in Africa. Their fathers were the first to set up a steel mill in Erode, Tamil Nadu, in India in 1992.

The Agni Steels South Africa venture is their first on their own as directors, in partnership with the three South African directors Sharaz Khan, Hassan Khan and Dhiroshan Moodley.

"To be frank we are very proud at this moment and we are enjoying it for the joyous celebration it should be. We are of course thankful to the South African directors for giving us the opportunity, to Coega for their help and association, and to the Industrial Development Corporation for their support and belief in us," said Ilangovan.

"This is not a small thing we have achieved. Our SA partners have persisted following a dream spanning over eight years – a dream where the financial forecasts fluctuate, the export market changes due to currency variation and the whole business plan takes on a new shape almost a decade later, but we are here now, as a team, to witness realisation of this dream."

Despite the changing context, there have been rewards, and the directors said they were excited to witness the positive shift in the South African policy environment as the Minerals

The Agni project will benefit from the Minerals Beneficiation Bill of 2011, which incentivises local beneficiation of scrap metal in particular. Trade and Industry Minister Dr Rob Davies said earlier in March at Coega that there was a "shortage of specialised steel products produced in South Africa" and as a result the country now imports steel: "Agni Steels would contribute to reversing this trend," said South African Director Hassan Khan

Beneficial Bill prioritises the type of activities Agni is involved in.

The beneficiation strategy aims to providing a strategic focus for South Africa's minerals industry in terms of developing mineral value chains and facilitating the expansion of beneficiation initiatives in the country.

"The revised South African approach to scrap metal beneficiation and the DTI's policy on supply whereby local consumption requirements must be fulfilled prior to exportation of locally available raw materials are developments that make us very happy."

"These are exactly the methods or schemes that international IDZs present as a key value proposition and incentive for investment. With these policies in place South Africa will experience growth," said South African Director Hassan Khan.

The Agni project will benefit from the Minerals Beneficiation Bill of 2011, which incentivises local beneficiation of scrap metal in particular. Trade and Industry Minister Dr Rob Davies said earlier in March at Coega that there was a "shortage of specialised steel products produced in South Africa" and as a result the country now imports steel: "Agni Steels would contribute to reversing this trend," he said.

The new Agni plant is also geared for expansion to meet any future demand, with partial infrastructure already in place to ramp up production to 20 000 tons per month when a new set of furnaces are added in the next phase. The directors also said the initial phase – located in zone 6 of the Coega IDZ – was the "first stepping stone in an entire growth strategy".

"We have only used half of the 12 hectares we have taken from Coega," said SA director Moodley, "as we are committed to growing in South Africa, creating more employment and critically expanding within the metals sector by way of our planned second and third phases whereby various structural steel products will be manufactured."

Sakthi said there was also a positive South African sentiment in India at the moment: "There is a good feeling about South Africa in India and there is growing interest from the Confederation of Indian Industries. You know, when one industry comes, others come too, they don't come in isolation and we are hoping the success of our investment bodes well for South Africa in general."

The Agni Steels project has already spurred the development of business in the Eastern Cape by purchasing vast volumes of scrap metal from scrap dealers across the province.

The company is also committed to skills development and recognising potential. Ramji cited an example of a truck driver who had now become a key person in operations.

"One of the things we have been very proud of is our staff development. Although the level of education that is available in India is higher than South Africa, we are supporting training so people can move up the ranks, by creating opportunities for people to grow."

"In this way, with training, someone can move from driver to melting supervisor and a junior electrician can become an overall supervisor. The socio-economic impacts of these promotions, which have really happened, are already being felt across these employees' lives."

Agni has currently employed 165 people and will employ more. A group of 90 Indian specialists are also based at the steel mill for a two year contract with the expressed purpose of transferring skills to their South African counterparts.

The plant will initially produce 100 000 tons of mild steel billet annually and about 270 people will be employed, with 90 working per 8-hour shift.

Now that the Inductotherm furnaces have been fired up, a three-shift system will kick into action enabling the plant to run 24 hours a day, 365 days a year.

For further details visit www.agnisteels.com ■

State's latest plan seeks 'smart industrialisation'

Minister of Trade and Industry unveils sixth iteration of South Africa's Industrial Policy Action Plan (Ipap)

The sixth iteration of SA's Industrial Policy Action Plan (Ipap) was a "transition" to a "higher impact" scheme that would focus on "smart industrialisation", Trade and Industry Minister Rob Davies has said.

Unveiling the 2016-17 plan at a low-key event at the Industrial Development Corporation (IDC) in Sandton, Mr Davies said it heralded a "structural shift" away from exporting mining commodities to making value-added products. Further, it would pay greater attention to regional integration of trade.

"This economy needs to undergo a very significant structural change if we are to create jobs," Mr Davies said. A rapid industrialisation was "critical" to this shift, both in South Africa and on the African continent.

"We need to move up the value chain. We are setting out to achieve a much more ambitious set of industrial policies."

Among other measures, special economic zones would be set up.

Manufacturing Circle chairman Mike Arnold lauded the Department of Trade and Industry's co-ordinated approach to support manufacturing in South Africa, including creating better funding mechanisms and incentives. The latter were "timeous", although industry realised they would "not last forever".

"We need to move up the value chain. We are setting out to achieve a much more ambitious set of industrial policies."

Local manufacturers had faced "imploding demand" since the start of the global financial crisis in late 2008, Mr Arnold said. Further, high labour costs and margin squeeze had made inputs "unaffordable".

In addition, Mr Arnold said South Africa's competitors in the Brics (Brazil, Russia, China and SA) bloc often had access to local markets, while still protecting their own industries.

Mr Davies said news of Nigeria's ascension to being the largest economy in Africa was an opportunity for South African industry. The West African state was keen to revive its automotive industry and South African companies were involved.

Shakeel Meer, divisional executive of corporate strategy at the IDC, said while SA was a "developing state", there was a need to "crowd-in the private sector to achieve industrial policy outcomes".

The private sector was participating in SA's renewable energy programme, which along with the localisation of content, saw the government spending billions of rand, including on railway infrastructure.

But the Department of Trade and Industry acknowledged in its latest Ipap "there is an urgent need for government to step up its efforts across departments to develop a methodology for establishing more rational and consistent administered prices". It said this especially related to electricity prices and port charges. The latter had recently risen 9.25% across the board.

A group of Port Elizabeth companies — including metals foundries that serve the automotive, mining and general industries, and also Coca-Cola and poultry firm Crown Chickens — is challenging municipal electricity tariffs in court.

David Mertens, executive director of litigant Autocast, said the group did not expect its case to be heard before the end of the year. "Similar cases are being prepared ... in other municipalities." ■

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10 years on and Lasercraft continues to grow

2004 was a turning point in Paul Dreyer's life, MD and owner of Lasercraft, a precision sheetmetal and plate engineering company based in Tunney, Germiston, Gauteng.

Not satisfied with the business partnership he had been involved in for the previous 10 years, he decided to open his own business. However, Dreyer's experience in the laser cutting and metal forming field goes back much further.

"Laser cutting of metal was a relatively new operation in South Africa when I first became involved with the technology in 1989. Even computer-aided design was still in its infancy in South Africa. The first known machine, a 1500 watt Bystronic Bylas, was imported by the late Robert Skok's company Varios SA in 1988. At that stage everybody was very skeptical about this 'expensive' technology and wanted nothing do with it."

"This can be borne out by the fact that less than 50 machines were sold before the turn of the century," said Dreyer.

The rapid growth in the industry from year 2000 has seen over 600 machines (unofficial figures) being installed countrywide with many companies owning more than one machine. Some are even on their third, fourth and fifth machine, including Lasercraft.

"In addition to being fast, laser processing has high material-utilisation rates and reduces work-in-process inventories. There are no tools to sharpen, maintain, purchase, or replace when broken and no need to purchase filters or dispose of coolants. Also, 3D-laser heads perform several operations simultaneously to eliminate waiting time between operations," explained Dreyer.

Since those early days laser-cutting technology has continued to mature and ace operators have learned how to tweak parameters to get the most out of the system - particularly when cutting thicker materials. It is the old saying: Experience counts.

This can be said of Paul Dreyer because he has been involved with and worked extensively on the first machine that was imported into South Africa. Since then Dreyer has built up a wealth of experience in the laser field and today views himself as an 'expert', he said tongue in cheek. He was in his early twenties when he made his foray into the market.

"I was working as a draftsman for a company that used lasers to cut dies for the packaging industry. I was asked to try to program a drawing for the manufacture of an intricate door panel for an armoured vehicle."

Paul Dreyer in the Lasercraft factory, which he believes is one of the most modern process-oriented operations in South Africa and probably the Southern Hemisphere. Lasercraft moved in 18 months ago and went from a 1 700 m² facility (1 600 m² factory and 100 m² office space) to 7 900 m² (7 000 m² factory and 900 m² office space), and from 43 staff to the current level of 111

"Lasers were still like space games," Dreyer recalls, but he was not fazed by the new technology. The company got in touch with Varios SA, the original Bystronic agent for South Africa.

"Varios SA did not have a programmer and they eventually employed me. A technician from Bystronic travelled to South Africa to teach me to learn how the machine worked. The two of us dismantled and reassembled the Bylas, until I knew it inside out. I also went to Switzerland for training and got to know the Bystronic staff in Switzerland, contacts upon which I could rely on for information, spares and advice."

"It was an exciting time as CNC was really starting to influence the market place and as a result the laser cutting and metal forming field was advancing in leaps and bounds in terms of the equipment, as did the industry."

"My previous partner and I set up a job shop come service centre in 1994. Our first purchase was a Byflex 4015. We decided on this machine after visiting the EuroBLECH exhibition in Hannover, Germany. Later we purchased a waterjet, a Byjet 4020, which we believe was the first to be imported into South Africa, and then a Hämmerle pressbrake."

"Our partnership broke up in 2004 and I went solo. Lasercraft purchased its first machine in October 2004. I have remained loyal to Bystronic so it was inevitable that I purchased a Bystar 4.4 kW, which could cut all standard sheet metal formats up to 3 x 1.5 metres."

Lasercraft quickly earned a reputation for offering its customers competitively priced, high quality products enhanced by efficient and reliable service.

These attributes attracted other industries to the company and today Lasercraft services a wide range of industries nationwide including those in the motion industry, electrical distribution, shopfitting, automotive, defence, material handling, general engineering sectors and more.

Such was the success of the machine that the company required extra capacity in terms of a second laser system. Believing that he should be able offer his clients a speedy turnaround, Dreyer purchased an identical machine in February 2006. This could afford him the opportunity, when it came to larger production runs, to run the job on both machines and thus get the job out in half the time.

This philosophy has stuck with him since.

In the mean time, along with two CNC bending machines purchased, came the MIG and TIG welding equipment, the bandsaw and the shearing equipment. All of these disciplines added value to the final product that Lasercraft could offer to its clients.

Towards the end of 2006 Lasercraft realised, even though they had just installed a second machine, that they were running out of capacity and that they needed to offer their clients a wider variety of cutting options. A visit to EuroBLECH 2006 convinced Dreyer that he needed to purchase two more laser machines.

"I have always visited the international exhibitions to learn what the rest of the world is doing and also to experience the new technology first hand. EuroBLECH is no exception. As a result I decided to purchase two identical Bystronic 6 kW Bystar lasers," said Dreyer.

"Fortunately the lead time on delivery gave us enough time to purchase the land next door and put up a facility specially dedicated to the lasers."

"The new machines were faster but they also allowed us to cut up to 25 mm on mild steel, 20 mm on stainless and 10 mm on aluminium. At the time this gave us a big advantage on most of the players in the market," Dreyer continued.

"Now with two 'sets' of machines we were not limited in size and we could cut anything from one offs to large production runs. In fact for one client we were cutting up to 60 000 components at a time."

More equipment

Organic growth in the business, coupled with winning tenders to supply the big projects such as the Gautrain and stadiums for the World Cup 2010, led to Lasercraft purchasing more fabrication and cutting equipment. This included an Xpert 320 press brake, two Xcel 50 press brakes and a Bystar L 4025 laser.

"The projects involved large quantities of formwork for the construction of the various bridges and stadiums. Lasercraft did not want to miss out on this infrastructural 'boom' in South Africa so we had to invest," explained Dreyer.

In pride of place at Lasercraft's laser cutting division is the Bystar L 4025 that is equipped with a 12-metre shuttle table.

"The 'Big Elephant', as the machine has been named, allows us to cut plates up to 12 metres long and 2.5 metres wide and up to 25 mm thick mild steel. The machine was purchased to allow us to manufacture components for a special customer specialising in heavy-duty, high-tech equipment such as enormous mine vehicles with dumper buckets, mine trucks and trailers, earth excavation equipment and locomotive parts."

"Many components are cut from durable, high-strength steel, which is twice as strong as mild steel, and allows the client to reduce component thickness while maintaining strength. The installation of the Bystar L 4025 took six weeks but it has run nonstop ever since. Our biggest problem now is that we only have one. It has no backup but this will change in the future."

Problems

Growing so fast comes with its problems and Lasercraft was no exception.

"A solution to the first one was easy to fix. Although we were adding value in certain areas we were lacking on the machining side. Clients did not want to move their components from one shop to another to have the machining operations done. Hence we invested in three CNC drilling machines and two CNC lathes. This does not constitute a machine shop but it has been adequate for our requirements. However we do have plans to increase the equipment in this area by adding more lathes and machining centres and then we will be able to market ourselves as a complete shaping, forming and fabricating entity," explained Dreyer.

"The second problem was a bit more tricky and required planning, negotiating and then implementing our strategy. It was essentially two-fold in that we ran out of space and we had virtually reached our capacity on the power supply side."

"This was the reason that we purchased the power saving Bysprint Fiber 3015, nicknamed the 'Baby Elephant', but once it was installed we were at our limit."

Certain clients need waterjet cutting services and Lasercraft has a Bystronic Byjet Smart 3015 to carry out these operations

The power saving Bystronic Bysprint Fiber 3015, nicknamed the 'Baby Elephant'

New factory

These days Lasercraft operates in an extremely competitive environment, and the South African market throws in some unique challenges such as demanding delivery times. Ten years ago, when the company was established, Lasercraft was virtually the only company offering laser cutting services in the area. Not only has there been an expansion in industrial areas that have opened up, but there has also been a proliferation in service centres and job shops offering cutting and fabrication services.

"On one hand it is good because there are more opportunities but on the other hand the competition is greater. There must be at least 12 competing companies just in our area now. I am not too sure what the growth has been in the greater Gauteng area, but I have seen established companies upgrading and offering more services with bigger and better equipment. This all adds to the competition."

"If I wanted to grow the company I knew I had to move to a bigger facility. During our strategic planning we took these factors mentioned into account and used them to our advantage."

"We first entered into a JV agreement with one of our largest clients that specialises in the manufacture and fabrication of heavy duty components and machinery, predominantly for the mining and industrial industries with a focus on manipulating and welding heavy plate. This secured a strong order book going forward as we were guaranteed all their laser cutting requirements. They had previously being shopping out most of this work to a host of competitors."

"In our negotiations it was agreed that we would incorporate their Pacific CNC 1 250 ton hydraulic press brake into our plans. This allowed them to concentrate on what they were good at, namely manipulation and welding of heavy plate and it allowed us to increase our capacity in our bending department, which is one of our strengths. The CNC press brake has a 10 metre bed and weighs in at 160 tons. The machine has a 6-axis backgauge, hydraulic upper tool clamping and a remote laser alignment system."

"Between the two companies it was decided that we look for a facility in close proximity to their facility for a number of obvious reasons. They were also looking at expanding and the outcome is what you see now. We have moved into what must be one of the most modern and technically advanced facilities that any sheetmetal and plate cutting company in South Africa occupies, and our client and JV partner is housed in an equally impressive facility next door. They also have another two facilities 500 metres up the road."

Open canvass

"As the new facility was built from scratch it afforded us the opportunity to have an open canvass. This meant we could incorporate all the latest techniques and designs that would make us one of the most modern process-oriented operations in South Africa and probably the Southern Hemisphere, something that I had always dreamt about."

One of the more recent machines that Lasercraft has purchased is a Bystronic Xcite 80 E CNC press brake

"We moved in 18 months ago and went from a 1 700 m² facility (1 600 m² factory and 100 m² office space) to 7 900 m² (7 000 m² factory and 900 m² office space), and from 43 staff to our current level of 111 with room to expand to 250."

New equipment and processes

"With all this space available to the company it was inevitable that we should fill it with equipment. And this we have done, but it was all part of the strategy."

Shortly before moving into the new facility a Bystronic Byjet Smart waterjet arrived from Switzerland. "This machine is not being used to its full capacity at the moment but strategically it works for us because certain clients need waterjet cutting services and rather than chase them away with the possibility of losing all their business, we accommodate them."

Plasma and oxyfuel

"To remain competitive, a shop must be willing to embrace both innovation and change together. To get the most out of that commitment, a shop needs to understand just how the introduction of any new technology will affect the entire process chain, not just one part."

"With our JV in place we knew our partner would require cutting of heavy plate operations and not just bending. This led us to Messer and we installed a Multitherm plasma cutter as well as a Multitherm oxyfuel cutter. Both of these machines are

The Messer Multitherm plasma cutter

The Messer Multitherm oxyfuel cutter

housed in a separate building within the new facility, so there is no contamination possible on the bending, laser cutting and machining side."

"We have also installed a Faccin three roll double pinch plate bending machine, which is ideal for light materials and low volumes."

In July last year a Bystronic Byvention 3015 laser arrived, followed in September by a Bystronic Beyeler Xpert 150 press brake, and then in February this year a Bystronic Beyeler Xcite 80 press brake was delivered. In March this year saw the company installed a Bystronic ByAutonom 3015 laser cutter complete with a Byloader for automated load/unloading.

Automation and part flow

"There's been a lot of focus on high-speed cutting with the laser. But it's an undue focus. It's as if, sitting in traffic, I think 'if I could just drive faster my commute would be shorter'. So I spend a lot of money to buy a really fast car, only to find I'm still stuck in the same gridlock traffic I was in before."

"The same can happen when buying a high-speed laser and not accommodating for part flow, be it within a product-oriented factory layout or a process-oriented job-shop layout. A shop should always analyse what the operator is doing while the laser cuts. For extremely high-speed cutting, an operator may continually need to finesse the feeds and speeds, the cutting aperture and gas pressure, as debris and other factors can cause slight changes to the focal point, requiring on-the-fly adjustments."

Ways to unclog

"A laser cell's value-added time occurs when it cuts metal — seemingly obvious. Yet if a high-speed system isn't integrated properly, it can spend remarkably little time cutting. Two major 'non-value-adding' points contribute to this: material handling (including raw sheet, finished parts and scrap) and tool change-out. Of the two, tool change-out represents the later development."

Lasercraft has a Faccin three roll double pinch plate bending machine, which is ideal for light materials and low volumes. The machine was supplied by Talmac Machine Tools

"Currently we spend too much time on changeover rather than reducing this aspect of the operation. I can go and buy fancy material handling equipment to get the sheets to the machine but it is wasted money if it costs me time on changeover."

"I have been talking to the manufacturers for a number of years about this situation. It is more relevant in a country like

Lasercraft offers robotic welding and have recently installed an ABB welding robot

South Africa where we do not have long production runs like Europe. Finally they are recognising my point and moves are being made to address the situation."

"Still key to the operation though," he says, "remains the company's 'manufacturing plan' that every job follows, from estimation through scheduling, production, post-process inspection and delivery. Most parts follow four primary paths through the shop floor, and each starts with a different cutting technology."

Material storage system

"Making the process faster and efficient on the machines means you need to address your material handling situation. As a result all of Lasercraft's laser cutting machines are fitted with a Byloader for automated load/unloading. The Byloaders are currently fed from a forklift delivery, which retrieves raw material from a racking area."

"Keeping the aisles free of wooden pallets, piles of 'work in progress' and raw material is a priority and we have been fairly successful in this area. But we are still not satisfied. We are currently looking at an inventory management system whereby the racking system that holds the raw material will be automated, from supplier delivery to machine delivery. I have seen it implemented in Europe so I know it can be done."

"The goal is to get the company's material suppliers to deliver material to us and then eliminate any labour intensive intermediate steps before the material is delivered to the machines. The inventory management system will be linked into our ERP system that we have installed."

"The ultimate goal is to be able to incorporate all the systems into the ERP and run seamlessly from the office."

Branding and advertising

"Part of our strategy in transforming our business from one which was relatively small but very service orientated to one that is a major player in our field was to ask: How to strengthen brand awareness and grow your business through advertising?"

"For many fabricators, the initial reaction to that question would be a resounding no. Often their reasoning is rooted in cost and not achieving a return on investment. Why spend money on some ads when you're not sure they're going to result in anything, much less sales? Why should I advertise when I already know who my customers are? Why should I advertise when I'm already doing fairly well?"

"Of course, if you have no interest in further developing your brand, if you're OK with not attracting any new customers, and you're content with not growing your business, then advertising definitely is not for you. But if you are looking to define, establish, and promote your brand; attract new customers; and grow your business, launching an integrated advertising campaign can go a long way toward making these goals a reality, which we have started with."

"We have taken it further in that our logo has been redesigned and our branding has been standardised thereby establishing consistent messaging throughout the company. This includes branding all the company vehicles, including mine. The feedback of this awareness campaign has been tremendous."

Down the road

"Besides implementing a total management control system with our ERP we are currently going through the process of getting ISO 9001 certification. We have already been pre-audited and will be certified in the next few months."

"Our current BBBEE level is 4 and we hope to achieve a level 2 status soon, we are looking at purchasing more CNC lathes as well as adding CNC machining centres to the mix, adding blasting/fettling equipment and a paint shop. These plans are already being drawn up and will be implemented in the near future."

"This will take us to virtually being a one-stop-shop. With what we have in place at the moment we have already been recognised both locally and internationally."

"Our motivation is to prove that we are serious about doing business."

For further details contact Lasercraft on TEL: 011 828 7900■

Lasercraft have incorporated a Pacific CNC 1 250 ton hydraulic press brake into their equipment register. The CNC press brake has a 10 metre bed, weighs in at 160 tons, has a 6-axis backgauge, hydraulic upper tool clamping and a remote laser alignment system

Branding and advertising - "Part of our strategy in transforming our business from one which was relatively small but very service orientated to one that is a major player in our field was to ask: How to strengthen brand awareness and grow your business through advertising?" said Paul Dreyer. Lasercraft have branded all the company vehicles

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Machining from an early age

The story behind every startup is generally unique and Shaughn Kornau and his machine shop are no different.

It was inevitable that Shaughn Kornau would make engineering and in particular, machining precision components, his career.

"At the age of 10 my dad gave me a Myford 7 lathe as a present. It was the beginning of a lifetime of challenges in mechanical engineering and the fun that comes with it," said Kornau, the owner of Ingenico Engineering Solutions, a precision CNC shop based in Eastleigh, Edenvale, Gauteng.

"From the moment I started to tinker with the machine I was fascinated with being able to make things out of metal. The exhilaration at finding satisfying solutions to difficult problems is unique and ever so rewarding to see them in production. All it demands is the confidence to accept a challenge, have faith in your ability to meet that challenge and be dedicated to whatever you do."

"Dad had a career in mechanical engineering and in a way I suppose he wanted me to follow in his foot steps. Dad worked for Kempe Engineering, a large engineering firm which is based in Australia and is owned by relatives."

"I largely learnt machining by working on the small lathe at home and by spending time at the factory where dad worked, watching and questioning different machinists as to how they were doing things."

"After leaving school I studied mechanical engineering at Wits University for two years. My studies were cut short because I could not get a bursary so I went and did my two years of national service. Once I had finished I established my first company Drill Bush Engineering Supplies. That was in 1989."

"Our focus was on manufacturing precision tooling and drill bushes as well as general manufacturing and design."

Right: The fly fishing reels that Shaughn Kornau of Ingenico Engineering Solutions has designed and developed

Windscreen repair kits

"Throughout my life I have tried to use my engineering skills creatively and not be a run-of-the-mill guy. Being creative means taking risks and being adaptable. Because machine tools still represent the power to create, they will appeal to the creative powers of people with talent and imagination."

"My first success came when I designed and developed the Glassmend Windscreen Repair Kits. They are highly successful tools used in workshops and windscreen repair and replacement shops all over the world."

"Established in 1990, the system has been developed and refined over 10 years and is today a leader in its field. Designed with the user in mind, the kit is lightweight and simple to use. It is an excellent tool for glass repair outlets, as well as an ideal business opportunity for an entrepreneur."

"Machined components are manufactured from high quality aluminium, and are anodised for long life and wear. The components are machined to tight tolerances on CNC machines and the moulded components are made from high strength polyurethane for long life and durability. It is designed to do long lasting repairs on all types of windscreens and because it is lightweight it is easy to move around. The total weight of the entire kit is just six kilograms."

"The bridge of the kit fits in the palm of your hand and is equipped with a pressure regulator which adjusts the pressure of the injector against the glass, for those breaks that have a tendency to run. The tips are disposable and all the vacuum pressure and surface seals are built into it.

The body of the reels are machined from aluminium solid

The system is equipped with a unique release mechanism which releases the bridge from the windscreen on completion of the repair."

"We are still making the kits and spare parts today."

The company continued to operate successfully until 2002 when Kornau decided to seek a new life in Australia, selling up everything and relocating his family. Life in Australia was not what the family thought it would be and they decided to come back to South Africa in 2004.

New beginning

Kornau still owned the company name Drill Bush Engineering and the manufacture of the windscreen repair kits were still under his control.

"I was very fortunate that I could virtually start again from where I had left off, despite the two year gap. I could begin machining almost immediately."

GCM sliding gate wheel kits

"The second product that I have been very successful with is the sliding gate component kit which is known as the GCM wheel kit. It comprises two wheel assemblies, two PVC guides and anti scuff brackets."

Shaughn Kornau of Ingenico Engineering Solutions with his wife Lauren, who also works at the company. They are standing next to Shaughn's latest development, which is an outdoor drinks stand that has features such as cellphone/tablet charging points and advertising banners built into it

"We manufacture wheel kits for sliding gates with the sizes comprising 40, 60, 80, 100 and 120 mm. The range is done in either V-type or U-radius type profiles and the bearings are made of steel."

"The anti scuff brackets, also made by us, are patented and are designed to omit the chances of inevitable squeaks arising from the rubbing of the wheel against the bracket. Another feature is that they stop unnecessary load and wear on the gate motor and its rack and pinion."

"We have been manufacturing the wheel kits since 2005."

New company name

With progression and increased technology, drill bushes became obsolete. In order to move forward, Kornau changed the company name to Ingenico Engineering Solutions in 2009.

The shop took shape when new CNCs were purchased and other equipment such as a bandsaw, a 100 ton and a 70 ton press were acquired. Kornau then secured a

The latest machine to arrive on the floor at Ingenico Engineering Solutions is a Hurco VM 10i vertical machining centre

Two of the machining centres have 4th-axis capabilities and up until a couple of years ago Ingenico Engineering Solutions was loyal to one supplier

long-term order for T-Lockout valves, which he still manufactures today.

"We progressed to become a full CNC workshop and manufactured a variety of our own products as well as any parts and components on request, offering a service from design to final product. I love to be involved from the beginning and offer advice on the design side and then produce a prototype."

So it was not long before Kornau started working on a new project.

Development of fly fishing reel

"We started this development just over three years ago. My son and I are quite keen fishermen, particularly fly fishing. On the end of the fly rod is a mechanical device called a reel... and there are many different manufacturers making a host of sizes."

"But what we saw comes out of a manufacturing base in China. You can pick from a choice of 15 styles of reel, give an order for two to three hundred, put your name on it, ship it here in a container and land it here for half of what it costs to produce locally."

"But what people don't realise is that if it breaks you might as well throw it away. You can call the supplier but because they don't make it they can't fix it. Also it is made of inferior parts and components so you are going to have problems. You can go the expensive route and get good quality but with our exchange rate this is costly for most of us."

"Development has taken awhile with many hours put in on the manufacturing and then testing. We have now got to the stage where we are confident that the reel will be very well accepted in the market place. I know it is a very competitive market but with the quality of the components that we have used I know it will be a reel that can be relied upon."

"We have tied up with a local fly fishing retailer and the reels are about to be launched under their own brand name. We have initially developed a salt water range and once this range is established we look at developing a fresh water range."

"The body of the reel is machined from aluminium solid. The reel comprises 19 different components, which we also manufacture. They come in three different sizes – 8#, 10# and 12# weight – and are anodised locally. The only imported components used are some screws and bearings."

"The 12# will be known as the Caranx (Caranx is a genus of tropical fish in the jack/GT/trevally family Carangidae), the 10# as the Chanos (Chanos is a genus of fish belonging to the Chanidae (milkfish) family) and the 8# as the Abula (Albula is a genus of fish belonging to the bonefish family Albulidae)."

"We have also designed the drag to make a sound on drag, which is not normal in a fly fishing reel but we figured that as we are only making the salt water range at the moment, the sound on drag is a necessity, especially

Currently the company has eight CNC machines comprising a mix of lathes and machining centres

An overhead view of the shopfloor

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Ingenico Engineering Solutions machines most materials including brass components

Ingenico Engineering Solutions manufactures T-Lockout valves for clients

when big fish are caught. From the sound on drag you can guage the speed and size of the fish on the end of the line."

"Some of the features that we believe will make it stand out is the light weight of the reel and it is manufactured with components that are made of high quality materials. Fishing reels are used in tough environments generally and you don't want one to 'explode' on you when you are about to land your record breaking fish."

"It is early days yet and we are not sure how many we will manufacture in a month. Time will tell."

Machine shop

Currently the company has eight CNC machines comprising a mix of lathes and machining centres. Two of the machining centres have 4th-axis capabilities and up until a couple of years ago Kornau was loyal to one supplier. However this has changed and the latest machine to arrive on the floor is a Hurco VM 10i vertical machining centre.

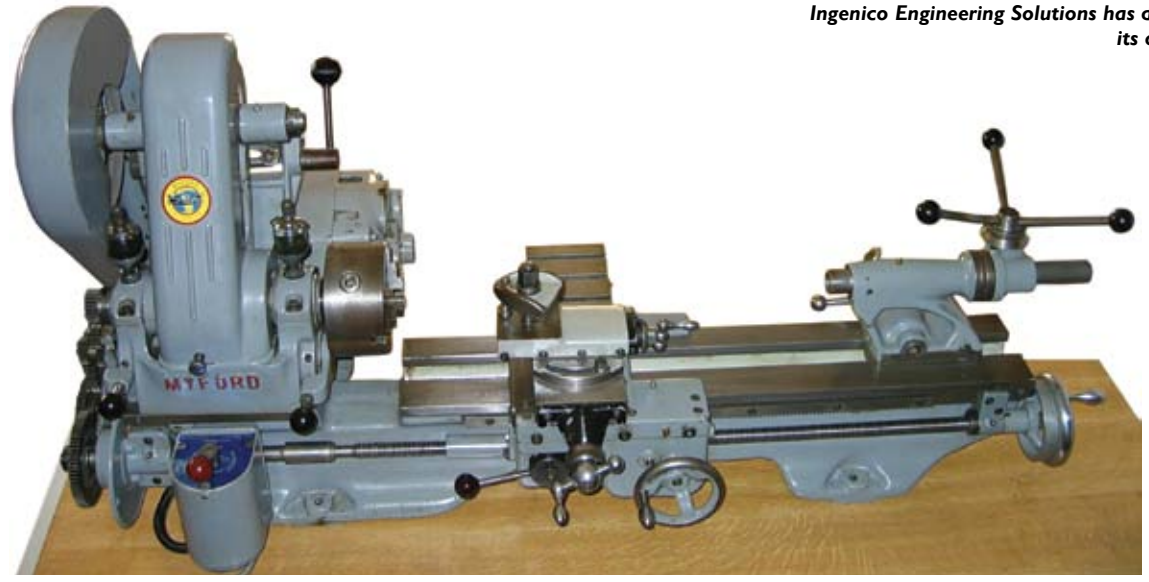
"We have only just installed this machine and it fits the profile of our shopfloor perfectly. We are not machining large components so we don't need a monster machine. It has a working envelope of 650 x 350 x 450 mm (XYZ) and comes equipped with Hurco's Version 9 WinMax software control system."

"A number of the components that make up the reels will be machined on the Hurco in future."

Ingenico Engineering Solutions machines most materials including aluminium, stainless (all grades), mild steel and special steel and high tensile steels. Kornau does most of the programming of the machines and where necessary provides drawings. The company also manufactures its own jigs.

For further details contact Ingenico Engineering Solutions on TEL: 011 524 0091 or visit www.ingenicoengineeringsolutions.com ■

Ingenico Engineering Solutions has designed and developed its own deburring machine



At the age of 10 Shaughn Kornau's dad gave him a Myford 7 lathe as a present. "It was the beginning of a lifetime of challenges in mechanical engineering and the fun that comes with it."

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Proficiency to diversify
leads to growth for AAA Laser

AAA Laser recently expanded its equipment capabilities to facilitate its continuous growth.

The multi-capable forming and fabricating company has drawn on its ability to diversify to grow and prosper.

When Greek immigrant Dimitri Anastasiu left Greece in 1991 he had no idea that he would end up making South Africa, his choice of a holiday destination at the time, his home and run a very successful engineering business.

"South Africa was not my first choice but I was persuaded to visit your country and have remained here ever since. I still maintain that the standard and quality of living in South Africa must be one of highest in the world and at this stage I would not swop it for anything else," enthused Dimitri.

Armed with a Masters degree in Mechanical Engineering and over 20 years of business experience Dimitri initially found a position with a local company, but after being an employee for two years he decided it would better suite his disposition if he became the employer.

In March AAA Laser installed a Doosan DNM 650 VMC CNC vertical machining centre and a Doosan Puma V550 CNC vertical turning centre, both supplied by Puma Machine Tools

Dimitri acquired a relatively small sheet metal and light engineering company Microcode in 1993, a company that still runs alongside his other company – AAA Laser – which he established six years ago.

"The two companies compliment each other in respect of facilitating in the different disciplines that the other one does not have. In essence you could say it is one company because they are both housed under one roof and the processes flow from one through to the other and there is no duplication," explained Dimitri.

"We are a full-service custom metal fabrication company that is committed to delivering superior quality and service at a fair price. We can design and fabricate practically any job in sheet metal. Our in-house metal fabrication processes include cutting, punching, forming, plasma, welding, and assembly. Whatever your needs, we have the team, experience, and manufacturing equipment to take your project from start to finish."

A component being machined on the Doosan Puma V550 CNC vertical turning centre

Dimitri Anastasiu, owner of AAA Laser, stands in front of the Messer MultiTherm CNC plasma machine fitted with a single Kjellberg Hi-Focus 440i plasma cutting unit, that was installed earlier this year

The Trumpf TruBend 3120 CNC press brake supplied by Retecon Machine Tools

AAA Laser was a value-added manufacturer before adding "value" to simple metal fabrications became cool. In this case Dimitri designed the complete enclosure, building in security features that allow the monitoring of the box from a control centre, via GPS, 24 hours a day seven days a week. Not rocket science in this day and age of electronics monitoring, but a technology that Dimitri used to his advantage early when GPS arrived

"We can handle all your manufacturing needs – from design and prototyping to final inspection and delivery. As part of our commitment to be your convenient one-stop shop, we have developed partnerships with reliable suppliers to provide complementary services such as water jet cutting, powder coating, wet painting, silk screening and plating."

"Some of our in-house metal fabrication services include CNC punching, bending, forming, stamping, shearing, flat sheet rolling, tube/pipe rolling, tube/pipe bending, MIG and TIG welding, spot welding, grinding, deburring, brushing, polishing and of course assembly."

Not just a fabricator

Innovation has been said to be at the heart of business success, but in a fabrication company that often doesn't work with product development or design, where is that innovation? According to the experts, innovation doesn't necessarily apply to just products. It also can be about process innovation, like innovative manufacturing methods or technologies. And then there are innovations within supply chain relationships.

During a tour of AAA Laser's facility in Germiston South, Gauteng my suspicions are that there is more to this company than first meets the eye. These suspicions are confirmed when

Next time you are in the international arrivals hall at OR Thambo airport look at the columns – fabricated by AAA Laser

Make sure you look at the security conveyors and fixtures at OR Thambo airport, because they have been manufactured by AAA Laser

you are only allowed to look at certain areas and not allowed to take any photographs. Then Dimitri sits you down and reveals what the company is actually involved in.

On the floor there are numerous electrical boxes being assembled but these are not just ordinary electrical boxes. Sometimes it pays for metal fabricators to think inside the box — electrical enclosures, to be precise.

The production of electrical boxes and similar enclosures are the bread-and-butter jobs for numerous fabricators. They cut the blank, bend it into a box, and weld it up so efficiently that some of the workers probably can do the job blindfolded.

But what about the components inside the box? Most shops aren't involved in that. A few, meanwhile, have jumped into the electronics assembly, where they pull the parts together and assemble the final box before it's shipped to the customer. And a select few actually make some of the electronic components that are put into the enclosure.

AAA Laser was a value-added manufacturer before adding "value" to simple metal fabrications became cool. In this case Dimitri designed the complete enclosure, building in security features that allow the monitoring of the box from a control centre, via GPS, 24 hours a day seven days a week. Not rocket science in this day and age of electronics monitoring, but a technology that Dimitri used to his advantage early when GPS arrived.

Today the company ships over 100 of these enclosures a day. At this stage there are three different sizes manufactured by the company.

"I don't know where or what industries they are used in," Dimitri answered bluntly when I enquired. "I don't even know whom the client or clients are," he continued.

But it is just not the enclosures that make this company fascinating. For the last fifteen years the company has been one the main maintenance contractors at OR Tambo airport.

"This security card allows me to access any area in the airport," Dimitri says as he proudly displays it.

"Any area at the airport where there is fabrication maintenance needed we are called in to sort it out. And this maintenance work cannot be done during the normal working hours of the airport, especially in the public areas. Our teams can generally only move in once the last plane has either left or arrived so that involves tight planning from our side."

"We are not just involved in the maintenance side. Next time you pass through security at the domestic or international terminal look at the conveyors that you put your hand luggage on. Those are all manufactured by my company."

"Another example where we have done fabrication work at OR Tambo is in the international arrivals hall. All those columns have been fabricated by us."

Other examples that Dimitri gave me is the fabrication work at the restaurant located at the Sandton Sun Hotel, the Engen Garage in Modderfontein and the fixtures and fittings in Stuttafords in Sandton City.

"We have also supplied numerous shopfitters with their fabrication requirements as well as kitchen equipment manufacturers where stainless steel work tops and doors are needed."

Equipment

Diversification strategies in metal fabrication tend to follow a predictable path. Business leaders identify core competencies

AAA Laser has a Trumpf TruLaser 3040 CNC laser cutting machine with a working range of (XYZ) 4000 x 2000 x 115 mm and maximum cutting thickness of mild steel 20 mm, stainless steel 20 mm and aluminium 10 mm which was supplied by Retecon Machine Tools

and then identify industries that can use those competencies. The approach isn't unique. However often fabricators frequently purchase equipment to meet the demands of a new customer. It's how they justify the capital expenditure. Not the case for AAA Laser.

The company's desire to invest in new equipment over the last few years has come about through necessity and diversification in the processes it wanted to offer. Arriving over the last few years has been a number of high-tech metal fabrication and forming equipment.

First to arrive was a Trumpf TruLaser 3040 CNC laser cutting machine with a working range of (XYZ) 4000 x 2000 x 115 mm and maximum cutting thickness of mild steel 20 mm, stainless steel 20 mm and aluminium 10 mm, together with a Trumpf TruBend 3120 CNC press brake that has a bending length of 3110 mm, a force of 132 tons and with precision up to 10 microns and 0.25 degrees, both supplied by Retecon Machine Tools.

"We had been doing just fine without a laser. Adding laser cutting capability can change the culture of a shop overnight and can be a monumental decision in any shop's life. As with any major investment, whether it's for capital equipment or something else, due diligence is needed."

"The addition of a laser cutter will also change the work lives of any company's employees. Even staff members that do not work directly on the laser cutter need to think differently to maximize the success of the machine."

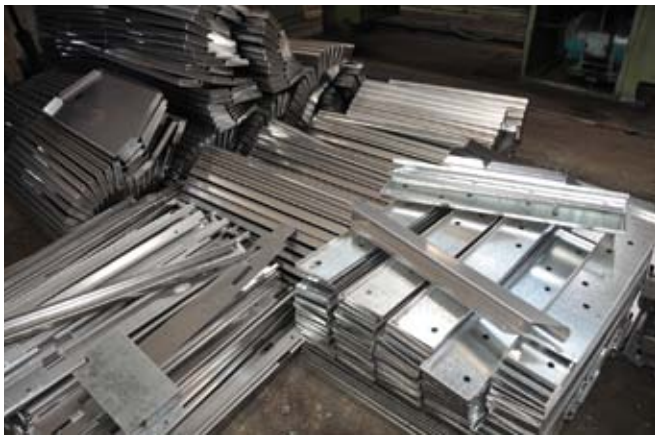
"The TruLaser 3040 has transformed this department as has the Trumpf TruBend 3120 CNC press brake. We have other bending equipment, all of which are bigger than the TruBend which we still use, but with the number of relatively small components that are required for the electronics enclosures the TruBend has pushed up our productivity remarkably."

More firsts – plasma and oxyfuel

Dimitri was keen to continue acquiring capabilities, so the company added oxyfuel and plasma cutting to its repertoire. Last year AAA Laser installed a Messer MultiTherm oxyfuel cutting machine and earlier this year the company acquired a Messer MultiTherm plasma cutter.

"Deciding what automated cutting equipment is best for your company depends on many factors: part size, part thickness, part accuracy, parts quantity, computer skills, and machine payback, or return on investment. After considering these factors, you'll be able to choose a machine configuration."

"Then you have to decide which process is best for your



Components that have been bent on the Trumpf TruBend 3120 CNC press brake

company while taking the above factors into account – oxyfuel, plasma or laser? The nature of the application and cutting process all play a role and they all have their benefits. We already had a laser so to accommodate cutting thicker materials we chose the oxyfuel cutting machine."

"Oxyfuel cutting requires very little capital to implement and operate. Oxyfuel also provides an advantage when the same pattern can be cut in parallel, which enables using multiple oxyfuel torches. In fact, multiple torches on the same gantry are relatively common. However, its cost per part advantage is at 50 mm and greater. Below that the plasma process has a speed and cost advantage and below 25 mm the laser comes into its own, especially when it comes to cutting sheet metal. Of course the thermal properties of the material you are cutting must also be taken into account."

"Now that we have laser, plasma and oxyfuel we are covering most bases. Who knows, maybe when you next visit there will be a waterjet cutting machine installed somewhere."

Messer Cutting Systems supplied MultiTherm CNC oxyfuel machine with four gas heads in 2013. This machine has the capability of cutting mild and low alloy steels up to 300mm thick. The machine incorporates the latest of drive technology giving a very accurate cutting accuracy. The Messer ALFA gas cutting torches have fully integrated height sensing, this not only maintains the optimum cutting height but also ensures consistent cut quality.

The second machine that has just recently been commissioned by Messer Cutting Systems is a MultiTherm CNC plasma machine fitted with a single Kjellberg Hi-Focus 440i plasma cutting unit. This machine has the capability of cutting mild and low alloy steels as well as stainless steel and aluminium up to a thickness of 80 mm. The Kjellberg "Contour Cut" ensures quality surface finish on both contours and holes. This gives a completely new dimension of precision plasma cutting on mild steel, whilst cutting of stainless steels offers one of the best possible cut quality currently available anywhere in South Africa.

The machine incorporates the latest of drive technology giving a very accurate cutting accuracy. The Messer Arc Voltage Height sensing systems not only maintains the correct cutting height but also consistent cut quality.

Messer Cutting Systems supplied a MultiTherm CNC oxyfuel machine with four gas heads in 2013

CNC machining

To meet customers' requirements over the years, the company has relied on its conventional machining equipment. However, constantly shifting demands and changing technology have affected the company's ability to follow its philosophy to add value where it can.

"The company has seen a great shift over the last two years in the cutting and fabrication areas and yes our expertise does lie in these fields. But we wanted to expand our horizons and at the same time offer a more efficient machining service."

"The result is that in March we installed a CNC vertical machining centre and a CNC vertical turning centre, both supplied by Puma Machine Tools."

"The Doosan DNM 650 VMC is incredibly versatile, providing high accuracy and excellent cutting performance. The machine has a 18.5 kW 12,000 rpm direct drive spindle (40 taper), 30-position tool changer and a 1,300 mm x 670 mm table."

The second machine we purchased is a Doosan Puma V550 CNC vertical turning centre with a maximum machining diameter of 730 mm, a maximum work length of 750 mm and travel distances of X axis 390 mm and Z axis 780 mm.

"Now having a Doosan DNM 650 and Doosan Puma V550 in-house has allowed much of the CNC out-sourcing to cease, eliminating the previous time, cost and quality issues."

Preparation leads to profit

"Expanding the company's manufacturing capabilities to keep up with industry changes aren't problems to be overcome but opportunities to be embraced. In fact it is essential."

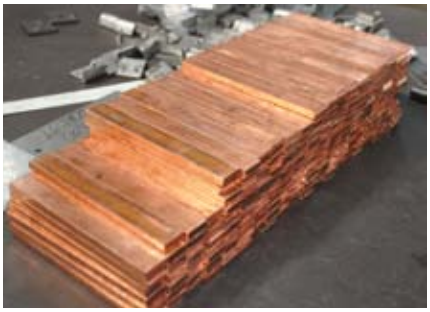
"We operate from a 10 000 m² facility, employ 170 staff and use the latest designing software such as SolidWorks and Autocad, fabrication software such as Sigmanest and TruTops and have purchased EdgeCam for the machining section."

"Successful innovation in the factory can come directly from responding to your customer's requests. However, to be successful and profitable usually requires planning so that you can capitalise on the opportunities when they arise."

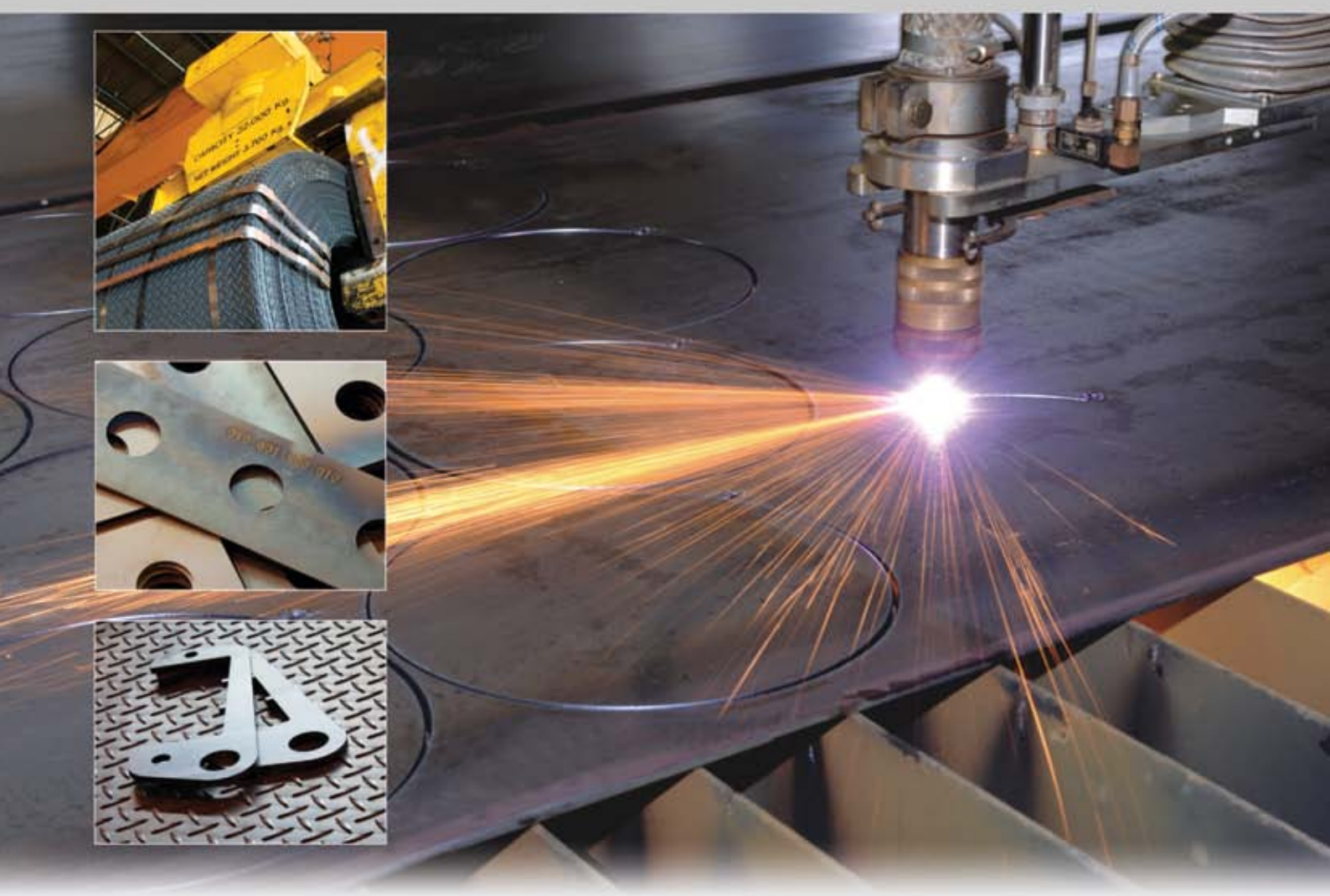
For further details contact AAA Laser on
TEL: 011 873 1166 / 1160 / 6125 / 6036 ■

The MultiTherm CNC oxyfuel machine comes equipped with Messer ALFA gas cutting torches that have fully integrated height sensing, this not only maintains the optimum cutting height but also ensures consistent cut quality

The MultiTherm CNC oxyfuel machine has the capability of cutting mild and low alloy steels up to 300mm thick



Buzzbar fabrication also takes place at AAA Laser



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How Larcol Pressings reinvented itself

Larcol Pressings used to be a general engineering shop that relied on just about any work coming in through the door. In fact when the company was established it did not have a single client – just the will, hope and dream of two immigrants from Germany. This isn't really a solid foundation for growth but somehow the company has survived and this year celebrates its 41st anniversary. This was not before the company reinvented itself and went through some major changes.

Degenhard Maisenbacher arrived in South Africa in 1968 having immigrated from Germany at the age of 23. He had read an article in a local newspaper in Germany on South Africa whereby South Africa was looking for people that had skills in engineering including fitter and turners, which Degenhard had qualified as. He took a decision of a lifetime that has seen him go through trials and tribulations, while still emerging as a successful businessman.

The staff at Larcol Pressings

My very informal meeting with Degenhard demonstrated his easy disposition with no graces attached, yet commanding respect from those that he has surrounded himself with. Dressed as though he was about to go on holiday Degenhard gave me the history of the company, in some instances giving precise dates of events.

Degenhard's first six years in South Africa saw him work for two different general engineering companies that still exist today in the Germiston, Gauteng area. The yearning to control his own future had already begun and in his spare time he took on the adventurous task of building a press.

"I did not know anything about sheetmetal work at the time," said Degenhard. Little did he know that sheetmetal and the cutting, manipulation and fabrication of it would years later be the mainstay of his business.

"The company found out about my dabbling on the side and, even though I was doing it in my spare time, I was shown the door," said Degenhard with no regrets.

"My friend, Paul Lupp, and I then set up business and we waited for clients to come rushing in. After countless hours of hard work, they slowly trickled in."

"Disaster almost struck on our very first job. I broke the tool, fortunately we had a neighbour who was a toolmaker and he helped us out of our predicament."

"That client, which is a large multinational company and has gone through a number of name changes, is still a client of ours today. Fortunately they did not find out about the mishap with the tool until many years later."

"We continued to operate as a general engineering shop for the first 25 years of the company, with no real focus in one area. Frequently we would purchase equipment to meet the demands of a new customer and this is how we ended up purchasing one of the first Amada Coma CNC turret punch

The new Gasparini PSG 330 press brake, which has a bending force of 330 ton over a four metre width, was supplied by Talmac Machine Tools

On the punching side Larcol Pressings has an Amada AC2510NT Turret Punch

presses in South Africa. It's how shops justify the capital expenditure," explained Degenhard.

"In 1989 we took a big decision in the company's history to purchase land and construct our own facility, which is where we are located today."

"We were also moving more and more towards sheetmetal fabrication work and over the next 10 years we purchased a second hand plasma cutter, two second hand lasers and various CNC turret punching machines."

"We also embarked on a strategy to develop our own products and then try and market them, something we were not very good at."

"We went about it all the wrong way. We did not ask ourselves questions such as who would buy it and why would they buy it? Is it for a broad market or a specialised niche? Is it unique, or is it a less expensive or a more functional version of something that already exists? What is the target sales trajectory? Can the product be protected, if necessary, from competitors that try to copy it?"

"It seems that when we come up with a product idea, mull it over and refine it a million times, that idea becomes our baby — the most beautiful thing in the world. Be very careful. That's the first sign that blinders are being put on, very expensive blinders. I've been there, done that, unfortunately. We could spend up to R250 000.00 on product development and then it would fail."

"Very few product ideas succeed in the marketplace. I strongly suggest that before you put any money into a new product beyond a functional prototype (if that), you work with people not involved in the product's success

Components that have been fabricated

Some of the components and products that Larcol Pressings fabricates

Larcol Pressings has an Amada FOM2 3015 NT laser, which represents the third generation of Amada's proven FO series that was introduced in 1999

Larcol Pressings offers a welding service

to do one thing: Try to rip the idea and its presumed acceptability to shreds. If there are fatal flaws, you'll find them at the least costly point."

Change in direction

"1999 was a pivotal year in the company's history. My partner and I had grown apart in our thinking of how to run the business so we split. That was 15 years ago."

"It gave me an opportunity to reinvent the business. I took a conscious decision to concentrate on what we were good at namely being a sheetmetal and fabrication job shop. No more of this developing, designing, wasting money on products that don't work. To give you an example, we were making what we thought was a brilliant product - Vesto Fuel Efficient stoves. After lots of frustration we showed it to someone and he said if we had made a couple of adjustments it would have worked. By that time we had given up the project. Anyway we are out of it now."

"My second big decision with the new Larcol Pressings was to inject money into the company and buy new equipment. We spent R12 million on new equipment however getting the finance was not easy. I remember virtually physically throwing the bank manager out of my office. Four years later, after we had obtained finance elsewhere and taken the company's annual turnover from R6 million to R20 million he came around again to offer finance."

"We have mainly stuck to lasers, turret punch presses and press brakes and upgrade them regularly. This is because most of our work centres around these disciplines. With it comes the welding and this enables us to do some assembly work for our clients. We do also have a small machining section where we have conventional lathes and mills."

"Currently we run an Amada FOM2 3015 NT laser, which represents the third generation of Amada's proven FO series that was introduced in 1999.The laser is equipped with a solid-cast frame, water assisted cutting, and a high-precision motion system. The FOM2 boasts new features such as automatic nozzle changer, cut process monitoring, and auto-pierce detection."

"When the first generation Amada FOM2 was launched we were one of the initial companies to purchase one in South Africa, and again with the third generation."

"On the punching side we have an Amada AC2510NT Turret Punch and numerous smaller Amada press brakes."

Larcol Pressings has a press and offers dished end pressings as a service

Larcol Pressings has numerous smaller Amada press brakes

Larcol Pressings has been fabricating components for one client for over 30 years

New press brake

Adorning the shopfloor of Larcol

"When the first generation Amada FOM2 was launched we were one of the initial companies to purchase one in South Africa, and again with the third generation."

Pressings is a new Gasparini PSG 330 press brake, which has a bending force of 330 ton over a four metre width.

"The machine incorporates the company's automatic crowning system ASCG1 and the 'Reflex' frame deflection compensation system. The 'Reflex' system allows complete control over deflections encountered by the frame structure of the press brake when bending, both in the vertical axis and the horizontal or torsion axis of the side frames. This system incorporates a unique and simple method totally independent of the operator or CNC. It requires no adjustment and works in real time to eliminate the inaccuracies. The Gasparini ACSG1 crowning system comes as standard equipment. The system is comprised of both digital electronics and hydraulic control of the deflection encountered on the bed and ram during bending."

"If I had my way the machine would be working 24 hours a day seven days a week such is its worth to us now. The machine was supplied by Talmac Machine Tools."

Going forward

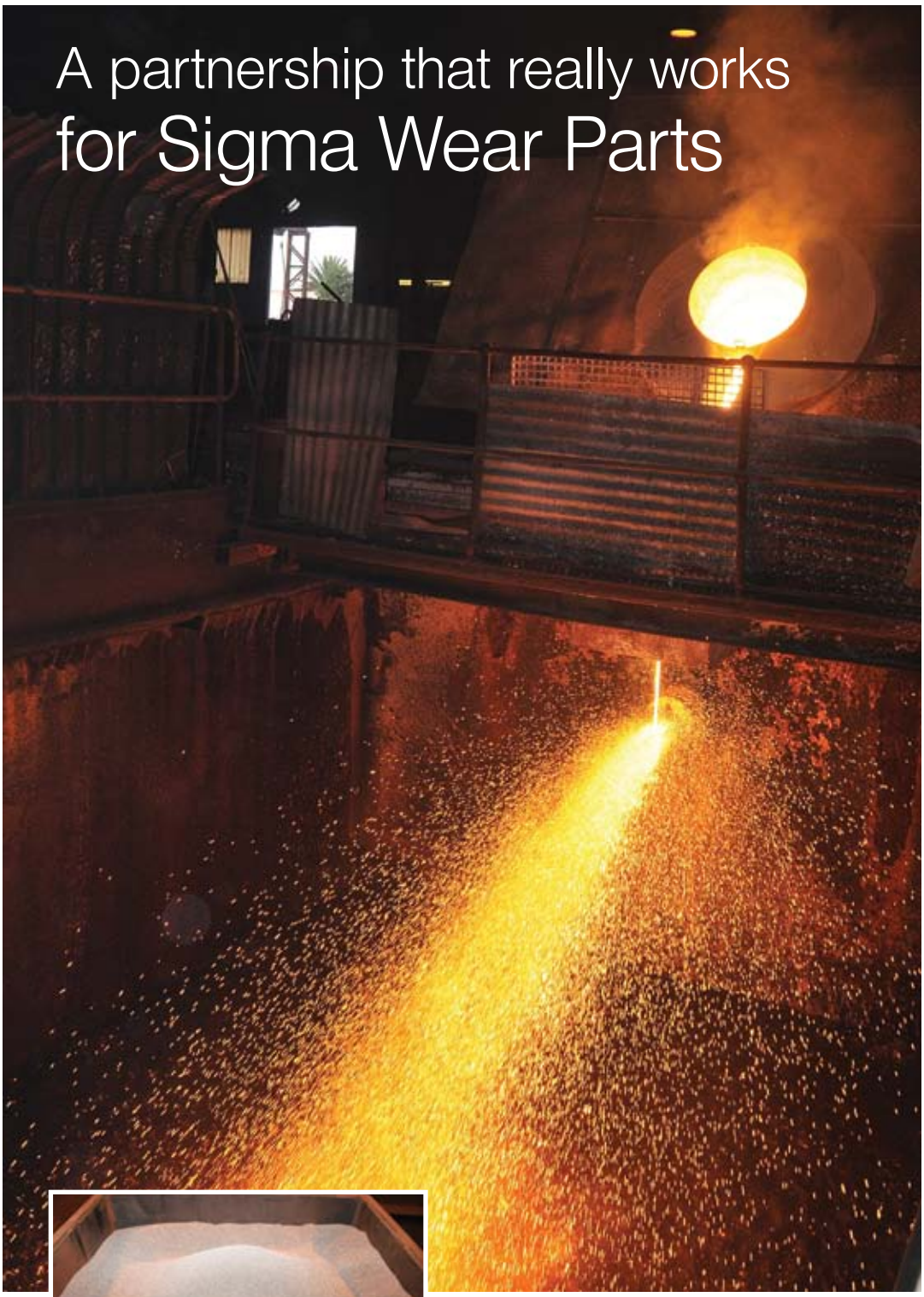
"I am now 70 and starting to take more of a back seat. I have surrounded myself with people that I can trust with many of them having over 10 years service. I could not do without them."

"Gert Gissmann, who has been with me for over 20 years, looks after the shopfloor activities and my nephew Andrea Lusardi takes care of the programming side. My son Oscar, who has just completed his Masters degree in Business Management, has also joined the company and is becoming more and more involved. Cheers!"

For further details contact Larcol Pressings on TEL: 011 902 3275 ■

A partnership that really works for Sigma Wear Parts

The company specialises in the manufacture of high integrity castings and the manufacture of atomized stainless steel shot and grit and low carbon steel shot.



Stainless steel abrasive volumes are low as compared to carbon steel abrasives because of cost but what clients don't realise is that stainless steel abrasives have a much longer life span

Manufacturing stainless steel abrasives is a specialised process and needs to produce a very spherical product, sub 1.5mm in size. The tonnage is not high because it is only used in niche areas where contamination must be kept to a minimum, for example high integrity castings in the automotive and aircraft industries

"I suppose it was inevitable that I would get involved in the foundry industry from an early age. My late dad Terry Ryan was a foundryman all his life and through his influence I started to work in the foundry industry from the age of 14," said Eddie Ryan, who is a partner with his brother Andrew in Sigma Wear Parts.

"I can't believe that it was 40 years ago that I first started to help with the metal sampling and analysis at J&C Malleable, the company that my dad was working for at the time. I was given the opportunity to earn a bit of money during my school vacations and I soon realised that school was not for me. Unfortunately I was only allowed to leave school until I was 17. Until I reached that age I continued with my vacation job. The added bonus was that I was given an opportunity to work in the different departments in the foundry."

"I eventually settled on pattern making and qualified as a patternmaker at the age of 21. I did various courses in foundry practice and metallurgy at college, which helped me become the foundryman that I am today."

Sigma Wear Parts

"The company name – Sigma Wear Parts – is relatively new. It was only formed 18 months ago when we decided to amalgamate the foundry business of "Thor Wear Parts" and

"Sigma Stainless Steel", our sister company that manufactures stainless steel abrasive media for the surface preparation Industry," explained Eddie.

"Both companies have established markets and clients locally and internationally. The foundry business was established in 2002 and the manufacture of stainless steel abrasives began in 2004."

Sigma Stainless Steel

The Ryan family has specialised in the casting of atomised materials for over three decades.

Terry Ryan was instrumental in forming Thomas Abrasives, which at the time was a division of Thomas Foundry, and began manufacturing low carbon steel shot to supply to both the local and export markets.

Since then the Ryan family have subsequently been involved in various other steel abrasives manufacturing ventures. To date they have designed, built and commissioned five abrasive manufacturing plants. Brothers Andrew and Eddie have been integral members of the family businesses since inception.

A natural extension of the experience and expertise gained from the various manufacturing processes utilised by the family was to start manufacturing stainless steel shot and grit in South Africa. Thus Andrew and Eddie started manufacturing stainless steel abrasive products under the Sigma Stainless Steel Abrasives label in 2004.

The company is a leading exporter of cast stainless steel abrasives to a very demanding European market. Again the company has proved its resilience and commitment to product innovation and is today a leading manufacturer of these products in the world.

In March the foundry installed a 100 kilogram furnace equipped with an Inductotherm Power-Trak 125-30R power source. This unit forms the heart of the new R&D facility. This furnace also allows the company to perform a specialised service in that Sigma Wear Parts can now offer a quick turnaround time for those urgent one-off castings and low volume castings in non-standard metal such as inconel and barium bronze. The size of this furnace dictates the weight of the casting - a maximum of a 50 kilogram net weight. Sigma Wear Parts will be able to manufacture castings in most metals from this unit

"Manufacturing stainless steel abrasives is a specialised process and needs to produce a very spherical product, sub 1.5mm in size. The tonnage is not high because it is only used in niche areas where contamination must be kept to a minimum, for example high integrity castings in the

The foundry floor

automotive and aircraft industries," explained Eddie Ryan.

"Stainless steel abrasive volumes are low as compared to carbon steel abrasives because of cost but what clients don't realise is that stainless steel abrasives have a much longer life span."

"Other advantages of why cast stainless shot is a popular product for cleaning and deburring aluminium or non-ferrous parts in air or wheel blast applications, is that it produces very bright surfaces and is ideal for producing finishes free from ferrous residue and it is available in very small sizes."

"The combination of proper abrasive type and size, along with air blast or wheel blast equipment selection, can produce finishes ranging from a very deep profile to provide an anchor pattern for heavy coatings, a clean, bright, cosmetically pleasing finish without metal removal and a finish stripped of coatings on composite materials without damage to the delicate underlying surface."

Low carbon steel shot

Although the company slowed down manufacturing low carbon shot over three years ago due to economic reasons such as the high cost of energy input, the strengthening of the Rand at the time, the high price of scrap and the increasing demands of labour, which all led to the product becoming less competitive, it has ventured back into this market but on a much smaller scale.

"We have over 40 years of collective experience in low carbon technology and offer a product meeting and exceeding SAE J2175 and J444 standards. Low carbon shot has a bainitic microstructure, achieved by meticulous raw material selection, constant monitoring of metallurgical chemistry and a controlled atomisation process. Abrasive durability has been reported up to 20% higher than standard high carbon shot with no loss of cleaning efficiency," explained Eddie.

Production

Two three ton 2000 kilowatt fast melting furnaces drive the production department in the abrasive manufacturing division. The atomising unit and process is unique to and specially designed by the company.

The foundry has two 500 kilogram furnaces, a 5-ton an hour Omega mixer that has been fitted with an auto blend unit and they are currently installing an Omega sand reclamation plant

Dedicated product processing lines consisting of retrieval, screening, crushing, classifying and packaging, exist for the different products produced by the company.

All products are issued with a quality control certificate and traceability records are stringently kept.

The foundry - Thor Wear Parts

In 2002 the family added a specialised foundry to the manufacturing mix, concentrating on small specialised castings for a select customer group. The vision was to build close relations with a small group of customers whereby optimum quality and service could be delivered.

Moulds that have been prepared

A selection of castings made by Sigma Wear Parts

This strategy has proved very successful with the company seeing growth in both turnover, profit and output in every year since inception, despite the severe impact of the financial crisis.

"With my late Dad, Andrew and I having gained extensive experience in the foundry environment prior to focusing our attention on abrasive manufacturing it was not long before we had the inclination to see molten metal poured into moulds again as opposed to molten metal following the atomising process. Once it's in your blood you can't get rid of it," said Eddie Ryan.

"We received an enquiry for high chrome replacement castings for shotblasting equipment. We had a spare furnace and floor space so it was a matter of sourcing the ancillary equipment and materials that would be needed to start a foundry."

"In the beginning the foundry was not our priority but as further enquiries came in we took it more seriously and it has evolved into a fully-fledged foundry that has a current capacity of 140 tons per month."

"We can manufacture castings up to three and half tons net weight per casting using the furnaces in the stainless steel abrasives division."

"The typical castings that we manufacture include a range of precision components for rotary turbines, paper mill refiner plates, pumps and a whole host of wear parts

The Renishaw Cyclone contact scanner provides the company the opportunity to do direct CAD output for reverse engineering, CAM output to machine components and a host of measuring and inspection capabilities

The Haas VF 3 CNC vertical machining center is used to test, run and enhance current and new castings, tool designs and patterns. Highly dimensionally accurate patterns can be manufactured in the patternshop and on the Haas CNC machining center

including crusher spares and some high integrity cast components for the railway industry."

"The mix of materials is made up of 70% high chrome castings with the rest made up of SG iron, stainless steel and cast iron and to a lesser extent the non-ferrous metals."

"Recently we added an aluminium casting line that has proved very successful and now delivers very high integrity aluminium castings in various aluminium alloy grades."

"On the equipment side we currently have two 500 kilogram furnaces, a 5-ton an hour Omega mixer that has been fitted with an auto blend unit and we are currently installing an Omega sand reclamation plant."

"The laboratory is equipped with a Spectro SpectroMax spectrometer. With it we are able to determine all of the elements used in the cast metal industry, including trace analysis of carbon, phosphorous, sulfur and nitrogen. Our laboratory can analyze all base metals including iron, aluminium, copper, nickel, cobalt, titanium, zinc and lead. Every heat that is melted in our company is analyzed and the results recorded for full traceability."

The Spectro SpectroMax spectrometer determines all of the elements used in the cast metal industry, including trace analysis of carbon, phosphorous, sulfur and nitrogen

The foundry philosophy

"Our philosophy for the foundry is to offer our customers a quality service and to produce high quality castings consistently. Typically we engage ourselves with specialised and more difficult castings, and exciting processes. We like to look at ourselves as the complete cast engineering solution providers."

"But to portray yourself as this type of business you have to have the equipment that can back-up your statement."

"In this respect for a number of years we have had a Haas VF 3 CNC vertical machining center to test, run and enhance current and new castings, tool designs and patterns. Highly dimensionally accurate patterns can be manufactured in our patternshop and on our Haas CNC machining center for our customers."

"We use Solid Edge CAD software to design and develop castings and tooling and we use EdgeCam as our machining software. I must emphasize that this machine is not a production machine. It is used purely for new development and enhancing existing castings."

"Standing next to the Haas is a Renishaw Cyclone contact scanner which provides us the opportunity to do direct CAD output for reverse engineering, CAM output to machine components and a host of measuring and inspection capabilities."

"Last year we purchased uPrint SE 3D printer manufactured by Stratasys. It offers a low-cost, networked alternative for printing functional 3D models and tools from the desktop. The printer builds models layer-by-layer using ABS plastic. The uPrint SE 3D printer enables us to evaluate design concepts and test models for form, fit and function."

"These add on services have been hugely beneficial in our quest to be the complete cast engineering solution providers."

New Inductotherm Power-Trak 125-30R and furnace

"We have now taken this philosophy a step further in our service offerings. In March we installed a 100 kilogram furnace equipped with an Inductotherm Power-Trak 125-30R power source. This unit forms the heart of our new R&D Facility."

"This furnace also allows us to perform a specialised service in that we can now offer a quick turnaround time for those urgent one-off castings and low volume castings in non-standard metal such as inconel and barium bronze. The size of this furnace dictates the weight of the casting but we are looking at a maximum of 50 kilogram net weight. We will be able to manufacture castings in most metals from this unit."

Dedicated product processing lines consisting of retrieval, screening, crushing, classifying and packaging, exist for the different products produced by the company

Sigma Wear Parts operates from a 4000 m² facility in Lilianton, Boksburg, Gauteng with the stainless steel shot and grit and the low carbon steel shot manufacturing operations housed in one factory, the foundry operations in an adjoining factory and the development and research equipment in another factory.

Currently the company employs 45 staff with 25 in the foundry division and the company has a Level 3 BBEEE rating.

The company is fully compliant with the current local and national environmental legislation governing all the processes carried out on site.

For further details contact Sigma Wear Parts (Pty) Ltd on TEL: 011 823 4443 ■

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New solutions for machining advanced composites

Machining composites takes resolve, ingenuity and, of course, the supporting manufacturing technologies.

Composites clearly differ to other engineering materials, such as metals and plastics, when it comes to machining. As is well documented, hardness is not the issue; rather, it is the material's abrasive nature and tendency to delaminate under cutting force.

Waterjet manufacturers will argue that their technology is one way to negate unwanted delamination, as well as side-step other hazards associated with conventional cutting tools, such as heat and fibre pull-out. These advantages are certainly proving popular with the aerospace manufacturing community.

While superb in airframes or marine vessel frames, types of fibre-reinforced epoxy, polyester and vinyl are harder on tools and less forgiving of even small vagaries in processing. Moreover, their higher added value pre-machining leaves even less tolerance for scrap. Fortunately, a new generation of cutting tools is emerging tailored specifically to the most frequently required operations on all types of advanced composites.

For instance, Iscar's PCD line of drills and milling cutters offers a wide selection of proven composite-specific tooling. There are drills suited for thicker materials with aluminium on the bottom, as well as for thinner materials with carbon-fibre reinforced plastic (CFRP) on the bottom. There are combination drill-countersinks and drill-reamers, slotting cutters and combination mill/drill cutters. Possibly for the first time since reinforced composites came on the scene, you can find no-compromise tools for any composite machining task.

According to Iscar, the cutting tool material of choice for composites is presently a solid carbide shank with thin PCD coatings, brazed-in PCD inserts or PCD veins at the cutting edge. In applications on virtually every advanced composite, Iscar reports this type of tool outperforming all others, including CVD diamond coated solid carbide. The harder and more highly reinforced the material, the greater the margin of improvement.

The reason for this is the solid carbide shank, which provides the rigidity and dimensional accuracy necessary to maintain close tolerances on size and location as well as smooth surfaces. Solid carbide also makes it possible to start with an optimal cutting geometry that minimises cutting forces, heat, uncut fibres, cups, fuzz and burrs, while controlling chips. The thin polycrystalline diamond (PCD) coating (or insert) provides the wear resistance at the cutting edge to maintain optimal geometry over long service intervals.

Note the emphasis on thin PCD coatings. These deliver the wear resistance of diamond while preserving the ideal cutting geometry machined into the carbide shank. By contrast, chemical vapour deposition (CVD) inevitably creates a thicker diamond layer that may detract from optimal geometry.

Whatever the application, there are a few principles to keep in mind when machining CFRPs or other stacked materials.

Hole-making, close-up

Hole-making, mainly for rivet holes, is a mainstay process in composites work, and very unforgiving. Because of their inherent hardness and dimensional stability, FRP composites don't readily resolve misalignment stresses introduced during fabrication by off-centre rivet holes.

Early solutions centred on orbital drilling on CNC machines with offset and interpolation programming capabilities, using solid carbide tools. This is actually an orbital milling process, not true drilling, which uses a tool smaller in diameter than the hole. The process does run cooler and reduces thrust forces compared with drilling. It also enables a single tool to produce different diameter holes and irregular cavities, which reduces tool inventory costs.

However, tool wear remained a problem, leading to a common 'workaround': programmed tool wear compensation. While this strategy maintained dimension, it did nothing for surface finish or heat management.

Diamond-enhanced solid carbide drills described earlier have proven very successful, as they stay sharper longer than plain solid carbide tools in composites machining service. Four styles of diamond-enhanced tools are now available for composites machining:

- PCD-veined solid carbide – features 'veins' of PCD bonded into grooves machined into the carbide shank
- PCD-brazed-in inserts in solid carbide shanks –

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The Multi-Master system features no set-up time, providing the ability to mount a variety of changeable heads on one shank quickly and easily

suitable where diamond's wear resistance is needed only at the leading edge
- PCD-coated solid carbide – offers the same advantages plus better sharpness and geometry control at the cutting edge
- CVD diamond carbide – combines the wear resistance of diamond and the dimensional accuracy of solid carbide. The downside is that the coating is inherently thick, which can detract from sharpness and geometry right at the cutting edge.

One recent innovation for composites and stack drilling is Iscar's new head for the Multi-Master line. The Multi-Master system features no set-up time, providing the ability to mount a variety of changeable heads on one shank quickly and easily. Comprising PCD cutting edges and composite-optimised geometries, the heads perform roughing, semi-finishing and finishing operations in sequence. This geometry enables opening of cavities and slots and performing shoulder applications. Since the shank is thinner than the cutting tip, contact and friction with walls is reduced, so the operation runs cooler.

Another promising newcomer is the Iscar Solidrill-Ream, a combination drill and reamer for producing more accurate holes in a single step. Separate brazed-in PCD inserts on the same shank handle the drilling and reaming.

Improving hole-making

That said, there are two points to remember for hole-making in composites: cutting forces should be kept light to minimise delamination and stress on the material; and carbide drills will probably suffice in aluminium honeycomb or foam core, solid.

Iscar has developed new ICF drilling heads geometry for CFRP and CFRP laminates drilling, combining small point angles and positive rakes. This provides low axial forces for smooth penetration during the cutting process without splintering phenomenon, which is critical on thin-wall workpieces. The new heads are produced in the new grade IC107, which combines IC07 hard submicron substrate and CVD diamond coating for prolonged and predictable tool life.

SumoCham for composites is suitable to be used on CNC or parallel kinematic machines (PKM) machines. For robots and powered feed machines, a special connector is available. The fast head replacement and high positioning repeatability provide minimum machine downtime. Relatively small indexable drilling heads with diamond coating provide a real price advantage compared with long full solid carbide drills, as well as easy stock management.

The harder the matrix and higher the reinforcing fibre content, the more you will need PCD coatings/inserts at the cutting edge. When hole size allows it, orbital drilling with a solid carbide endmill or milling interpolation using the Multi-Master with PCD-coated tips is preferable to straight twist drilling.

For shallower holes, use stubby, straight-shank drills. For deeper holes, design the process for absolutely reliable ejection of all types of chip. Consider 'peck drilling ' and even coolant flushing, if possible. Moreover, match speeds and feed to the layers in the laminate. Be ready to change parameters for each layer as the drill progresses.

Select the tool geometry based on the last material in the stack. If a plastic, use a tapered drill with a long point angle. If the last layer is aluminium or titanium, a high-shear drill with a sharp point angle will exit more cleanly and leave less burr. The tapered drill would just smear aluminium.

In thicker composite structures, beware of heat build-up as well as chip jamming. Select drills with narrow flutes, wide gullets and tighter spirals that complete the hole before things get too hot – in addition consider coolant.

What about titanium?

When titanium is in the stack, the preferred practice is everything that composites hate. To avert work hardening and overheating and to keep chips controllable, select tools with low reliefs and rake angles and a low spindle speed. Although coolant or mist is not generally used, it may be unavoidable for titanium because of the heat and/or chip flushing.

In short, take everything into account in tool selection, including the relative thicknesses and location of the metal and plastic layers. It is a balancing act. A stack heavy toward the metal favours solid carbide tools with internal coolant. If CFRP is the main part, PCD carbide tools would be preferable.

Be sure the process reliably breaks up the titanium chips into small, easily ejected pieces. You especially don't want to risk a titanium chip jamming the hole in a composite. Again, the most effective remedies are slower speeds and pecking cycles.

Composite milling

Milling composites is equally challenging. If the tool encounters several different layers at the same time, you need to engineer the process, taking all limitations into account. If you are progressing through the layers pass by pass, you may have to change parameters to match the layer.

This is why Iscar has designed many of its most popular styles of milling cutters and routers in versions optimised for CFRPs and complex laminates. Its SolidMill solid carbide endmills for rough and finish end- and side-milling now come with optimal diamond coatings. TangSlit slitters and TangSlot slotters can now offer PCD tips. Versatile Heli2000 indexable inserts are now available with PCD-tips. All have proven effective in hundreds of wingstrut and airframe, commercial and military applications. On request, Iscar can provide specially tailored solutions in the form of vacuum brazing tools for machining composite materials.

If you haven't taken a fresh look at tooling for composite materials in the past two years, you are missing out on opportunities for big gains in efficiency, quality and edge life – and competitiveness in a booming field. In this very demanding sector of machining, ask an experienced full-line tool provider such as Iscar for guidance early. You'll get better answers sooner and find that your productivity can be improved significantly.

Watch the video

To watch a video on these latest developments visit:

http://metalworkingnews.info/new-solutions-for-machining-advanced-composites/

For further details contact Iscar South Africa on TEL: 011 997 2700 or visit www.iscar.com ■

New sheet metal 3D forming process can reduce prototype delivery time from 6 months to 3 days

Ford creates sheet metal prototypes in hours instead of weeks.

How do you stamp out prototype sheet metal parts without "stamping" them in a single blow - and without a die to boot? No, it's not a Zen riddle. It's a question that Ford engineers have been working on for a while, and now they think they have the answer.

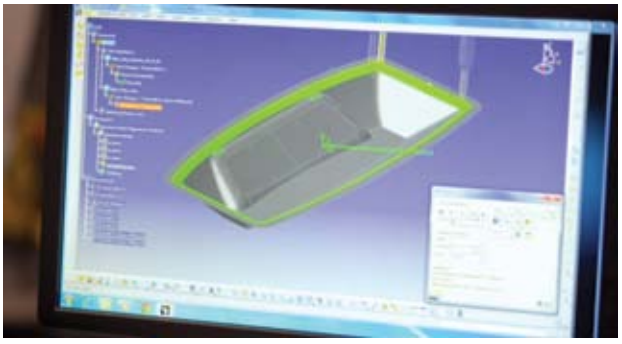
Ford Freeform Fabrication Technology (F3T) is the company's new, highly flexible, first-of-its-kind, patented technology to rapidly form sheet metal parts for low-volume (think prototyping) production applications. Once fully developed, the technology will allow for lower costs and ultrafast delivery times for prototypes - within three business days versus conventional methods that take anywhere from two to six months.

Developed at the Ford Research and Innovation Center, the process starts with the F3T machine, which features an upper and a lower "stylus," each mounted on its own hexapod. CAD data of the desired part is sent to the machine, just like you would send to a digital printer. A piece of sheet metal is clamped around its edges to the machine's frame. The part is then formed into a 3D shape by the two stylus-type tools working in unison on opposite sides of the sheet metal blank - they literally push the part into being by making "written" pressured paths from opposite sides. The final shape includes the required dimensional tolerances and surface finish.

Ford Freeform Fabrication Technology uses an embossing technique similar to 3D printing

One great thing about the process is that geometric-specific forming dies are completely eliminated, along with the high cost and long lead times associated with die engineering, construction, and machining

Ford Freeform Fabrication Technology uses CAD files to control the process



Ford Freeform Fabrication Technology embosses the sheet metal line by line

It's kind of an inside-out, weird take on spinning (spin forming) metal, where a round piece of flat metal, attached to a forming block mounted in the drive section of a lathe, is rotated at a high speed. A tool is then used to push the spinning metal into place over the form, making a bowl or a bell shape. But in F3T, the metal is stationary and the dual stylus tools move around on the top and bottom, pushing (or "writing" with great force) the metal into a 3D shape.

While traditional stamping processes remain the most efficient method for high-volume stamping, efficiencies for low-volume production can be achieved with the F3T because it is so flexible. Once fully developed, the technology should allow for lower costs and ultrafast delivery times for prototypes - within three business days versus weeks or even months.

One great thing about the process is that geometric-specific forming dies are completely eliminated, along with the high cost and long lead times associated with die engineering, construction, and machining. And the time, cost, and energy savings are a no-brainer, given that F3T could produce sheet metal parts for prototypes in just days for essentially no cost.

Besides basic prototyping, Ford says that the F3T technology could also be useful for producing concept vehicles and vehicle personalization enhancements. Other applications include aerospace, defense, transportation, and appliance industries. ■

This was the technology highlight this year at the company's Open House exhibition held in February in Germany, while further global expansion plans were revealed.

DMG Mori presents an additive manufacturing breakthrough

DMG Mori is the combined sales and service operation for the currently separate firms of DMG Mori Seiki Co, Japan (formerly Mori Seiki Co) and DMG Mori Seiki AG, Germany (formerly Gildemeister AG), reports Andrew Allcock, Editor of Machinery UK. The two companies have been working together across sales, service, development, production, purchasing and finance since March 2009. There is already a cross-shareholding between the two, but they will become a single company in 2020, as announced in October last year.

Combined sales for the two global machine tool makers are over £2.5 billion (DMG Mori Seiki AG, €2 billion/£1.645 billion [to 31/12/2012]; DMG Mori Seiki Co, ¥150 billion/£884 million [to 31/3/2013]), while their combined production capacity is put at 20 000 machines a year.

World standing

So, by volume, that puts the couple ahead of Haas Automation, which claims the position of the largest producer of CNC machine tools in the Western world; and by value puts them ahead of Japan's Yamazaki Mazak, which claims the position of "the world's largest producer of CNC metalcutting machine tools", (sales over €1.5 billion/£1.23 billion).

The DMG Mori Seiki AG turnover figure includes its energy products activity, so its machine tools' revenue is lower than the headline figure, at €1.175 billion/£966 million but services related to machine tools are put at €790.5 million/£650 million, so, on combining these figures, the Yamazaki Mazak claim could be challenged, although DMG Mori Seiki AG makes no such challenge. Overall employee count for DMG Mori Seiki AG and DMG Mori Seiki Co is 10 400, with DMG Mori boasting 500 employees.

The unmistakable overall message is that the two companies together are a major global force in the machine tool industry. Across the world, there are almost 500 DMG Mori machine tools in some 100 DMG Mori showrooms, staffed by the 500 employees, while there are also 50 technology partners.

With the Lasertec 65 Additive Manufacturing, DMG MORI presents a machine, which is currently unique and incorporates laser deposition welding into a fully-fledged 5-axis milling machine

The two companies have a combined product offering of around 200 machine models, although rationalisation to around 100 models is on the cards, with these machines produced at 19 machine tool manufacturing sites worldwide.

And with an R&D workforce approaching 1 000 engineers, the frequent announcement of new products is a habit that only gathers pace, with the February Pfronten, Bavaria, Germany Open House a major fixture on the calendar. Eight world premières were unveiled to an audience of 6,000+ visitors. And they "come to learn what's new from DMG Mori, what innovations we have to offer", says Mori Seiki AG chairman of the board Dr Ruediger Kapitza.

Coating

Repair

Sauer Lasertec 65 Additive Manufacturing

The technological highlight this year was the Sauer Lasertec 65 Additive Manufacturing, a machine that combines traditional milling/toolchanging with additive manufacturing in the frame of a DMU 65 monoBLOCK machining centre. A development from DMG Mori Seiki AG company Sauer AG, the machine offers a unique proposition – the ability to create solids from powder and then machine them to the finished state.

First revealed at Euromold last December, the Lasertec 65 incorporates a 2 kW diode laser system (glass fibre optic-transported beam), located to the right in the working envelope. Build rate, at 3.5 kg/hour, is 20x faster than for powder bed machines. Wall thicknesses of 0.1 mm to 5 mm can be built up, depending on the laser and the nozzle geometry, while complex 3D contours can also be generated in layers, without the need for supports. The machine's capacity is 650 mm diameter by 360 mm in height, with a maximum weight of 1,000 kg.

The laser head features an HSK back end, with the spindle picking it up from its location, which is currently within the working envelope. The use of a powder nozzle additive manufacturing system allows for a faster material build-up versus powder bed machines (which cannot machine), while such technology is "easily implemented within a machine tool", according to Friedmann Lell, Sauer GmbH sales director. Indeed, the technology could be incorporated into any number of DMG Mori machine tools.

At the Pfronten Open House, a funnel-shaped part was shown being produced, via video. Approximately 150 mm high and 180 mm diameter at its widest end, it features annular spigots around the funnel's external wall and also has two flanged ends featuring drilled holes. Built from nothing using stainless steel powder and then fully machined, it takes some about five hours. The same part would take around 50 hours, using a powder bed machine, would need support structures added during build and, of course, would not be finished machined.

The machine on show at Pfronten was a 'project' – a functional study - not the finished machine. Currently only dry machining is possible, as the laser is not fully protected, but the final design will support coolant use, with full protection for the laser. That machine will be available around the middle of the year and will break cover at the IMTS 2014 (Chicago, USA) and then AMB (Stuttgart, Germany) exhibitions. And Mr Lell says that five machines will be shipped this year. Unsurprisingly, the machine price is not yet fixed.

While a machine such as this could have been developed some years back, the reason for its development now is customer demand. There is no additive machine currently available that offers the surface quality and component accuracy that DMG cutting machines do: "So we developed an additive manufacturing machine for our customers that does give such quality and accuracy." And there is "unbelievable interest", with this emanating from Europe and the USA, Mr Lell offers.

Regarding the temperature of the additively produced features, if highest machined accuracy is required, then cooling must take place prior to cutting – the application of coolant to accelerate that process is a possibility, he says.

As for material properties, currently stainless steel is the trial material. "We are not finding any porosity," Mr Lell says, but adds that the company "is not yet the process expert".

Inconel and aluminium

The next material to be tested will be Inconel, which has long been used in additive manufacturing, so should present little problem, he suggests. Following that, aluminium is the next material on the agenda, but this does present greater challenges regarding porosity, so will require greater process development.

For the project machine, CNC programs are being generated via two systems: one for the additive element of the process and another for the cutting element. At the launch of the production unit this year, there will be a single software system for programming, Mr Lell says, with the machine itself using Siemens CNC only.

As to the matter of process control/repeatability and consistency of component quality/performance, this will require further machine development. At the moment there is no process control. "For aerospace turbine or aircraft parts, if you make 1 000 parts, how do you avoid any failures? This is an open question. There will be process monitoring in the future, with many parameters involved. But there are many parts today that do not require this level of control," Sauer's sales director explains. It's the same situation for powder bed machines, of course, although there are efforts in this area under way already.

And the market for its Lasertec 65 Additive Manufacturing? Well, around 100 metal AM powder bed machines are sold annually. This is the first time a machine dedicated to manufacturing has been developed, so it's a new market. Its launch will "definitely give a push to the market" with its potential "tremendous", Mr Lell concludes. ■

Stratasys to acquire Solid Concepts and Harvest Technologies

Stratasys Ltd., a leading global provider of 3D printing and additive manufacturing solutions, has announced that it has entered into definitive agreements to acquire two privately-held companies, Solid Concepts Inc. and Harvest Technologies.

Solid Concepts is the largest independent additive manufacturing service bureau in North America and a fast-growing partner to RedEye, Stratasys' existing digital manufacturing service business. The transactions are expected to be completed early in the upcoming third quarter, subject to customary closing conditions, and are expected to be accretive to Stratasys' Non-GAAP earnings per share within the first 12 months after closing. Upon completion of the transactions, Stratasys will combine Solid Concepts and Harvest Technologies with RedEye to establish one additive manufacturing services business unit. Joe Allison, President of Solid Concepts, will join the Stratasys management team and lead the combined parts business, supported by the strong management teams of Solid Concepts, Harvest Technologies, and RedEye.

Solid Concepts and Harvest Technologies are leading providers of additive manufacturing services. With the addition of Solid Concepts and Harvest Technologies, Stratasys is creating a leading strategic platform focused on meeting customers' additive manufacturing needs through an expanded technology and business offering. Solid Concepts and Harvest Technologies provide Stratasys with significant manufacturing and end-use parts production capabilities, infrastructure, capacity and process knowhow, which are expected to accelerate and enable further adoption of additive manufacturing. The combination of Solid Concepts' deep knowledge of manufacturing and vertical focus, such as medical and aerospace, and Harvest Technologies' experience in parts production, as well as materials and systems knowhow, together with RedEye, strengthens Stratasys' direct digital manufacturing and parts production expertise. ■

The 2014 World Machine Tool Output and Consumption Survey

This article is from Modern Machine Shop, as reported by Steve Kline, Jr., Director of Market Intelligence from Gardner Business Media.

The 2014 World Machine Tool Output and Consumption Survey shows that the US machine tool market has outpaced the rest of the world two of the last three years and is forecasted to grow faster in 2014.

As an indicator of the health of manufacturing in a country, a growing market for machine tools is a positive sign. For this reason, we should be heartened by the prediction that US consumption of machine tools will grow 15 percent in 2014. This level of investment is clear evidence that American manufacturing is undergoing a resurgence.

Let's start looking at the numbers, as reported in the 2014 World Machine Tool Output and Consumption Survey. Data for this report comes from research conducted by Gardner Business Media, the publisher of this magazine.

In general, there has been a recent turnaround in world machine tool consumption. After growing in 2010 and 2011, world machine tool consumption has contracted for two consecutive years. This rate of contraction in world consumption was slightly faster in 2013 (-7.8 percent) than it was in 2012 (-6.1 percent). However, based on several important leading indicators of machine tool consumption — money supply, capacity utilization and industrial (or manufacturing) production. For most countries, all three of these data points are available; however, for a few countries capacity utilization is not calculated.

Of these three leading indicators, money supply is the most important. No matter the country, the money supply rarely contracts. So, it was no surprise that in 2013 the money supply grew in every one of the top 25 consuming countries. But, in 11 of those countries, the money supply was growing at a double-digit rate. (The U.S. ranked second with a 22.9-percent increase in its money supply in 2013.) Further, in 16 of the countries, the money supply was growing at an accelerating rate. It is this accelerating growth that is indicating stronger machine tool consumption for 2014.

After money supply, capacity utilization is the next most important leading indicator. Twenty-one of the top 25 consuming countries report capacity utilization (excluding China, Russia, Taiwan and India), and it grew in just four of them in 2013. But, in the remaining 17 countries, the rate of change was moving in a direction that indicates

> Of these three leading indicators, money supply is the most important. No matter the country, the money supply rarely contracts

leading indicators, I am forecasting world machine tool consumption to grow by 6.2 percent in 2014 to about $58,300 million. When calculating region and world totals, I use the top 25 consuming or producing countries from that year. So, for example, total world consumption in 2002 is from a different set of countries than the total world consumption in 2010. This provides a reasonable approximation because the top 25 consuming or producing countries account for roughly 95 percent of all consumption and production.

This year's data on production, exports and imports was collected from 27 countries which consume and produce virtually all of the world's machine tools. Consumption is calculated by adding imports to and subtracting exports from production. The data typically is reported in local currencies then converted to U.S. dollars. After converting to U.S. dollars, all of the data in the 2014 survey also was inflation-adjusted using the Bureau of Labor Statistics' Producer Price Index for capital equipment to provide a better historical comparison.

For this year's report, I also made one further adjustment to the data. Unlike the rest of the world, consumption and production in China includes a significant portion of non-CNC machines. Therefore, to provide an apples-to-apples comparison, the consumption and production totals from China have been adjusted for all years to remove the non-CNC part of the machine tool market. The total data for China can still be seen in the "as reported" line of the tables.

Leading indicators point toward growth in 2014

The 2014 forecast was created using the three most growth in machine tool consumption this year.

Industrial production also is an important leading indicator for machine tool consumption, although it has the weakest link to consumption of the three. For 2014, it is providing more of a mixed signal than either money supply or capacity utilization. In 11 of the top 25 consuming countries, production is growing, and in the remaining 14, the rate of change in production is moving in a direction that indicates stronger machine tool sales this year.

World consumption highlights

In 2013, the top five consuming countries remained the same, although their order did change some. Despite contracting the last two years, China remains the world's largest machine tool market. Having grown two of the last three years, the U.S. has narrowed the gap with China but remains the second-largest market. China eclipsed the U.S. as the No. 1 consumer in 2009, and the U.S. lost more to ground in 2010, ending that year just 45.9 percent the size of the Chinese market. Since 2010 though, the U.S. has gained ground on China every year. In 2014, because the U.S. should grow by 15 percent while China remains relatively flat, I estimate that the size of the U.S. market will be 81.4 percent of the Chinese market.

While the top two positions remained unchanged, there was movement among the other three top consumer positions. In last year's survey, Germany was the fourth-largest consumer of machine tools, but Germany's consumption grew 8.4 percent in 2013, bumping it up to the

position of third-largest consumer of machine tools in the world. I forecast Germany to grow by 12 percent in 2014, retaining its No. 3 position.

Even though its consumption was relatively flat in 2013, South Korea also moved up one spot in this year's survey to No. 4, and I expect it to grow by 13 percent in 2014.

With both Germany and South Korea moving up one position, Japan fell from third to the fifth-largest machine tool consumer in 2013. This is a further drop from its No. 2 position in 2011. Since then, Japan's consumption has fallen by almost 45 percent. In 2013, its consumption was less than $5 billion (in real dollars) for just the second time since 2003. This year, however, I expect Japan to grow by 6 percent, or about the world average.

Although it is still not among the top five markets for machine tool consumption, Mexico made the largest jump in the 2013 rankings to No. 6. According to the 2013 survey, Mexico was the 10th largest consumer with $1,361 million in 2012. This year's survey includes revised data for 2012 and shows that Mexico consumed $2,246 million of machine tools in 2013. My forecast of consumption in Mexico calls for a slight decline of 8 percent to $2,077 million. Yet even with that decline, 2014 would be the third year in a row that Mexico consumed more than $2,000 million of machine tools.

Of all the top 25 consuming countries, India fell the furthest in the 2013 rankings, dropping from sixth to 11th in the world. Consumption in India has fallen from $2,627 million in 2011 to $1,441 million in 2013, or 45 percent, and I think it will continue to contract in 2014, but the rate of contraction will be slower.

World production highlights

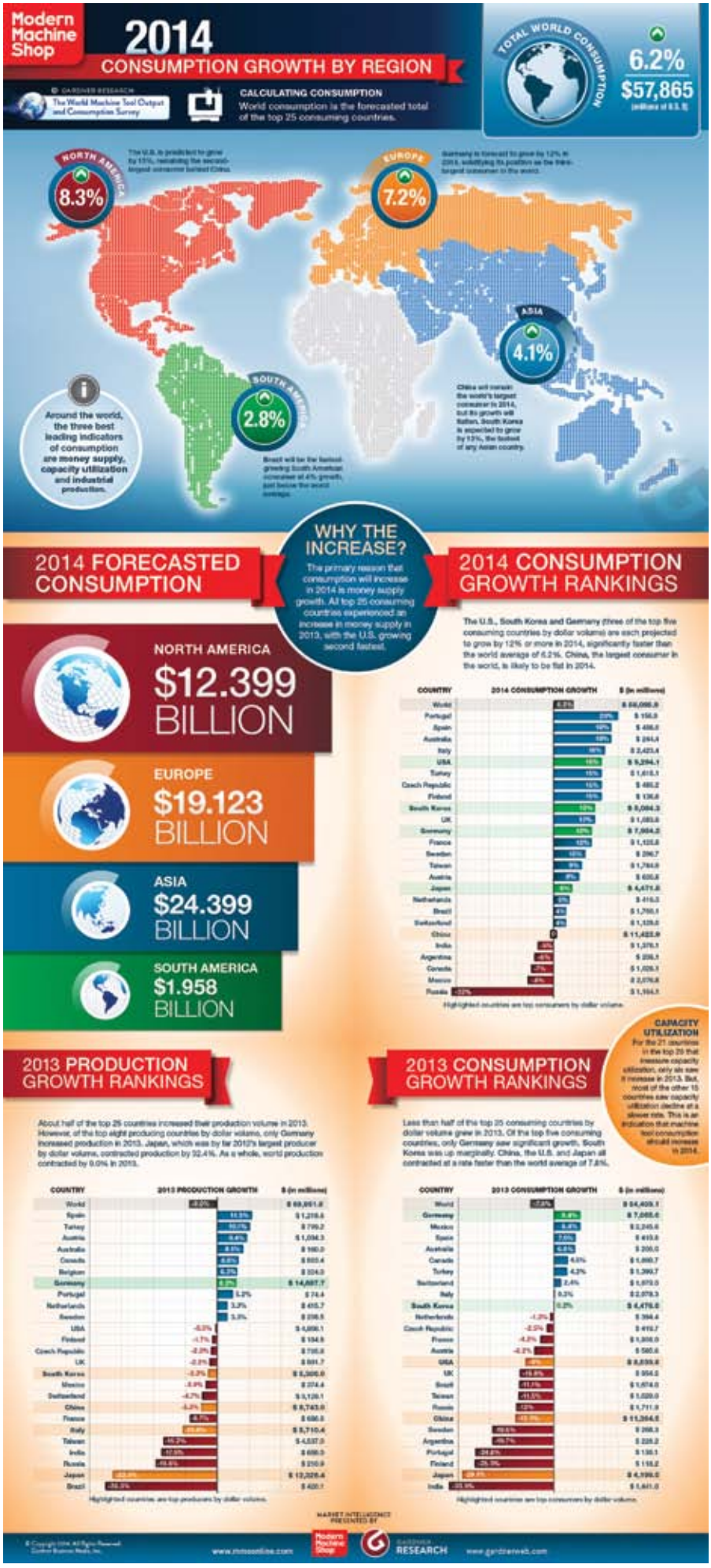
It is very unusual for the rates of change in production and consumption to be substantially different from each other. Just like world machine tool consumption, world machine tool production fell for the second year in a row in 2013. The contraction in production was significantly slower than the contraction in consumption in 2012, but it fell at a slightly faster rate than consumption in 2013. In 2012, world production fell by 1.8 percent, and this significantly slower contraction in production resulted in over-production of machine tools in 2012. This in turn caused machine tool prices to fall rather significantly in 2013.

In 2013, however, supply and demand came into a better balance. Because production fell at a slightly faster rate than consumption last year, by the end of 2013, machine tool prices, at least in the U.S., were improving from what they were a year earlier.

If my machine tool consumption forecast is correct, then builders will need to produce $73,735 million of machine tools for the rate of growth in production to match the rate of growth in consumption, which it has historically done.

While the top five machine tool producers remained the same in 2013 as the year before, only China holds the exact same position in the rankings at No. 3. Its production has contracted at a moderate rate each of the last two years. Germany was once again the world's largest machine tool producer, returning to the No. 1 spot for the first time since 2009. Production in Germany increased about 5 percent in 2013 from 2012.

Japan fell from the top position, which it had held for the ▸



last three years. Production in Japan peaked in 2011 at $18,484 million, but it had fallen all the way to $12,326 million by 2013, a decline of roughly 33 percent.

In 2012, Italy held down the No. 5 spot, but it moved up to the position of fourth-largest producer in the world in 2013. Production in Italy has been relatively unchanged the last three years.

South Korea fell one spot to No. 5 last year. Like Italy, South Korea's production has been relatively stable the last three years, and for the first time in the country's history, it has produced more than $5,000 million of machine tools for three consecutive years.

In addition to the consumption and production data, the 2014 World Machine Tool Output and Consumption Survey contains export and import data for each of the 27 reporting countries. You can find the full report with the online version of this article, as well as a link to the forecast and leading indicators for the top 25 consuming countries.

Eds note:

According to the latest figures listed below are the top 20 producing companies in order of ranking, with the companies in the group in brackets and are according to machine tool revenue. Some companies have different reporting periods.

Shenyang Group (SMTCL, S1, Schiess, ZJ, Fiyang), DMG Mori Seiki (Deckel Maho, Gildemeister), Yamazaki Mazak (Mazak) Trumpf, DMTG (DMTG, Ingersoll Production Systems, BoKo), Amada (Amada, Amada Wasino), Komatsu (Komatsu, NTC) Jtekt (Toyoda, Koyo) Mori Seiki (Mori Seiki, Dixi), Okuma, Schuler (Schuler, Müller-Weingarten, SMG, Gräbener) Makino, Hyundai WIA, MAG USA & Germany, Doosan Infracore, Haas, GF AgieCharmilles (Charmilles, Agie, Mikron, ActSpark) Grob, Heller and Emag (Emag; SW; Naxos-Union).

For further details visit www.gardnerweb.com ■

Renishaw acquires US metrology specialist

Renishaw, a world leading engineering technologies company, has purchased the business of Advanced Consulting & Engineering, Inc ("ACE"), a US-based supplier of dimensional measurement products and services focused on the automotive industry.

The acquisition of family-owned ACE, based in Rochester Hills, Michigan, provides Renishaw with further specialist programming capabilities using leading industry packages and will help to support Renishaw's sales of co-ordinate measuring machine (CMM) probing systems and Equator gauges in the USA.

For over 15 years ACE has provided a range of in-house and on-site measurement services to its customers including contract inspection, CMM fixture design, machine retrofits, CMM programming, training and full turnkey solutions from conception to completion. Since 2011 the company has also been a distributor of Renishaw's CMM and gauging products, including REVO®, PH20 and Equator™. ACE has A2LA lab accreditation.

Ken Bergler, Founder of ACE, says, "We are very excited at becoming a part of the Renishaw Group which is globally respected within the metrology industry. This is a great opportunity to expand our existing operations and I believe that we can make a significant contribution to Renishaw's US operations through the specialist skills that we have developed servicing our high quality customer base."

In response, Leo Somerville, President of Renishaw Inc, says, "This is an excellent acquisition for Renishaw and further underlines our commitment to invest in the development of our metrology business. We have known Ken and his team for many years over which time ACE has built an excellent reputation for delivering high quality measurement solutions, particularly for demanding applications within the automotive sector."

"As Renishaw continues to focus on supplying end-user metrology solutions, including CMM retrofits and installations of our Equator gauge, the specialist programming and applications knowledge within the ACE team will be particularly valuable."

For further details visit www.renishaw.com ■

Mick Jagger laser cut steel statue revealed

Right in time for his band's headline show at the UK's legendary Glastonbury festival, Rolling Stone Mick Jagger has been honoured by his hometown of Dartford where a steel sculpture of the singer has been revealed.

Part of one of the biggest ever public arts projects in the UK, the statue was manufactured by Midlands based laser-cutting specialists Laser Process Ltd. The company produced over 250 life size steel statues of local celebrities and symbols for the project which was brought to life by sustainable transport charity Sustrans in order to decorate its latest cycle ways and pathways throughout the UK and Ireland.

Made from weathered steel, Laser Process Ltd was originally given the order for three sculptures. However, upon their completion in 2010, the Cannock firm was awarded the contract for the whole project, encompassing a total of 256 statues across 85 sites in the UK and Ireland.

Labelled "The Portrait Bench", the art collection is part of Sustrans' Connect2 project to encourage more people to get about on foot and bike for everyday journeys. One bench on each route is now featuring three local heroes who have been chosen by the communities themselves, among them actors Richard Burton and Michael Caine, comedians Eric Morecombe and Rob Brydon, musicians Mick Jagger, Tom Jones and Gary Barlow, Olympian Paula Radcliffe as well as historical and political figures such as Henry VIII and local heroes and symbols.

Mick Jagger

This portrait bench, in Kenilworth, depicts Helen Martin, the most generous benefactor of the University of Warwick, Edward Langley Fardon, a whitesmith and pioneer in bicycle design and John Kemp Starley, who is considered to be the inventor of the modern bicycle

According to David Lindsey, Director at Laser Process Ltd, "This contract has been an interesting departure for the company as our products are usually industry based, consisting of engineering components for a wide variety of customers. However, this project has given us the chance to show that engineering has got a creative side to it and can result in quirky and fun output." ■

Mitsubishi Materials Corporation becomes Tier 2 AMRC member with Boeing

Mitsubishi Materials Corporation, a global provider of materials and cutting tools for aerospace and other industrial sectors, has become a Tier 2 member of the University of Sheffield AMRC with Boeing.

Mitsubishi attended the 2013 Global Manufacturing Festival, hosted by the AMRC, and attracted attention to their iMX cutters and other aerospace tooling they had on display. Following the initial contact from AMRC, further discussions took place and an understanding of the benefits of membership of the AMRC for both parties was quickly established.

Mitsubishi representatives from the parent company in Japan were also quickly involved in the project and have since been to AMRC to sign the Tier 2 membership agreement on behalf of Mitsubishi Materials Corporation.

Dr Sam Turner, head of the Process Technology Group at AMRC, was a key person in the initial meetings and discussions with Mitsubishi. He says: "To meet quality standards at an affordable cost, high performance materials require high performance machining. The AMRC's industrial partners look to the Process Technology Group (PTG) to apply the latest technology and innovative techniques and to produce and integrate machining solutions that deliver significant improvements in quality and cost. We are delighted to have Mitsubishi on board with their expertise and advanced cutting tools to help us achieve these standards."

The University of Sheffield Advanced Manufacturing Research Centre (AMRC) with Boeing is a world class centre for advanced machining and materials research for aerospace and other high value manufacturing sectors. It is a partnership between industry and academia, which has become a model for research centres worldwide.

The AMRC with Boeing identifies, researches and resolves advanced manufacturing problems, with a focus on developing new technologies and processes for machining high performance metal alloys used in aerospace and other industries. Researchers work with individual companies on specific projects, and collaborate on generic projects for the benefit of all members.

Over 70 companies have signed up as members of the AMRC with Boeing, which is also the High Value Manufacturing Catapult, a consortium of seven manufacturing and process research centres backed by the UK's Technology Strategy Board.

For further information contact Multitrade Distributors on TEL: 011 453 8034 or visit www.multicarb.com ■

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Gene Haas
granted Formula 1 entry for 2015 season

A team owned by NASCAR's Gene Haas has been formally accepted to join the F1 grid for the 2015 season.

NASCAR team owner Gene Haas is out to prove that an American-based team can succeed in the Formula One racing series.

"I think we can beat the Europeans at their own game," Haas said at a news conference.

Haas said he plans to field a team "Haas Formula" either in 2015 or 2016, depending on how long it takes to find an engine supplier and get things up and running. Haas Formula would become the first American-based Formula One team since Parnelli Jones Racing in 1974-76, which employed Mario Andretti as its driver.

The FIA granted entry to the American-based USF1 team in 2009 but it was a major failure and never hit the grid in part because of a lack of financial backing. As a result, there is plenty of skepticism when it comes to Haas' foray into the Formula One world.

"It's extremely hard to do," Haas said. "I wouldn't be doing it if I thought I was going to fail. But that's the challenge - proving other people wrong."

Haas said he expects the venture into Formula One racing to cost billions of dollars. "Every week it goes up by another billion," he said with a grin.

However, he said he has better resources than the failed USF1 team, which puts him ahead of the curve.

Haas is the owner of CNC machine manufacturer Haas Automation, one of the largest machine tool builders in the world. He recently said the company, which is based in California, currently exceeds $1 billion in annual sales. He also operates the Windshear wind tunnel, one of the most sophisticated wind tunnels for the testing of car aerodynamics in the world.

"USF1 was basically a startup that had no resources whatsoever and didn't have a racing team and it took on a huge challenge," Haas said. "I admire the fact they took that challenge."

"But on the other hand I'm partners with Tony Stewart in a very successful (NASCAR) racing team and I have a machine tool company that has the capability of building the most sophisticated machines in the world. ... I have a lot of the resources and infrastructure that is necessary to succeed."

Haas said his goal is hire a young American driver with a great potential - although he hasn't begun to narrow down that search. He co-owns a NASCAR team with Stewart and Danica Patrick, Kevin Harvick and Kurt Busch all drive for them.

However, Haas essentially ruled out his current collection of NASCAR drivers as potential candidates, saying it would be "impossible to accomplish that and survive" given the grueling schedule Sprint Cup drivers face and the challenges it takes to learn how to drive a Formula One car.

Haas plans for his Formula One headquarters to be based on Kannapolis, N.C., in a building adjacent to where his NASCAR team calls home.

The 61-year-old Haas made it clear his venture into Formula One is to broaden Haas Automation's exposure in the European market - and he believes the worldwide racing series will give him that opportunity.

"We want to become a household name" in Europe, Haas said.

Haas was granted a license from Formula One's governing body to start a U.S.-based entry in the series in April.

Haas said he must inform the FIA of the team's plans to begin racing - in 2015 or 2016 - by June. He expects he'll know much sooner, probably within the next four weeks.

The 61-year-old Haas made it clear his venture into Formula One is to broaden Haas Automation's exposure in the European market - and he believes the worldwide racing series will give him that opportunity. "We want to become a household name" in Europe, Haas said

"I think 2015 is too close and 2016 is too far - that's kind of where I see it," Haas said. "If we wait until 2016 were are going to start delaying and spending even more money because we will be a neutral. What we need to do is come up with a plan where we can basically arrive with a car that is based on our partner's technology within the rules of the FIA. We are going to have to beg, borrow and steal to arrive at that first race so we can compete."

In December the FIA opened a tender for a 12th team and Haas quickly became one of the leading contenders to take on the position. Originally Bernie Ecclestone voiced doubts about the financial validity of Haas' bid but has recently changed his opinion on the proposed team.

Forza Rossa also being considered

F1 supremo Bernie Ecclestone has suggested that Haas may not be the only team that gets an entry for 2015. The FIA confirmed that it was evaluating another entry from an outfit called Forza Rossa, but a final decision on it getting the nod had not been taken.

Although no further details were released, sources have suggested that this is a bid being put together by former F1 team principal Colin Kolles. ■

Trumpf launches its own bank

A manufacturer's own deposit bank - so far only available in the automotive industry - is a worldwide innovation in the mechanical engineering sector.

The laser and machine tool manufacturer Trumpf is the first company in its sector to launch its own bank, complete with all competencies, according to the company. The bank bears the name Trumpf Financial Services GmbH, and in future will offer customers and employees a broad range of financial services. It is the first bank to have been founded in Baden-Württemberg, Germany for three and a half years.

"With this step we are showing once again that we are highly innovative, not only in technology but also in other sectors," said Trumpf President Dr. Nicola Leibinger-Kammüller.

"We certainly have industry-specific advantages – we are closer to our customers than many traditional bank representatives, we are active in the real economy, and we provide for reinvestment in the German mechanical engineering sector."

Being licensed as a universal bank will enable Trumpf to offer entirely new products in the future for everything relating to sales financing, lending, and business startups – not only in Germany, but throughout Europe. This is because a full banking license also includes the so-called 'EU passport', enabling services to be offered across borders without the need for separate authorisation procedures.

"With our financing solutions, we can now accompany our customers in their markets right across the EU," says Harald Völker, Chief Financial Officer of the Trumpf Group. "At the same time we are making ourselves less dependent on other sources of refinancing."

Despite the universal license, the Trumpf Bank will remain a special bank with industry-specific expertise, appealing primarily to customers in the manufacturing technology sector. Trumpf employees will also benefit from the banking license. During the course of the year there will be daily, fixed-deposit and savings accounts available, which offer attractive investment opportunities beyond the company pension scheme.

With the foundation of this bank, Trumpf now stands out from the crowd – and that applies not only to sectors where high-tech companies usually operate but also the leasing sector. In view of the steady increase in regulatory requirements for the leasing sector in recent years, a growing number of companies have canceled their licenses. Trumpf, in contrast, has decided to pre-empt this tighter regulation and to operate directly as a universal bank under the strictest supervision.

Ever since 2001 Trumpf has provided sales financing via its own leasing company, which has operated since October 2012 under the name of Trumpf Financial Services GmbH. In 2007 a second leasing company, Trumpf Finance Switzerland, was added. Due to other conditions it is also active worldwide in cross-border business. Currently, customers in 22 countries are making use of Trumpf financing models, and there are cooperation partners in eleven countries. ■

William Ford, grandson of famed carmaker, dies at 88

William Clay Ford, the last surviving grandchild of automotive innovator Henry Ford and owner of the Detroit Lions (having bought the Lions in 1963 for $4.5 million) died recently of pneumonia at the age of 88.

Ford, who served as Ford Motor Company's director emeritus, died at his home, the company said in a statement. He was the largest individual shareholder at Ford, serving as a board member and employee for 57 years after joining the company in 1949 upon graduation from Yale University.

Ford held various executive and board positions at the company, including chairman of Ford's design committee, chairman of its executive committee and a member of the office of the chief executive.

In 1980, he was elected vice chairman of the board and in 1987, chairman of the finance committee.

"My father was a great business leader and humanitarian who dedicated his life to the company and the community," said William Clay Ford, Jr., executive chairman of Ford Motor Company.

Control of the team will likely go to the son, who has served as vice chairman of the Lions since February 1995.

"No owner loved his team more than Mr. Ford loved the Lions. Those of us who had the opportunity to work for Mr. Ford knew of his unyielding passion for his family, the Lions and the city of Detroit," Lions president Tom Lewand said in a statement.

Ford CEO Alan Mulally said that the carmaker was "grateful for his many contributions to the company and the auto industry."

Ford is survived by his wife, Martha Firestone Ford, plus three daughters, one son, 14 grandchildren and two great-grandchildren. ■

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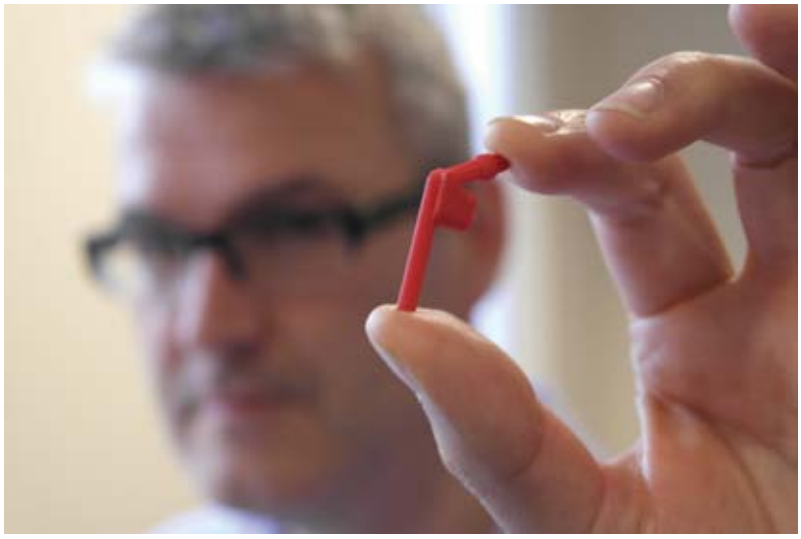
BAE certifies '3D Printed' part on BAe 146 jetliner

BAE Systems said that it has produced and certified a replacement part for the BAe 146 regional jet for the first time using additive manufacturing, or "3-D printing" technology. Now the company is exploring using 3-D printing to supply replacement parts for other commercial aircraft types.



BAE Systems Regional Aircraft looked for help from BAE's military air and information business at Warton, UK, to produce a plastic window breather pipe that serves as a vent to stop cabin windows misting up. The plastic pipes were originally made by injection molding, but the tooling the supplier used was no longer available. Acquiring new tooling would have cost £14,000 ($23,255) and involved several months' lead time, the company said.

BAE's military business is producing 3-D printed components for Tornado GR4 fighters operated by the UK Royal Air Force. The company recently flew the first such component — a metal camera bracket — on a Tornado operating from its Warton airfield. It is also designing and producing 3-D printed components at RAF Marham to support Tornado ground maintenance.

"Within two weeks, our Warton colleagues had produced examples of the [BAe 146] part and once we had used these to gain certification, they introduced us to a commercial 3-D printing supplier who was able to produce the required quantity for us," said Philip Beard, BAE Systems Regional Aircraft structures support manager.

The 3-D printed parts cost 60 percent less than traditionally manufactured parts, Beard said. BAE had the supplier make 300 window breather pipes, which it stocked at the Regional Aircraft spares warehouse in Weybridge, southwest of London. The company is shipping the part to customers as they require for in-service aircraft.

Additive manufacturing creates three dimensional shapes from digital, computer-aided designs, using powdered raw material. The digital model is divided into horizontal cross-sections or slices. A laser or electron beam is used to trace a slice onto the powdered material, which melts and then cools to form a solid. The process is repeated slice by slice, with each cross-section bonding to the layer below.

Aerospace industry manufacturers see promise in the technology for producing aircraft and engine parts with complex geometries. Parts made by additive manufacturing tend to weigh less than conventional parts because they replace complex assemblies with single pieces, and they do not require the same amount of welding. The technology also generates less scrap material during the fabrication process, reducing waste.

In addition to BAE Systems, Boeing, EADS, GE Aviation and Rolls-Royce are among aerospace manufacturers advancing the technology. On January 22, RTI International Metals, a major supplier of titanium and specialty metals to the aerospace industry, announced that it acquired 3-D printing company Directed Manufacturing, of Austin, Texas, for $23 million. "We look forward to maximizing the commercial opportunities that the new capabilities of our latest acquisition will generate, particularly on the most advanced new commercial aircraft and engine platforms, as well as medical device applications," said Dawne Hickton, RTI president and CEO.

According to BAE Regional, additive manufacturing provides a potential solution for aircraft parts that are prone to obsolescence, replacement parts made from tooling that is no longer available, quick turnarounds and small batch production. It is helping the regional aircraft division transition from providing engineering support of its in-service fleet to becoming an "integrated solutions provider" for other fleet operators. "Having achieved this first breakthrough on the BAe 146 window breather pipe, we are now looking at a range of other 3-D printing opportunities to provide replacement parts across several different commercial aircraft types," Beard said. ■

"Having achieved this first breakthrough on the BAe 146 window breather pipe, we are now looking at a range of other 3-D printing opportunities to provide replacement parts across several different commercial aircraft types," said Philip Beard, BAE Systems Regional Aircraft structures support manager

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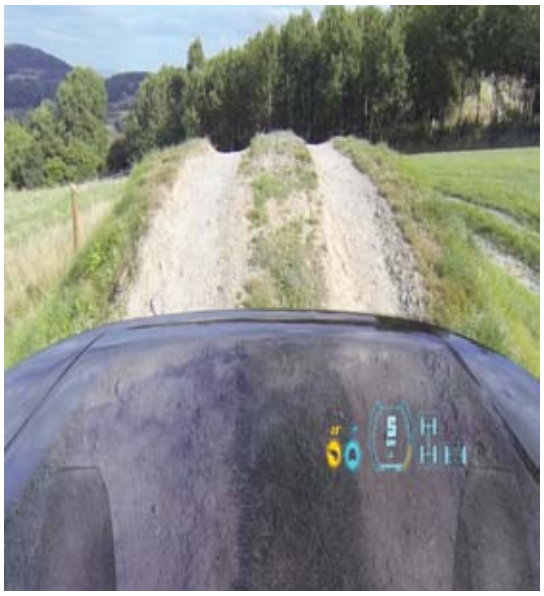
Land Rover debuts invisible car technology

Pioneering technology is being developed to give Land Rover drivers a digital vision of the terrain ahead by making the front of the car 'virtually' invisible.

Cameras located in the vehicle's grille capture data used to feed a Head-Up Display, effectively creating a 'see-through' view of the terrain through the bonnet and engine bay, breaking new ground in visual driver assistance. The technology, named Transparent Bonnet by its creators, shows how advanced technology will take Land Rover's unrivalled capability to the next level.



The technology enables a driver climbing a steep incline or maneuvering in a confined space to see an augmented reality view capturing not only the terrain in front of the car but also the angle and position of the front wheels.

Dr Wolfgang Epple, Director of Research and Technology for Jaguar Land Rover said: "We believe the next 25 years will be the most exciting and dynamic the automotive industry has ever experienced. There will be huge strides in environmental innovation, in safety and capability."

"As our vehicles become more capable and autonomous off-road, we will ensure the driver has the confidence to allow the car to continue to progress, over any terrain. We are developing new technologies including the Transparent Bonnet to give drivers an augmented view of reality to help them tackle anything from the toughest off-road route to the tight confines of an urban car park."

Opening the doors to Jaguar Land Rover's advanced research, the Discovery Vision Concept car is a design and technology showcase, which was unveiled at the New York International Auto Show in April 2014. The concept demonstrates Land Rover's design vision for a future family of premium SUVs built on Land Rover's key principles of emotive design, unrivalled capability and ultimate versatility. From the city to the sand dunes, Land Rover's new, driver-assisting technology will enable safer, smarter and more enjoyable driving in the SUVs of tomorrow. ■

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Dates for your calendar

LAMIERA 2014
14 to 17 May 2014 • Bologna, Italy

LAMIERA 2014 will be held from May 14 to 17, 2014 at the exhibition centre of BolognaFiere, Bologna, Italy. On display will be machines and equipment for the machining of sheet metal, pipes, sections, wire and metal structural work, dies, welding, heat treatment, surface treatment and finishing. LAMIERA 2012 attracted 441 exhibitors and over 18 000 visitors. The exhibition is organised by UCIMU-SISTEMI PER PRODURRE (the Italian machine tools, robots and automation manufacturers' association).

For further details visit www.lamiera.net

BIEHM 2014
2 to 7 June 2014 • Bilbao, Spain

At "BIEMH" – the Spanish International Trade Fair for Machine Tools – the leading manufacturers and suppliers of the machine-tool industry present the latest developments, technologies and services. "BIEMH" offers a wide range of novelties and business opportunities. Visitors from around the world are able to enjoy a very high technological showcase and the ideal framework to foster business relationships. The event, which takes place at the Bilbao Exhibition Centre, attracted 1171 exhibitors, 694 of them foreign firms, 34,000 trade visitors from 56 countries and is organised by AFM – Advanced Manufacturing Technologies (Machine Tool, Accessories, Component Parts and Tools Manufacturers' Association of Spain).

For further details visit www.biemh.com

IMTS 2014
8 to 13 September 2014 • Chicago, USA

The 30th edition of the International Manufacturing Technology Show showcases the latest technology in the machine tool, tooling and related industries. IMTS is the largest and longest-running manufacturing technology trade show in the United States. The biennial event will take place at McCormick Place in Chicago, Illinois September 8-13, 2014. The exhibition is organised by AMT – The Association For Manufacturing Technology.

For further details visit www.imts.com

AMB 2014
16 to 20 September 2014 • Stuttgart, Germany

AMB 2014 will be held at the Stuttgart fairground where it is expected to attract around 1 300 exhibitors and well over 85 000 trade visitors. AMB is the international exhibition for metalworking with the focus on machining and metal-removing machine tools and precision tools. Products and machines from the areas of measuring systems and quality assurance, robots, workpiece and tool handling, software, computer systems and peripherals, components, subassemblies and accessories, as well as completely specific applications for diverse industries, are also on show at AMB. The exhibition is organized by Messe Stuttgart in conjunction with the VDMA and VDW.

For further details visit www.messe-stuttgart.de/en/amb/

29.BI-MU
30 September to 4 October 2014 • Milan, Italy

29.BI-MU, the two-yearly exhibition of machine tools, robots and automation systems has become an extremely important international meeting point, and the "world event of even years". Taking place at Fiera Milano in conjunction with SFORTEC, BI-MU is a point of reference for all operators from the manufacturing industry as a whole. BI-MU focuses the attention of all user sectors in the mechanical, transport, household appliances, maintenance, energy, environment, electronics and biomedical industries. The exhibition is promoted by UCIMU-SISTEMI PER PRODURRE, the Italian machine tool, robots, automation systems and ancillary products (NC, tools, components, accessories) manufacturers' association and is organised by EFIM-Ente Fiere Italiane Macchine in collaboration with Fiera Milano.

For further details visit www.bimu.it

SFORTEC 2014
30 September to 4 October 2014 • Milan, Italy

Taking place at Fiera Milano in conjunction with BI-MU, SFORTEC is the specialist technical sub-contracting exhibition highlighting the products of component manufacturing and structural processing capabilities of production companies that contribute to the technological and organisational development of the manufacturing sector. The 2014 exhibition will take place from September 30th to October 4th at Fieramilano.

For further details visit www.bimu.it

JIMTOF 2014
30 October to 4 November 2014 • Tokyo, Japan

JIMTOF is the largest exhibition in Asia for machine tools. At the show machine tools (metal cutting and metal forming), machine tool accessories, and other equipment including tools and measuring devices are all exhibited together. JIMTOF brings many machines and equipment together in one place so you are able to see them all and find comprehensive solutions. The 27th edition of JIMTOF is organised by the Japan Machine Tool Builders' Association and Tokyo Big Sight Inc.

For further details visit www.jimtof.org

TRADE FAIR TRAVEL, in association with METALWORKING NEWS and the Southern African German Chamber of Commerce and Industry have organised a carefully chosen tour for EuroBLECH 2014, the leading exhibition for sheet metal working technology.

EURO BLECH

21 – 25 October 2014
Hannover, Germany

Sun 19 Oct	Depart Johannesburg International Airport		
		LX 289	19:25
Mon 20 Oct	Arrive Zurich		06:10
	Depart Zurich	LX 814	07:25
	Arrive Hamburg		08:45

N.B. Due to the unacceptably high airfares given by all airlines to Hannover, we have decided to fly the tour group to Hamburg. From here we will have a 2 hour drive south to Hannover.

OPTION 1

Novotel Hannover

On arrival at Hamburg Airport you will be collected by our coach driver and transferred to the 3 star Novotel (www.novotel.com), Podbielskistrasse 21/23, Hannover. Those clients who were on our 2012 tour will remember this hotel. Due to popular demand we have again taken an allotment of rooms. This 206 roomed modern hotel is located 50m from the underground station Lister Platz. The journey time to Hannover Messe takes 25 minutes, with one change at Hannover main station.

OPTION 2

Andor Hotel Plaza

On arrival our coach driver will meet you and transfer you to the Andor Hotel Plaza. This hotel is a modern 3 star hotel which is 100m away from the railway station. 140 modern rooms come with satellite and pay TV, modem connection (partially ISDN), mini-bar, safe and hair-dryer. There is 1 floor reserved only for the smoking guests. As a special service, hotel residents receive a discount on the entrance ticket to the Cinemaxx in the adjacent building and have complimentary access to the fitness and wellness club nearby. The hotel includes a restaurant and bar, and a bar in the foyer for coffee or draught beer. Express breakfast is offered for guests who have to leave early. There are many entertainment facilities for your free time in the evening nearby.

Your fairground entrance ticket allows free travel on the Hannover transport system. At the time of planning this tour, the cost of the entrance ticket was not known, and is not included in the tour cost. Should you wish us to order the entrance ticket when the cost is known and add to the final invoice, we will be pleased to do so.

Under own arrangements to visit the Trade Fair until departure.
You will be collected from your hotel and transferred to Hamburg Airport

Fri 24 Oct	Arrive Hamburg Airport for check in		18:00
	Depart Hamburg	LX 1055	19:55
	Arrive Zurich		21:20
	Depart Zurich	LX 288	22:45
Sat 25 Oct	Arrive Johannesburg		09:10

TOUR PRICE

R18 750 p.p. sharing a twin room
with R25 575 in a single room

Bookings close on the 20th July (Option 1) and 20th September (Option 2). Due to severe demand for hotel accommodation, all unsold rooms will be released back to our agent. Reservations after this date will be requested on an adhoc basis, and will incur a late booking fee of R250 per reservation whether confirmed or not, and must be paid in advance. No reservation will be confirmed until a completed booking form and a non-refundable deposit of R2000 is received by Trade Fair Travel.

Exchange Rates prevailing at 20th February 2014, final tour costs will be recalculated when balance due.

N.B. No refunds given to passengers not utilizing airport transfers

Due to the constant fluctuation of airport departure taxes and fuel surcharges these have been excluded from our tour cost. At the time of preparing this tour taxes and surcharges were approximately R6200.00 per ticket. The exact amount will be added to the final invoice when tour balance is due, usually 6 weeks before departure.

N.B. NO CREDIT CARDS ACCEPTED

PRICES INCLUDE:

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- Airport to hotel transfer
- Accommodation for 4 nights
- Full breakfast daily
- Full medical/travel insurance
- Hannover city map

OPTIONAL EXTRAS

- Special reduced domestic add on fares available from certain South Africa cities. Details on application.
- Passengers wishing to extend their stay in Germany, or return from a different city may do so, subject to availability, and subject to appropriate additional fares and taxes.

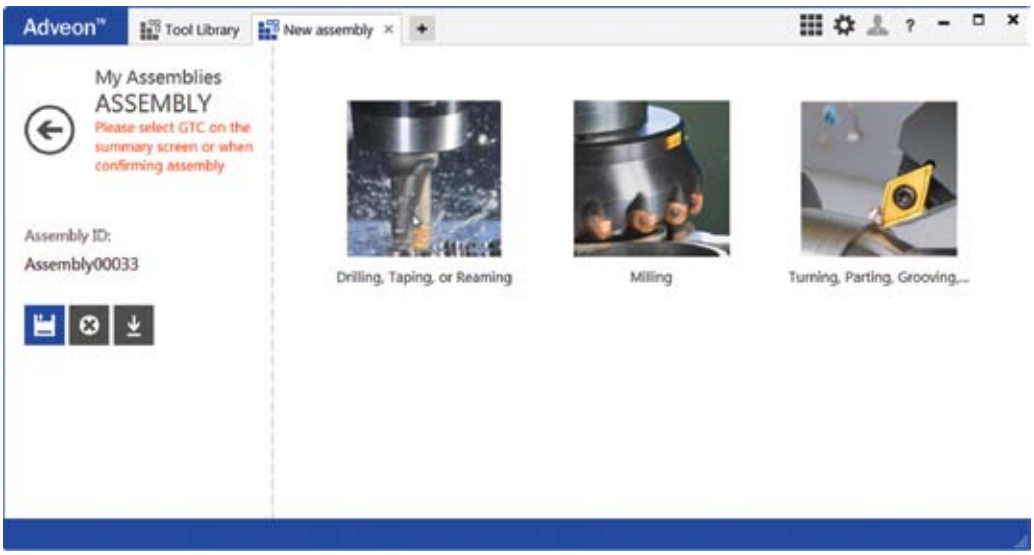
Please return completed booking form which can be downloaded off the website www.tradefairtours.com to Trade Fair Travel, Tel (031) 916 1414, Fax (031) 916 5674, email peter@tradefairtravel.co.za

TRADE FAIR TRAVEL

www.tradefairtours.com

Edgecam is the first CADCAM system
to incorporate Sandvik Coromant Adveon tool library

Edgecam, CADCAM software from Vero Software, is the first package to integrate the Sandvik Coromant Adveon tool library, allowing easy construction of tool models for use in NC programme generation and testing. The capability will be built into Edgecam's 2014 R2 software release.



Adveon accepts electronic tool catalogues in ISO 13399 format, allowing users to build tool assemblies and then import the resulting 'solid tools' into Edgecam. This allows real-life simulation of cutting tools, in contrast to the approximations that are often used.

The integration provides customers with a single source of data for multiple CNC systems. The library allows the rapid building of tooling databases and ensures automatic access to 3D CAD models for accurate simulation and visualisation. The engineer's input is reduced, improving both consistency and quality of data.

By offering a standardized methodology for cutting tool suppliers to deliver digital tool data to customers, Adveon simplifies and speeds CAD/CAM programming. Support for the ISO 13399 cutting tool data standard allows selection of tools from any supplier and assures the accuracy of the geometrical information. Customers can develop their own libraries, quickly build tool assemblies and see immediate results in 2D and 3D.

Klas Forsström, president of Sandvik Coromant, explains: "Pressure to reduce time from design to production, combined with the ever-increasing complexity of tools, makes rapid access to accurate and current tool data more critical than ever. Companies can no longer afford to rely on manual data entry and operators need a single tool library that can manage tools from multiple manufacturers. Adveon has been designed from the 'ground up' to address these challenges."

Edgecam general manager Raf Lobato adds: "Integration of the Adveon tool library into the market-leading Edgecam CADCAM system will help customers boost productivity and security, especially in 3- to 5-axis manufacturing operations. Adveon will be included in all new Edgecam licences and will provide a single tool library for multiple applications." Adveon will be free with Edgecam for 2014.

For more information contact Stillam on TEL: 011 663 2600 or visit www.stillam.com ■

Heavy duty 65° face mills with tangentially clamped inserts - Iscar

Iscar is introducing the T465 FLN D...R-22ST, a modified family of 65° cutting edge angle face mills with protective seats, thus improving their durability in heavy machining applications.

The 65° cutting edge angle is a very efficient solution for high metal removal face machining of cast iron and steel components. Using these face mills minimises burrs and edge chipping, especially for cast iron applications.

The new face mills carry tangentially clamped inserts with four cutting edges, which can be used for up to 19 mm depth of cut.

The T465 LNHT 2212 inserts feature a high positive rake cutting angle for a light cut and a positive axial angle (R.H. helix) for soft entry to and exit from the workpiece. The insert has a 2.5 mm flat wiper for high quality surface finish. In addition, inserts are available with chip splitting grooves that can greatly improve performance in rough milling operations.

The following are the three insert edge configurations:

- T465 LNHT 2212 in grades IC830, IC5400, DT7150, IC5100 and IC810, used for steel and cast iron.
- T465 LNHT 2212 in grade IC330, used for machining stainless steel and high temperature alloys.
- T465 LNMT 2212-CS is a chip splitting insert in grades IC830 and IC5400, used to reduce power consumption and vibration.

The tools are available in a diameter range of 125 to 315 mm and were designed for machining large parts such as those found in power generation or in marine industries.

For further details contact Iscar South Africa on TEL: 011 997 2700 or visit www.iscar.com ■

Victor Fortune introduces a new range of heavy-duty lathes

Victor Fortune has introduced a new range of heavy-duty lathes into the South African market. Occupying the larger end of the turning range, the heavy-duty lathes and larger through-bore machines will complement existing products offered by Victor Fortune.

Rugged in construction, the new VMax machines can be customised to meet demanding customer requirements. Lathes come as either flat-bed (CNC or manual) or slant-bed and with swing-over bed capacities starting at 800 mm and rising to 1 800 mm. Bed lengths can be specified up to 12 metres at point of order with through-spindle bore capacities varying from six to 24 inches for large shaft work. All machines are equipped with geared heads, delivering power up to 100hp for heavy-duty cutting.

The weight of a machine is often perceived as a measure of its stability, so with VMax's weighing in at up to 31 000 kilograms rigidity won't be an issue. Built on either two or three shear hardened and precision ground bedways, well-structured and balanced build quality ensures minimal vibration and precision results.

Machines can be specified with a host of features including programmable tailstocks, C- and Y-axis for milling functions, (B-axis heads are also available), high pressure coolant (a useful feature when machining and drilling large diameter bores), toolsetters, sub-spindles and fixed or travelling steadies for supporting larger and longer components.

Dudley Meredith, Sales Director at Victor Fortune says: "We've spent many months researching and looking for the right machines to extend our portfolio. Over the years, Victor Fortune products have become synonymous with quality, reliability and overall machining performance, so it was imperative for us to make sure we continued this theme with any new machines added to our range."

"Large mining and general engineering machining and larger shaft turning are requirements that many engineering companies, including our customers throughout South Africa, confront on a daily basis and up until now we've had to take a back seat in that particular marketplace. This is a really exciting time for Victor Fortune and our customers and we are proud to be able to supply a complete turning solution, from small turned complex components to large shaft work for the mining, oil, gas, subsea and general engineering markets."

For more information contact Victor Fortune on TEL: 011 392 3800 or visit www.victor.co.za

Kasto Unitower C storage tower for sheet metal

A Kasto Unitower C storage tower for sheet metal is a space-saving tower that stores 3 metre by 1.5 metre sheets, plates, flat products and other materials such as bar, tube, boxes and semi-finished goods in a compact footprint. It offers many advantages compared to conventional storage on shelves, cantilever arms or on the floor.

The tower is especially suitable for job shops, machine shops and small to medium size sheet metal processing facilities, providing flexible storage to a height of up to 7.2 metres. It has a compact footprint of 3,415 x 4,350 mm and the standard version has a storage location every 47 mm.

The pallets holding the sheet metal glide on almost wear-free, plastic-lined tracks when pushed into or pulled out of a storage location within the steel structure. A lift mechanism travelling at the front of the tower effects horizontal transfer of the material as well as traversing vertically between locations at up to 8 m/min.

Depending on design, pallets can support a maximum load of either 1,200 kg or 3,000 kg. The height of the loading / unloading station is adjustable, allowing direct transfer to a sheet metal processing machine or transport cart. This raises production efficiency, improves safety, saves labour and minimises the risk of damaging the material.

Versions of the Kasto Unitower C are available for semi-automatic or fully automatic operation, with appropriate safety measures. The tower is controlled by Kasto's own BasicControl, which is fitted with a user-friendly touch panel.

For further details contact Retecon Machine Tools on TEL: 011 976 8600 or visit www.retecon.co.za

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Yaskawa Motoman MA1440 welding robot offers improved welding speed

Welding robot for use in high-density layouts

The MA1440 robot has a 1 440 mm horizontal reach, 2 511 mm vertical reach and ±0,08 mm repeatability

Sleek, strong and fast, the new 6-axis MA1440 arc welding robot features a six kilogram payload, up from three kilograms on the MA1400 model. Additionally, compared to the MA1400, the new MA1440 features a 23% larger wrist hole for utilities and is up to 15% faster. The MA1440 robot is introduced with the new DX200 robot controller, which is more energy efficient and designed for improved maintainability.

The MA1440 features a new contoured arm structure that reduces interference by enlarging the close-range motion area of the robot, making it optimal for welding large workpieces and reaching over jigs. The upper arm shape also provides an improved mounting area that allows more room for the feeder. Available in floor-, wall- or ceiling-mounted configurations and ideal for high-density layouts, the space-saving MA1440 robot increases productivity due to its Sigma-5 motor control technology.

The MA1440 robot has a 1,440 mm horizontal reach, 2,511 mm vertical reach and ±0.08 mm repeatability. Its integrated through-the-arm torch cabling eliminates cable interference, simplifies programming and reduces cable wear. The enlarged 50 mm thru-hole can allow signal cables for sensors, higher current cables and water-cooling lines. The higher payload allows motorised torches and cameras to be mounted on the wrist for welding applications. Additionally, a material handling version of the robot with a 12 kg payload is available (MH12).

The MA1440 robot uses the new Yaskawa Motoman DX200 controller that features patented multiple robot control technology to easily handle multiple tasks and control up to eight robots (72 axes), I/O devices and communication protocols. Its extensive I/O suite includes integral PLC and HMI pendant displays, high-speed Ethernet communication, 4,096 I/O addresses and a graphical ladder editor that can provide system level control. The DX200 has been designed to improve process capability, reduce energy usage, and improve maintainability and safety. An enhanced Functional Safety Unit (FSU) provides control reliable zone and tool position monitoring, stand still monitoring and speed limiting. This can reduce costs for safeguarding hardware and provides new capabilities such as collaborative tasks. It is compliant to ANSI/RIA R15.06-2012 and other relevant ISO and CSA safety standards.

For more information contact Yaskawa Southern Africa on TEL: 011 608 3182 or visit www.yaskawa.za.com

Feeler reveals four new machines at MACH 2014

All have new styling and fresh branding, which brings a more European look and feel to a Taiwanese machine. On show for the first time was the Feeler U600-5AX 5-axis machining centre.

The U600-5AX is a travelling-column, trunnion-style machine aimed at the general machining, mould and die, and low volume manufacturing sectors.

The U600-5AX has the X, Y and Z axes mounted on a rigid column combined with A and C rotary axes on the trunnion, it gives better visibility for the operator, easier access for loading and unloading, and a larger safe zone for tool-changing.

The U600-5AX has a 460 mm (X) by 520 mm (Y) by 400 mm (Z) working envelope and a 15,000 rpm, BT-40 Big Plus spindle. Spindles with 10,000, 12,000 and 20,000 rpm are available as options.

Axis travel speed is 30 m/min in X, Y and Z. A 30-tool magazine is fitted as standard, with a 40-tool option available.

Feeler's new VMP45 vertical machining centre is Feeler's standard 3-axis, 1,100 mm X-axis vertical machining centre.

Feeler's VMP580 vertical machining centre with automatic pallet changer is the third one that was on show and, finally there was Feeler's new TC20 Alpha drilling and tapping centre. The TC20 Alpha is benchmarked to compete head-to-head on performance with the market-leading brands.

The TC20 Alpha has a 20,000 rpm direct-drive spindle, 1.2 axis accelerations, a 21-tool magazine and a capacity of up to 510 mm in the X-axis. It will be suitable for fast, light machining of aluminium and steel castings, and die castings.

For further details contact Craft Machine Tools on TEL: 011 845 2030 or visit www.craftmt.co.za

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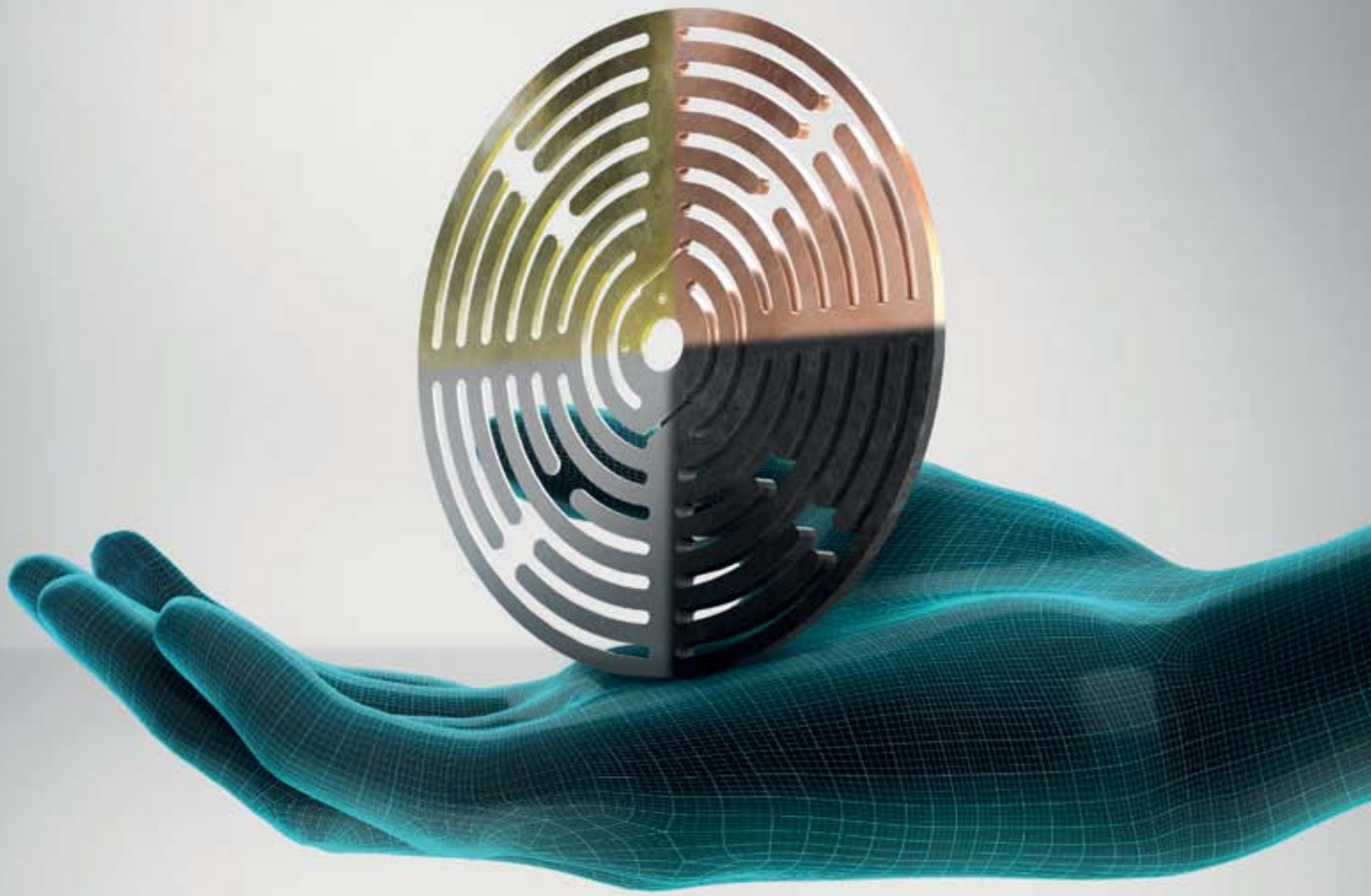

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Vargus makes additions to grooving and thread milling ranges

Vargus Tooling has made numerous additions to its Groovex, TSMD deep hole thread milling, Mega Line thread generation ranges and has also introduced a special clamping system for its Vargus gear milling inserts.

Vargus' Groovex grooving, boring and micro-machining solutions now include GrooVical indexable inserts for internal grooving and parting-off applications. Available in square, round and special profiles, GrooVical incorporates two systems for different groove widths and depths: GV26 for 0.5 to 2 mm and groove depths to 5 mm and GV29 for 2 to 6 mm groove widths and depths up to 6.5 mm.

The inserts feature a three cutting corner geometry for faster machining and are supplied in VKX grade with a tough substrate and TiN coating for wear resistance and tool life.

Toolholder styles, suitable for a variety of GrooVical applications, feature an innovative clamping system for corner support and improved rigidity. All GrooVical toolholders are nickel coated for protection against rust and corrosion.

TMSD thread milling solutions for deep holes have been extended to include TMSD Vertical for small diameters and inserts for American Buttress (Abut).

TMSD Vertical three-flute thread milling tools are designed for efficient machining of smaller tool cutting diameters and a minimum M11.5X0.5 thread size. Inserts feature a single point design and reinforced cutting corner to reduce load on the cutting edges and improve rigidity. They are available in 7V, 9V and 11V sizes in VBX and VTX grades for profile styles Partial Profile 60°, Partial Profile 55°, Trapez and Stub ACME.

Toolholders for TMSD vertical are available in Weldon steel shank and carbide cylindrical shank styles for 10.5 to 20.8 mm tool cutting diameter and tool overhang from 25 to 65 mm. Both feature through-tool cooling.

TMSD inserts for machining small to large pitches from 16 to 2.5 tpi are now included as standard. The design of the toolholders provides support for non-symmetrically-shaped Abut-style inserts. Inserts for Abut are available in 5.0 L, 3/8-in L and 5/8-in V styles in VBX and VTX grades. Toolholders are available in Weldon steel shank, carbide cylindrical shank and shell mill styles.

The Mega Line of heavy duty thread generation solutions now accommodates 10 to 24 mm pitches. The latest insert design and geometry provide increased levels of stability and support during machining as the toolholder is tailored to each insert profile. A clamping system with an indented insert edge prevents insert rotation and helps to withstand higher cutting forces.

Offered in the Vargus VKX tough submicron grade, Mega Line inserts are available in IC 5/8-inch MG with one cutting edge for improved machining of large pitches. The inserts are available for a range of profiles – ISO, round (DIN 20400), Trapez, ACME, Stub ACME, American Buttress (Abut) and Metric Buttress (Säge), as well as specials.

The inserts feature a three cutting corner geometry for faster machining and are supplied in VKX grade with a tough substrate and TiN coating for wear resistance and tool life

The external toolholder range comprises external and internal styles in 25, 32 and 40 mm shank diameters, and 40, 50 and 63 mm for internal toolholders. Maximum tool overhang for internal toolholders is 150 mm.

A high precision clamping system for gear milling inserts has been introduced for guaranteed radial and axial run-out for a wide range of gear, spline and rack applications. An innovative 'stopper', pre-assembled onto the toolholder, remains intact when inserts are changed.

Vargus gear production tooling is suited to the machining of both straight and helical teeth gears and gear modules from 0.5 to 6 mm. All materials can be accommodated, from very soft to hardened steels of 60 Hrc, and a full profile can be achieved in accordance with Class 7 DIN 3962.

The tooling features affordable carbide inserts located in standard tool bodies for end, shell and disc milling on 3-axis CNC milling machines (the cutting edge being subject to relatively low loads). This offers production efficiencies compared to high cost hobbing machines and tooling with their lengthy set-ups.

For more information contact Pilot Tools on TEL: 011 607 1818 ■

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Servo-electric turret punch press fits in compact spaces – Prima Power

Prima Power offers a comprehensive product range in 2D and 3D laser systems, turret punch presses, cells combining punching with right angle shearing or laser cutting, press brakes and automated bending solutions and Flexible Manufacturing Systems, all supported by sophisticated software and extensive service offering.

Prima Power's Ex series turret punch press offers state-of-the art in servo-electric punching technology, based on pioneering experience, in an eminently flexible and affordable package. The servo mechanically actuated punching stroke is NC-controlled and thus, in addition to high-performance punching, outstandingly accurate forming capacity is available.

The new Prima Power E6x features a new, easy way of operation, a high degree of productivity and accuracy, as well as low energy and maintenance cost. All the benefits of versatile, servo electric punching technology are now within easy reach.

The E6x has an ability to process full 1,500 x 3,000 mm sheets, which allows a greater range of work accepted and makes nesting of the part more efficient and economical.

The E6x comes with the Lite version of Tulus, a member of a software suite developed by Prima Power. It makes the machine easy to use even for operators without prior experience of Prima.

Power technology

Convenient downloading of programs, instructive task lists and set-up screens giving clear indication of material and tooling requirements are just some of the standard features adding to ease of operation.

The E6x is an efficient machine tool for standard punching tasks, but the machine capabilities also allow uncomplicated and accurate utilisation of all the latest tooling technologies. For example, the number of rotating tools can be increased by using indexable multi-tools. Thus programming is simplified and set-up times are shortened. New quick-change toolholders can be used for even shorter set-up.

A major contribution to operating efficiency is made by an easy load mechanism and automatic clamp positioning and closing function, as well as a large 500 mm x 500 mm work chute for components. A lifting brush table mechanism provides extra protection for materials with a sensitive surface.

A three–stage system makes the machine safe to operate and minimises downtime in case of failure. The machine is equipped with sensors that automatically stop the machine if the sheet comes loose or the tool jams. As an option, a sensor with similar function for sheet distortion can be added. Instantaneous machine stop prevents further damage to the machine and makes re-start of operation fast and simple.

Compact Express – fast loading and unloading with a small footprint

Compact Express is a fully automated material-handling device. The placing of the automatic loading and unloading unit makes it possible to use several combinations of automatic and manual loading and unloading cycles. The manual loading table is free for use for manual operation.

For more information contact Forest Engineering on TEL 011 397 4050 or visit fhmt@fhmt.co.za ■

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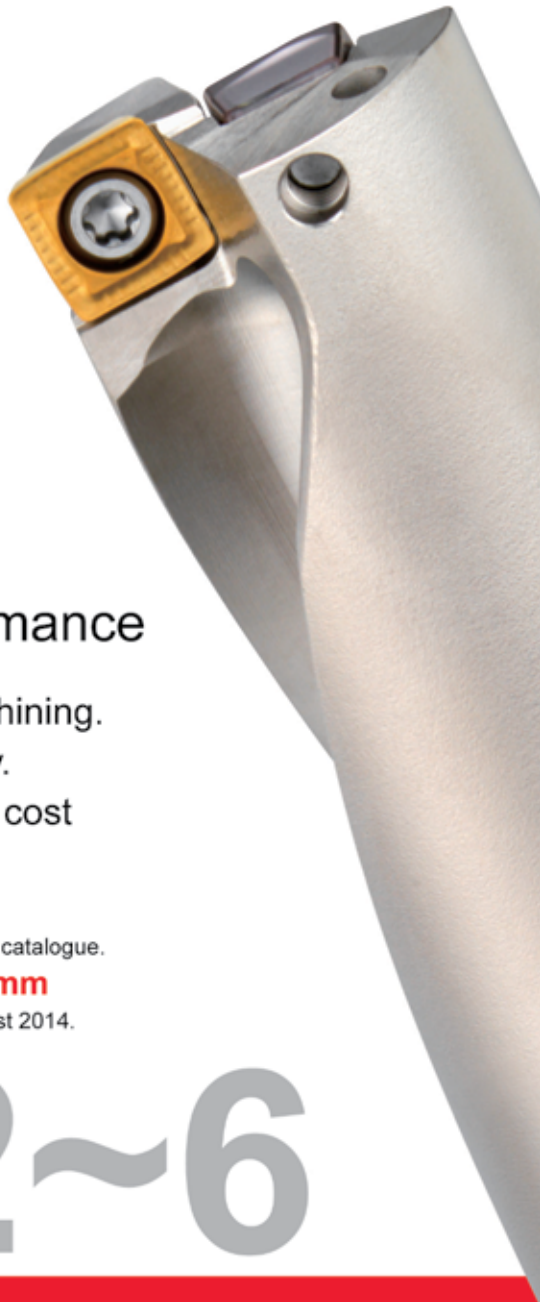

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Economical bending - The new generation Trumpf TruBend series 3000

The new generation of the Trumpf TruBend Series 3000 combines high joint speeds with simplified controls and an attractive cost-to-benefit ratio.

The TruBend Series 3000 has a multi-touch-control and the space-saving design as the predominant features. But the design is convincing not only in visual terms. The backgauges can move across the entire bending length, which enables its unrestricted use when bending. Automatic crowning makes for constant angles. In addition, the high joint speeds make this machine the fastest in its class. The TruBend 3100 with press force of 1,000 kilo newtons and three meters of bending length premiered at INTECH, the Trumpf in-house exhibition held in March 2014. Standard equipment includes a two-axis backgauge; this may, as an option, be expanded to a four- or five-axis backgauge. This makes it possible to position sheet metal securely, even where complex part geometries are involved.

Simply climb aboard to make the change

The operating concept is simple and intuitive. The machine's operator can sketch components and program them graphically at a large display with modern multi-touch control. The exact bending parameters are calculated by the control circuits, based on Trumpf technology data derived in decades of experience. 3D visualisation further simplifies the work and examines the design for potential collisions. If suitable bending programs already exist, they can be imported either via a USB interface or a network connection.

Moving up to the TruBend Series 3000 is also made simple, since even third-party tools can be used without an adapter. The customer can select from a number of different tool clamping concepts. Manual clamping is standard. Here the upper and lower tools are secured with Allen screws. The quick clamp option reduces set-up times, since the upper tools are rapidly clamped with a lever. The swiftest option for set-up is automatic hydraulic clamping. In addition, all the clamping systems automatically center the tools, which can be inserted vertically. Both these features reduce clamping times.

Safe and sure bending

A variety of components ensures that the machines in the new TruBend Series 3000 offer a safe and ergonomically correct workplace. Among them is the optoelectronic safety system BendGuard. It uses a light field to monitor the area beneath the upper tool. If there is a discontinuity - a hand interrupting the light field, for example - the machine will be stopped. In this way the system protects the machine's operator. He can then make use of the machine's full speed, without any second thoughts, for highly productive bending work. The BendGuard is positioned at the sides of the machine, next to the ends of the press beam. In preparation for inserting tools from the side, the BendGuard can be simply swung to the rear so that it does not interfere. The position of the BendGuard can be easily adjusted in increments to accommodate differing tool heights.

The machine's compact design brings about further advantages. It requires only a small footprint, the interior space for the machinery is readily accessible, and it is quickly installed - since it is delivered completely assembled. It is easy to reposition the foot switch, which the operator uses to start the bending stroke. The workspace is also well lit, thanks to LED illumination in front of and inside the machine.

For further details contact Retecon Machine Tools on TEL: 011 976 8600 or visit www.retecon.co.za ■

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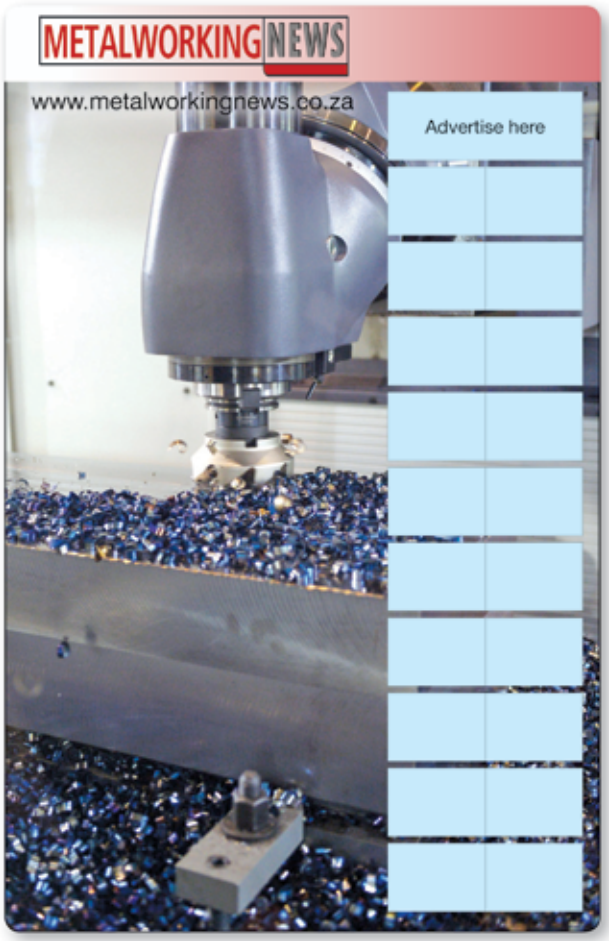

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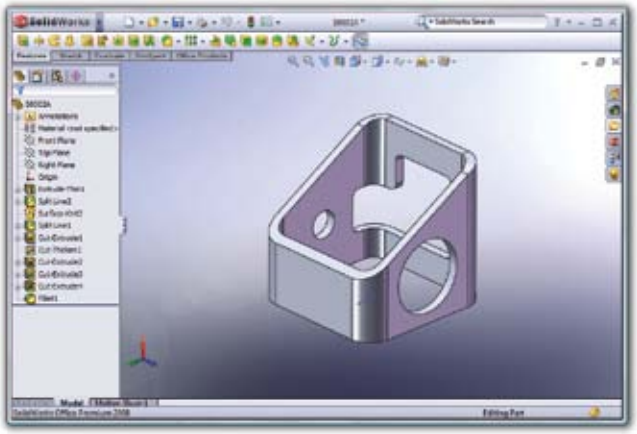
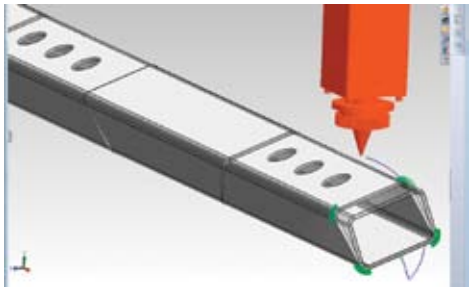
SigmaTUBE® tube and pipe cutting

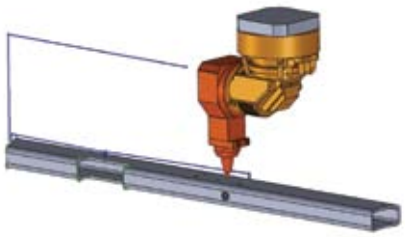
SigmaTube is a tube cutting solution for 4-axis profile cutting machines that runs completely inside the native SolidWorks design environment.

It is designed as an add-on to SolidWorks which provides users with a simple yet powerful wizard based interface for generating toolpaths for their tube family of products.

SigmaTEK Systems, LLC, the world's leading authority on CAD/CAM nesting and manufacturing process automation, has announced the release of SigmaTUBE®. A complete tube and pipe cutting software, SigmaTUBE supports round, square, rectangular, or triangular tube/pipe. In addition structural material such as I-beams, H-beams, C-channel, and angle iron are supported. Custom programs are available to fully maximize the advanced features of FabriGear, Trumpf, BLM, Bystronic, Amada, and other 3D tube and pipe cutting laser machines.







Key features include:

- Flexibility allows multiple cutting machines to be driven with a single solution
- Supports multiple assembly model configurations
- Simple model refresh provides updated design revisions
- Cutting technology table sets cutting condition parameters
- Operates seamessly within the SolidWorks® environment

SigmaTEK Product Manager, James Lindsey comments: “Tube and pipe cutting has traditionally lagged in terms of sophisticated nesting; this all changes with the release of SigmaTUBE. Powerful automatic, manual, and true shape nesting speed tube and pipe cutting processes maximize yield. This of course translates into money saved through waste reduction. The industry’s most efficient nesting is achieved by calculating the best possible combinations based on actual geometry while common-line cutting cuts shared edges at the same time reducing time and pierce points.”

For further details contact Mecad Systems on TEL: 086 111 2236 or visit www.mecad.co.za or www.sigmanest.com ■

Saint-Gobain Abrasives’ latest generation of medium diameter cut-off wheels

Saint-Gobain Abrasives has introduced the latest generation of medium diameter cut-off wheels for foundry environments, under the Norton brand. Developed with the new Foundry X bond technology, the cut-off wheels are engineered to increase cut rate and wheel life in all foundry cut-off applications.

The new range is available in standard Norton (good tier) and Norton Norzon (better tier). Foundry X bond technology offers three major features and benefits compared to existing Norton bonds.

First, improved thermal stability ensures increased resistance to heat and thermal degradation allowing longer tool life and reduced cost per cut for the end-user.

Second, higher mechanical strength ensures high performance in even the most demanding cutting conditions.

Finally, Foundry X technology is compatible with an extensive range of abrasive blends, providing flexibility and guaranteed performance on a wide range of materials.

Improved cut-rate, shorter cycle time and longer tool life are key factors to lowering overall process cost for cutting applications in the foundry market.

According to Saint-Gobain the cut-off wheels last longer, cut faster, reduce cycle time, reducing the cost per part produced, they are versatile and their efficiency cuts a wide range of material types, including cast iron, alloyed and stainless steels.

For further details contact Willie Gillan on TEL: 011 961 2000, or email: willie.gillan@gmail.com ■

Angled wheels

Flat wheels

TaeguTec expands RhinoRush line

Due to the huge success of the new RhinoRush family of tools that was released last year, TaeguTec has expanded the line with new insert designs and holders, which cover a wider range of applications for various sectors.

The T-Holder clamping system is just one of the new additions to the RhinoRush family, a tool that is widely known for its simplified mounting design, smaller size inserts and rigid clamping system.

The T-Holder adds to the RhinoRush even greater stability for turning applications especially during high feed interrupted cutting rates.

Its optimised clamping remarkably prolongs the tool's life by creating double clamping forces for rigid clamping. The RhinoRush T-Holder line includes external holders, boring bars as well as through coolant type boring bars.

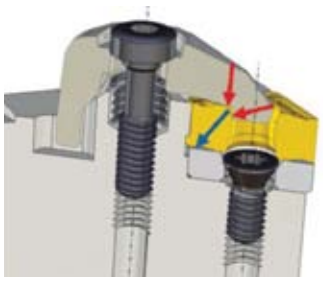
RhinoRush DNUX line

To significantly reduce cutting forces that occur during the machining of steel and stainless steel materials during medium light to medium applications, TaeguTec has released the DNUX insert type for the RhinoRush family.

Suitable for machining slender bar, thin-wall components, the DNUX's high positive, high rake and inclination angle at the cutting edge works with much less cutting force and vibrations than the existing ISO-DNMG inserts.

As an added benefit, the DNUX line's four cutting edges offers better economy and guarantees the same performance as the KNUX's two cutting edges.

Furthermore, the new addition can be mounted on DNMG insert type RhinoRush tool holders, eliminating the need for separate tool holders.



RhinoRush WNMX Line

Last but not least is the highly productive and economical insert and holder for the RhinoRush family, the WNMX series.

Designed for stability, the WNMX's widened contact area doubles that of the existing ISO-WNMG 06 millimeter series. Also, the WNMX 06 mm series demonstrates enhanced reliability over the ISO version as well as increased tool life under interrupted machining conditions.

Maximum stability through its strong clamping is made possible by two different types of holders: a hook lever type and a T-Holder type clamping mechanism which both offer optimised tool life.

For more information contact TaeguTec SA on TEL: 011 362 1500 or visit www.taegutec.com

Hurco machining center extends Y-Axis travel

Designed to meet the demands of moldmaking applications, Hurco's VMX6030i vertical machining center provides more Y-axis travel in a footprint smaller than the company's VMX64.

Designed to meet the demands of moldmaking applications, Hurco's VMX6030i vertical machining center provides more Y-axis travel in a footprint smaller than the company's VMX64. X, Y and Z-axis travels measure 1525 x 760 x 610 mm, respectively, and the machine also features a 12,000-rpm spindle and 40-tool swing-arm-type automatic toolchanger.

The worktable measures 1680 x 760 mm and features Hurco's UltiMotion system, said to reduce cycle times and improve surface finish. A dual-screen control console offers data block search, concurrent programming and DXF transfer features. The integrated Hurco control supports both ISO/EIA and conversational programming.

The machine is built on a heavy, ribbed cast iron frame. Pre-tensioned ballscrews are anchored at both ends for increased accuracy and rigidity. A 115-gallon coolant tank is standard. Options include through-spindle coolant, a thermal stabilisation package, part probing and Renishaw tool probing.

For more information contact Hurco South Africa on TEL: 011 849 5600 or visit www.hurco.co.za

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Hypertherm expands torch line-up with new Hyamp torches including new 1.2 meter long torch

Hypertherm, a manufacturer of plasma, laser and waterjet cutting systems is expanding its industry leading line-up of Powermax air plasma torches with the introduction of Duramax Hyamp torches. The new offerings include "long" torches for extended reach cutting and a number of robotic torches.

The long torches, designed for hand-held cutting, come in two different lengths — 0.6 meter and 1.2 meter — and two different torch head angles — 45 and 90 degrees. The torches are ideal for scrapping, skeleton cutting, overhead cutting and more, enabling operators to complete jobs more quickly and ergonomically without bending down or climbing ladders. The Duramax Hyamp Robotic torches, which provide lower cost robotic cutting solutions, are available with three different head angles — 45, 90 and 180 degrees.

All of the Duramax Hyamp special application torches are made from high impact, heat-resistant materials to withstand the harshest industrial environments. The torches are compatible with the Powermax125, as well as the Powermax105, Powermax85 and Powermax65 plasma cutting and gouging systems and feature Hypertherm's patented FastConnectTM technology to make switching between torches easy.

"A one size fits all approach can make it difficult for people to cut metal in an efficient manner which is why Hypertherm offers more torch options than any other company," said Erik Brine, Hypertherm's Powermax product manager. "A total of eleven different torch styles including the industry's first straight torch and now our new long torches make it easy to choose the torch that makes the most sense for each particular application."

For further details contact Yvette Leeflang on TEL: 0031 165 596932 or email yl@hypertherm.com or visit www.hypertherm.com

DMG Mori CTX 450 ecoline and 650 ecoline

The DMG Mori CTX 450 ecoline and 650 ecoline are the first jointly developed turning machines from DMG and Mori Seiki and come with advanced components. The large turning and spindle passages, along with the rigid and compact design, demonstrates how much emphasis is put on ergonomics. Emphasis is placed on top technology with proven components at the best price.

The work area is designed to provide optimal chip fall and clean up. Two different chip conveyors (to the right or the rear) are available and the large doors also provide quick access to the work area. The machines offer unique precision, even under heavy machining conditions, thanks to the stable construction and high thermo stability. The large dimensional ball screws (40 x 10 mm for the CTX 450, and 50 x 10 mm for the CTX 650) and wide linear guides ensure the best rigidity values and positioning precision of 0,02 mm, with the direct distance measurement system even 0,008 mm is achieved.

Both models feature a turret for 12 tools with VDI 40 / 50 holder and rapid traverses of 30 m / min in all axes. Furthermore, the use of six block tools is made possible.

The comprehensive equipment of the models promises maximum efficiency. An upgrade of the complete machine right up to turn and mill full machining is possible thanks to the task-optimised configurations.

Setting the machine apart from their competitors are a FEM-optimised cast iron bed, large ballscrews, linear guideways for high rigidity and top positioning accuracy, and small footprints of 4.9 sq m and 9.8 sq m respectively.

The CTX 450 ecoline operates at spindle speeds up to 4,000 rpm, while the CTX 650 ecoline, with its water-cooled motor, provides maximum torque of 2,000 nm for heavy machining.

Regenerative braking of the spindle and axis drives saves energy. Linear guideways minimise friction and also reduce energy consumption through the use of smaller motors. The machines also use less lubricant, which further mitigates environmental impact.

The CTX 450 ecoline can be fitted with the chip conveyor at the back rather than at the side, reducing the installation width of the machine by up to 35 percent.

For further details contact Retecon Machine Tools on TEL: 011 976 8600 or visit www.retecon.co.za

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Walter AG expands its Tiger•tec Silver® range with three efficient, positive, steel cutting geometries

Walter AG has expanded its Tiger•tec Silver® range with three efficient, positive, steel cutting geometries – an often underestimated insert type, which shows its full potential with low cutting pressures and on small diameters.

The three new ISO P geometries with a positive basic shape are called FP4, MP4 and RP4. The indexable inserts for steel machining are available in the proven WPP10S, WPP20S and WPP30S Tiger•tec Silver® cutting grades.

FP4 (F = finishing) is optimised for finishing steel and achieves the best surface finish quality and chip control for exact precision machining. MP4 (M = medium) for mid-range steel machining is the universal design of the three new inserts and is particularly well suited to machining long-chipping materials, such as St37 structural steel or other low-carbon steels. The geometry is available with two clearance angles (7° and 11°), as well as in a precision-sintered and a precision-ground design. The clearance angle of 11° enables machining of smaller diameters. Precision grinding provides an indexing accuracy of +/- 25 micrometers, which is twice as accurate as sintering and ideal for precision finishing. RP4 (R = roughing) has a very stable cutting edge for roughing forged steel parts or casting skins. This insert is first choice for maximum machining volumes. The FP4 and MP4 geometries were optimised in particular for short chip breaking, which is very effective on long-chipping materials such as structural steels.

Problem-solving:
With a positive insert, you have two to four cutting edges, a negative insert has double the number of cutting edges: therefore, your initial thought is that the positive insert is less economical. However, the positive basic shape offers a host of advantages: lower cutting pressures and a softer cutting action for machining smaller diameters or very long, unstable components. Where these attributes are needed, this positive insert makes economic sense. On multi-spindle machines, you can, for example, achieve higher feed rates thanks to the reduced cutting pressure and at the same time benefit from excellent chip control. Positive inserts are, in many cases, problem solvers; when working with very small internal diameters for example. They can be used from 8.5 mm in this respect.

Performance-enhancing:
Tiger•tec Silver® in combination with the new geometries allows an increase in performance of up to 75 percent. During a field test of an MP4 insert made from WPP10S Tiger•tec Silver® at a customer in the US automotive industry, Walter AG was able to machine 60 components in comparison to the 35 achieved with a competing product. In addition, only one dimensional correction instead of the usual five was required for maintaining correct size.

Informative:
Information which previously could only be found on the indexable insert packaging is now also lasered onto each individual insert – as is already the case for negative geometries. The cutting tool material, radius and geometry are lasered onto the side of each insert. This helps minimise the risk of machine operators mixing up the inserts and therefore reduces scrap components.

The positive basic shape offers a host of advantages: lower cutting pressures and a softer cutting action for machining smaller diameters or very long, unstable components

Sharp:
Conventional aluminium oxide coating crystals are rough and easily tear out of the coated surface. In a Tiger•tec Silver® layer, the crystals are aligned, reducing tear out and as such, wear out more slowly. It is important to specifically influence crystal growth during the CVD coating process so that the coating grows parallel to the cutting surface. Finally, a mechanical post-treatment transforms the tensile stresses which result from cooling through various expansion coefficients into compressive stress. This enables the inserts to maintain their integrity for longer, especially when machining interrupted cuts.

For further details contact Spectra Carbide Tooling Technology on TEL: 0860 23 23 23 or email spectra@spectra-sa.co.za or visit www.spectra-sa.co.za or follow them on Twitter @Spectra_Carbide ■

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