METALWORKING NEWS
VOLUME 15.2
May 2016

CoroMill® 745

Performance and economy in one

SANDVIK Coromant

Where eagles dare...

LT20 3D LASER CUTTING

We have answered the call from our incredible customers to expand into the structural steel market in order to meet their demands for highly accurate and efficient processing of all tube and structural steel sections.

Gone are the days of endless grinding, measuring and re-working. The LT20 can literally cut, pierce, mill and deburr in a single cycle and we believe this will revolutionise the way architects put pen to paper.

This highly accurate laser can process tubes and beams in a heartbeat, rendering them ready for final assembly and erection.

B-BBEE
Level 3 Contributor

SABS
ISO 9001

"Tell us and we won't forget, show us and we will remember, involve us and we will lead the way."

ALLIED STEELRODE
ON A MISSION

Tel: 0861 777 777 toll free | Website: www.alliedsteelrode.com

METALWORKING NEWS

Printed by paarlmedia
A division of Novus Holdings

Look after our skills and resources

For a long time the mining industry was the well-being of our economy. It is an industry that affects all of us and has a long historical background. Its real beginning dates back to the 19th century, when the diamond and gold rushes started. While the history of gold mining is often presumed to postdate that of diamonds, the precious metal was, in fact, discovered, and the first mine established, at roughly the same time as the diamond rush, they say.

Although diamond and gold discoveries played an important part in the growth of early South Africa, beneath the surface of South Africa's incredibly varied landscape, lies the richest mineral treasure trove to have ever been discovered in a confined region. Almost every precious stone, metal and mineral known to humans has been found here in deposits varying from mere traces to quantities of unparalleled value.

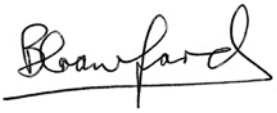
However, the mining industry is now struggling under a myriad challenges, after more than 160 years of commercial enterprise, sighting a number of temporary factors that might have contributed to the unusually low level of production. While part of that deterioration is a result of the global slump in metal prices currently threatening 32 000 jobs in the country, some of South Africa's problems are self-inflicted. Varying statistics are reported and it is believed that mining now accounts for less then 5% of GDP whereas the manufacture and export of vehicles and components accounts for almost 12%.

There is good and bad news in these figures. It can indicate that we are not reliant so much on mining anymore and have developed other areas or, which is the more likely, costs in terms of labour remuneration and unrest have caught up with the industry and investors are looking elsewhere. Conversely the automotive industry has been relatively 'stable' and, along with the APDP incentive, is attracting investment and is growing. As reported in this issue, US motor company Ford's investment of another R2.5 billion in its South African manufacturing operations brings to nearly R50 billion the total spent on, or committed to, South African vehicle production by foreign companies.

This brings me to my real point. The industry is highly diversified in terms of the number and types of models of machine tools, metals, castings, accessories and production systems it uses. It employs a highly skilled workforce of design, mechanical, sales and service engineers, as well as technicians and assembly workers. These skilled individuals are undoubtedly the industry's most important assets and retaining them is a great challenge.

Commendably the OEMs are very active in the upliftment of skills in the industry. Both Mercedes-Benz SA and BMW South Africa have made recent announcements about training their own staff. This is a positive spinoff, but the cost of the government's dictatorial attitude towards training in the supporting industries has been a major obstacle towards the upliftment of skills in industry and business as a whole. New legislation now proposed by the Department of Higher Education and Training (DHET) is going to be very detrimental towards the supporting industries.

South Africa still has one of the most diverse and important mining industries in the world, as well as an attractive resource base that holds much promise for future mining activities.
But because of the numerous squabbles in the industry it is declining. Let it not happen to the automotive industry.



METALWORKING NEWS

Volume 15 Number 2
May 2016

Editor
Bruce Crawford

Online Editor
Damon Crawford

Editorial Board
Professor Dimitri Dimitrov,
Global Competitiveness Centre
in Engineering, Department of Industrial
Engineering, University of Stellenbosch

Dr Willie Du Preez, Senior Researcher, Faculty
of Engineering and Information Technology
of the Central University of Technology

Production Manager
Wendy Crawford

Reproduction
Jericho Graphic Design

Advertising
Bruce Crawford / Wendy Crawford
Tel: + 27 11 463 0489
Cell: + 27 83 628 7654
E-mail: online@engnews.co.za
Website: www.metalworkingnews.co.za

Printed By
Paarlmedia - A Division of Novus Holdings

METALWORKING NEWS
is published by:
BA Crawford Specialised Publications (Pty) Ltd
PO Box 69299, Bryanston, South Africa, 2021

41 Arklow Road, Bryanston, South Africa, 2021
Tel: + 27 11 463 0489
E-mail: online@engnews.co.za
Website: www.crawfordpublications.co.za

Subscriptions
Annual – Local: R140.00 (incl VAT)
International: on application
ISSN 1682-8909

MITSUBISHI ELECTRIC

The Art of Economy

This isn't what we mean when we say "Long Life System"...

Actually, we mean that EDMs by Mitsubishi Electric greatly reduce wear and simplify the maintenance process. While it takes only 92 seconds to replace the cutting wire, the ingenious auto-clean function for the tank seal means that you won't have to clean that yourself any more. And if you don't think that's interesting enough, this translates to long-term precision and saves labour for the user.

LLS LONG LIFE SYSTEM

Try out the world market leader now!

www.mitsubishi-edm.de / www.wdhearn.co.za

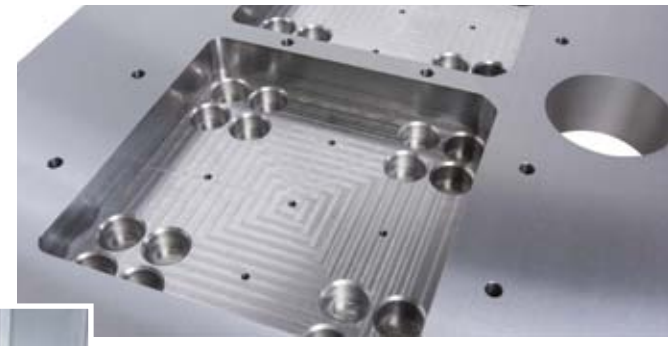
Great individually – perfect together

WD Hearn MACHINE TOOLS
ESTABLISHED 1937

Cape Town / Port Elizabeth / Durban / Johannesburg
www.wdhearn.co.za / www.mitsubishi-edm.de

New technologies raise the global bar in mouldmaking

The business of global mouldmaking is extremely competitive and constantly changing — case in point, the return of high-end mouldmaking to the United States from overseas. Reasons for this include reshoring initiatives, requirements for higher precision on certain parts, logistical issues and rising costs of parts made overseas. In reply, overseas mouldmakers are employing aggressive pricing and financial engineering tools such as currency devaluation as a way to retain business, while in the United States, the secret weapon is advanced manufacturing technology.



Much of the current trend reflects differences between the moulds made overseas and those manufactured here. Overseas mouldmaking generally involves basic moulds with single-digit numbers of cavities. On the other hand, the strength of the US mouldmaker is the manufacturing of high-precision moulds with 50, 100 or more cavities. These complex multicavity moulds facilitate true mass production of parts. However, every cavity of a 150-cavity mould, for instance, must be perfect to produce 150 perfect parts. There can be no deviation. A scrapped two or four-cavity mould made overseas may be less of an issue, but a mistake in the manufacture of a 150-cavity mould is a whole different story.

For US mouldmakers, the integration of new technologies into the mouldmaking process facilitates manufacture of moulds that provide reductions in part producing cycle times, increased production volumes and top product quality. All of which elevates US mouldmaking to levels far beyond that of many other countries.

One important new technology is additive manufacturing. Additive processes have evolved to the point that they produce workpiece materials with physical characteristics extremely close to those of traditional mouldmaking alloys.

Additive manufacturing techniques can be applied to address the critical cooling aspects of the injection moulding process. To maximise the output of a complex multicavity mould it is essential to optimise coolant flow throughout the entire mould and around each individual cavity. Building a mould via laser sintering, for example, permits the creation of internal coolant channels that conform to the specific arrangement of cavities and that would be impossible to produce with just subtractive machining. Conformal cooling (or warming, when the channels carry warm water) reinforces moulded part consistency and decreases cycle times by speeding plastic flow into the mould and accelerating cooling of the parts before ejection.

When the additive manufacturing process is complete, the vast majority of mould components require secondary operations such as milling, EDM or grinding to achieve required accuracy. To streamline the mouldmaking process, manufacturers can create a cell in which a mould component is built via additive manufacturing methods on a standardised clamping and palletising system, after which the pallet is moved to a milling machine and/or an EDM for secondary operations. The advantage here is the seamless transfer of data between the 3-D printing model, the additive manufacturing machine, the milling machine and the EDM.

However, achieving that seamless data transfer requires full integration of the differing manufacturing technologies. The recently initiated strategic cooperation between GF Machining Solutions and the global provider of high-end additive manufacturing solutions EOS, for instance, represents one such effort to expedite that integration.

Another technological advantage for US mouldmakers is their application of sinker EDM's with highly advanced digital spark generator capabilities. Such generators help produce surface textures that reduce friction on the mould surface area, including inside small details and ribs. Moulds fill quicker, saving time in the moulding process. The surface texture also reduces the chance of residue sticking to the mould after the plastic is injected. The results are faster cycle times and reduced maintenance expenses to clean moulds.

In general US mouldmakers need to embrace automation, additive manufacturing, five-axis machining and other technologies to remain globally competitive. They need to become more like project managers, expanding their focus to think about how a variety of operations combine to produce a final product. Mouldmakers must also partner with their customers to educate them about the benefits of advanced technologies and keeping their mouldmaking work in the United States. ■

This article was first published in the Manufacturing Engineering magazine and is the viewpoint of Gisbert Ledvon, Director of Business Development, GF Machining Solutions

ecoGrinder

The simplified for complex demands.

RETECON (PTY) LTD
Your Partner in Metal Working

Agent in South Africa
100 Plane Road, Spartan, Kempton Park, Gauteng
Tel: +27 11 976 8600
Fax: +27 11 394 2471
Email: machines@retecon.co.za
www.retecon.co.za

MTMA

STUDER
KÖRBER SOLUTIONS

Fritz Studer AG
CH-3602 Thun
Telephone +41-33-439 1111 - Telefax +41-33-439 1112
www.studer.com

cover story

CoroMill® 745 is available in medium and close pitch and as a differential pitch version for vibration-prone applications

Introducing the first double-sided, multi-edge milling concept with positive cutting action — Sandvik Coromant

The cost-efficient and productive CoroMill® 745 is now available.

Offering high productivity and a low cost per edge, the CoroMill® 745 has a double-sided, multi-edge design that is ideal for large batch productions. With its tilted insert positioning system and sharp cutting edges, this milling cutter offers a light cutting action at low power consumption.

With a total of 14 cutting edges per insert, the CoroMill 745 is a cost-efficient choice for face milling. The assortment includes three pitch versions. The differential pitch design of the MD pitch is best when vibration is a factor and is radially compensated to ensure equal chip thickness for every insert. The M pitch is best for general applications and the H pitch has a higher number of teeth, making it the best choice for higher productivity. The M and MD pitch both have the same number of teeth.

Designed to make insert indexing quick and easy, the unique insert positioning system in the tip seat and heptagonal insert design keep the inserts securely in the pocket when mounting. The inserts are tilted in the tip seat to create a positive cutting action. Inserts, geometries and grades are available for steel and cast iron materials. For roughing to semi-finishing applications, the strong and light cutting inserts provide reliable face milling in all types of milling machines.

"You might see other multi-edge concept milling cutters on the market but none have the performance of the CoroMill 745. The science behind it is impressive. The unique double-sided, multi-edge insert design has 14 positively tilted cutting edges which are spaced out at different positions resulting in a milling cutter that is quiet and soft. For our customers, that means that they get a highly-productive milling cutter, increased tool life at a lower cost per component," said Matts Westin, Global Product Manager for Milling.

CoroMill 745 was launched at the recent MACH 2016 exhibition in the UK under the theme of "Together we shape the future of manufacturing". Sandvik Coromant also highlighted its work in Industry 4.0 topics such as digital transformation, intelligent machining, digital product and application recommendations and tool data in ISO format. The company recently acquired Prometec, a sophisticated process monitoring company, and opened the Additive Manufacturing Center in Sweden. The company also showed how Sandvik Coromant uses additive manufacturing (AM) to inspire high fashion as it displays one-of-a kind, 3D-printed steel shoes created with Lady Gaga fashion designer, Naim Josefi.

Sandvik Coromant

Part of global industrial engineering group Sandvik, Sandvik Coromant is at the forefront of manufacturing tools, machining solutions and knowledge that drive industry standards and innovations demanded by the metalworking industry now and into the next industrial era. Educational support, extensive R&D investment and strong customer partnerships ensure the development of machining technologies that change, lead and drive the future of manufacturing. Sandvik Coromant owns over 3100 patents worldwide, employs over 8,000 staff, and is represented in 130 countries. For more information visit www.sandvik.coromant.com or join the conversation on social media.

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

MicroStep South Africa®

The FiberLas series

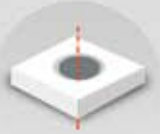
The high-speed solution for the sophisticated laser-cutting

Laser + Plasma

YOUR PARTNER FOR CUTTING AND AUTOMATION

Scanning, reading

Labeling, marking



Drilling, countersinking, tapping

Processing of tank ends

Processing of pipes and profiles

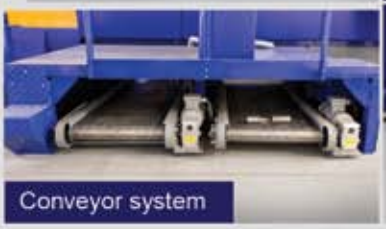
Cutting of bevels

2D - Cutting

The FiberLas series

High cutting speeds and delicate cuts

A Fiber Laser system with a very high efficiency which can process a variety of materials with fiber laser or a combination of fiber laser and plasma. The machine is perfectly suited for the production of high precision parts at high cutting speeds. It needs astonishingly low maintenance and has very low operating costs. The superb dynamics of the FiberLas series is achieved by a low gantry, digital AC motors and precision planetary gear.



It is also equipped with

- **Automatic Pallet Changer**
- **Tapping and Drilling**
- **Tube Profile Cutting**
- **Laser Marking**
- **Bevel Cutting**

www.microstep.co.za

info@microstep.co.za

AAD exhibitors have to comply with South African arms and weapons legislation

AAD takes place at AFB Waterkloof in Centurion 14 to 18 September 2016 — includes air shows and trade exhibition.

The organisers of this year's Africa Aerospace and Defence (AAD) exhibition have obtained the necessary approval from the National Conventional Arms Control Committee (NCACC) for weapons and componentry, and at the same time remind foreign exhibitors especially of the need for proper import and export documentation.

Apart from NCACC regulations, which saw the abrupt cancellation of last year's Maritime Security conference and exhibition in Cape Town, AAD exhibitors have also been asked to note obligations as regards weapons of mass destruction, nuclear weapons and firearms, ammunition, explosives, pyrotechnics and riot control. The last five items are regulated and controlled by the SA Police Service, while the SA Council for the Non-Proliferation of Weapons of Mass Destruction concerns itself with nuclear weapons, chemical weapons and the regulation and control of the manufacture, trade, transfer and use of these, as well as provision of services related to dual-use goods (civilian and military applications) and delivery systems for nuclear and chemical weapons.

"Persons who participate in AAD 2016 must ensure they comply with the requirement of the relevant South African non-proliferation and arms control related legislation," the organisers said.

This year AAD will also have a new platform for exhibitors to interact with specifically selected audiences.

"Engagement platforms" as part of the overall exhibition offering can be used to host mini-conferences, product launches or press briefings. The venues will be equipped with a screen and audio-visual system and can accommodate up to 50 people for a session lasting up to an hour.

AAD 2016 will open for business on September 14 at AFB Waterkloof in Centurion and will be hosted by Armscor this year.

Indications are that the 2016 edition of the exhibition will attract around 450 exhibitors, including 14 national pavilions from 30 countries.

Defence industry companies which have confirmed attendance at AAD 2016 include Aerosud, Arrow Altech, Astra Aircraft Corporation, BSDI, CATIC, Chrinicia, Connector and Wire Services, Cummins South Africa, Curtiss-Wright, Cybicom Atlas Defence, Daliff Precision Engineering, Damen Shipyards, Denel, Desert Wolf Consulting, Dupont De Nemours South Africa, ECM Technologies, ELW Global Logistics, Embraer Defence and Security, Eurooptic Africa, FN Herstal, Forges de Zeebrugge, Hiconnex, ICP, Industeel Arcelor Mittal Group, KADDB Investment Group, Magnum, Mecar, Metmeiser, MKU Pvt Ltd, MTU South Africa, Newcon Optik, OTT Technologies, Paramount Group, Pearson Engineering, Reutech, Rheinmetall Denel Munitions, Rhino Intercept, Rugged Interconnect Technologies, Russian Helicopters, Saab, SAFOMAR, SATCOM, S-Plane Automation, Synertech, TCL Digital Technology, Tellumat, Thorough Tec Simulation, Truvelo, Turtle Pac, TWA Africa, UVirCO Technologies, Vliegmasjien and VR Laser.

For further details visit www.aadexpo.co.za ■

Boeing, Paramount Group to collaborate on light multirole aircraft

Aerospace group Boeing and South African privately owned defence and aerospace firm Paramount Group have expanded their 2014 agreement to cooperate on an advanced mission system for a variant of the Advanced, High Performance, Reconnaissance, Light Aircraft (Ahrlac).

The high-wing, two-seat Ahrlac was designed to incorporate advanced intelligence, surveillance and reconnaissance (ISR) capabilities and weapons systems. Boeing would develop an integrated mission system for the aircraft, enabling ISR and light strike missions for the Ahrlac safety and security, and military variants.

The militarised version would be known as Mwari.

"Working with Paramount, we will bring a flexible, persistent and affordable aircraft to the international market and develop world-class technology in Africa," said Boeing military aircraft VP Jeffrey Johnson.

He added that Boeing had examined the aircraft extensively and believed it had found an opportunity to expand into a new market for the company. Boeing would, along with Paramount, actively market the aircraft in the international market. "Boeing has a worldwide footprint in parts and field services, as well as in logistics that we hope we can use in our portfolio of products, from high-end costly fighters all the way down to cost effective products," Johnson said. ■

EUROMAC®

Euromac meets your ambitions

punching machines

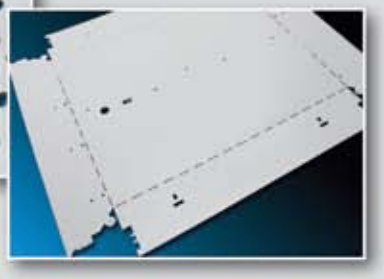
mtx *flex 6 hybrid*

With Euromac you get the maximum punching flexibility

mtx *flex 12 hybrid*

CML
MACHINE TOOLS
Suppliers of Fine Equipment

2 Patrick Road, Jet Park • Tel: 086 142 2423 • Fax: 086 553 9975
• e-mail: luis@cmlmachines.co.za • web: www.cmlmachines.co.za



ZX *flex hybrid*

Strong
affordable
easy
fast
flexible

Every steel and copper workshop can take advantage of a Digibend

bending machines

With Euromac you get the maximum bending flexibility

EUROMAC®

First train from new R1 billion

South African factory expected in 18 months

The production of the first South African-manufactured commuter train – made up of six state-of-the-art cars — destined for the Passenger Rail Agency of South Africa's (PRASA) Metrorail network is scheduled to start in about 18 months' time at a new R1 billion factory at Dunnottar in Ekurhuleni, Gauteng.

This is according to Marc Granger, CEO of Gibela Rail Consortium (Pty) Limited (Gibela), the Alstom controlled company established in 2012 with black economic empowerment partners to supply and maintain 600 new commuter trains under contract to PRASA.

The production of the first South African-manufactured commuter train — made up of six state-of-the-art cars — destined for the Passenger Rail Agency of South Africa's (PRASA) Metrorail network is scheduled to start in about 18 months' time at a new R1 billion factory at Dunnottar in Ekurhuleni, Gauteng

Granger was speaking at a PRASA-hosted event in Ekurhuleni to mark breaking of first ground by the Minister of Transport, Dipuo Peters, for the new train manufacturing facility.

By the end of 2020, Granger said, the factory is expected to be producing at maximum capacity of two rail cars a day, with a 1 500 strong, onsite workforce directly employed by Gibela.

"Manufacturing at this level will be a huge industrial challenge, exceeding the kind of performances currently achieved by any of the world's top train-building plants," Granger said.

Already, some 32 South African suppliers — identified and developed in terms of Gibela's local sourcing programme — were delivering 20% of the requirements for 20 of the new trains being built currently at an Alstom plant in Brazil, ahead of production from the South African factory

Some 10 000 components, manufactured by some 250 South African suppliers to meet PRASA's 70+ percent local content requirement, will have to be delivered to the factory daily.

Already, some 32 South African suppliers — identified and developed in terms of Gibela's local sourcing programme — were delivering 20% of the requirements for 20 of the new trains being built currently at an Alstom plant in Brazil, ahead of production from the South African factory, Granger said.

Two test trains built in Brazil have already been delivered to South Africa for testing in terms of an intensive, joint Gibela/PRASA testing programme at PRASA's test facility at Wolmerton, near Pretoria. A third test train was scheduled for delivery to South Africa from Brazil during March 2016.

According to Granger, a 4 000m² training centre is targeted for completion on the factory site at Dunnottar by October this year. It is envisaged that, over a 10 year period, this centre will provide training in various technical fields to thousands of people, including those not directly employed by Gibela but rather working or intending to work in South Africa's broader rail and rail-related industries.

For the 2016 academic year, Gibela had awarded 180 bursaries with a total value of R12 million to historically disadvantaged students studying at tertiary institutions around the country, Granger said. Most of the successful bursars were studying for qualifications in various engineering disciplines.

In addition, Gibela — in conjunction with Ekurhuleni East College — had successfully launched its Railway Introduction Course, free to qualifying senior students at universities and technical vocational education and training (TVET) institutions. ■

Victor Taichung

Vcenter - 165

LARGE VMC FOR BATCH PRODUCTION, HEAVY DUTY CUTTING

Machining centers built to withstand the heaviest of today's cutting conditions

- Heavy duty spindle roller bearings
- Bonded with low friction composite Turcite B
- All boxways with constant forced lubrication
- 2 speed gearbox for high torques at low rpm
- 3 axis box slideways
- XYZ travels of 1650 x 850 x 900 mm
- Table work area 1 700 x 800 mm with load of 2500 Kg
- Spindle motor 15/18.5 kW
- BBT-50 spindle taper

Port Elizabeth branch now open

Johannesburg:
41 Loper Ave, Aeroport,
Kempton Park
Tel: (011) 392-3800
Email: dudley@victor.co.za
ian@victor.co.za

Port Elizabeth:
Unit 3, Jet Park, Caravelle St,
Walmer Industrial
Tel: Abraham 082 469 2647
Email: abraham@victor.co.za

www.victor.co.za

VICTOR FORTUNE

MTMA

Pressure Die Castings wins contracts and invests in new equipment and processes

Recently installed is a new zinc HPDC machine, a chrome plating plant and two Doosan twin-table vertical machining centres.

"Ten years ago we made a strategic decision to move further up the value chain, with an emphasis on product delivery and quality. The strategy involved reconfiguring the business, increasing factory productivity and training employees, which would ultimately lead to improving quality and reducing costs," explains Pressure Die Castings (PDC) managing director Mike Wolhuter.

"We also employed a number of smart and innovative engineers who are constantly working on important areas such as energy savings and process design improvements. They are continuously pushing the boundary for implementing radical and new ideas, including automation. However, with the ever-increasing challenges of regulation and energy costs, the importance of continuing to develop and implement new technologies has never been greater."

The new chrome plating plant is capable of processing 200 000 components per month with an OEE of 80%. PDC is not a jobbing operation and has reserved the full capacity for Cobra's production

"The recent developments at PDC are as a result of a long term technical and business relationship with Cobra, a client of ours in the plumbing industry. Both Cobra and PDC are in the brass industry. However, our association goes beyond the normal client/supplier relationship in that we regularly share knowledge on brass processing, alloying and other technical aspects that can make improvements in the final component that we supply to them."

"A few years ago Cobra decided to get out of high pressure die casting brass and focus on gravity and low pressure casting. We acquired their high pressure die casting equipment and tooling and continued to supply a selection of brass components to them."

The project involved the purchase of a 160 ton hot chamber HPDC machine from Taiwanese manufacturer Producer CO Ltd

"During one of our recent discussions we were asked by Cobra to look into the feasibility of manufacturing HPDC zinc components with a chrome plating finish to help the client 'reshore' products from the east back into South Africa."

"The revival of OEMs' demand for domestically produced castings is gradually gaining traction in South Africa, although it is no sudden phenomenon worldwide. It does present an opportunity for local metal casting execs who are determined to improve their organisations' competitiveness."

"Executives of efficient foundries and die-casters who overcome organisational inertia and take steps needed to improve their competitiveness can meet the price and delivery requirements of casting buyers and take advantage of the 'reshoring' trend - casting orders once assigned to cheaper foreign metal-casters, but now returning due to rising Far Eastern labour costs, fluctuating foreign exchange rates and logistical difficulties."

New zinc HPDC machine and a chrome plating plant

"However it went beyond 'reshoring'. Cobra had previously tried the local route but soon became fed up with the local suppliers blaming each other for not delivering the quality that is expected of them. They operate in a very competitive area of supplying aesthetic sanitary and plumbing products and need to have a showroom finish."

"As we have had many years of experience in high pressure die casting the proposal was put to us (PDC) that we manufacture a certain range of their zinc products as well as the finishing aspect. We agreed to take on the project where

beyond™ EVOLUTION™

GROOVING
CUT-OFF, AND
MULTI-DIRECTIONAL
TURNING
MADE...

EASY

That's **Different Thinking**

Beyond Evolution is the new single-sided grooving and cut-off tool that also performs multi-directional turning.

Beyond Evolution EASY kits are currently

50%* OFF

when you order using the promotion code:

B01KGL1C116-P3

CALL +27 0 11 748 9317

kennametal.com/BeyondEvolution

* Savings compared to sum of kit component list prices. Offer cannot be combined with other discounts/offers. Offer ends June 30, 2016. Only available through participating distributors.

- Face Grooving
- Grooving
- Deep Grooving
- Cut-Off
- Side Turning
- Chamfering
- Profiling
- Facing

www.kennametal.com

KENNAMETAL®

we would cast, polish and chrome plate the parts so there was no finger pointing."

"We knew this would be a challenge as Cobra's plating standard is the "Rolls Royce" of sanitary/plumbing in South Africa."

"The project involved us purchasing a 160 ton hot chamber HPDC machine from Taiwanese manufacturer Producer CO Ltd. It is the first fully automatic HPDC machine that we have installed at PDC and includes auto spray, auto cycle and auto picking and typically producing three components every 15 seconds on a three cavity die."

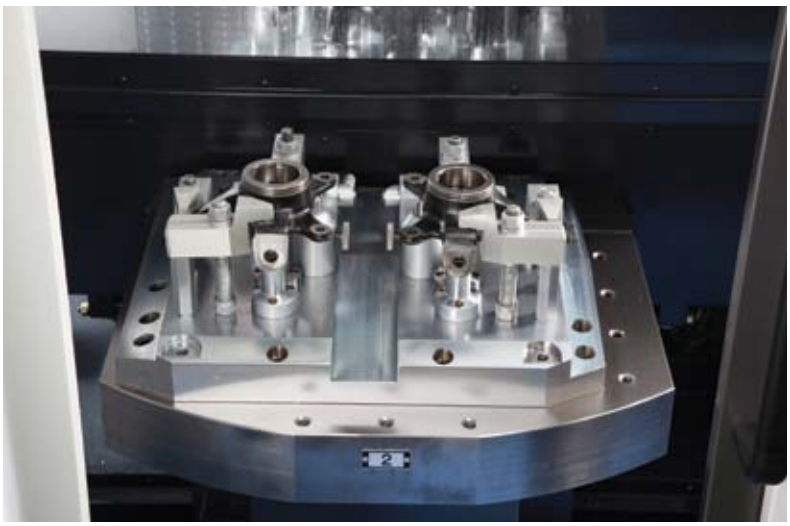
"The machine has turned out to be reliable and able to produce parts of a good quality. This has pushed us to investigate fully automating our brass and aluminium machines to improve throughput rate and increase quality. We are currently automating an aluminium HPDC machine for business that we have received in the automotive industry from Toyota and Ford. Our next challenge will be to automate a brass casting machine — a lot more challenging!"

"The chrome plating process is a four stage plating process - Cyanide copper, acid copper, Nickel and then chrome plating. This gives you a 30 micron coating that is aesthetically stunning and has good corrosion resistance."

"The plating plant is fully automated and includes off line filtering and heating on the process tanks, reverse plating of jigs, auto dosing of chemicals into the tank and reverse plating in the Nickel tank, all designed to achieve optimum quality."

"The plating plant is capable of processing 200 000 components per month with an OEE of 80%. PDC is not a jobbing operation and has reserved the full capacity for Cobra's production."

"We have been contracted to initially manufacture six relatively small products, about 50mm x 50mm in size on average, with high aesthetic and high volume requirements. This contract will utilise about 50% of the plating plant, but we have an understanding with Cobra that we will be awarded further contracts once we have achieved their "Rolls Royce" status."



PDC have purchased two Doosan twin-table vertical CNC machining centres that have been supplied by Puma Machine Tools

"We have also installed a comprehensive effluent treatment plant and are looking at reusing all the waste water wherever it is practically possible."

Doosan twin-table vertical machining centres

"For a number of years we have been supplying aluminium components into the OEM automotive industry. We have recently been awarded further contracts in this industry that necessitate us investing in equipment for our machine shop."

"In April two Doosan twin-table vertical machining centres were installed. Both the vertical CNC machining centres have a moving column with integrated rotary pallet changer, designed for high-volume production. They are also easily interfaced with automatic workholding equipment and rotary tables, and can be automated with a robot."

"The VC 510 machines are equipped with a 15/18.kW 10,000rpm spindle, a 30-position (BT 40) tool changer and a rotary twin pallet changer. The XYZ strokes are 762 x 516 x 570mm, and the table size is 860 x 570mm. The machines were supplied by Puma Machine Tools."

Positive results with capital investment and automation

"With the recent capital investment and automation programme that we have embarked on at PDC, coupled with a better organisational performance, we have found that we are very competitive against components and products being imported from the East even with their relatively cheap labour costs."

"Executives dissatisfied with the status quo need to understand that clients can be persuaded to purchase their cast products again from domestic foundries - from their foundry - not for patriotic reasons, but because they can make quick deliveries of quality products at reasonable prices."

"This year we expect about 30% of our turnover to be in components and products that were previously sourced from the East. This is as a result of us reconfiguring our business, increasing factory productivity, including automation, and training our employees."

"Over the last couple of years we have installed eight robots, taken up mainly in labour intensive areas. However we have not had to retrench staff as a result of these installations. Rather we have seen the benefits of productivity and quality."

"The most successful business executives I have met are never fully satisfied with current results. They have a gnawing sense that if they had only made an extra effort here, had asked their managers to execute faster there, had been less accepting of excuses, and had insisted on better performance rather than resting on dubious laurels of current profitability (that is often marginal), their firms would have lower per-unit costs, better delivery records, and more orders taken at more profitable margins."

For further details contact Pressure Die Castings on TEL: 033 397 5500 or visit www.pdc.co.za ■

The Universal
3D metrology software platform™

PolyWorks® 2016 delivers a universal hub that interfaces with any type of 3D metrology measurement device, and offers a universal workflow for performing all inspection tasks.

PRODUCTIVITY | RELIABILITY | QUALITY

Contact George Sansoni
Tel: 011 976 8600 | Fax: 011 394 2471
machines@retecon.co.za | www.retecon.co.za

RETECON (Pty) Ltd

Cape Town: 021 555 2270/1 | Port Elizabeth: 041 453 2720 | Durban: 031 701 8149

The fourth industrial revolution — Industry 4.0

Do you know what it is yet?

Industry 4.0 is changing the world of manufacturing, but what — if anything — does it mean for you?

It's 7 AM, April 13th, 2025. Your smart clock rouses you from a dreamless sleep and you climb from bed as your house comes to life. The bathroom light turns itself on and the shower begins to heat its water. After washing off, you throw on a T-shirt that has been perfectly fit for your body. You check your phone, only to discover that its battery is about to give out. A push notification informs you that there is no need to worry — a replacement is already on its way. You hear your car start in the garage, ready to take you down to the factory you manage, where, according to your phone, one of the machines has malfunctioned. Actually traveling to your place of work has become an increasingly rare phenomenon for you — most of the time the factory takes care of itself.

"What a pain in the ass," you mutter as your car pulls itself out from your garage. "Can't these things get anything right, anymore?"

Welcome to life after the fourth industrial revolution, where all of the objects you use on a day to day basis are custom-made and constantly talking to one another for your benefit.

It is — we're frequently told — the grand concept that's going to usher in the next industrial revolution, change forever the way that we make things, and shape the world's balance of industrial power in the decades to come. But what exactly is Industry 4.0?

Despite everyone — from politicians to captains of industry — trumpeting its transformative power for the last few years, it's not often that you come across a coherent definition of the concept. And when you do, it often differs from someone else's coherent definition.

Nevertheless, the technologies at the heart of the Industry 4.0 concept are already having an impact. Across Europe — and particularly in Germany — large manufacturers are increasingly exploiting the benefits of smart sensing systems, and advanced connectivity to introduce new levels of flexibility, speed and reliability into their production processes.

Things are moving fast. So far, mainland Europe, and specifically Germany, leads the way, although China, which recently unveiled a bold ten-year industrial plan, is catching up. And there's a genuine concern that you could get left behind.

So what do we need to do to ensure that we stay in the race?

Whilst large multinationals frequently have the money and the structure to implement grand visions, Industry 4.0 won't be truly transformative unless the whole of industry gets on

Siemen's electronics plant in Amberg, Germany, the poster child for Industry 4.0

board. The challenge is ensuring that the whole of industry is on-board — and this includes the many thousands of smaller engineering firms and manufacturers that form a huge chunk of the industrial landscape.

What does Industry 4.0 look like?

One of the more tangible aspects of the fourth industrial revolution is the idea of "service oriented design." This can range from customers using factory settings to produce their own products, to companies tailoring individual products for individual consumers.

The potentials enabled by this mode of production are enormous. For example, the communication between smart products on the Internet of Things and the smart machines manufacturing them on what GE calls the "Industrial Internet" means that objects will be able to monitor their own use and determine when they are going to give out.

If your phone knows that it is going to "die" in the near future, it can notify the factory, which can alter its production levels to reflect the data coming in from the smart objects produced there. When your phone kicks the bucket, there will already be another one waiting for you, meaning the days of back-ordering are numbered.

What's more, as this process becomes more sophisticated and integrated, your phone will arrive already programmed with your custom settings, just like how you had it when it gave out on you a few hours ago.

This process is not just limited to phones and other sophisticated electronics, however. Everything from custom-fit clothing to custom shampoos and soaps will be at the consumer's disposal, without the added cost that has typically accompanied individually tailored designs in the past. Objects will increasingly be made just for you and in a very real way — it will no longer be about selecting one out of a handful of predetermined colours for your phone and calling it personalised.

Furthermore, the increasing integration of smart factories into industrial infrastructures could mean large reductions in energy waste. As the Industrie 4.0 working group noted in its report, many factories squander large amounts of energy during breaks in production, such as weekends or holidays, something that could be avoided in the smart factory.

According to proponents of this framework for totally integrated production, Industry 4.0 also has the potential to change the definition of human labour. Since machines are able to perform repetitive, routine tasks in manufacturing with much more efficiency than their human counterparts, these tasks will increasingly be automated. Yet rather than putting people out of work, this will supposedly free them up for more creative, skilled tasks, rather than subjecting them to menial, low-skilled work. Moreover, as physical systems become digitized, workers will have to spend less time in a designated physical work environment — rather, managing a factory can be done remotely over the internet.

The foundry industry must respond by identifying the new developments and challenges of the markets we supply and adapt our processes accordingly — we must always operate a 'changing' system. ■

Last year Kurtz Ersa opened a new iron foundry, The Smart Foundry, that is a particularly high-capacity foundry with unit weights from one to ten tons that can be manufactured from all currently common iron casting materials

Management changes at Toyota SA Motors

Andrew Kirby appointed as President and CEO.

Toyota Motor Corporation (Japan) recently announced important structural changes within the global management structure which impacts on Toyota South Africa Motors (TSAM) and the Africa Region. The restructure came into effect as of 1st April 2016 and will impact TSAM as follows:

Dr Johan van Zyl, previously President and CEO of TSAM, is now appointed as Chairman of TSAM. He will continue to function as the CEO of the Europe Region based in Brussels. Dr van Zyl's role within TSAM will be of a more strategic nature, and he will continue to guide and support the TSAM management into the future.

Mr Takeshi Isogaya is appointed as CEO of Africa Region based in Tokyo Japan.

Mr Andrew Kirby, currently serving as Executive Vice President and Chief Operating Officer of TSAM, is appointed as the President and Chief Executive Officer of TSAM, based in Durban.

"Andrew is a very experienced, multi-talented motoring man and I am confident he will do an outstanding job as the new President and CEO of TSAM," said Dr van Zyl.

"The road ahead economically will not always be an easy one to travel, but I believe that, with Andrew and the Executive team, we will meet every challenge successfully and continue to build on its proud leadership heritage to remain an integral part of South African life for many years to come. I feel very privileged to have personally shared in this rich Toyota legacy and for the ongoing role that I have been asked to play."

NASA expert mesmerises delegates at Engineering Community Conference 2016

Dr. Jakob J. van Zyl, associate director of Project Formulation and Strategy at NASA's Jet Propulsion Laboratory, mesmerised delegates attending the second Engineering Community Conference (ECC) hosted by ESTEQ, when he delivered his keynote address on Curiosity Rover's journey to Mars.

Van Zyl, born in Outjo, Namibia, received his first degree in electrical engineering from the University of Stellenbosch, South Africa in 1979, elaborated on Curiosity rover's landing on Mars on Tuesday August 6th, 2012. The Mars Science Laboratory mission successfully placed the one-ton Curiosity Rover on the surface of Mars, about one mile from the centre of its 12-mile-long target area.

"Within the first eight months of a planned 23-month primary mission, Curiosity met its major science objective of finding evidence of a past environment well-suited to support microbial life," explained van Zyl.

"After landing, NASA's Curiosity Rover, continued on its extraordinary journey across landscapes that are both utterly alien, and remarkably familiar," said van Zyl.

Equally interesting was Willie van der Walt's presentation on Denel's SARA (South African Regional Aircraft).

The ECC was attended by 200 delegates.

For further details contact Susan Krüger, Events & Office Manager at ESTEQ on TEL: 012 809 9500, email s.kruger@esteq.com or visit www.esteq.co.za ■

"Within the first eight months of a planned 23-month primary mission, Curiosity met its major science objective of finding evidence of a past environment well-suited to support microbial life," explained van Zyl

Willie van der Walt Executive Manager Engineering Denel Aerostructures, Cobus Oosthuizen MD of Esteq and keynote speaker Dr. Jakob J. van Zyl, associate director of Project Formulation and Strategy at NASA's Jet Propulsion Laboratory

Andrew Osmond and Danie Booysen of Design Office Technologies with Charl Jacobs and Robert Mawbey, both of DIY Electronics

Pieter Swart, Christian Stehle and Pieter Anker, all from Weir Minerals

Jan Oosthuizen, Anthony Robinson, Gerhard Smit, Wilmien Visser, Cobus van Rooy and Rudolf Bester, all of Airbus DS Optronics

South Africa considering emergency steel tariffs

South Africa is considering imposing emergency tariffs on some iron and steel imports, it said in a filing to the World Trade Organization published in early April.

South Africa's steel industry body requested the temporary trade barrier because a surge in import volumes had caused the industry "serious injury" in the form of lower sales, output, market share and capacity utilisation, the filing said.

It blamed a global steel glut and measures by other countries to protect their steelmakers, as well as new investments by current steel importers, which meant South Africa could expect further increases of imports, the filing said.

The analysis was based on data from ArcelorMittal South Africa, which accounts for 70 percent of local production of the affected goods.

South Africa's steel sector is facing catastrophe and ArcelorMittal may have to close down if the government does not act soon, labour union Solidarity said.

"If there are no concrete plans on the table to assist the struggling steel industry by the end of April, the primary steel industry in South Africa will perish," said Solidarity's steel spokesman Marius Croucamp.

Another steelmaker, Evraz Highveld Steel and Vanadium, shut its doors in February, shedding around 2,200 jobs in the process. South African trade authorities indicated earlier that they would decide in June 2016 whether to aggressively protect steel manufacturers,

Solidarity said, but this would be much too late according to the union. In March 2016 ArcelorMittal said it would raise steel prices from April as it tries to stabilise its business after heavy losses due to competition from cheap imports. Last year South Africa slapped a 10 percent tariff on imported steel, but the emergency tariff, which would not apply to imports of stainless steel or silicon electrical steel, would provide much greater protection.

IDC and Evraz Highveld Steel and Vanadium

Meanwhile the State-owned Industrial Development Corporation (IDC) has instituted urgent court proceedings against Evraz Highveld Steel and Vanadium and the company's joint business rescue practitioners to ensure that it is not relegated to a "concurrent creditor" in the event of liquidation. The IDC extended a R150 million loan to the embattled steel company in June last year to help its cover working capital requirements during a business rescue process, initiated in an effort to sustain the business as a going concern and save jobs. After interest, the outstanding amount owed to IDC stood at R153.5 million on February 9. ■

IQSTARTUP
MACHINING INTELLIGENTLY

Flat Top TANG-GRIP-IQ Tools Engineered for Easy Chip Flow

Featuring Longer Tool Life!
Free unobstructed chip flow since there is no upper jaw as in the other clamping systems (very important in deep grooving applications)

TANG-GRIP-IQ is a single-ended parting insert with an unbeatable clamping method.

TANG-GRIP IQ
350 LINE

Parting Intelligently with New Holders for Even Greater Productivity!

C for Hard Materials and Tough Applications

J for Soft Materials

MF for Hard Materials and Tough Applications

LF for Stainless Steel at Low to Medium Feed

Machining Intelligently
ISCAR HIGH Q LINES

ISCAR's Winning Edge
Parting and Grooving Innovations

The End of Chip Evacuation Problems!

Economical Blade
2 or 4 Pockets
Longer Tool Life
Higher Productivity

ISCAR SOUTH AFRICA (PTY) LTD.
ShareCall 08600-47227, Tel +27 11 997 2700
Fax +27 11 388 9750, iscar@iscarsa.co.za

Member IMC Group
www.iscar.co.za

Volkswagen begins commissioning R120 million

Fagor Arrasate die try-out press

After travelling 13 140 km by ship from Spain, Volkswagen Group South Africa's (VWSA) new die try-out press arrived in the Uitenhage factory recently. The new 21 000 kN (kilo Newton) die try-out press is said to improve the manufacturing capability of its Uitenhage, Eastern Cape plant.

The new press will be used to ensure that the tools are pressing the vehicle sheet metal parts according to the required quality standards prior to going into production. This ensures that the currently installed presses are used solely for production thus improving the productivity of the press plant. It will also be used in tool maintenance and implementing engineering changes on the current series production press tools.

"The press design and kinematics of this new press are comparable to that of the equivalent production draw press. It will therefore be able to accurately reproduce the line conditions and deliver the same quality of parts off-line," said Thomas Schaefer VWSA Chairman and Managing Director.

Once fully assembled, the new press will weigh approximately 600 tons and will deliver a maximum force of 2 100 tons, equivalent in weight to 306 male African elephants.

The heaviest single lift in the initial stages of the project was the press bed at 120 tons, however, this was eclipsed later by the press crown which weighed in at 220 tons and was lifted eight metres above floor level and mounted on top of the press columns.

"Our Uitenhage plant has one of the newest press plants in South Africa and in the Volkswagen Group. The Press Plant was commissioned in 2013 and is capable of producing close to 10 000 parts per day for the Polo, Cross Polo and local Polo Vivo models," concluded Schaefer.

The die try-out press is expected to be fully operational by mid-2016. VWSA last year announced a R4.5 billion investment programme to upgrade and expand the Uitenhage plant to produce two new models. ■

Gordhan puts a hold on Denel-Gupta deal

The Treasury has said it was still considering an application by state-owned arms manufacturer Denel to do business with a company owned by the Gupta family, which has been under scrutiny over its alleged close ties to President Jacob Zuma.

South Africa's top banks and some audit firms recently cut ties with the holding company for the Gupta family's businesses, Oakbay Investments, following speculation that the family has undue influence with President Zuma. Some of those companies cited reputational risk as a reason for ending the ties.

According to South African media reports, Denel said that it had set up a joint venture with a Gupta-associated company, VR Laser Services, and that all legal processes had been followed.

The Treasury, however, said that Denel submitted an application on December 10 to set up the joint venture but the department requested further information before approving the deal.

"The Minister of Finance is still considering this application, and further information has been requested from Denel," the Treasury said in a statement.

State-owned companies are required to obtain approval from relevant government departments, including the finance ministry, before making major financial transactions, it said.

The joint venture, to be called Denel Asia and based in Hong Kong, would manufacture a variety of steel products for the defence, mining, rail and transport industries and would be 51% owned by Denel and 49% owned by VR Laser Services, media reports said.

Oakbay Investments lists VR Laser among the firms that are part of the group on its website. Oakbay officials were not available to comment.

The relationship between Zuma and the wealthy Gupta family has been under scrutiny for years but it burst into the open in March 2016 when senior figures went public to say the family had exerted undue influence, including offering cabinet positions.

Zuma has denied suggestions the Guptas wield undue political power. The Guptas have also dismissed such reports, saying they are pawns in a plot to get Zuma out of office.

Denel statement

Denel has noted media reports with regards to the National Treasury (NT) views on the new venture company Denel has entered into as a vehicle to penetrate the Asia-Pacific markets.

Chapter 3 of the Constitution enjoins all spheres of government, including organs of state like the NT and Denel SOC, to co-operate with one another in mutual trust and good faith. That includes an expectation to always deal with matters of mutual interest internally and underpinned by principles of cooperative governance and inter-governmental relations.

Denel SOC will continue to engage with NT directly to ensure that any misunderstanding between Denel and the NT about the Denel Asia joint venture is resolved amicably. ■

South Africa plans for new auto plants ... but with whom?

The possibilities are still many for South African officials who want to lower the country's 25% unemployment rate, in part, by landing more investment for new auto plants.

South Africa plans for new auto plants ... but with whom?

South Africa is in talks with five vehicle manufacturers about a proposed new assembly plant in the port city of East London, a potential boost for an industry that's using government incentives to attract investment from companies including Ford Motor Co. and BMW AG.

East London IDZ SOC Ltd., which operates an industrial park, is seeking to sign three producers within a year to assemble vehicles in a shared facility, Tembela Zweni, the state company's executive manager for zone development, said in an interview in the city on South Africa's southern coast. Interest in the site from international companies has increased since South Africa announced last year it will extend its automotive-incentive programme, which encourages vehicle production in the country through tax breaks, he said.

"Suddenly we are getting more interest from companies," Zweni said, declining to name specific carmakers. "They will save on start-up costs because we would have this huge facility."

South Africa set up the East London IDZ in 2002 to boost investment and create jobs in an economy that's grappling with an unemployment rate of about 25%. The vehicle production threshold for benefiting from government incentives has been lowered to 10,000 units a year from 50,000 and support for the industry will be extended beyond 2020, the Department of Trade and Industry said in November 2015.

While the industry sees domestic new-vehicle sales slumping in 2016 for a third consecutive year, demand will probably increase from next year, the National Association of Automobile Manufacturers of South Africa said in March.

Transport equipment was the third-largest category of South African exports by value in 2015, after mineral products and precious stones, according to the nation's revenue authority. Exports of vehicles climbed 21% in 2015 from a year earlier, Naamsa said.

While about 60% of the companies in the IDZ are in the automotive industry, mostly supplying parts and services to the nearby Daimler AG plant, the zone is attracting other investment, such as renewable energy, Zweni said. A new wind farm may be operational in a year and there are plans for a solar-equipment production facility, he said. ■

"Suddenly we are getting more interest from companies," Zweni said, declining to name specific carmakers. "They will save on start-up costs because we would have this huge facility."

Mitsubishi Electric to strengthen Factory Automation presence in Southern Europe and Africa

Italian FA Centre and South African FA Centre Satellite to support manufacturers.

Mitsubishi Electric Europe B.V. has announced the opening of a new Factory Automation (FA) Centre in Italy and a Factory Automation (FA) Centre Satellite office in South Africa, intended to provide automation products and services to Southern Europe and Africa. There are a large number of manufacturing companies in these regions that can benefit from the high level of automation support offered by a Mitsubishi Electric office. Both facilities will help support the ongoing expansion of Mitsubishi Electric's FA business in Africa and Europe respectively.

"Wherever there is industrial growth, there is a need for automation. This is as true for Italy as it is for Africa, where we can see demand for technology and solutions growing strongly. The new offices demonstrate our commitment to growth both in Southern Europe and on the African continent. Mitsubishi Electric prides itself on providing advanced automation equipment that is both extremely reliable and easy to use. By providing solutions around the globe we are able to share that knowledge throughout our expanding world," said Hartmut Pütz, President of Mitsubishi Electric's Factory Automation — European Business Group.

The new FA Centres will both offer FA product training, product support, technical consultation, solutions and technology training for customers. Servicing and support for FA products in Africa had previously been provided directly by the European FA Centres, of which the new Italy office is now the seventh. The South Africa FA Centre Satellite is one of two such satellite offices that Mitsubishi Electric now has in the CEE region and Africa. ■

World Power Products consolidates manufacturing sites for better efficiency

The consolidation is taking place to cut costs, to improve customer service, and make the company more competitive.

When a company occupies five different factory sites, has 30 000m² under roof to work with and offers CNC laser cutting, punching, bending, milling and turning, robotic welding as well as MIG/TIG welding and stud welding, plastic injection moulding, die casting, polyurethane gasket extrusion, powder coating and electro plating, you know it means business.

However, as cost cutting drives more applications away from labour-intensive secondary and tertiary operations, better tools are needed to help consolidate processing into a minimum amount of handling.

World Power Products has six Haas CNC machines in the machine shop

"As a manufacturer, your world is growing in complexity. You are serving more customers, with more products across multiple supply chains. The technology you are using to manage your business may be spread out across multiple, disconnected systems that make it difficult to consolidate into a "single version of the truth". Therefore your business needs a technology solution that provides end-to-end visibility through insights that enable you to make timely, effective decisions to maintain and grow your business," says Jan Görtzen who joined the company three years ago as Managing Director.

Jan Görtzen (MD) and Igmar van Rie (Factory Manager) of World Power Products

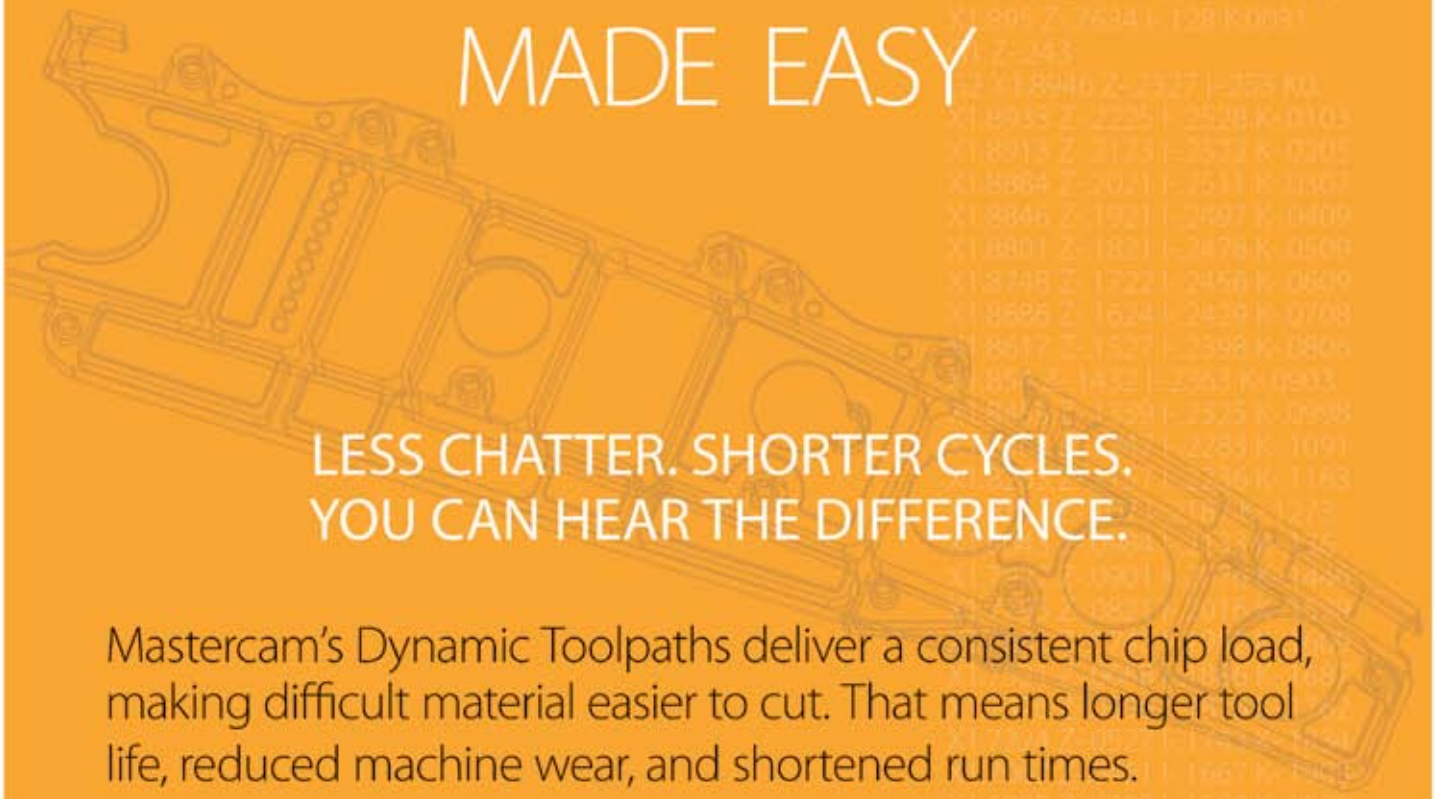
Established in 1963 in the south of Johannesburg by the late Peter Bahlig, World Power Products originally focussed on part production and repair work. Currently World Power Products is run by Bahlig's son Mark, as Director, and Görtzen.

Today the company specialises in the manufacture of high-precision, custom sheet metal products as well as standard mild steel, stainless steel and aluminium enclosures and cabinets, offering a vast range of sizes and various accessories to cater for customers specific needs. All cabinets and enclosures have Ingress protection ratings of IP40, IP54, IP55 and IP65. The standard products are powder coated in RAL 7032 grey and B26 orange. Textured finishes and various colours are also available.

"The occupation of five different factory sites was augmented by the company's growth and its endeavour to offer a complete solution. Planning was obviously undertaken because electro plating, for example, was off-site from the main operation a few streets away. It made sense in that it would not contaminate the other operations. But the time wasted on transport between facilities before assembly and dispatch, which has always taken place at the main facility, was affecting the bottom line. Equally, having duplicate support staff and in some cases duplicate operations at the various sites did not make sense."

"The more closely we examined our sites and envisioned the ideal facility, the more we realised how significantly each individual facility either supported the overall operation and contributed to profitability, or detracted

DIFFICULT MATERIALS MADE EASY



LESS CHATTER. SHORTER CYCLES. YOU CAN HEAR THE DIFFERENCE.

Mastercam's Dynamic Toolpaths deliver a consistent chip load, making difficult material easier to cut. That means longer tool life, reduced machine wear, and shortened run times.

See and hear the difference at Mastercam.com/dynamic.

Mastercam® | DYNAMIC MOTION™

5% discount offered when requesting via email using the promotion code MC4605

MECAD
Sales, Training and Support

Mastercam
Lodewyk Jansen van Vuuren
sales@mecad.co.za
086 111 2236 | www.mecad.co.za

SolidWorks
Freek van den Berg
086 111 2236 | www.mecad.co.za

MILL | LATHE | MILL-TURN | SWISS | WIRE | ROUTER | DESIGN | MASTERCAM for SOLIDWORKS

Enclosures manufactured by World Power Products on the assembly line

World Power Products has four Motoman robots of various sizes carrying out robotic welding operations

from it and drained profitability."

"Additionally we weren't being as efficient with our space at the main facility as we could have been. The various operations, which should follow the previous one, were also located all over the factory. The relatively new Salvagnini fiber laser was located on one floor while the other lasers were on another floor."

Five ways to add punch to productivity

According to Görtzen, the company considered many factors as part of the decision to consolidate operations.

"The efficiency of consolidated operations was a key point. Generally, the more operations can be consolidated, the less part handling is required. Combining different operations can also improve part accuracy."

"However there are five ways to add punch to productivity and efficiencies - eliminate, optimate, renovate, coordinate and consolidate."

"We have done all of these and now only operate from two facilities that are located next to each other. In essence you could say it is one facility with two addresses."

"In a company of this size offering clients a complete package there are a large number of machines that are on the floor. At the heart of them in the sheet metal operations are five lasers, which include three Trumpfs and the relatively new Salvagnini L3 fiber. Then there are five CNC Trumpf punching machines and over 30 press brakes, the bulk of them being Trumpfs and the largest a 320 ton Trumpf."

"At the moment we have six Haas CNC machines in the machine shop, and in the welding department we have taken the automation route and have four Motoman robots of various sizes carrying out robotic welding operations."

"We have extended and renovated the buildings and now we have all our operations in one place, and as a result we will be more competitive and quicker to respond to changing requirements."

"The added advantage is that because of the restructuring and reorganising we have more space to grow."

"The best metal fabricating partner in a supply chain is the one that not only provides on-time delivery of quality products, but also provides complete and open communication, and this has been our strategy since Mark and I took over. We believe we have achieved this."

For further details contact World Power Products on TEL: 011 680 5524 or visit www.wpp.co.za ■

World Power Products has over 30 press brakes, the bulk of them being Trumpfs, and the largest a 320 ton Trumpf

The relatively new Salvagnini fiber laser

APDP incentive attracts nearly R50 billion spend in automotive OEM industry

US motor company Ford's investment of another R2.5 billion in its South African manufacturing operations brings to nearly R50 billion the total spent on, or committed to, South African vehicle production by foreign companies under the government's incentive-driven Automotive Production and Development Programme (APDP).

This latest investment underlines the importance of the APDP in attracting automotive investment. Between 2013, when the APDP was introduced, and the end of this year, figures from the National Association of Automobile Manufacturers of SA (Naamsa) show foreign motor companies will have invested R25.4 billion in their South African vehicle manufacturing operations. Before the programme began, however, Ford invested R3.4 billion and BMW R2.2 billion, on the promise of APDP incentives. And in the last few months, Volkswagen has pledged R4.5 billion to build new models in South Africa, and BMW another R6 billion for the next-generation X3 SUV.

In November 2015, Beijing Automotive Industry Company (BAIC) became the first Chinese car company to flag full-scale South African car production when it and the Industrial Development Corporation (IDC) announced plans for a R12 billion plant.

The APDP has four legs: import duties on components and built-up vehicles; a vehicle assembly allowance offering duty-free import credits; a production incentive based on local value addition; and an automotive investment scheme, offering up to 30% back on production-based investments.

Trade and Industry Minister Rob Davies said that Ford could recoup up to R699 million on its latest R2.4 billion investment.

In addition, international free-trade agreements allow South African-built vehicles to enter the US and European Union duty-free, as long as a minimum 60% of their value is sourced from South Africa.

Mr Davies said the motor industry was strategically important to South Africa. A report late last year said that through its own activities, as well as purchases from other industries, it was responsible for 677,000 jobs across the South African economy. ■

Ford invests R2.5 billion ($170 million) in South Africa to build Everest SUVs

Ford turns to the capital city of Pretoria, where its plant has the capacity to build 10,000 of the mountain-named SUVs every year and create about 1,200 jobs.

Ford Motor Company is investing R2.5 billion ($170 million U.S. dollars) to expand operations in South Africa at its Silverton Assembly Plant in Pretoria, to produce the all-new Ford Everest, along with the new Ford Ranger that was launched at the end of last year.

This investment will create approximately 1,200 new jobs at Ford South Africa and within the South African supplier network.

"Our customers love the capability and utility offered by the all-new Ford Everest," said Jim Farley, Ford executive vice president and president of Europe, Middle East and Africa. "By producing the Everest in South Africa, we will be able to make it more readily available, and in a greater variety of models, for customers throughout Sub-Saharan Africa.

"The R2.5 billion investment reaffirms the importance of these markets as part of our growth strategy across the Middle East and Africa," Farley added. "It further reinforces South Africa's position as a strategic export base for Ford Motor Company."

The Silverton facility joins AutoAlliance Thailand in Rayong, Ford's Chennai plant in India (where it is sold as the Endeavor) and the JMC Xiaolan Plant in Nanchang, China, as production hubs for the Everest. Initial production at Silverton of the Everest will commence in the third quarter of 2016, with the first units expected to come to market in the fourth quarter. South African-produced models will be sold locally and exported to markets across Sub-Saharan Africa.

Part of this investment has been directed towards the production of the new Ranger, which is already running at maximum capacity at the Silverton Assembly Plant — with domestic sales and export demand at an all-time high.

The Silverton Assembly Plant features state-of-the-art automation utilising Ford's global manufacturing processes, and will be equipped to produce 10,000 Everests annually.

"The all-new Everest has been extremely well received since it was launched in September last year, with demand far outstripping supply," said Jeff Nemeth, president and CEO of Ford Motor Company Sub-Saharan Africa Region.

"This crucial investment will enable us to increase

We complete the **Smart Partnership picture.**

Finding the right partner in any venture is crucial. The right addition brings insight, creative energy and augments the strengths of the team with their unique talents. So it is when you engage the services of Stalcor. Yes, you're getting the finest range of stainless steel and aluminium available, but you're also getting as partners, a 24-hour a day team of highly experienced, committed experts. People who will ensure that downtime is kept to an absolute minimum and that you are fully aware of the incredible range of options and resources you have at your command. We offer a total solution to improve your productivity. Call us to find out the details because **the right partner can make all the difference**

For more information visit **www.stalcor.co.za** or call **Stalcor:**
Germiston 011 871 6900 | Cape Town 021 928 2500 | KwaZulu Natal 031 719 1000 | Port Elizabeth 041 486 1280

stalcor EXPRESS

stalcor
Stainless Steel, Aluminium and Carbon Steel Suppliers

volumes and expand the Everest range to eight derivatives across a broader price range. It will allow customers across Sub-Saharan Africa to choose from two powerful engines mated to robust six-speed automatic or manual transmissions for exceptional capability."

Currently, the all-new Everest is imported from Thailand, using the locally produced 3.2-liter five-cylinder Duratorq TDCi engine. It is only available in South Africa in 3.2 Automatic guise in two specification levels — XLT and the range-topping Limited. With the commencement of local production, a 2.2-litre Duratorq TDCi four-cylinder diesel engine will be added to the range, along with a wider spread of specification levels.

Built at Ford's Struandale Engine Plant in Port Elizabeth, the latest-generation Duratorq TDCi diesel engines — which are also used in the new Ranger — offer maximum fuel economy along with exceptional performance.

The all-new Ford Everest is a rugged seven-seat SUV featuring body-on-frame construction, intelligent four-wheel drive and an Advanced Terrain Management System to help navigate challenging terrain with ease.

In recent years, Africa has emerged as an increasingly important region for Ford, with continued investment and growth.

In 2008, Ford announced plans to build the Ford Ranger at its Silverton Assembly Plant with an investment of R3.4 billion. The investment allowed Ford to transform both of its South African plants into world class facilities to produce the Ford Ranger and Duratorq TDCi engines for local consumption and export.

The Ford Ranger is exported to 148 countries in Africa, Middle East and Europe, while engines and machined components are supplied to Argentina, Thailand, North America, India and China.

In 2014, Ford formed its newest business unit, Middle East and Africa comprising 67 markets to support the region with a dedicated focus and clear understanding of the unique conditions and customer needs.

The African growth story continued in 2015, when Ford confirmed that it would assemble the Ford Ranger in Nigeria, using semi knock-down (SKD) kits and components imported from South Africa.

Ford Motor Company's growth story goes beyond its manufacturing expansion in South Africa. In 2015, Ford sold 78,471 passenger cars and light commercial vehicles in South Africa, the highest number on record. The South African-built Ranger pickup performed particularly well, with an 18.1 percent year-on-year increase in sales and a total of 33,920 Rangers sold in 2015.

"When your plant gets a new vehicle, it's a big deal," Jim Farley, Ford's president of Europe, Middle East and Africa, said in a presentation at the factory. "Today we are demonstrating our commitment to South Africa and Africa as a long-term strategic export base for the Ford Motor Company."

The South African government's automotive-incentive program has attracted companies including Ford, BMW AG, and Volkswagen AG to set up factories and create jobs in the country, where unemployment is almost 25%. Exports of all cars and commercial vehicles will probably reach a record of 376,000 units this year, according to the National Association of Automobile Manufacturers of South Africa, even as the local market declines. Automakers are also preparing for an expected rise in demand in sub-Saharan Africa, boosted by improved road conditions and young populations with disposable income.

The Sahara is far from the only vehicle new to South African production.

"Ford will start manufacturing 30 new vehicle models by 2020 in African countries, including South Africa, Morocco, Nigeria, Gambia, Ghana and Kenya," said Jim Benintende, Ford's president of Middle East and Africa.

Transport equipment exports from South Africa last year were valued at $8.7 billion, 24% higher than 2014, according to South African Revenue Service data. The category was the third-largest by value of exports, after mineral products and precious stones.

"As we continue to grow our business here in South Africa we are committed to improving the skills of our employees and creating new opportunities within the company and the broader supply chain. It is only through the dedication and commitment of our work force, suppliers, dealers, union and government partners that we have been able to secure this investment and expand our operations, broadening our footprint in Africa even further," Nemeth concluded. ■

Richards Bay IDZ looks at aluminium hub

With the increasing contribution of the aluminium industry to the South African economy, particularly in the automotive field, the Richards Bay Industrial Development Zone (RBIDZ) is seriously considering the establishment of an aluminium metals hub.

Richards Bay has the benefit of being the home to South 32's Hillside smelter, the largest aluminium smelter in the Southern Hemisphere. This smelter produces over 810kt of aluminium per annum that provides substantial down-stream beneficiation opportunities, a point recently made by RBIDZ CEO Pumi Motsoahae at the recent Aluminium International Conference hosted by the Aluminium Federation of South Africa.

Motsoahae added that the aluminium hub will have the facilities for direct receiving of liquefied aluminium from the South 32 Hillside smelter and is intended to also attract downstream industries that will beneficiate not only aluminium but also iron, steel and titanium, to take advantage of Richards Bay Minerals and Tronox producing about 30% of the world's titanium and about 30% of its high quality pig iron in the Richards Bay area.

"The aluminium hub will offer tenants a fully-serviced property located within a secure Customs Control Area, which will reduce export and import duties as well as serve as a one-stop shop by clustering all the relevant government departments that investors moving into the hub will require," Motsoahae said.

The South African aluminium industry is one of the industrial pillars of the South African economy, ranking eighth in the world for the production of aluminium. The aluminium sector generates significant foreign exchange revenues and provides over 15 000 employees with decent jobs.

The South African aluminium industry is one of the industrial pillars of the South African economy, ranking eighth in the world for the production of aluminium

Aluminium also has great potential in the automotive industry where manufacturers are making more and more use of aluminium to reduce weight, one example being the C-Class Mercedes Benz that consists of 45% aluminium against nine percent that went into the previous model.

At the same conference, Sizwe Khumalo, CEO of Isizinda Aluminium, elaborated on the platforms for down-streaming aluminium and also highlighted the Memorandum of Understanding signed with the RBIDZ wherein Isizinda undertakes to supply molten metal received from South 32 Hillside Smelter to locators within the hub. ■

Tysica upgrades processing equipment
to take advantage of technology advancements and to realise cost savings

One day while on holiday together, Colin Dallas and Steven Moody started talking about opening their own laser cutting shop. At the time it seemed like a really crazy idea, but they both decided that it was worth a try. Colin had been running Tysica Steel and needed to expand, and Steven was working for FAF Engineering where he was in charge of the laser cutting machines. Colin saw the potential in the laser cutting field and Steven felt that he wanted to advance in his area.

That was back in January 2000. By August the same year Tysica Steel & Laser was established and the company had made its first capital purchase, a Bystronic Bysprint 3015 three kilowatt laser.

"The company cut a wide variety of components for clients manufacturing various products, ranging from office furniture and building supplies, through to motor components and electronics," said Colin Dallas.

"From the beginning we decided that the company would be a jobbing shop, and 16 years later we still hold that philosophy. We believe that we should stick to what we know and also not try and compete with our customers."

History shows that the company added a further two Bystronic laser cutters and some press brakes to the inventory, and as the company grew two moves to bigger facilities were necessitated.

This culminated in 2008 when the company moved into its custom built facility in Leader Avenue, Roodepoort, Gauteng.

"Today that crazy idea has borne fruit and the company now has 2400m² under roof for the processing section of the business and a further 750m² of office space."

"At the time of the move it was very frustrating because we built in a relatively new industrial area. Where we had been located before, in the older industrial area of Roodepoort, we always had plenty of power supply. This new area had not been accommodated for companies like ours that need extra power to run equipment."

"We also had to take into account that we were moving three lasers and could not delay deliveries. Our planning had to be spot on. With the help of the Bystronic trained First Cut technicians we accomplished the task without a delay in production."

New equipment

Tysica Steel & Laser has just completed another phase in its history.

The new Bystronic Bysprint 4020 6kw fiber laser comes with automatic loading and unloading

The new Bystronic Bysprint 4020 6kw fiber laser was installed in December 2015 at Tysica Steel & Laser. The machine was supplied by First Cut

"Continuous improvement halts once a company stops applying consistent energy to the change process. Keeping lean team members involved in problem-solving efforts keeps them in shape so they can continue to recognise problem areas and opportunities for continuous improvement that add value to the organisation."

"This typically means doing things better, more efficiently, and more economically than anyone else. Continually challenging the way things have been done in the past and viewing them from a new perspective ultimately leads to innovation and a strong competitive edge."

"Fabricating metal parts today using the same approaches and technology from 10 years ago is a time-intensive exercise. New technology introduces efficiencies to the fabricating process and shops need to embrace it if they are to maximise profitability and stay ahead of the competition."

"We had reached a point where our existing CO2 lasers were reaching their sell-by-date. High-speed fiber lasers have had a significant impact on the fabrication industry, and the introduction of one into our shop would enable us to manufacture things faster, more economically, and with even higher quality."

"With this in mind we decided to purchase a Bystronic Bysprint 4020 6kw fiber laser."

"The decision to purchase the fiber laser was based on pretty obvious features that the cutting technology demonstrates. This includes:

- Fiber lasers in the 6-kW power range are up to 400 percent faster in cutting thin sheet, and also faster across a large majority of metal thicknesses when compared to the industry-standard 4-kW class of CO2 lasers.
- Fiber laser technology requires 1.5 times less electrical energy to produce the same wattage, and overall consumes about 50 percent less in hourly operating costs. Because the fiber laser uses highly efficient laser diodes to initiate the lasing process instead of high voltage or radio frequency, the electrical input requirements and consumptions are far less compared

to CO2 technology. In addition, the fiber does not require the use of gas turbines because there are no lasing gases, unlike the CO2, which utilises lasing gases and turbines.

- Maintenance tasks that would normally consume several hours per month, such as beam alignments on a CO2 laser, are not required in the routine maintenance of a fiber laser.
- Costs such as mirrors, lasing gases, and beam delivery bellows disappear because fiber lasers don't have these elements.
- The combination of faster cutting speeds and reduced maintenance time increases machine availability and capacity when compared to a similarly powered CO2 machine."

Steven Moody and Colin Dallas in front of the new 6 metre 220 ton Adira press brake supplied by Forest Engineering

"The Bystronic Bysprint 4020 6kw fiber laser was installed in December 2015. The higher power increases the machine's cutting speed in thin to medium sheet metal thicknesses. For example, the 6-kW fiber laser cuts 3mm stainless steel up to 70 percent faster than a 4-kW fiber laser and three times faster than a 6-kW CO2 laser."

"The machine now allows us to accept bigger enquiries with larger runs because we can process the orders faster, something we have been struggling with."

"The 6-kW version is equipped with Cut Control to monitor the cutting process. When a cutting tear occurs, Cut Control automatically stops the laser and the cut is repeated, reducing the risk of miscuts."

"We have also upgraded the software to BySoft 7. This gives us many new features to use in the CAD/CAM sphere. Coupled with the new technology in the machine, we are now able to nest more components per sheet with the tighter lines it achieves, and as a result we are achieving about 80% less scrap."

Only stretcher leveler material

"The introduction of stretcher levelers into South Africa has been a huge help to the laser cutting industry. The stretcher leveler removes all the stresses in the material and removes all waves leaving you with perfectly flat and stress free material. Additionally we can now nest parts closer together and there is absolutely no deviation on the material being cut. This has drastically reduced the scrap factor on all material up to and including 12mm."

"This is why we decided to use only stretcher leveler material. There are many benefits attached to this for our clients in their downstream processes."

New press brakes

"We have also upgraded our press brake department, and last year we purchased two Adira press brakes from Forest Engineering. The one is a 6 metre 220 ton and the other is a 3 metre 120 ton.

"With this new equipment, besides realising cost savings on power, we are also now able to do all our processing inhouse whereas before we were shopping out to other service centres, and we no longer have to work 24 hours a day six days a week."

For further details contact Tysica Steel & Laser on TEL: 011 474 7976 or visit www.tysica.co.za ■

Alstom completes acquisition of CTLE shares, reinforcing its local presence in South Africa

Alstom has announced that it has completed the acquisition of a 51% share in South African rail company CTLE (Commuter Transport & Locomotive Engineering), specialising in the modernisation of trains, from CTE and IDC, which remain shareholders.

The company has also revealed the new name of the company which is Alstom Ubunye and its new CEO Yvan Eriau, also Managing Director of Alstom South Africa.

Through this acquisition, which follows approval by the South African antitrust authorities, Alstom Ubunye's structure will be reinforced and its portfolio broadened. Meanwhile, Alstom's presence in South Africa is reinforced, to better address the country as well as Southern African region transport needs.

Alstom is now starting the integration of Alstom Ubunye, which counts over 400 employees and a 80,000 m^2 manufacturing facility. The acquisition will develop local competencies and the new company will benefit from Alstom's technology and expertise. The integration will extend the activities of Alstom Ubunye which will include infrastructure, signaling, trains and components, as well as services to better address the region's railway transport needs.

"To be closer to its customers, Alstom has decided to further invest in South Africa. We know we can rely on a highly skilled workforce here in CTLE to seize the new opportunities to come. We are very pleased to conclude this new deal with our South African partners to create a stronger industrial and commercial base able to offer a full range of rail products and solutions in Southern Africa" said Yvan Eriau.

CTLE was formerly known as Union Carriage & Wagon (UCW) which was established in 1964, providing rail vehicles for the South African Railways and executing export orders for several Asian and Southern African countries.

Well established in South Africa, Alstom is presently working on the supply of 600 X'Trapolis Mega commuter trains to the national rail company PRASA (Passenger Rail Agency of South Africa) through its South African joint venture Gibela. ■

State urged to help localise aluminium value chain

Until fairly recently, aluminium auto bodies were the domain of a select few high-end vehicles, including Land Rover, Jaguar, Audi and Mercedes Benz. But in their search for ever increasing gas mileage, more automakers are using aluminium for at least some of the body panels, frames and parts on the cars they make

Mercedes-Benz SA (MBSA) wants the government to encourage local beneficiation of aluminium that would allow motor companies to stop importing up to 50% of metals used in their cars, according to the Business Day.

CEO Arno van der Merwe said his company was working with the industry and the government to identify raw materials that could be developed locally for inclusion in cars made in South Africa.

Some firms claim local content of 70% or more in their vehicles, but the industry average is just more than 40%. Local content is defined as the value added in South Africa of the ex-factory cost of a vehicle including parts and manufacturing costs such as labour and energy.

not achieve its goals alone. South Africa needed a robust, co-ordinated industrialisation strategy across all sectors.

In a report published at the end of last year, consultancy Econometrix warned that lack of a comprehensive strategy threatened South Africa's industrial development. The motor industry, it said, was a rare example of how an industry could develop with proper support.

The industry has had consistent incentive policies since 1995. The current model, the Automotive Production and Development Programme, is due to expire in 2020, but the government has committed to continued support after that.

Mr van der Merwe spoke at the presentation of MBSA's

Mr van der Merwe said MBSA imported all its aluminium, which accounted for 40% to 50% of the construction of C-Class cars assembled at its East London plant. Industry-wide demand for the metal is set to increase significantly

Mr van der Merwe said MBSA imported all its aluminium, which accounted for 40% to 50% of the construction of C-Class cars assembled at its East London plant. Industry-wide demand for the metal is set to increase significantly. "It's the material of the future," he said.

The existing supply process "is not sustainable", he added.

"We have a strong focus with government to identify raw materials that can be localised."

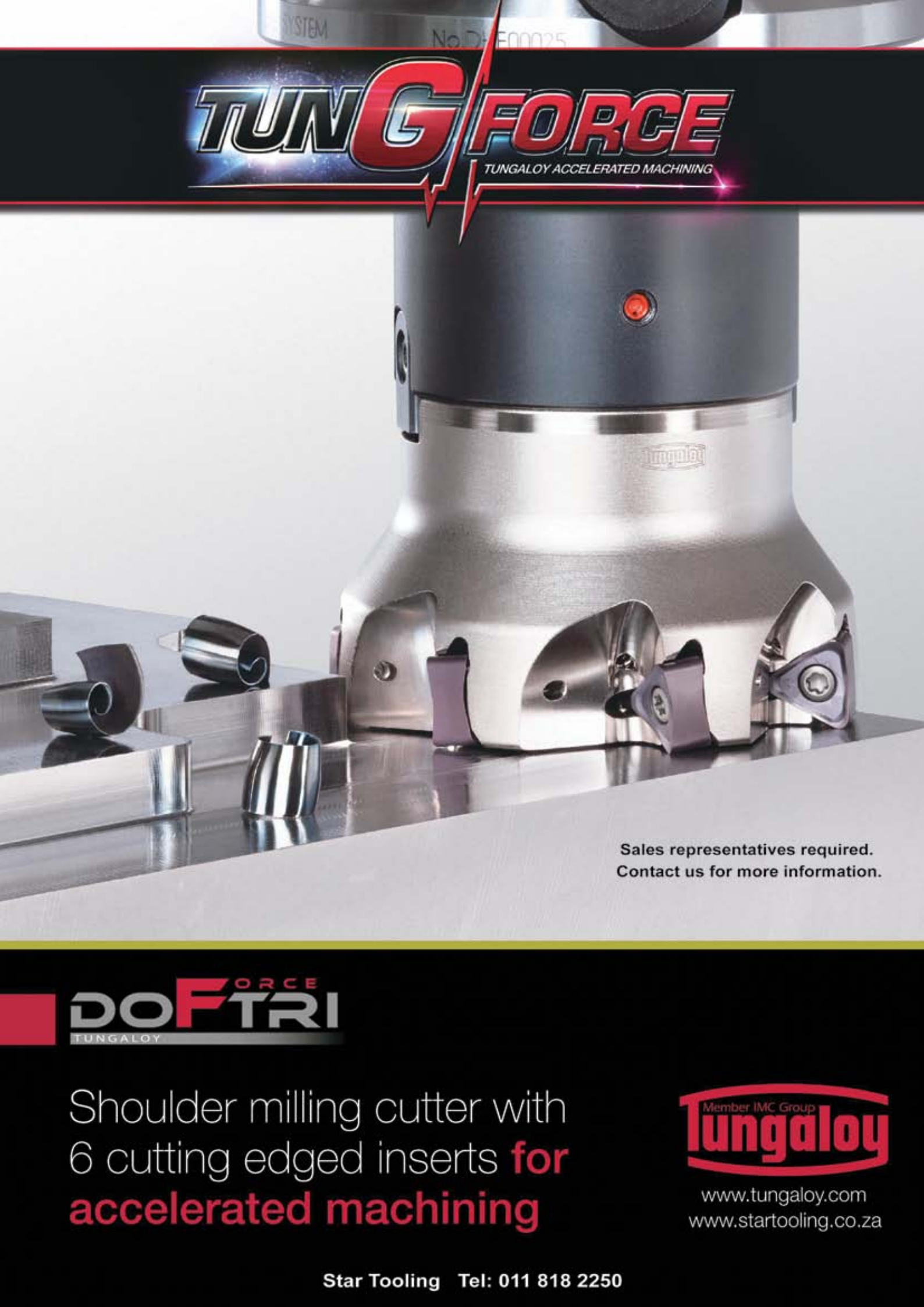
MBSA was also keen to localise some of the polymers and plastics it used. Sasol was among the companies involved in discussions.

However, Mr van der Merwe said the motor industry could

2015 business results. In a sharply declining new-vehicle market, the company increased revenue last year by 45%, from R45.3 billion to R65.9 billion.

As a net exporter, the company avoided the worst of the rand's depreciation. MBSA exports 90% of production to more than 80 markets. Last year, it built a record 102,000 C-Class cars, as well as 4,000 trucks and buses.

A weak rand should not necessarily be seen as a negative, Mr van der Merwe said. As long as it stabilised and avoided the recent wild fluctuations, "it represents a real opportunity for local industry to capitalise on international competitiveness and (exports)". ■


TUNGFORCE
TUNGALOY ACCELERATED MACHINING
Sales representatives required.
Contact us for more information.
DOFORCE TRI
TUNGALOY
Shoulder milling cutter with
6 cutting edged inserts for
accelerated machining
Member IMC Group
Tungaloy
www.tungaloy.com
www.startooling.co.za
Star Tooling Tel: 011 818 2250

WD Hearn opens
CNC Technology Centre in Gauteng

WD Hearn Machine Tools recently hosted clients and suppliers at a grand opening event of its new purpose built CNC Technology Centre located in Bonaero Park, the new home for the company's Gauteng branch.

On display was a Kitamura 5-axis machining centre, a Mitsubishi WEDM, Leadwell CNC lathes and machining centres, a Nikon portable arm for 3D metrology, Renishaw probing systems, Sisma laser welding and marking machines, and Starret video measuring equipment.

Below is a selection of visitors that attended the opening and exhibition.

For further details contact W.D. Hearn Machine Tools in Gauteng on TEL: 011 970 7005 or Marius Conradie on 083 285 1655, the head office on TEL: 021 534 5351 or visit www.wdhearn.co.za ■

Vikesh Harikaran (Siemens), Ray Cooper (WD Hearn), Zeki Aydan (Siemens) and Graeme Cooper (WD Hearn)

Graeme and Ray Cooper with Eric Change (President of Leadwell) and Rachel Shi (Leadwell Area Manager)

Hans-Jurgen Pelzers (Mitsubishi Electric EDM machinery), Charlie Endress (Endress Dies & Moulds) and Markus Funk (Universal Tool & Patternmakers)

Maurius Conradie (WD Hearn), Burrie Smit (BBQ Engineering) and Gavin Adams (Iscar South Africa)

Paul Castle and Michael Spaeth, both of Flow

Celebrating the first 5-axis Kitamura machine to be installed in South Africa at Hentiq 1536

On display was a Kitamura 5-axis machining centre,
a Mitsubishi WEDM, Leadwell CNC lathes and machining centres,
a Nikon portable arm for 3D metrology, Renishaw probing systems,
Sisma laser welding and marking machines,
and Starret video measuring equipment

Sakkie Coetzee (Extreme Machine Technologies), Eric Vermuelen (Master Machining), Wayne Mackinlay (WayMac Precision Engineering) and Andre Vermuelen (Master Machining)

Charles Parkin (Stillam), Brian Percival (Bell Equipment), Vincent Wills (Stillam), Myles Crosthwaite (WD Hearn) and Simon Griffiths (WD Hearn)

Moulding a niche — proudly made in South Africa "my china"

Enviro Lamps is not your typical moulding shop, but a small sub-set (niche) of the broad injection moulding business since its specialty is developing and marketing its own products. Not only is it committed to providing the highest quality, reliability and best performance, in recent years the company has explored other avenues that now contribute to the bottom line.

In 1994 Johan Dreyer's late father Baltus Dreyer started to tinker in what he refers to as his father's garage shop. The garage wasn't much to see and it did not even have the usual equipment such as a used mill and a manual lathe. However, it was soon supplying irrigation components and extruded pipes to a number of retail suppliers and the mining industry.

"What mattered was the product that he supplied was in his hands and he had a dream to run his own business: a dream that was coming true and starting to grow. Several years later the business purchased its own injection moulding machine and expanded its product lines, and I joined him in the business."

"I came from the sales and marketing background but had inherited his engineering genes. From one bay in the garage we moved to a factory in Kya Sands, Gauteng where we stayed until late last year. The move to the Laser Park area was necessitated because we were losing too much production time because of the unstable power supply that had become the norm for many South African businesses. We were losing about 30 odd days a year."

"Thankfully this debacle has improved and we are now able to operate in a 'normal' environment."

The range of oil lamps that Enviro Lamps manufactures

Enviro Lamps manufactures its own moulds and designs, and manufactures for clients

The early history of the company shows that the emphasis was on manufacturing injection moulded components and products, and later included blow moulded plastic products.

Move into mould manufacture - Invent a product not just its mould

Ten years ago the company took a major decision and expanded into the metalworking arena, more specifically mould manufacture.

"My father always had the belief that in manufacturing you had to develop your own unique product and then manufacture the product in its entirety, as best possible, in your own shop. He was not interested in running a make-it-best-you-can job shop environment where almost every new job represents new process challenges. It's also an environment where profit or loss hinges on how efficiently the shop can get a job done."

"He had previously developed a non return valve for underground support systems in the mining industry, a product that we still manufacture today. We have had numerous offers from distributors to take our entire production and have an exclusive agreement with them. This does not fit our business model and ultimately would leave us beholden to one client who could drop us at anytime. We would also not be very popular with our existing clients."

"The truly successful companies provide a turn-key business model including product development, tool building, moulding, finishing, assembly and logistics. They are shipping to clients - not just the moulds, but finished goods that are ready to go on the shelf for sale to the consumer."

But there's much more to it than just that. The core issue is that this shop makes plastic injection moulds in a

production environment, even though they still mostly build them one at a time. Long gone are the days when "handcrafted" was synonymous with quality. This is a factory where measurable and repeatable production control reigns, and they continuously look to weed out identifiable sources of process variability just as sure as if they were knocking out parts by the thousands on their plastic machines.

Enviro Lamps first attempt at manufacturing a mould was brought about because of the frustration of having to rely on a third party and their excuses.

"About 15 years ago we developed an oil lamp that we named Enviro Lamp, hence the name of the company. The Enviro Lamp is eco-friendly and is ideal for use in restaurants, bars and pubs, bed and breakfast establishments, outdoor and home use."

Johan Dreyer is very hands on and operates his CNC machinery on a regular basis

"Oil lamps are beautiful and add a really stylish finish to your tabletop. They are very clean, do not make the mess and waste of traditional wax candles or t-lights, and they always look as beautiful as they did when you first light them. They run on highly refined, clean burning lamp oil that is also smokeless."

"If you already use candles, imagine the beauty of natural light, with no more cleaning wax out of glasses, or off tables and candle sticks! The oil is very safe — flashpoint is 120 degrees - and will not burn without a wick. Additionally, all of our lamps are tested for strength and stability."

"They come with frosted or clear lenses and on request logos, branding or text can be printed onto the lenses. There are seven different fragrances to choose from, and citronella oil and mosquito pads are available for outdoors or indoors."

"We have supplied over 1500 restaurants with the Enviro Lamp and with approximately five restaurants opening up every week in South Africa we have an ongoing demand. The first restaurant Group to order our product was Mimmos and they still order the lamps today."

"It has been said that it was found that 83 out of 100 people prefer a restaurant with candle light to one without."

"We now have 15 models with different variations of lenses and bases. If you visit a restaurant or a pub/bar in this country that has oil lamps as their decoration to create an ambience you will probably find that it is made by our company."

"We used to shop out the manufacturing of our moulds but 10 years ago we decided to manufacture our own in keeping with our philosophy to manufacture in-house where possible and to eliminate the frustration of dealing with a third party."

"By that stage we already had four injection moulding machines and a blow moulder pumping out product. The oil lamp was gaining traction in the market place and we wanted to offer variations."

"In the beginning our toolroom was very rudimentary with a few conventional machines, including a grinder. Of course it was a huge learning curve for me as well, but where there is a will there is a way and we have reached a position now where we say 'If they can draw it we can make it!' It must be recognised that we would not have reached this point had it not been for my trusted designer and colleague Andrew Routledge. Andrew is a wizard on the design side and can turn an idea into drawings literally in a couple of hours. Clients are absolutely amazed when they sit and watch him work."

With the new CNC equipment that Enviro Lamps has just purchased it has started to offer machining as a service as well as 3D design and printing

"When I say 'sit and watch him work' this aspect has been added to the services that we offer. In the past Andrew would just do the drawings for our own products but once we decided to go the CNC route six years ago it opened up another avenue for us — mould manufacture for outside clients. In general we will not manufacture the end products for the client but rather provide them with a mould."

"In the last three years we have manufactured about 200 moulds for clients and for our own use. This all came about because of our need to diversify the range of oil lamps that we manufacture, and the need for faster turnaround times on the moulds that we needed for these new designs."

CNC machines

"The only regret I have in the company's move into the CNC era was that my father was not around to see the transition. He would have loved to see the changeover and the resultant benefits. Like me, it would have been the enjoyment of undertaking the challenge of adapting to the new technology that would have driven him."

"The first CNC machine we purchased was the Haas TM-2 Toolroom Mill, a versatile machine that combines the functionality and simplicity of a manual mill with the power and flexibility of the Haas CNC control, making it the perfect machine for toolrooms and shops transitioning to CNC."

"The TM-2 has generous XYZ travels of 1016 x 406 x 406mm that provide plenty of room for machining larger workpieces. The large table accommodates multiple vices and/or chucks, as well as 5C indexers and small rotary tables. All axes feature brushless servomotors for precise positioning, and a one-piece cast-iron base/column damps vibration and provides rigidity for heavy cuts. The machine runs on either single- or three-phase power."

"The TM-2 features a 5.6 kW vector drive spindle that uses standard 40-taper tooling and spins to 6000 rpm. A push-button tool-release system makes tool changes fast and easy."

"The TM-2 has served us well and will continue to do so but we have reached a point in the company's history where we needed to increase our CNC capabilities. To stay competitive in both cost and technology manufacturers no longer

The new Romi G280 turning centre that was supplied by Libcor Machinery

The first CNC machine that Enviro Lamps purchased was a Haas TM-2 Toolroom mill

require a skilled machinist to run a single machine. They need technologists who understand cutting tools, machine programming and editing, statistical process control, machine diagnostics, metrology, and the computer skills needed to communicate with ERP systems or enterprise-wide systems that oversee multiple machines."

"We at Enviro Lamps have this mentality and our small staff of nine are happy to multi-task, and that includes me. I am at my best when I am running the Haas TM-2 or working on the two new CNC machines that we acquired in February 2016."

"One of these is a Romi G280 turning centre and the other is a Hurco VM10i machining centre. As a result we are now able to offer CNC turning and milling work."

"The Romi G280 turning centre that was supplied by Libcor Machinery, has a swing of 440mm, cutting diameter of 280mm, cutting length of 540mm, travel XZ axis of 202/540mm, a rapid traverse X-axis 18 m/min, rapid traverse Z-axis 24 m/min, speed range of 3 – 3500rpm and bar capacity of 76mm, not that we use this in our operation."

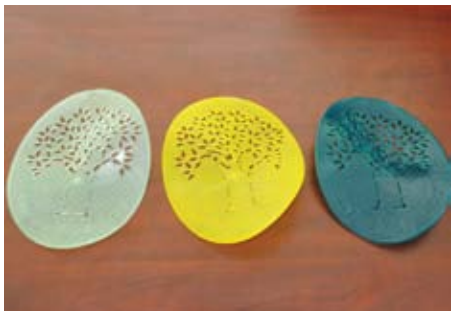
Another recent purchase was a Hurco VM10i vertical machining centre that was supplied by Hurco South Africa

"The Hurco VM10i vertical machining centre that was supplied by Hurco South Africa, has a XYZ axis travel of 660 x 406 x 508mm, a table size of 762 x 356mm and a table weight of 340 kilograms."

Proudly made in South Africa "my china"

Johan Dreyer is very vocal when it comes to this topic. "Herein lies the question: 'Do mouldmakers really have to fear China as a threat to mould manufacture?' The answer is: Yes and No. Yes, there are manufacturers who are looking at what is happening in the industry and adjusting their approach to toolmaking to meet the demands of their customers. They (Chinese manufacturers) are finding ways to leverage technology and modernise the design approach that will rival local companies. They still have an advantage of lower labour rates, but those rates are continuing to rise as the Chinese populace wants more of the things that a consumer-driven economy provides."

"There is of course the long distance communication and very little relief if things go wrong, especially on the quality



A new product developed and manufactured by Enviro Lamps is the Wee Tree

Another product of Enviro Lamps is the Bio Tee that is making inroads in the golfing industry because of its strength and biodegradable properties. Made up of 70% wood and 30% polymer, it lasts longer than a wooden tee but degrades quicker than a plastic tee. It also does not damage clubs and green keepers' equipment

Enviro Lamps has recently developed a number of other products. The caterware products are ideal for the South African outdoors and include cups, plates, bowls, platters and glasses — both beer and wine. There is also a range of sushi bowls and plates

side. More recently, the South African Rand has weakened and as a result it is not so cheap to import from China anymore."

"In the case of our oil lamps there are literally hundreds of cheap and nasty alternatives on offer but none come anywhere near to our quality. We can also offer small batch orders, something that is not possible if you are importing from China. They want you to take container loads."

"This makes the local industry very competitive, especially if you have kept abreast by investing in modern equipment."

"Additionally, a company that is manufacturing its own product needs to manufacture most of the components that make up that product. In the case of our oil lamps we make the moulds, manufacture the lenses and bases, print where required, manufacture the brass component, the plastic housing and the metal fixture for the wick, weave the wick and assemble. We have also done a huge amount of research on the fuel, which is unique for our application, and supply this as a consumable. Virtually every 10 days we order five tons or 6700 litres of oil. Spares are also always available."

Other products

Enviro Lamps has recently developed a number of other products. The caterware products are ideal for the South African outdoors and include cups, plates, bowls, platters and glasses — both beer and wine. There is also a range of sushi bowls and plates.

The Bio Tee is busy making inroads in the golfing industry because of its strength and biodegradable properties. Made up of 70% wood and 30% polymer, it lasts longer than a wooden tee but degrades quicker than a plastic tee. It also does not damage clubs and green keepers' equipment.

The latest product has been dubbed the Wee Tree and is currently being introduced to the South African market. Manufactured out of a fragrant material that can retain its smell for up to seven weeks, it will primarily be used in men's urinals.

Although not its primary focus the company can now also offer machining as a service as well as 3D design and printing.

In the case of Enviro Lamps, it has built a business based on flexibility and breadth. It's a business designed to handle parts, sub-assemblies or complete products for its customers.

By performing more services than generally found in a single discipline shop, some of the business risk is spread over a group of jobs rather than just one. It has also cultivated customer loyalty by becoming a unique kind of supplier.

While the company has derived more work from its diverse capability, as one might expect, there have also been process advantages from the crossover that were not anticipated.

For further details contact Enviro Lamps on TEL: 011 708 3655 or visit www.envirolamps.co.za ■

The plastic injection moulding department at Enviro Lamps

Enviro Lamps believes in manufacturing its own moulds and components that make up that product, including weaving the wicks for the oil lamps

GO FOR GOLD!

BE AHEAD OF THE PACK WITH BULLDOG ABRASIVES HOME GROWN PREMIUM FLAP DISCS!

Bulldog
ABRASIVES & AUXILIARIES
EXPECT MORE

HIGHLY DURABLE DISCS FOR BOTH STEEL AND STAINLESS STEEL APPLICATIONS

CONTACT BULLDOG ABRASIVES SALES TEAM ON
+27(0)11 786-5991 OR SALES@BULLDOGABRASIVES.CO.ZA

Resolution Circle
looks to fill gap for industry

Everybody talks about the skills and technology gap but what are you doing about it?

"It's all about collaborating and pulling our industry together into a team to grow faster than single entities would be able to do by themselves." That comment from Gideon Potgieter, Group Senior Manager: Business Development seems to capture the overall sentiment of the newly formed Resolution Circle.

"The creation of Resolution Circle will help with accelerating ideas and product to market. We believe that technology advances like those being explored by the Resolution Circle will continue to improve the capabilities of our nation's manufacturing base, which is a critical growth engine for our country."

The laser installed at Resolution Circle is a Trumpf TruLaser 1030 fiber laser. The machine was installed by Retecon Machine Tools

"Additionally the strength of manufacturing's future is dependent on the ability of all levels, including those of the educational structure, to respond to the needs of industry and develop and maintain a skilled workforce. We are dedicated to advancing that process, as well as showing what we can do for companies' products and how the various technologies will transform certain aspects of manufacturing."

"There is a gap in knowledge relative to exactly what these technologies can do. This is where the Resolution Circle will play a critical role - connecting the capabilities of the technologies with the needs of industry and helping to transfer knowledge."

"To transform manufacturing education to better prepare today's and tomorrow's practitioners to meet the accelerated technical and business advancements of the 21st Century will drive South Africa forward."

In the bending department there is a Heli 125 ton 3 metre press brake and a Heli 6mm by 3200mm guillotine

Concept

The Resolution Circle is a University of Johannesburg (UJ) initiative headed by Professor Willem Clarke who is spearheading the multi-million rand project to marry technological innovation with industry and business, and is partly funded by the National Skills Fund. It operates as an independent, commercial company, through commercial partnerships and projects.

Resolution Circle is a uniquely horizontally integrated ecosystem that specialises in developing innovations in support of the commercialisation process, including both IT and non-IT solutions, is a hub for incubation of small businesses, is a service provider to industry, offers product and process development and is an integrated training, research and development ecosystem to deliver innovative technology.

It is a model that Professor Willem Clarke believes could prove effective for driving innovation and job creation across numerous sectors in South Africa, in line with the government's drive to promote innovative job creation

Students being trained on the Flow mach 2031b waterjet

Two Euromac machines have been installed by CML Machine Tools. The first machine, a Euromac MBX 1250/30-2250mm, is an autoindex CNC punching machine that uses the Euromac multitool system, and the second machine is a Euromac Digibend 400 bending machine with a 40 ton force

projects and a knowledge economy. It also supports the government's call for more emphasis on science, technology and innovation.

The educational concept was born out of the reality that many engineering students lack practical experience, and large numbers of students battle to find placements where they can complete the one-year practical training component of their diploma courses.

Resolution Circle was started in 2012 and has since grown to a company with more than 100 employees. Through its partnerships with industry, it has successfully developed many products in the market and filed various patents.

The Resolution Circle is housed in two facilities. The first of these is at the 7500m² Resolution Circle Towers that is situated in the Milpark area of Johannesburg, Gauteng. This facility includes The Incubator, which is specifically targeted towards early stage technology start-ups that need to design, prototype and to commercialise any form of technology, the R&D Lab rental service setup and the extensive training and events facilities, which allow Resolution Circle to host various events and offer professional training. This hospitality arm also hosts conferences and meetings.

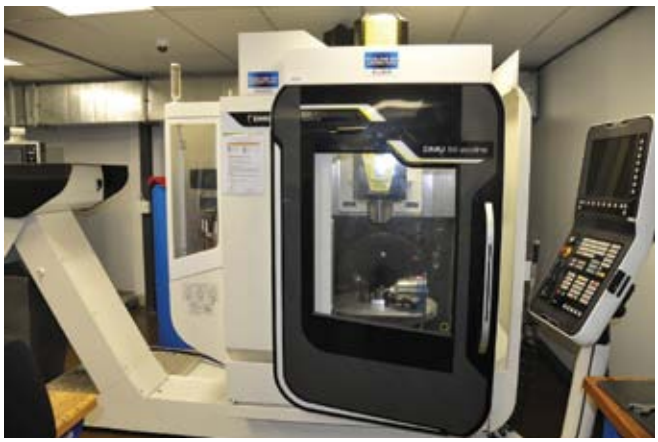
The second facility, which is situated in a building alongside the UJ Doornfontein campus, is a 3500m² dedicated training workshop run by experienced artisans from industry as supervisors, and boasts a number of high-tech equipment for metal forming and shaping, plastic injection moulding and metrology and quality inspection. This facility also includes PC board and electrical wiring training and carpentry manufacturing equipment.

The Resolution Circle's operating processes are designed for doing business, not primarily for education, although this is an important component. The entity is fully involved in product development, from the generation of intellectual property, to prototyping development, sourcing or co-funding of development and the formation of start-ups and joint ventures.

The Resolution Circle have also installed a Victor Vcenter-102E CNC vertical machining center

Just installed is a Nikon Altera 7.5.5 coordinate measuring machine, supplied by WD Hearn Machine Tools

Retecon Machine Tools have also installed an AgieCharmilles CUT 20 P. In the background is the Chevallier FSG-1632ADIII·1640ADIII high-precision 3-axes automatic surface grinder



5-axis machining is done on the DMG MORI DMU 50 ecoline, supplied by Retecon Machine Tools

As its contribution to a joint venture, Resolution Circle will provide admin support, office space, legal support, patenting and commercialisation services, HR support and tax registration and compliance, in addition to the research and development support and access to facilities.

In short, if you do not have the capability or services of one or more of the following: 3D printing, machine vision, robotics and industrial automation, EMI testing, industrial electronics, energy efficiency and management, design and simulation infrastructure, composite materials, including fiberglass and carbon fiber, product reliability testing, non-destructive and material testing, a chemical process and microbiology lab, textile processing and software development, including commercial image processing, app development and testing, then the Resolution Circle is able to assist you.

This includes cutting, machining, plastic production, fabrication, carpentry and quality control.

Intern development programme

"As we struggle to find skilled workers to fill positions in manufacturing facilities across the country, there are those among us working hard to interest young people in what manufacturing and technology have to offer," said Johnny Pretorius, Manager: Skills Training at the Resolution Circle.

"Resolution Circle offers an Engineering Intern Programme. During the one-year programme, interns develop 17 different skills areas that are divided into four groups, i.e. vocational skills, professional development, professional life, and technical work."

"This is offered as an outsourced service for companies that are required to take on interns but do not have the necessary facilities or resources. This programme qualifies for BBBEE Skills Development."

"Our intern programme provides new engineering graduates or Work Integrated Learning diploma students with work experience and skills to get them workplace ready."

National Diploma

"In addition to two years of theory, the National Diploma also requires that students complete one year of practical training, divided into two parts. Through our Work Integrated Learning (WIL) programme, Resolution Circle offers mechanical, electrical and electronic technology students the opportunity to complete their Practical 1 and Practical 2 courses."

"Resolution Circle's WIL programme has been structured to strict logbook requirements, not only to satisfy the practical requirements set by the various training institutions, but also to give student's exposure to real-world situations. This is accomplished through a comprehensive range of hands-on, practical training exercises and actual deliverables. All of this is done in a high-tech environment (state-of-the-art equipment) and under the supervision of professionals recruited from industry."

"Currently we have the capability to train 300 students every year. Once a student has completed the year of practical

Included in the sheetmetal department is a Durma MRB-S 2006 three roll bending machine

On the turning side there is a DMG MORI CTX 310 ecoline

training, he or she is available to enter the market place."

"Industry needs to reach out and offer manufacturing opportunities for these young people. They are our future."

"For South Africa to compete globally, it is essential to train the workforce in skills and technology. One way to combat the cheaper imports is to keep jobs here by doing them more cost-effectively, and the only way you are going to do that is if you have a trained workforce."

Small-scale manufacturing - prototyping and small manufacturing runs

Resolution Circle's small scale manufacturing centre hosts unique one-stop idea-to-barcode facilities. It provides companies and individuals with the opportunity to develop prototypes and manufacturing small runs thereof for quick turnover. The state-of- the-art high tech equipment along with 100+ dedicated industry professionals, allows for an effective and efficient use of the equipment in managing different materials in different formats.

"It is important to emphasise here that the Resolution Circle has not been set up to compete with industry but rather to assist and stimulate. We have identified this gap and it is already taking traction with industry. Currently we have some interesting projects we are working on and one in particular is about to reach maturity. This particular product is being tested in the US market and, if it is given the go-ahead, by June this year the local developer will be exporting a few variations of

"For South Africa to compete globally, it is essential to train the workforce in skills and technology. One way to combat the cheaper imports is to keep jobs here by doing them more cost-effectively, and the only way you are going to do that is if you have a trained workforce."

the products to 68 outlets in the US," explained Gideon Potgieter.

Manufacturing facilities

Resolution Circle's cutting facility is a 900m² workshop equipped with laser, water jet, turret punch press and plasma cutter machines. These machines can cut at different tolerances and thicknesses a wide range of materials including mild steel, stainless steel, glass, stone, plastic, carbon fiber, aluminium, titanium and composites.

Cutting, punching and bending equipment

The laser installed is a Trumpf TruLaser 1030 fiber laser with a bed size of 3000 by 1500mm and can cut mild steel up to 16mm, stainless steel up to 8mm, aluminium up to 6mm, copper up to 3mm and brass up to 3mm.

The water jet installed is a Flow mach 2031b that has a work envelope of 2000mm by 3100mm.

Two Euromac machines have been installed by CML Machine Tools. The first machine, a Euromac MBX 1250/30-2250mm, is an autoindex CNC punching machine that uses the Euromac multitool system, and the second machine is a Euromac Digibend 400 bending machine with a 40 ton force.

Other machines installed in this department are a

Heli 125 ton 3 metre press brake, a Heli 6mm by 3200mm guillotine and a plasma cutter.

Included in the sheetmetal department is a Durma MRB-S 2006 three roll bending machine.

There are a number of Pinacho turret mills

Machining equipment

The machining centre is equipped with modern high speed, precision and flexible machines required for tight-tolerances and includes 5-axis milling. Most of the equipment is housed in an environmental controlled room to achieve the required tolerances when manufacturing moulds for plastic production (injection and blow), for example.

These include a DMG MORI DMU 50 ecoline, a 5-axis CNC universal milling and drilling machine designed for high precision and reliability in workshop, training and laboratory settings, as well as for tool, fixture and mould construction applications. The DMU 50 ecoline features an NC swivel rotary table for 5-sided machining of parts ranging from simple to complex.

On the turning side there is a DMG MORI SEIKI CTX 310 ecoline, which features a fast servo turret and 30 m/min rapid traverse, bar capacity of 51mm and a turning diameter of 200mm.

The Resolution Circle have also installed a Victor Vcenter-102E CNC vertical machining center with XYZ travels of 1020 x 600 x 560mm, table size 1100 x 510mm, BT-40 tooling, 11/15kW spindle motor, 8000RPM and a 750 kg load.

Retecon Machine Tools have also installed an AgieCharmilles CUT 20 P, an EDM wire cut unit that handles wire diameters from 0.15 to 0.30mm, has Integrated Collision Protection (ICP) on the XYZ-axes, travels on the XYZ axis 350 x 250 x 254mm and can accommodate maximum workpiece dimensions of 900mm L x 680mm W x 250mm H.

Another machine installed is a Chevallier FSG-1632ADIII • 1640ADIII high-precision 3-axes automatic surface grinder.

"We are very well equipped in our fabrication and machining departments. Additionally we have pipe bending and welding services, and a 3 Axis CNC milling machine for extruded aluminium fabrication," continued Gideon Potgieter.

"With all these capabilities we are able to manage steel in different formats namely solid, plate, pipe and profiled."

Conventional lathe turning is done on Pinacho machines

Plastic production

"Our plastic production facility is equipped with a 90 ton machine capable of moulding by injection or blow. This is ideal for companies in need of speciality parts and/or to produce small runs to test the market."

Resolution Circle's CAD-station consists of 10 high- performance CAD workstation computers, especially equipped with features to accommodate the requirements of advanced resource-hungry software.

"Our composite materials technology station's primary function is to manufacture composite products from hybrid materials such as fiber glass and carbon fiber. These products can vary in size and shape and are accurately manufactured using our CNC machining and CAD design technology."

Quality control and finishing

"Additionally we offer in-house quality control services for client focused precision measurements. In this area we have just installed a Nikon Altera 7.5.5 coordinate measuring machine, supplied by WD Hearn Machine Tools, that features a ceramic bridge and quill for structural and thermal stability, and is designed to provide superior accuracy across a wide range of metrology applications. Probing support is extended with the Renishaw REVO 5-axis scanning technology to improve CMM productivity for complex tactile inspection applications."

"Our finishing product facility allows us to deliver final products that have been spray-painted or powder coated."

"Although Resolution Circle has been operating since 2012 this facility in Doornfontein has taken some time to get together. The building where we are housed was not in a very good condition when we moved in and we had to carry out an extensive amount of renovation before it became inhabitable."

"It started to look like a manufacturing environment just over a year ago when the first of our machines started to arrive. We are now geared, between both facilities, to offer industry in South Africa something meaningful."

For further details contact Resolution Circle on TEL: 010 020 3300 (Towers facility) and 079 022 8286 (Perskor Building Doornfontein facility) or visit www.resolutioncircle.co.za ■

HURCO®

mind over metal®

Introducing

the new MAX5 control

To find out more scan the QR code
or go to HURCO.com/MAX5

HURCO®
SOUTH AFRICA

Unit 9, 30 Golden Drive, Benoni, Gauteng - South Africa
Tel: +27 (0) 11 849 5600 Fax: +27 (0) 11 849 5602
Email: sales@hurco.co.za | www.HURCO.com

MTMA

Moving into fabricating

Sheet metal processing and fabricating, electronics design, assembly and finishing make for a unique value-added offering from Edge Line Engineering.

Making the transition into manufacturing, more specifically sheet metal processing and fabrication, is a daunting task at the best of times. But when you see the opportunities and you can reflect six years later on your decision to diversify and see what you can now offer clients, it is somehow all worth it.

This company, which has roots in the electronics product distribution and installation industry, now offers sheet metal processing and fabricating, electric and electronics design, assembly and finishing for a multitude of clients. These value-added capabilities, combined with its metalworking and electronic talents, have made Edge Line Engineering an important partner for its clients in several different industries.

The new Durma HD-F 3015 4kW fibre laser with a cutting length of 3000mm and cutting width of 1500mm was installed in April 2016

What makes the company stand out even more than other fabricating shops in an industry where one metal fabricating shop is rarely an exact copy of another is its ability to take your concept and then deliver the end product, whether it is a one off or a production run of a product made up of many different components, including the electronics.

In recent times the company has increased its presence in processing sheet metal and offering a job shop service with the introduction of a Durma fiber laser, two Durma press brakes and a Durma turret punch press.

Even though the business, with its full-blown electronics capabilities, is not your typical sheet metal processing and fabricating operation, Edge Line Engineering does share a lot of similarities with its peers, like focusing on the basics, and is committed to producing quality components and products.

The company's entrance into the sheet metal processing and fabricating market really began to take shape in 2010 when Edge Line Engineering was established. While some fabricators were feeling the pinch of a tightening economy, the company's shareholders decided to enter the market with the intention of becoming a market leader in the design, manufacture and sales of electrical, electronic and mechanical products and components for the commercial, industrial, municipal, and mining market sectors.

The shareholders had been working in the electrical industry for some time and saw opportunities to offer more than just what they were doing at the time.

Edge Line Engineering have installed two Durma press brakes recently

Edge Line Engineering has also recently installed a Durma turret punch press

Quality and Value in Metalworking, Engineering and Sheetmetal Machinery since 1972

PRECISION ENGINEERING
HEAVY ENGINEERING
SHEET-METAL
TOOLING
MACHINE ACCESSORIES
SERVICE DIVISION

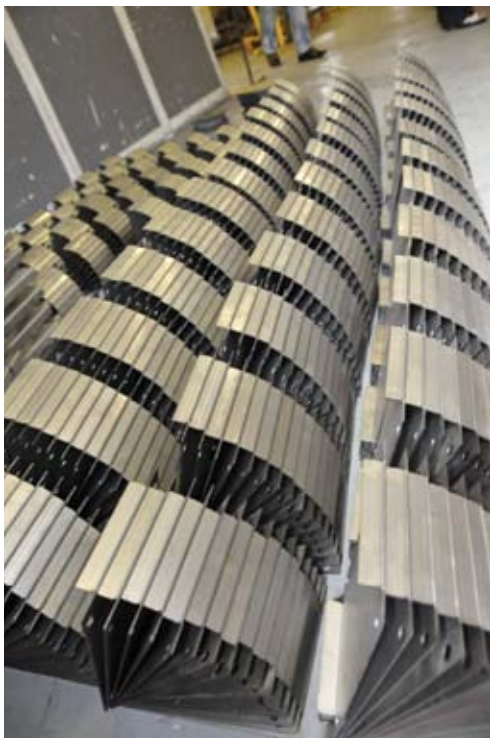
COASTAL
ENGINEERING SUPPLIES

Tel: (021) 552 6063
www.coastalengineering.co.za

Shortly after the formation of the company, they acquired a sheet metal processing/ fabricating entity that was established in 1964. This acquisition provided a solid foundation and accelerated the growth for the company to its current position.

Edge Line Engineering now specialises in sheet metal processing and fabrication of components, as well as the design, manufacture, finishing and assembly of products such as enclosures, substation components, distribution kiosks, motor control panels and distribution boards, cable management systems, electrical low voltage products, secure locking systems, power generators, and much more.

Most importantly, the shareholders saw precision sheet metal processing and fabrication as a road to diversification and a consistent cash flow. The company now has several successful product lines for the power utility sector that they manufacture on a contract basis, and it's a growing business.



Components bent on the Durma press brakes

Contract metal fabrication doesn't have to be seasonal, and it can serve customers across multiple markets. That is why Edge Line Engineering offers this service as well.

Moreover, getting into contract fabrication allows the company to participate in a trend in manufacturing: the push of design services down the supply chain. A purchasing manager on a quest for the lowest per-piece price may work for long-established product lines, but these days, many products have short life cycles. Before you know it, a new design is on the table, and quite often there's a new or better way to manufacture it. A fabricator's engineers, who sit steps away from the people and machines that actually perform the work, can help.

Edge Line Engineering currently operates from two locations in the Robertsham area of Johannesburg with a gross area exceeding 10 000m², offering their clients a complete manufacturing solution, from concept to end product. This includes a 3D design studio using SolidWorks as their design platform.

The company's facilities utilise the latest CNC controlled equipment. The fabrication department is well equipped and boasts machinery of the highest standard, covering a wide spectrum of processes including roll forming, slitting, punching, bending, corner notching, and laser cutting.

Edge Line Engineering also uses the latest version of cncKad from Metalix, a CAD/CAM software system for nesting and other processing features. Grinding and finishing processes are all incorporated in the production area, ensuring for even distribution and work flow.

All completed products are chemically cleaned at the company's pickling and passivation plant. A seven stage dipping process forms the basis of the cleaning process, assisted by high pressure spray equipment for a final rinse cycle. The powder coating plant boasts a high volume batch oven allowing for larger/heavier products. The plant can also process more than one colour at any given time.

Final assembly and wiring is facilitated in the Electro Mechanical Department, comprising of several assembly stations. Each station is well equipped to deal with the required fitment, assembly, and wiring of products.

The main areas of activity of the company's clients are in the building, food and beverage, forestry, hospitals, IT, lighting, medical, mining, municipality, paper and pulp, petrochemical, power generation, refrigeration and air-conditioning industries.

Edge Line Engineering manufactures modular steel enclosures for distribution boards, motor starters, motor control systems, steel fabrication of conveyors and chutes, and the product range includes network cabinet enclosures and accessories, control desks, electrical main distribution boards, modular electrical kiosks manufactured to suit client requirements, modular motor control panels, PLC panels and system integration, intelligent smart meters and other control systems, E-houses and control cabins.

In addition to design and manufacture of products Edge Line Engineering also offers electricity consumption analysis, electricity recordings and load profiling, repairs to all makes of power factor correction units, servicing of existing power factor units, supply and installation of new power factor correction units and total energy management solutions.

Standing out

Edge Line Engineering believes that there are a few other factors that make the company stand out from others. The shareholder's electrical engineering background is always a

The existing Amada punch press

Edge Line Engineering has two Amada press brakes

The first laser that Edge Line Engineering purchased was a Bystronic Bysprint 3015. This took place three years ago

SIMPLE | RELIABLE | PROFITABLE

COMPLETE MACHINE TOOL SOLUTIONS

CONVENIENCE • IN ONE PLACE • EVERYTIME

BEWARE OF IMITATIONS

ERCOLINA®

SETTING THE CURVE

PBS Machine Tools (Pty) Ltd
PO Box 18422, Sunward Park, Boksburg 1470
Unit 2, 31 Seller Road, Boksburg East, 1459, South Africa
Tel: +27 11 914 3360 | Fax: +27 11 914 3366
www.pbsmt.co.za | www.ercolina.co.za

PBS MACHINE TOOLS

FOR PRODUCTIVE BASED SOLUTIONS

SKETCH 2015/8851

The management team includes Gary Shear, Megan Caldwell, Verny Turton and Prince Mcineka

plus, as is the company's ability to deliver the complete product including all the necessary electrical componentry. Edge Line Engineering are also the agents for General Electric (GE) circuit breakers, switchgear and control units as well as having access to a number of locking solutions, including mechatronic smart locks.

An example is given by the shareholders. The brief for the Eskom Soweto Revenue Enhancement Project was to provide a secure enclosure for the prepaid metering system that the SOE was rolling out. Edge Line Engineering manufactured the enclosure, the electronics inside, the locking mechanism and the remote communication system.

But the company went further. They designed and had the concrete base manufactured so that when they deliver the final product, all Eskom has to do is install their smart metering split prepaid meters, connect the wires and then switch on.

"Any metal fabricated product starts with an idea and then a design. The job shop or contract fabricator then feeds components to the product-line manufacturer or OEM. So, ultimately, this business boils down to three principal functions: engineering, job shop fabrication, and production. Like other progressive fabricators, Edge Line Engineering has evolved to include all three of these, but we have progressed even further than our competitors and this is what makes us stand out," said one of the shareholders.

Inevitable change — new equipment

When the shareholders purchased the fabricator in 2010, the company wasn't in the healthiest position. It ran traditional, batch-style production that created significant work-in-process, which is why it took six weeks for most jobs to make it through the shop. Jobs just sat in a queue most of the time. Even worse, the company had equipment spread all over the place.

Change was therefore necessary and this has gradually been made, with acceleration over the last three years, including the purchasing of new metal fabricating equipment, the purchase of a new building that has seen a complete refurbishment and renovation, and additions to the existing facility.

Edge Line Engineering is a distributor for GE products

Edge Line Engineering's first major capital equipment purchase took place three years ago when they acquired their first laser — a Bystronic Bysprint 3015 3kW 2000 CNC laser. The company already had a couple of existing Amada punch presses and press brakes but they have now added equipment in all three of these disciplines.

"We have many more opportunities in the market than we anticipated. As a result production capacity on the metal fabrication side was a restriction," said one of the shareholders.

Last year Edge Line Engineering installed a new Durma turret punch press and a Durma AD-R 30135 press brake that has a capacity of 3048mm bending length, a 135 ton bending force and a throat of 410mm.

Installed in January this year was another Durma press brake. This time the company purchased the

Various components and products before further processing

Fettling in the metal fabrication shop

DMG MORI

Five-axis universal milling machines

DMU 75 / 95 monoBLOCK®

High tech as standard

Five-axis simultaneous machining at the best price.

Top features for five-axis simultaneous machining with 950 mm X travel.

With 950 mm traverse on the X axis (75: 750 mm), 18,000 rpm motor spindle and a tool magazine with 60 stations, the DMU 75 / 95 monoBLOCK ® machines offer top features from the ground up. In a footprint of less than 8 m² (95: 11.7 m²), workpieces up to 1,040 mm in diameter and 1,000 kg in weight can be machined. Easy loading by overhead crane. The 3D control systems Heidenhain TNC 640 or Operate 4.5 on Siemens 840D solutionline and the integrated MPC (Machine Protection Control) round off this unique five-axis complete solution.

The New **Benchmark** in all Sectors!

PRODUCTIVITY | RELIABILITY | QUALITY

Contact Franz
Tel: 011 976 8600 | Fax: 011 394 2471
machines@retecon.co.za | www.retecon.co.za

RETECON (Pty) Ltd

Cape Town: 021 555 2270/1 | Port Elizabeth: 041 453 2720 | Durban: 031 701 8149

A view of the electrical assembly area

Final product ready for delivery

Durma AD-R 30100 hydraulic press brake that has a bending power of 100 ton and bending length of 3050mm.

New fibre laser

"Fabricating metal parts today using the same approaches and technology from 10 years ago is a time-intensive exercise. New technology introduces efficiencies to the fabricating process that shops need to embrace if they are to maximise profitability and stay ahead of the competition," said one of the shareholders.

"High-speed fibre lasers have had a significant impact on the fabrication industry, and the introduction of one in your shop would create an immediate differentiation. However, at Edge Line Engineering we first had to consider how the faster cutting equipment would affect our front-end systems and downstream processes. Would the new technology help to reduce lead times, increase productivity, and improve our overall profitability?"

"The answer is simple. The extension to our building is complete, and the new Durma HD-F 3015 4kW fibre laser with a cutting length of 3000mm and cutting width of 1500mm was installed in April 2016."

"There are many reasons why we have installed the Durma HD-F 3015 4kW fibre laser. When we looked at a

reduction in overall operating expenses, the prospect of up to three times faster feed rates, and that we could reduce cost per part while producing more parts per hour it was no brainer."

"Just on the smart meter side we are manufacturing over 6000 enclosures a month and we cannot afford to have any downtime."

In this department the company can now cut up to 20mm in mild steel and comfortably bend up to 12mm. They do cut other materials where necessary.

New building

The new building, which is situated 100 metres up the road from the existing facility, has been completely refurbished and renovated. It houses the electrical wiring, assembly and finishing departments. Another recent purchase is also housed in an atmospheric controlled room in this building.

With an increase in contracts that Edge Line Engineering had won for enclosures, the company had to purchase a polyurethane Foam-In-Place Gasketing (FIPG) machine to cater for its requirements. Liquid gasketing is a popular, cost-effective way to replace moulded, die cut and other types of gaskets in automotive and other applications. One or two-component materials, including urethanes, elastomers and silicones, are used to form a seal that prevents leaking and keeps the outside environment from invading the system, a must for most of these enclosures.

"Fabricating metal parts today using the same approaches and technology from 10 years ago is a time-intensive exercise. New technology introduces efficiencies to the fabricating process that shops need to embrace if they are to maximise profitability and stay ahead of the competition."

Company structure

Edge Line Engineering is a proudly South African, level 2 BEE company that was established from various shareholders specialising in the electrical and mechanical engineering field. The company employs 80 staff and has three directors. They are Prince Mcineka, Verny Turton and Megan Caldwell.

The shareholders believe it's productivity, efficiency, and defect-free production that will best serve their customers and the company's bottom line, and that this will also allow Edge Line Engineering to compete.

Going forward Edge Line Engineering is looking at bringing other disciplines in-house. This includes adding turning and machining capabilities to the fabrication division.

"In business, success is often the product of a company's vision - the aspirations for the future and the plans for creating opportunities and managing growth. Differentiation from the competition is an important factor in uncovering and realising those opportunities," said one of the shareholders.

"This typically means doing things better, more efficiently, and more economically than anyone else. Continually challenging the way things have been done in the past and viewing them from a new perspective ultimately leads to innovation and a strong competitive edge."

For further details contact Edge Line Engineering on TEL: 011 680 5492 or visit www.edgeline.co.za ■

IT and OT converging in the Factory of the Future

Technology, innovation, and advanced manufacturing capabilities are the agents of change that you need to understand, and embrace.

The "Factory of the Future" is being built on technology, innovation, and advanced manufacturing capabilities. But what is it, exactly? And what are the technologies you need to know about to help your manufacturing company embrace the change? Keep reading to find out.

The definition of the Factory of the Future is evolving; even the name is in flux. Some call it Smart Manufacturing, Industry 4.0, or the Digital Enterprise. While the terms vary, there's one thing that is clear: The Factory of the Future is the product of fast-changing disruptive technologies hitting manufacturing like a cyclone. Information technology and operational technology are both seeing drastic innovations, and the convergence of these two forces is creating a paradigm shift. Manufacturing is experiencing the fourth industrial revolution. Many analysts predict that the stagnation and slow recovery that followed the Great Recession will evolve into a period of expansion for manufacturers. Although margins will likely remain compressed, tools for greater savings and improved capabilities will make it easier for manufacturers to achieve profits and growth. The impact of these technologies and the Factory of the Future is growing.

Consider these statistics:

- IndustryWeek reports that 40% of manufacturers believe that smart manufacturing and its foundational technology — the Internet of Things — are within reach and it's the right time to invest. Huffington Post reports that early adopters of modern solutions that have at least partially implemented smart manufacturing initiatives have documented measurable results:
- 82% reported increased efficiency.
- 49% reported lower product defects.
- 45% reported customer satisfaction gains.

The impact promises to grow and be even more substantial as manufacturers and their suppliers deploy technologies across the entire manufacturing landscape, from product design to supply chain logistics. Greater speed, value, innovation, and closer alignment with demanding customers will be the new normal.

Five IT forces driving modernisation

IT solutions are at the foundation of the Factory of the Future. New IT technologies, from cloud computing to the Internet of Things, are changing the way manufacturers do business — from the shop floor to the back office and throughout the entire value chain.

Manufacturers should consider harnessing more than one of these IT capabilities in order to fully benefit from the next generation technologies transforming manufacturing.

1. Value chain visibility — In order to achieve greater visibility across their value chain, manufacturers must eliminate silos and get disparate systems to communicate. After all, data is meaningless if it is stored in silos and if it lacks

the full dimension of context and consequence. They need to ensure that real-time access is available to easily monitor the details of the complete manufacturing operation — within the four walls and beyond. Interoperability is the key word here; it's a step beyond simple integration. Data must be able to be consumed in context and used for event triggers and actions. A highly flexible ERP system is the starting point for accomplishing this goal.

2. Mobile and social connectivity — Manufacturing leaders can't be tethered to their offices, desks, and PCs. They walk the plant floor. They make decisions on site, in the heart of the operation. They need 24/7 access to critical data and systems from remote locations. This can range from a maintenance technician who's checking the inventory of a spare part while repairing a critical piece of equipment, to a warehouse manager using a tablet to confirm the location of forklifts and personnel. We live on a planet with over 7.2 billion active SIM cards — that's more mobile devices than there are human beings.

On the social front, manufacturers need to take advantage of integrated tools to capture conversations and use those to build a knowledge base and document key decisions relating to product design and customer orders. In a recent survey, 61% of CEOs said socially-enabled business processes are important to business. McKinsey Global Institute estimates suggest that by fully implementing social technologies, companies have an opportunity to raise the productivity of interaction workers — high-skill knowledge workers, including managers and professionals — by 20 to 25%.

3. Cloud-enabled agility — More than ever before, manufacturers are being forced to keep pace with fast-changing global trends. New markets, new customer demands, omni-channel shopping, and growing competition from start-ups are driving manufacturers to become more agile. Accelerated product launches, more product offerings, highly configured products, and additional value-add services are among the ways manufacturers strive to remain relevant and maintain or gain

Tilted in your favour

You see things from a different angle, and so do we. That's why we've put an innovative tilt on the inserts in our new, face milling cutter. This provides all the advantages of a positive single-sided cutter, in a double-sided, multi-edge tool.

All-new CoroMill® 745
Made for Milling

64 Jet Park Road, Jet Park • PO Box 25038, East Rand, 1462
Branches: Durban, Port Elizabeth, Cape Town, Vaal Triangle
Direct Sales: 0860 101 008 Fax: 0860 101 006

sandvik.coromant.com/madeformilling

SANDVIK
Coromant

market share.

Cloud solutions, because they offer faster deployment and implementation, support manufacturers in these efforts. Cloud solutions allow manufacturers to easily add branches, bring on new fabricating facilities, and set up new distribution hubs without needing to invest in hardware and servers. Implementations take weeks, rather than months; and new sites can be online and producing with remarkable ease.

Analysts are reporting increased adoption of cloud solutions. A report by IDC says, "According to IDC's 2015 Vertical IT and Communications Survey of 602 United States–based manufacturers, cloud services are at the top of manufacturers' IT initiatives, and just over 43% of manufacturers are using public cloud and 56% are using private cloud in pilot, proof of concept, or in production. We see similar adoption rates worldwide. In fact, a majority of manufacturers worldwide are currently using public (66%) or private (68%) cloud for more than two applications, according to the respondents that qualified for IDC's 2014 CloudView Survey."

4. Data ingenuity — As gears, grease, and steam ran the manufacturing plants of the last century, today data is the force that makes modern manufacturing cost-effective. Insights derived from data analysis help manufacturers focus on markets, buying trends, customer attributes, cost of raw materials, time, labour, and operational costs, as well as details about the product in use in the market and consumer opinions. As the Internet of Things moves past today's infancy stage, the role of Big Data will only increase. The challenge, therefore, lies not in collecting as much data as possible, but in setting a data strategy. Manufacturers need a clear roadmap for how to turn their data into meaningful actions. Data paralysis is a real threat that must be avoided.

5. Customer centricity — The fifth element of the Factory of the Future is perhaps the most critical. Today's market economy has evolved into a customer-centered model that stresses speed of delivery, product value and a positive customer experience. Consumers — in nearly every industry — are highly vocal, fickle, and quick to turn elsewhere if they are disappointed. Manufacturers are not exempt from dealing with easily outraged customers who are willing to share their complaints about a product or service with hundreds of thousands of "close friends" on social media. Modern customer relationship management (CRM) solutions, collaborative tools, online portals, and product configuration abilities all help to provide customers with a positive experience. Warranty management and after-market service abilities also help to enhance value after the point of sale.

Operating technologies for the future

Operational technology is also a vital part of the Factory of the Future blueprint. Shop floor production, fabrication, assembly, automation, material handling, logistics, scheduling, and labour tracking are all operational elements that are receiving careful scrutiny from manufacturers looking to improve their efficiency.

Faced with extremely thin margins and volatile supply chain costs, manufacturers are increasingly turning to operational processes for improvements in efficiency and productivity. In many cases, manufacturers have already cut the typical excesses out of their budgets. Their workforce is lean. They've eliminated non-essential projects and perks. And they have little control over market prices and competing vendors. This leaves operational tactics as the best way to control shop floor costs and improve profitability.

Here are five operational technologies that are helping to propel manufacturing:

1. Robotics — Robotics are becoming more and more import to manufacturers that are looking to control costs and improve accuracy in highly dangerous or difficult conditions. The last several years have seen a sharp resurgence in orders of industrial robots, roughly tripling in the wake of the Great Recession. The global robotic systems market (including software peripherals and other related costs is estimated to reach $41 billion by 2020, according to Allied Market Research.

According to Time, online retail powerhouse Amazon recently demonstrated its faith in using robotics for warehousing operations when it purchased Kiva Systems for $775 million and announced plans to roll out 10,000 robots into a network of warehouses, a move which it says will realise fulfillment cost-savings of up to $900 million — or up to 40% savings on cost per order.

2. Product innovation and product configuration tools — To meet customer demand for highly personalised products, manufacturers are turning to product configuration tools. These tools help manufacturers manage the complexity of design variations, product quotes and production specifications. Integration with online portals and CAD solutions allow customers to visualise designs, adding to the positive customer experience — while also improving accuracy and speeding the quote-to-cash cycle.

Production innovation has been greatly enhanced by 3D printing. Additive manufacturing has made prototyping and design of new products much easier, quicker, and more economical. Manufacturers are gradually finding applications for additive manufacturing that go beyond experimentation — and that instead are relevant, practical, and profitable. According to a recent Innovations Survey, two-thirds of manufacturers are already adopting 3D printing. The study also estimates that the global 3D printer market will reach $6 billion by 2017 (up from $2.2 billion in 2012).

3. Closed-loop quality control — Manufacturers are using automated quality control methods to help control consistency and brand value. Consumers have littler tolerance for unexpected variations. Manufacturers are learning they can deploy sensors and monitoring devices at numerous checkpoints in the production cycle — rather than only at final stage inspection to help detect noncompliance issues early and minimise waste.

4. Late stage assembly — As customers are increasingly demanding engineer–to-order (ETO) and made-to-order (MTO) products, manufacturers are turning to delayed assembly or late-stage assembly to help them manage this mass consumerisation trend. By designing products in interchangeable modules, components can be manufactured and inventoried, while the manufacturer waits for an order. When the order is received — either at the retail outlet, online portal, or through a channel partner — the product is assembled with the appropriate details and accessories, and drop shipped to the customer.

A similar concept is distributed manufacturing, where the raw materials and methods of fabrication are decentralised, and the final product is manufactured very close to the final customer. Distributed manufacturing is a growing trend, like reshoring, where manufacturers, their suppliers, and subcontractors work to form the right combination of proximity to customer and a productive location. Cloud deployment supports this agility and "pop up" manufacturing movement by letting manufacturers deploy systems in a matter of weeks, not months or years.

5. IoT-aided logistics supply chain management — The Internet of Things (IoT) will undoubtedly impact many aspects of manufacturing. Supply chain management and logistics seem to hold some of the greatest potential. Already scanners, bar codes, and GPS tracking are being used to monitor the movement of goods in the warehouse and on trucks to customers. A recent survey indicated that:

- 35% of manufacturers currently collect and use datacgenerated by smart devices to enhance manufacturing/operating processes, and an additional 17% plan to do so in the next three years.
- 38% currently embed sensors in products that enable end-users/customers to collect sensor-generated data, with an additional 31% planning to do so in the future.
- 34% believe it is extremely critical for US manufacturers to adopt an IOT strategy.

This is an exciting time for manufacturers like you. Economic recovery and global growth point to optimism on the horizon. The Factory of the Future is right around the corner. The most important take-away is that you need to start now in order to remain competitive in the new manufacturing paradigm. A wait-and-see attitude is highly risky, putting you in danger of losing market share to an existing competitor or a start-up with a low-cost alternative product.

Your ERP system is the foundation upon which you can build the Factory of the Future. You need an ERP system that has a flexible architecture, so the solution can expand along with your company, and you can easily integrate specialised applications, such as CRM solutions or product configuration tools, to meet your changing needs.

You also need to consider your deployment options for the disruptive technologies that will help shape the Factory of the Future. Cloud deployment is the great enabler for solutions like Big Data and the Internet of Things. Cloud deployment offers the agility and storage needed to fully incorporate the vast amount of sensor data, customer account data, product history, and expense data needed to be proactive and in-tune with customer expectations.

Our final advice: Don't delay. Start to plan your strategy. Investments and deployment can follow a phased approach, so you spread out costs and create manageable project plans for your teams. A phased approach also gives you a chance to score some early wins and quick benefits. The sooner you start, the sooner you will achieve a return on your investment.

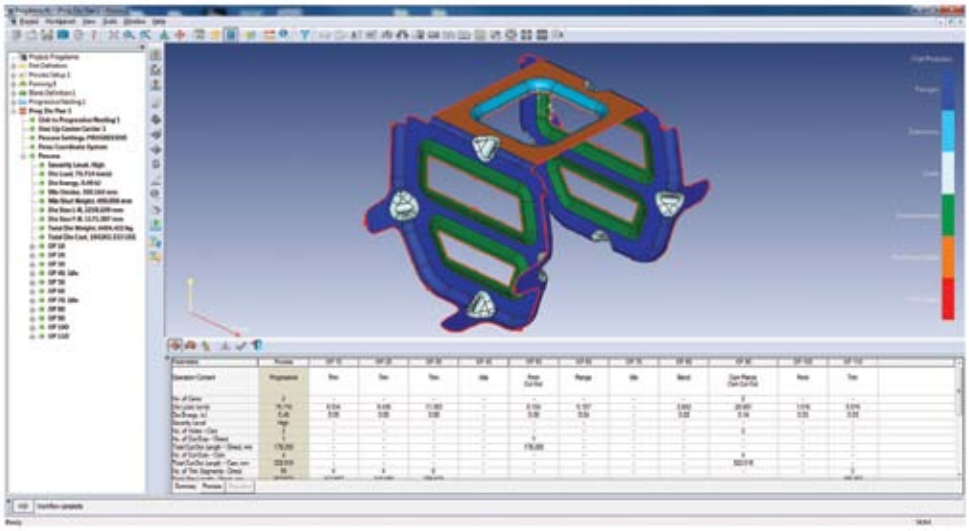
Your company needs to be bold to help define the Factory of the Future — and to reap its rewards. The time and technology are ready to make the Factory of the Future a reality now.

Author: Larry Korak is the Director of Industry Strategy Direction, Industrial Manufacturing at Infor, a developer of enterprise software ranging from financial systems and resource planning to supply chain and customer relationships. ■

Hexagon acquires sheet metal software company Forming Technology Inc. and optical metrology firm Aicon 3D

Hexagon, a leading global provider of information technologies that drive productivity and quality across geospatial and industrial enterprise applications, has announced the acquisition of Forming Technology Inc. (FTI), a provider of innovative manufacturing software solutions designed to reduce the development time and material costs of sheet metal components.

Sheet metal is used extensively in the production of car bodies, aircraft, electronics enclosures and many other applications. Rapid, cost-efficient design and manufacturing of sheet metal components is key to addressing the rising challenges of manufacturing efficiencies.



Hexagon has acquired Forming Technology Inc. (FTI), a provider of innovative manufacturing software solutions designed to reduce the development time and material costs of sheet metal components

Founded in 1989 and based in Burlington, Ontario (Canada), FTI serves original equipment manufacturers (OEMs) and suppliers in the automotive, aerospace, electronics, and appliance industries with sheet metal design, simulation, feasibility, and costing solutions. Its leading-edge technology portfolio, sold through an international network of reseller partners, coupled with its engineering services and years of expertise in the sheet metal industry, enables customers to validate designs before they go into production and immediately reduce labour and material costs.

"Closing the manufacturing feedback loop to enhance quality and productivity is an integral part of our solutions strategy," said Hexagon President and CEO Ola Rollén.

"Combining FTI's CAE (computer-aided engineering) technologies and knowledge of automotive sheet metal applications with our CAM (computer-aided manufacturing) and metrology solutions will enable us to deliver substantial productivity gains to our automotive customers."

Hexagon has acquired Aicon 3D Systems, a provider of optical and portable noncontact 3D measuring systems for industrial manufacturing

Optical metrology firm Aicon 3D

Hexagon has also announced that it has acquired Aicon 3D Systems, a provider of optical and portable noncontact 3D measuring systems for industrial manufacturing.

Founded in 1990 and based in Braunschweig, Germany, Aicon serves automotive manufacturers and companies in the aerospace, shipbuilding, renewable energy and mechanical engineering markets. Its technology portfolio includes portable coordinate measuring machines for universal applications and specialised optical 3D measuring systems that enable efficient, high-precision monitoring, quality assurance and control in manufacturing production.

With over 140 employees, Aicon has a direct presence in Germany, subsidiaries in China, Korea, Japan, and the U.S. and a network of resellers worldwide supported by its field support resources.

Hexagon reported that Aicon will be fully consolidated as of April, and that company's sales for 2015 amounted to approximately €19 million.

For more information visit Hexagon at www.hexagon.com, or contact Retecon Machine Tools on TEL: 011 976 8600 or visit www.retecon.co.za ■

THE FUTURE IS FORMED BY OUR MACHINES

DURMA

FIBER LASERS

Simple, inexpensive, compact

• Variety of materials • Enhanced productivity in thin sheets • Low investment and operating costs • Simple to operate • Simple design and short installation time

ADS PRESS BRAKES

Fast, stronger, accurate with new design

SPECIAL OFFERS ON THE FOLLOWING MACHINES

All in stock (subject to prior sale)

PRESS BRAKES

- AD-S 30220 (220 Ton x 3000mm with 8 Axis CNC)
- AD-R 30135 (135 Ton x 3000mm with 4 Axis CNC)
- AD-R 30100 (100 Ton x 3000mm with 4 Axis CNC)

SHEARS

- VS 3010 (10mm x 3000mm Variable Rake CNC)
- SBT 3006 (6mm x 3000mm Swing Beam CNC)
- MS 2504 (4mm x 2,500mm Mechanical CNC)
- MS 1303 (3mm x 1,300mm Mechanical)

IRON WORKER

- IW 45 (45 Ton Single Cylinder)
- IW55/110 BTD (55 Ton Double Cylinder with deep throat)
- IW80/150 BTD (55 Ton Double Cylinder with deep throat)

PATE ROLLING MACHINE

- HRB-4 3016 (16mm x 3000mm Four Roll Hydraulic) – NC Control)
- MRB-S 1506 (6mm x 1500mm Asymmetrical Mechanical)

SECTION ROLLERS

- PBH 60 (60mm shaft diameter Profile Bender)
- PBH 100 (100mm Shaft Diameter Profile Bender)

BANDSAW

- DCB-S 360 (Ø360 Semi-Automatic with turn table)
- DCB-S 560 (Ø560 Semi-Automatic with turn table)

DURMA Go with the heavy Weight

MTMA

Local: 08600 DURMA (38762)
International: +27 11 865 4090
sales@durma.co.za | Byron 083 231 1955
www.durma.co.za

DURMA

Conzzeta to acquire DNE Laser of Shenzen, China

Complements the sheet metal processing business of Bystronic.

Conzzeta has announced the signing of a binding agreement to acquire DNE Laser, Shenzen, China. The closing of the transaction is planned by mid-year 2016, subject to regulatory approval. Conzzeta will acquire a stake of 51% with a long-term option to increase the position.

Founded in 2008, DNE Laser employs approximately 400 employees and operates profitably, generating revenue of CNY 335 Million (CHF 51 Million) in 2015. DNE Laser complements the sheet metal processing business of Bystronic, which is part of the Conzzeta business portfolio. Bystronic is a leading supplier of solutions for the processing of sheet metal and other sheet materials with a global footprint. Bystronic employs close to 1700 employees and generated revenue of CHF 570.9 Million in 2015, primarily with high-end laser cutting solutions.

DNE Laser by contrast covers the middle and lower-end product segments of laser cutting equipment with a focus at China and Southeast Asia. DNE Laser will operate with its own brand and a dedicated sales and service organisation within the Bystronic business unit of Conzzeta.

"The transaction is a step towards the further internationalisation of our Group. This acquisition adds significant scale to Bystronic's footprint in Asia and provides additional growth opportunities for Bystronic globally," said Michael Willome, Group CEO of Conzzeta.

"We are delighted to join forces with Bystronic, a technology leader in our industry. Through Bystronic we broaden both our knowledge base and our geographic reach," said Zhang Yonghong, founder, President and CEO of DNE Laser.

Yonghong will remain CEO of DNE Laser and join the Group Executive Team of Bystronic.

About Conzzeta

The Conzzeta Group of companies are involved in the sheet metal processing, sporting goods, foam materials, graphic coatings and glass processing industries. The Group has 3 500 employees at more than 60 locations worldwide. Conzzeta is listed on the SIX Swiss Exchange (CON.SW). ■

Okuma's 5-Axis VMC receives 'Best 10 New Product' Award

Okuma's "UNIVERSAL CENTER MU-4000V-L" 5-axis vertical machining center with turning function received one of the Nikkan Kogyo Shimbun's (Business & Technology Daily News) 2015 Best 10 New Product Awards. Best 10 New Product Awards are given to selected products for their contributions to the development of manufacturing and the strengthening of Japan's international competitiveness. Winners are chosen from among all products developed and in practical use in a given year. This is Okuma's twelfth product to receive a Best 10 New Product Award.

The MU-4000V-L completely integrates turning, grinding, and gear cutting in high-speed, high-accuracy 5-axis machining. It is a 5-axis machining center that leads the IoT age. High-dimensional process-intensive machining with a high-speed, high output spindle, turning capacity equivalent to that of a medium-sized lathe, grinding, gear skiving and more, results in shorter lead times in the machining of complex shapes.

The MU-4000V-L is equipped with the OSP suite monozukuri controller that leads the IoT age. In addition to coordination with production control systems and CAM simulators, it records information including the load, vibration, and pressure on each axis with a "monitoring function" that visualises and logs utilisation status, as well as flow sensor signals and worker operation information. This makes it possible to track and analyse production processes. ■

North American robotics market sets new records in 2015

Robot orders and shipments in North America set new records in 2015, according to the Robotic Industries Association (RIA).

North American companies ordered 31,464 robots valued at $1.8 billion during 2015, an increase of 14 percent in units and 11 percent in dollars over 2014. Robot shipments also set new records, with 28,049 robots valued at $1.6 billion shipped to North American customers in 2015. Shipments grew 10 percent in units and 9 percent in dollars over the previous records set in 2014.

The automotive industry was the primary driver of growth in 2015, with robot orders increasing 19 percent year over year. Nonautomotive robot orders grew 5 percent over 2014. The leading nonautomotive industry in 2015 in terms of order growth was semiconductors and electronics at 35 percent.

According to Alex Shikany, director of market analysis for RIA, the fastest-growing applications for robot orders in North America in 2015 were coating and dispensing (up 49 percent), material handling (up 24 percent), and spot welding (up 22 percent). RIA estimates that about 260,000 robots are now in use at North American factories, which is third to Japan and China in robot use.

The recent record performance by the robotics market in North America is concurrent with falling unemployment. In January 2016, the Bureau of Labor Statistics announced that the unemployment rate in the U.S. reached 4.9 percent, its lowest level since February 2008.

Recent forecasts of the International Federation of Robotics (IFR) estimate that there will be more than 150,000 new service robots in professional use and about 35 million new service robots in private use between 2015 and 2018. Service robotics is relevant today for many different sectors, from the defense industry and agriculture to the automotive industry, medical engineering and even consumer goods. In the latter sector, entirely new market segments have originated with vacuum cleaners and lawn mowers. ■

Human-robot cooperation (HRC) in close quarters requires intelligent sensor technology, safe and reliable control and software, as well as failsafe communication. With the world's first safety gripping system, Schunk has already set standards in this area

Global machine tool market forecast for 5.5% growth

A new three-year global forecast for the machine-tool market projects a 5.5% annual growth rate through 2019, driven particularly by expanding demand in China and other developing nations. The total market is given an estimated value of $181 billion by the end of the current three-year period.

The Freedonia Group's World Machine Tools is a 447-page report available for purchase that examines the trends shaping the global market for machine tools, including regional differences, technology trends, applications, and finished product types.

Freedonia offered that global market growth will be largely driven by durable-goods demand in particular regional markets, including China, but also the Asia/Pacific region in general, Africa/Mideast, Eastern Europe, and Central and South America. However, China alone is expected to account for more than two-fifths of all new machine-tool product demand through 2019.

The three-year forecast for Western Europe sees 6% annual growth there, the second-largest regional market. That rate would match the average global growth rate, and Western Europe will account for 18% of global machine-tool demand gains through 2019.

Market conditions are expected to improve in various other regions as a result of overall economic growth and increasing capital investments.

"Growth will also be supported by the introduction of more expensive machine tools," according to Freedonia analyst Gleb Mytko. In Western Europe, new machine-tool technologies (e.g., increased standards for process control and precision) are among the factors that will increase the relative value of new products.

Machine tool demand in Japan is expected to increase for the first time in several years, where pent-up demand is a significant factor in the forecast expansion.

North American machine tool demand is forecast to decline by almost 1% annually through 2019, entirely as a result of weak U.S. manufacturing conditions. In addition, durable goods manufacturers across the region have been modernising operations and replacing older equipment on a steady basis over recent years, so demand for new and replacement machine tools will be minimised through 2019.

In Mexico, demand will grow faster than the worldwide average, while in Canada the increases will be on pace with the average. ■

MBK Partners
acquires Doosan Machine Tools

After months of speculation it has been announced that Doosan Infracore has sold its machine tool business to MBK Partners, a private equity firm in Korea.

MBK Partners and a private equity arm of Standard Chartered were among three parties that submitted a binding bid for Doosan Infracore Co Ltd's machine tools business, all bidding around 1 trillion won ($849 million). The third bidder was a state-run corporation from Hebei, China, the Korea Economic Daily reported, citing unnamed investment banking sources.

Doosan Infracore put the business up for sale in November 2015 to cut debt after it reported a third-quarter net loss of more than 200 billion won.

Last September Britain's Tesco Plc, the world's third-largest retailer agreed to sell its South Korean business to a group led by MBK Partners for $6.1 billion.

"MBK Partners, our new shareholder who owns 100 percent, is one of the biggest private equity firms in Korea, which has invested in diverse market leading companies such as Doosan Techpack, Coway and Home Plus (Tesco), and I believe it will be our great partner for new development," said Jae Seop Kim, President of Doosan Infracore Machine Tools Business Group.

"This final agreement will remove all anxiety and rumors which are made and expanded maliciously by many competitor companies with fear and jealousy of the Doosan brand. Therefore, please show customers the continuous stability, confidence in strategic development and financial soundness of Doosan Machine Tools with pride."

The Doosan story is a little sad. Doosan Infracore built a wonderful machine tool company since taking over Daewoo. Perhaps it got a little heavy in oil and gas, but basically the machine tool division is solid. The company made a colossal blunder in buying Bobcat at the absolute worst time, paying for it with borrowed money. Last year Doosan Infracore laid off 1500 people and lost a fortune in the last quarter.

Doosan Machine Tools' Namsan factory in Changwon, South Korea

Doosan Machine Tools manufactures a range of CNC turning centers, machining centers, horizontal boring mills, Swiss turn machines and double column machining centers and is represented in South Africa by Puma Machine Tools.

For more information contact Puma Machine Tools on TEL: 011 976 8600 or visit www.pumamachinetools.co.za ■

Schuler acquires
leading die manufacturer AWEBA

Schuler AG, a manufacturer of forming equipment, is to take over the die construction specialist AWEBA and thus greatly expand its activities in this business field. Based in Aue, Germany, the AWEBA Group is one of the world's leading full-service providers of dies and fixtures. Under the terms of the purchase agreement, Schuler will acquire a 100 percent stake in AWEBA Werkzeugbau GmbH Aue.

The transaction is still subject to the approval of the relevant anti-trust authorities. AWEBA Werkzeugbau GmbH was previously held by private and institutional investors. The parties have agreed not to disclose any details about the purchase agreement.

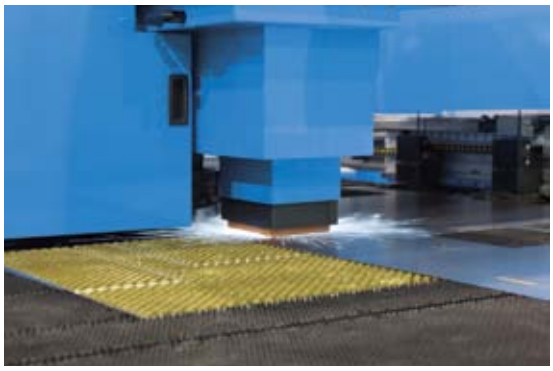
AWEBA was founded in 1882 as "Bernhard Hiltmann Spezialfabrik für Schnitt und Stanzwerkzeug". Today the company supplies international customers in the automotive and electrical industries, as well as machine and plant manufacturers. The product portfolio includes forming, cutting, hydroforming, and die-casting dies, as well as fixtures and a comprehensive range of services.

In fiscal year 2015, the AWEBA Group generated sales revenue of around €60 million.

The AWEBA takeover is Schuler's second major acquisition in the last twelve months. Last year, the company acquired a majority stake in the Chinese press manufacturer Yadon with annual sales of around €110 million. ■

Prima Power develops own fibre laser source

Prima Power has developed its own fibre laser, claiming to be the first laser machine manufacturer to internally develop its own such laser source and, having done so, says it has won a strategic advantage for this laser profiling machine core technology.



The 3 kW CF3000 was developed through an intensive development activity over the last few years and has been operating at pilot customers' plants for more than six months, the announcement states.

The new laser will be produced at group plants in Chicopee (Massachusetts, USA), Barone Canavese (Turin, Italy) and Suzhou (China). A 4 kW unit, the CF4000, will also be introduced during the year.

Up to now, US company IPG Photonics has been the sole supplier of fibre laser sources to the group. Prima Power maintains a strong relationship with IPG, however, it stressed.

The development of this product offers Prima Power an alternative source for what is described as "a highly strategic component", with this representing a winning technology for specific applications, says the company.

Prima Power adds that it expects "remarkable growth" in its laser machine business, with this built on recent developments that take in the 3D laser profiling machine Laser Next (principally for the automotive market), the Platino 2.0 Fiber and the Laser Genius 2D laser cutters, plus the Combi Genius laser-punch combination machine.

The Group's target for 2016, the first year of the new fibre laser's production, will see a gradual ramp-up in volumes to around 10 units per month delivered to customers.

With its own laser source, aftersales activity will be more efficient, the company adds, as it will allow Prima Power to return to a situation where the group holds sole responsibility for the delivered solution. Gianfranco Carbonato, chairman of Prima Industrie Group, says: "With the introduction of the fibre laser, we achieved an excellent result for the group, thanks to which we will be able to offer our customers from time to time the most convenient solution, having the chance to present our group to the end user as the sole supplier."

For further details contact Talmac Machine Tools on TEL: 011 827 6539 or visit www.talmac.co.za ■

New selective laser melting technique can create stronger, lighter parts

Researchers at Fraunhofer ILT have developed a processing technique that makes it possible to use selective laser melting on difficult-to-weld metals. The result is lighter, stronger parts for the automotive, aerospace, and medical industries.

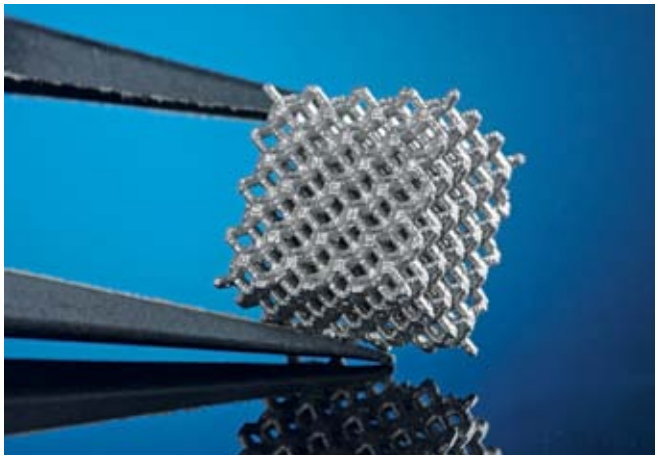
A special processing technique developed by researchers in Germany allows selective laser melting (SLM) to be used with more difficult materials such as magnesium alloys, copper alloys, and other crack-prone, difficult-to-weld metals.

The use of these materials makes it possible to employ the SLM process, an additive manufacturing (metal 3D-printing) technique, in new application areas using new materials, such as lightweight car parts and medical devices. Magnesium, for example, is 30 percent lighter than aluminium. Alloys of this material can be even lighter.

Selective laser melting with "normal" materials such as stainless steel, aluminium, or titanium alloys has already come of age in the world of production. The materials and processes have been extensively researched, and the related machinery to produce parts is available from a number of vendors. These machines use powdered metals that are melted layer by layer to form the final design.

Things get challenging when attempting to work with other materials such as magnesium, which have proven difficult for a number of reasons, including the aforementioned cracking; the material's low boiling point, low evaporation heat, and low viscosity compared to established materials using the process; and not producing smooth surfaces or defined edges.

Experts at Fraunhofer ILT have developed a processing technique that makes it possible to work these difficult materials using SLM. And to combat heavy smoke formation, a new process chamber featuring optimised shielding gas flow was developed in cooperation with ILT spinoff Aconity3D for use with magnesium alloys. In addition, processes for use with copper alloys were optimised, as were special systems with high-temperature preheating for use with crack-prone and difficult-to-weld metals.



Implant (scaffold) with defined pore structure made from biodegradable magnesium alloy (WE43). It measures 10 x 10 x 7.5mm³ with a strut thickness of approximately 400 µm

Demonstration of a topology-optimised motorcycle triple clamp (material: AZ91)

Lighter and stronger auto and aero parts: SLM allows for full topology optimisation

The advantages of magnesium alloys have been known in the worlds of aerospace and motorsports for a long time. These materials are much lighter than aluminium, yet they are also much more difficult to work with.

The new SLM processing technique solves this problem. To explore the concept in detail, Fraunhofer ILT constructed a motorcycle triple clamp in 1:4 scale by optimising the entire topology of the component by computer. The objective was to achieve full structural and weight optimisation for comparable lightweight parts.

The researchers say that their efforts represent one of the world's first examples of complex components made from magnesium alloys. In terms of quality, they are equal to other SLM products, yet with respect to strength they are even superior to cast parts.

On the medical side

Desirable features of medical implants, such as tailored designs and complex structures, can be produced at no extra expense using SLM. As a material, magnesium offers the added advantage of being resorbable by the human body. Implants based on solid magnesium materials are already in use, but further benefits are promised for implants that feature pore structures.

The idea here is that new bony material will grow into the implant, while at the same time the metallic material is resorbed by the body. Fraunhofer ILT has developed an SLM process for magnesium alloy implants of this type, in which both the exact shape and pore size of the implant can be chosen. The biocompatibility of the implant prototypes has already been demonstrated in vitro.

While Fraunhofer ILT continues to research new materials and processes, SLM equipment for magnesium alloys is available from Aconity3D, which is a Fraunhofer start-up company. ■

AM will not threaten metalworking in medium term, study finds

A German study predicts that additive manufacturing will displace only one percent of existing metalworking processes over the next five to seven years.

Dr Myron Graw, partner at KEX Knowledge Exchange AG in Aachen, Germany says: "Additive Manufacturing (AM) supplements the manufacturing processes available in the metalworking sector. For the time being, there is not going to be any broadly based displacement of existing machining processes, nor the much-cited revolution in industrial production operations."

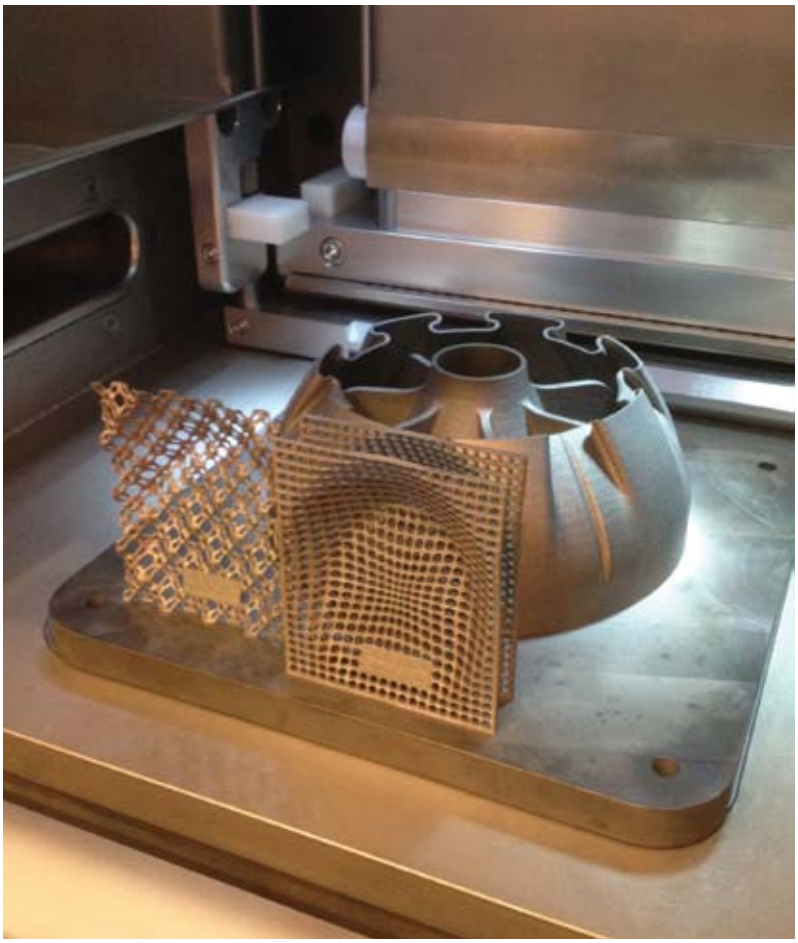
He was speaking at the opening press conference of the METAV trade show in Düsseldorf, which ran from 23-7 February. He is responsible for the firm's AM operations and for the study entitled "Additive Manufacturing — potentials and risks from the viewpoint of the German machine tool industry", commissioned by the VDW (German Machine Tool Builders' Association) and carried out in conjunction with the Fraunhofer Institutes for Production Technology and Laser Technology.

The headline finding was that, assuming annual growth of 40% for additive processes, less than one percent of the existing technologies will be replaced by additive processes. This relates to the production volume of the international machine tool industry. "Overall, then, only minor shifts can be expected in the future production mix of the machine tool industry," Graw concludes.

Obstacles to greater market penetration are encountered in the costs involved and the machining time required. In small-series manufacturing, and when producing complex customised and small components, the cost advantages of an additive process can be achieved by tool-less manufacturing. A special advantage ensues when substantial added values can be generated by additive manufacturing, such as lightweight structures in the aircraft industry, cooling ducts and undercuts. That way, possible cost-related disadvantages in medium-sized and large series can be compensated.

When it comes to manufacturing large components, additive processes often have cost-related disadvantages. These result not least from the comparatively low build-up rates. Other relevant factors include the expensive machinery required and the high material prices for metal powder. "These cost-drivers will in the years ahead be changed by technological advances and the upsizing of capacities," argues Graw. This, he adds, will speed up the dissemination of AM. ■

> "Additive Manufacturing (AM) supplements the manufacturing processes available in the metalworking sector. For the time being, there is not going to be any broadly based displacement of existing machining processes, nor the much-cited revolution in industrial production operations."



Parts that are impossible to machine, such as lattice structures, can be created using the additive manufacturing process

30th Edition of the "Bible of the Metalworking Industries" — Machinery's Handbook — now published

Having celebrated 100 years of continuously updated publications in 2014, Machinery's Handbook is now in its 30th edition, just released in March 2016. This new edition has grown by nearly 100 pages to 2,896 pages. It offers major revisions of existing content as well as new material on a variety of topics, including:

- Expanded metrology section including v-blocks and micrometer, vernier, and dial calipers.
- New fluid power section covering pneumatic, hydraulic, and vacuum theory and applications.
- New powder metallurgy section, including additive manufacturing.
- Even more useful specs, including tap drill sizes for Unified threads, reaming allowances for drilling, standard mesh and grit sizes, rules for figuring tapers, and assembly with pins and studs.

It also includes additional content on sheet metal and presses, keys and keyways, shaft alignment, taps and tapping, helical coil screw thread inserts, metric screw threads, miniature screws, fluid mechanics, solid geometry, statistics, calculating hole coordinates and thread dimensions and distinguishing between bolts and screws.

Numerous sections have been thoroughly refreshed, reworked, or renovated, including: Mathematics, Mechanics and strength of materials, Properties of materials, Dimensioning, gauging and measuring, Machining operations, Manufacturing process, Fasteners, Threads and threading, Machine elements and Standards have been updated.

The metric content continues to be expanded. Throughout the book, wherever practical, metric units are shown adjacent to the U.S. customary units in the text. Many formulas are now presented with equivalent metric expressions and metric examples have been added.

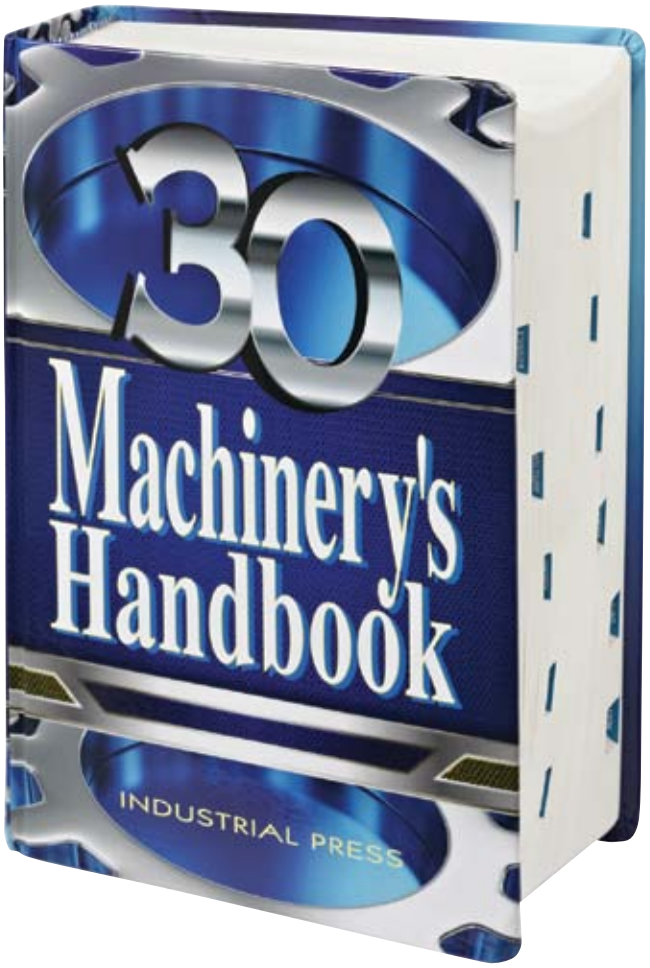
The design and typography of the 30th Edition also has improved, with an expanded table of contents at the beginning of each section. The editors have fine-tuned these navigation aids to make it easier to locate the information you seek. The typography, including tables and equations, has been updated and reset. And thousands of figures have been refined and redrawn for enhanced clarity.

Machinery's Handbook is one of the world's most popular reference works in metalworking, design, engineering and manufacturing facilities. It is in broad use in technical schools and colleges throughout the world. It is universally acknowledged as an extraordinarily authoritative, comprehensive, and practical tool, providing users with the most fundamental and essential aspects of sophisticated manufacturing practices. It is an essential reference for mechanical, manufacturing and industrial engineers, designers, draftsmen, toolmakers, machinists, engineering and technology students, and the serious home hobbyist.

Published by Industrial Press in the USA the 30th Edition of Machinery's Handbook is also available in CD-ROM. For further details visit www.industrialpress.com

For orders contact Michael Brightmore on TEL: 011 447 7441 or email info@academicmarketing.co.za ■

Numerous sections have been thoroughly refreshed, reworked or updated, including: Mathematics, mechanics and strength of materials, properties of materials, dimensioning, gauging and measuring, machining operations, manufacturing process, fasteners, threads and threading, machine elements and standards



Bystronic

Best choice.

Are you flexible?

Cut beveled edges with up to two cutting heads at once.
ByJet Flex: Waterjet cutting has never been this versatile.

Laser | Bending | Waterjet

waterjetcuttingnews.com

MTMA

FIRST TOTAL CUTTING SOLUTIONS

CUT (PTY) LTD

JHB: +27 11 614 1112, DBN: +27 701 3960
C.T.: +27 21 531 3126, P.E.: +27 41 453 3826
WEBSITE: www.firstcut.co.za EMAIL: info@firstcut.co.za

Radan celebrating its 40th anniversary

Radan, now part of the Vero Software Group, began life as a verification programme created at Bath University.

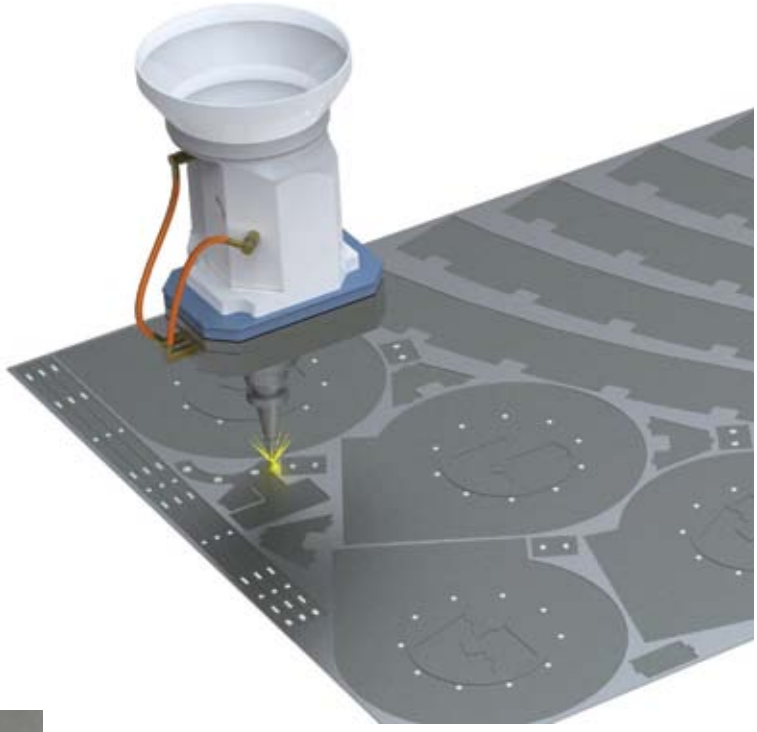
Kevin O'Connor, Radan's Sales and Major Accounts Manager, says the University was approached by a machine tool manufacturer who wanted offline programming software for a sheet metal punch press.

"In those days pre-verification programmers would type the G-code and X and Y co-ordinates, longhand, and it came out as paper tape which would be fed into the machine tool controller. The cutting tool would then move according to the instructions on the paper tape."

Two senior lecturers at the university, Tony Billett — who was to become Radan's Managing Director — and Martin Swainston, devised the software to read the paper tape and simulate the movement that the machine would make, offline.

"It's very primitive compared to Radan today, but was far in advance of anything else available in 1976. For the first time, it was possible to try a program out on a computer instead of waiting until it was on the machine and cutting metal."

Radan has developed into the world leader by staying solely in the sheet metal industry, and creating solutions for specialist niches within that sector. These include Radtube, which drives dedicated tube cutting machines tools as well as the rotary axis on flat bed lasers and Radm-ax for driving 5-axis lasers.



"Both these modules provide an affordable solution to the CNC part programming needs of engineering businesses of all sizes."

But Kevin O'Connor says today's customers are looking for much more than just CAD/CAM functionality. "They want something to run the whole of their production process, which may include punch, laser, press brake, costing, and production control."

That led to the advent of Radan's logistics suite, which began with Radimport, and the new Radmanager. Also, Radquote will be released later this year.

"Customers asked us for a quoting module to manage their production, and be able to fully integrate with existing MRP systems."

Now with a UK customer base approaching 2,000, he believes Radan's future lies in two areas: guaranteeing that customers continue to get new state-of-the-art functionality in each of the annual updates, and further development of the logistics products.

"We talk to the machine tool companies to ensure that all our new functionality fits in with their technology, and we hold regular user group meetings where customers tell us what they'd like to see in future releases."

For further details contact Stillam CNC Programming Solutions on TEL: 011 663 2600 or visit www.stillam.com ■

HEXAGON
MANUFACTURING INTELLIGENCE

THE NEW **LEICA** ABSOLUTE TRACKER AT960/AT930

QUALITY AND PRODUCTIVITY ON THE MOVE

The Leica Absolute Tracker AT960 from Hexagon Metrology is the first truly portable dynamic six degrees of freedom (6DoF) laser measurement system, providing a robust, all-in-one solution to even the most challenging large-scale metrology requirements. With customers seeking better productivity while still demanding technical excellence, Hexagon Metrology offers pioneering solutions. The AT960 brings together the functionality of the hugely-successful Leica Absolute Tracker AT901 and T-Cam with the usability of the compact Leica Absolute Tracker AT402, creating an ultra-portable coordinate measuring machine that fits in a single box. Featuring optional battery operation and Wi-Fi as standard, the AT960's revolutionary integrated-technology design makes lengthy setup a thing of the past. With built-in levelling equipment, IP54 protection and a system weight of less than 14 kg, the AT960 can be taken almost anywhere.

DRIVING INNOVATION FOR OVER 25 YEARS

The Leica Absolute Tracker AT960 is the latest innovation in Leica laser trackers. Drawing on mature technology from over 25 years of research and development to raise the bar once again, it offers the most advanced and accurate Leica portable tracker system ever to help customers measure their world in increasing detail.

Leica has an unrivalled pedigree for laser tracker technology, having introduced the original shop-door tracker system to the market in 1990. Since then, Leica products have continued to revolutionise the technology, creating the frst absolute distance meters, 6DoF trackers, absolute interferometers and the PowerLock active vision system. This continuing desire for progress ensures the Leica name always stands for quality.

- AUTOMATIC TARGET LOCK
- HIGH-SPEED DYNAMIC MEASUREMENT
- EASY TO USE CONTROLS

VERSATILE AND RELIABLE FOR ANY INDUSTRY

PRODUCTIVITY | RELIABILITY | QUALITY

Contact George or Vic
Tel: 011 976 8600 | Fax: 011 394 2471
machines@retecon.co.za | www.retecon.co.za

RETECON (Pty) Ltd

Cape Town: 021 555 2270/1 | Port Elizabeth: 041 453 2720 | Durban: 031 701 8149

MTMA

Modular hybrid unmanned war vehicle system unveiled

Why have a four-legged pack-mule robot follow you in combat, when you can have a transformable go-bot arsenal on mini tank tracks follow you instead? That, at least, is the idea behind the new THeMIS (Tracked Hybrid Modular Infantry System) unmanned ground vehicle concept shown off by Estonian defense company Milrem.

The first-of-its-kind hybrid modular UGV was unveiled at the 2016 Singapore Airshow in February. It features an almost Swiss Army-knife-like pack of convertible tools and weapons that can assist and replace soldiers on the battlefield in complex and hazardous tasks.

The multi-mission, 8-ft-long vehicle platform allows different superstructures to be mounted and integrated onto the middle vehicular platform for complex missions such as rescue, transport, and reconnaissance. It can also be outfitted with multi-caliber weapons (a little more about that later), a lifting platform, a demining platform, a training platform, an unmanned air vehicle (UAV) platform, and the capability to act as a chemical, biological, radiological, and nuclear (CBRN) detector.

The flexibility and versatile nature of the system is aimed at not only increasing efficiency, but also at significantly reducing the life-cycle costs of traditional complex unmanned systems by simplifying maintenance and spare supplies.

The max speed for the 700-kg (1,543 lb) base unit is 50 km/h (31 mph) and it can carry a payload that matches its curb weight. The diesel-electric drive (that's the hybrid part) can also be used in electric-only mode. Milrem says it will perform about 8 hours of work with fully charged Li-Ion batteries and a topped-up gas tank. It can be remotely controlled or preprogrammed to run autonomously.

Together with Singapore Technologies Kinetics (ST Kinetics), Milrem developed the THeMIS ADDER. This variant, for when you literally want to get the big guns out, features THeMIS equipped with ST Kinetics' remote weapon station, the RWS ADDER, and includes an anti-tank platform.

According to IHS' Jane 360, "The Adder RWS is able to accommodate either a 7.62-mm or 12.7-mm machine gun, or alternatively a 40-mm automatic grenade launcher. It also features day and night cameras, a laser rangefinder, and an optional air-bursting munition system."

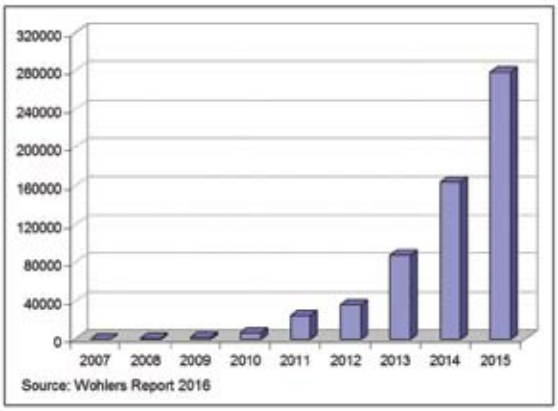
In line with THeMIS, Milrem has also launched the Digital Infantry Battlefield Solution (DIBS), the tactical usage of smart unmanned systems up to battalion level. This program is in development in conjunction with the Estonian National Defense College, which will take a role in real-world testing with Estonian Defense Forces.

Milrem has successfully conducted initial running tests for the THeMIS prototype and says it will be ready for production by the end of this year. ■

3D printing industry expanded 25.9% in 2015, topping $5 billion

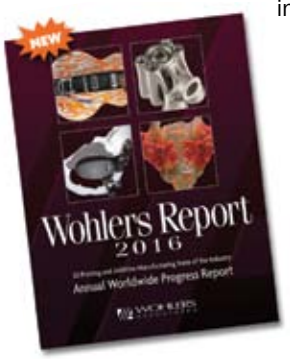
The global additive manufacturing (or 3D printing) industry expanded by 25.9% in 2015 (consolidated annual growth rate, CAGR) to a value estimated at $5.165 billion, according to an annual study of the AM/3D printing market by Wohlers Associates Inc. It was the second consecutive year the industry grew in value by more than $1 billion. In its Wohlers Report 2016, the market analysis and consulting group said CAGR for all segments of the AM/3DP over the past three years has been 33.8%.

Over the past 27 years, the CAGR for the AM/3DP industry is 26.2%. The annual report presents market analysis based on over 20 years of data from companies in the industry. The new report presents a history of AM/3DP technology, different processes and materials, and applications. The numerous manufacturers of AM/3DP systems are profiled, too.



In addition, the report documents developments in R&D, investment and collaborative activities in government, academia, and industry.

Wohlers collected data for the 2016 report from 51 industrial system manufacturers, 98 service providers, 15 third-party material producers, and many manufacturers of low-cost desktop 3D printers. Contributors include 80 experts in 33 countries.



According to Wohlers Associates' analysis, the industry's growth was evident across multiple market segments, in particular additive manufacturing of metal parts. The desktop 3D printer segment also showed impressive growth in the past year.

In 2015, 62 manufacturers sold industrial-grade AM systems (priced over $5,000, according to the report). That is compared to 49 manufacturers in 2014, and 31 manufacturers offering industrial systems as recently as 2011.

The 335-page Wohlers Report 2016 — with numerous charts, graphs, tables, and over 300 photographs and illustrations — is available for purchase. For further details visit www.wohlersassociates.com ■

AMADA

Amada's 3-axis linear motor drive system provides unmatched speed and precision – enabled by true closed-loop feedback of the head position directly to the AMNC control.

The 8-station changer automically changes, cleans and calibrates the nozzle based on material processing requirements.

CUT PROCESSING TIME IN HALF WITH AMADA'S FIBER LASER.

Amada's FOL3015AJ 2000w and 4000w fiber laser series is specifically designed for various lot/volume production cutting.

Additional benefits of the state-of-the-art system include:

- Faster cutting of thin material (up to 6 times that of a comparable CO_2 laser, dependent on the material)
- Superior speed and edge quality in material thicknesses of up to 22mm compared to other solid-state systems
- P.R.E. (Process Range Expansion) by providing the ability to cut copper, brass, titanium and other materials that were previously difficult to process

Amada offer a full range of laser cutting systems from 1kW to 6kW that feature the latest advances in both CO_2 and fiber laser technology. Further proof that Amada is uniquely positioned to help you choose the best technology, system, software and automated solution for any sheet metal application.

AMADA

Tel: (011) 453 5459 • Fax: (011) 453 5442 • E-mail: RickFerreira@amadaJHB.co.za • Barry@amadajhb.co.za
Stand 225, Albert Amon Road• Millennium Business Park • Meadowdale Ext. 7

Engel presents
Liquidmetal injection moulding machine

Metal processors need to get to know the new technology.

With its completely new material characteristics and ability to be injection moulded, Liquidmetal revolutionises the fabrication of high-quality metal components.

Both hard and elastic

Liquidmetal stands for a class of material with completely new characteristics. The zirconium alloys have an amorphous structure that makes Liquidmetal components extremely hard and at the same time very elastic. A hardness of 53 HRC is achieved even without any thermal treatment. The elasticity lies at 1.8 percent while in comparison steel has an elasticity of approximately 0.2 percent and titanium approximately 1 percent.

In addition, the Liquidmetal materials are characterised by a low specific weight as well as excellent corrosion resistance and biocompatibility. This range of characteristics predestines them for use in precision and functional components that are subjected to high mechanical stresses. This opens up new opportunities from medical technology to electronics, automotive to aerospace and even sports equipment. Electronic components, surgical instruments and particularly high-quality decor elements will be among the first applications.

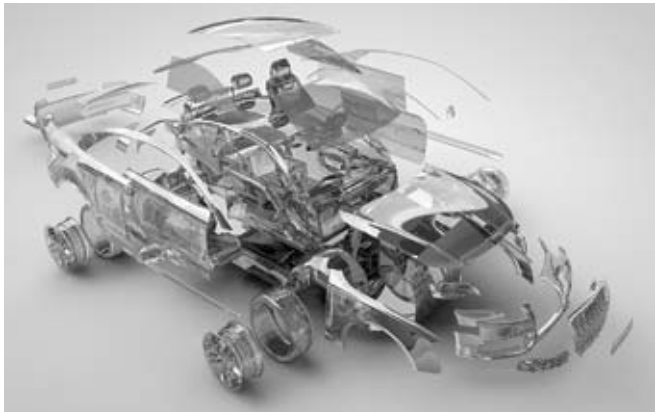
More efficient than CNC and MIM

The fact that these materials can be processed in injection moulding is another advantage, says Engel. Compared with the metal injection moulding (MIM) and CNC processing methods, this makes it possible to realise manufacturing concepts that are significantly more efficient and to achieve a higher level of automation and process integration. In just one single step and in short cycles, fit-for-purpose components with a very high-quality surface finish can be produced. Even sophisticated three-dimensional forms and very fine structures can be moulded with excellent reproducibility and material efficiency.

As the exclusive machine manufacturing partner of Liquidmetal Technologies, which is located in Rancho Santa Margarita, California, USA, Engel is the only supplier worldwide offering injection moulding machines and integrated system solutions for the processing of Liquidmetal materials. A further partner is Materion Corporation, the material producer and distributor based in Mayfield Heights, Ohio, USA.

For further details contact Patrick Bracke of Greentech Machinery on TEL: 083 444 7012 or email patrick@greentechmachinery.co.za ■

Even the finest structures can be modelled efficiently using the Liquidmetal process



Liquidmetal alloy in possible automotive applications

NEW

Nikon

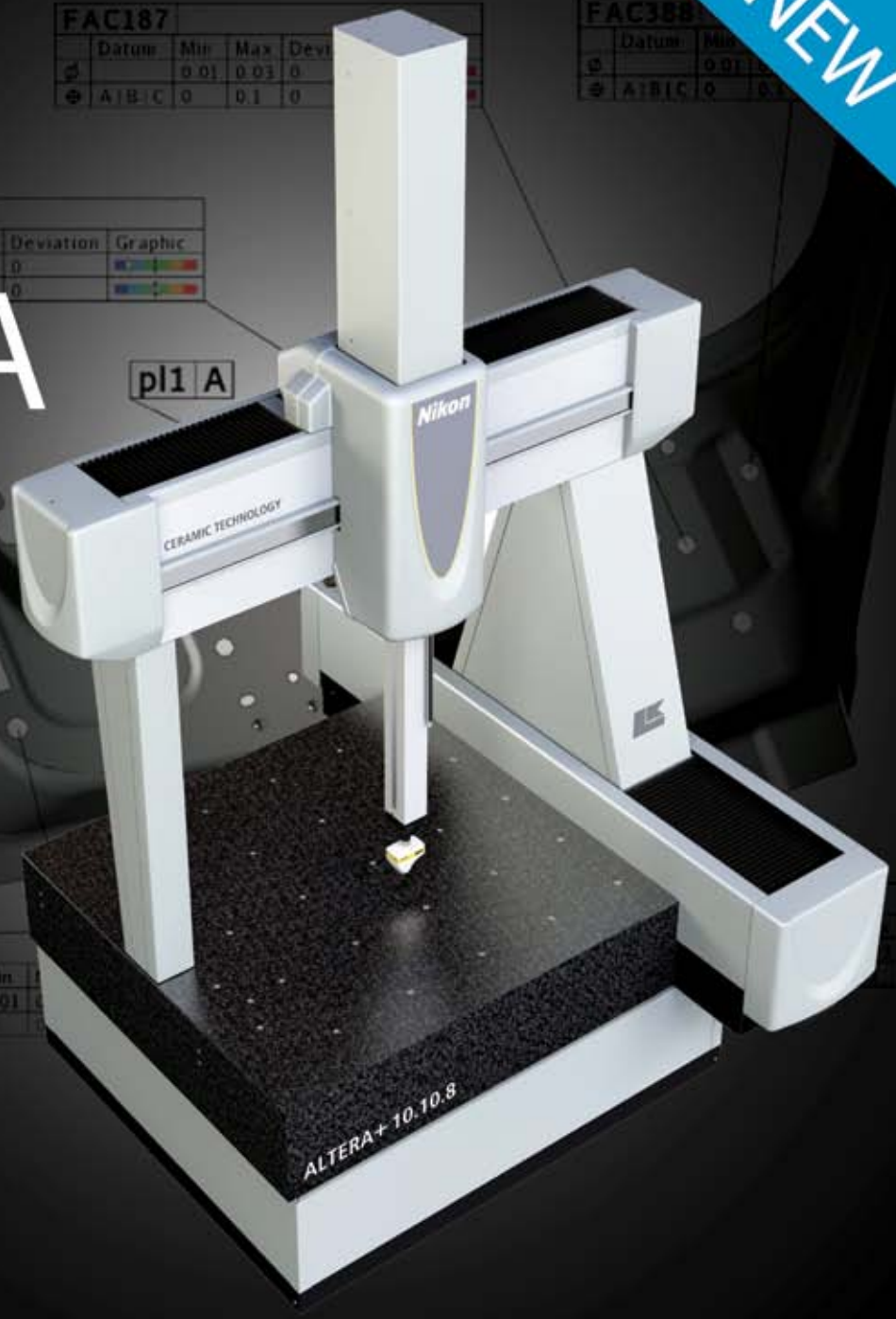
ALTERA

MULTI-SENSOR CERAMIC CMM

www.wdhearn.co.za

10 YEAR ORIGINAL ACCURACY GUARANTEE

Nikon Metrology is the only manufacturer to guarantee the accuracy of its CMMs for 10 years.



WD Hearn MACHINE TOOLS
ESTABLISHED 1937

Excellence now and in the future…

Nikon Metrology's range of premium quality CERAMIC CMM's have been refined to meet the varying needs of manufacturers. The superior design, with near perfect stiffness-to-weight ratio and greater resistance to temperature shifts, provides consistent and long-lasting performance across all manufacturing environments. Advanced multi-sensor technology optimizes CMM throughput and broadens the application scope to new materials and components.

NIKON METROLOGY EUROPE NV
T +32 16 74 01 00 - sales@nikonmetrology.com

NIKON METROLOGY UK LTD.
T +44 1332 811349 - sales_uk@nikonmetrology.com

NIKON METROLOGY | VISION BEYOND PRECISION

For more information:
www.nikonmetrology.com

Alcoa to supply Airbus with metal 3D printed components

The first US built Airbus jet carried out test flights recently

Alcoa has reported some new details of its supply agreement with Airbus, involving 3D-printed titanium fuselage and engine pylon parts, following a $1 billion deal announced last fall. Without offering a value for the new contract, nor the particular Airbus jet series involved in the supply, Alcoa said the deliveries would begin mid-year.

The supplier emphasised that its portfolio of materials design, various production capabilities, and aerospace product experience, were all decisive factors for Airbus in its contract placement.

"The unique combination of our multi-material alloy development expertise, powder production capabilities, aerospace manufacturing strength and product qualification know-how position us to lead in this exciting, emerging space," according to Alcoa chairman and CEO Klaus Kleinfeld.

Many of the parts will be sourced from Alcoa Titanium & Engineered Products (ATEP), the business unit that consists largely of the RTI International Metals organisation that Alcoa purchased last year for $1.5 billion. Those operations include titanium refining, casting, and forming, and 3D-printing capabilities.

For the Airbus program, the ATEP 3DP operation at Austin, TX, will be a important supplier, as will other titanium ingot melting and billet casting, machining, finishing, and inspection capabilities.

The Airbus project also will draw on Alcoa's CT scanning and hot isostatic pressing (HIP) capabilities at Whitehall, MI. HIP is a thermal forming process in which heat and pressure are applied to cast products (e.g., turbine blades, engine structures) simultaneously under a pressurised atmosphere, in a controlled sequence that aims to improve the mechanical and structural properties of the component.

Last year Alcoa invested $22 million to install a new HIP system at Whitehall, capable of processing the largest jet-engine parts in its portfolio. It calls the Michigan operation one the world's largest "aerospace HIP technology" complexes.

3DP capabilities are being expanded as well at the Alcoa Technical Center in Pittsburgh, where a $60 million project is in progress. Among the details of that project is a pilot-scale development of Alcoa's Ampliforge process, in which a part designed and produced using 3D printing is completed using a more standard process, i.e., forging.

It's notable that several of the operations involved in the Airbus supply program are due to be spun-off by Alcoa to a new "downstream company", called Arconic, later this year. ■

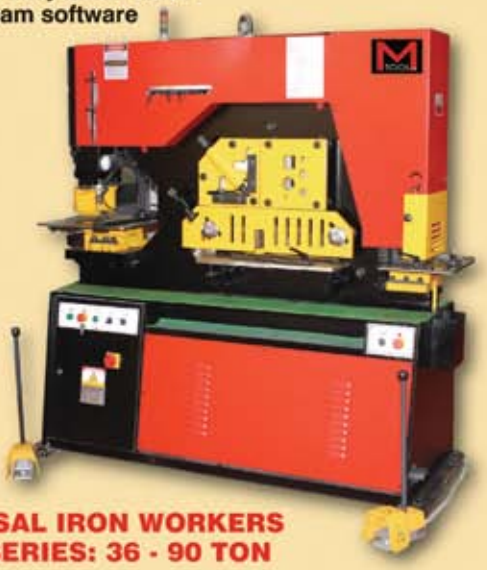
CNC PLASMA CUTTER HCZ SERIES
3000 *1600 & 6000 * 2200

New CNC Plasma Cutter HCZ 3000 * 1600

New CNC Plasma Cutter HCZ 6000 * 2200

Includes:

- HP-160 Amp plasma source (25mm cutting capacity)
- Dual heads plasma/flame
- Heavy duty water table
- Fast cam software



UNIVERSAL IRON WORKERS
IW-90 SERIES: 36 - 90 TON

- Built in laser for easy & quick punching
- Built in hydraulic clamps for shearing
- Electronic backstop
- Oil chiller on oil tank
- Dual foot pedals

HYDRAULIC GUILLOTINES QC12Y SERIES:
4 - 16MM

- Estun E20 2 axis NC controller
- Electronic backstops with ball screws
- Built in oil chiller on oil tank

SEMI AUTOMATIC BANDSAWS
180 – 400 CUTTING DIAMETER

- Hydraulic Clamping
- Coolant Pump and work lamp

HYDRAULIC PRESS BRAKES WC67Y
SERIES: 63 - 400 TON

- Estun E20 2 axis NC controller
- Electronic backstops with ball screws
- Built in oil chiller on oil tank

PYRAMID PLATE ROLLS W11
SERIES: 6-20mm

M TOOL CC

7 Steventon Rd, Anderbolt, Boksburg
e-mail: info@mtool.co.za
Tel: (011) 894-8385
Fax: (011) 894-5561
Carlo Cell: 082 881 8514

www.mtool.co.za

SUPPLIERS OF NEW AND USED MACHINERY

Finance Available T&C's apply

All prices ex VAT - subject to stock availability.

PolyWorks® 2016
delivers a universal 3D metrology workflow

Connect to a non-contact or a contact-based portable metrology device, or to a CNC CMM controller from Hexagon, Mitutoyo, Nikon, Pantec, Wenzel, and I++ servers to play the measurement sequence.

InnovMetric Software Inc., a leading provider of universal 3D metrology software solutions, has launched PolyWorks® 2016, the latest release of the company's universal 3D metrology software platform. PolyWorks 2016 fully supports probing and laser scanning on stationary CNC CMMs, and delivers a truly universal 3D metrology workflow that will allow users to operate any type of portable metrology and CNC CMM measurement device within a common framework, from a single software module, and using similar tools and methods.

"This launch marks a major milestone not only for InnovMetric but also for metrology experts worldwide. We have unveiled the most significant version of PolyWorks in the history of our company, and set a new standard for 3D metrology that the manufacturing industry as a whole will benefit from," said Marc Soucy, president of InnovMetric.

"Portable metrology and CNC CMM metrology devices used to be operated in very different ways. Offline CMM programming and online CNC measurements were traditionally performed in different modules using different tool sets. This time is now over."

"More than ten years ago, InnovMetric embarked on an ambitious journey to deliver a universal hardware-independent 3D metrology software platform to our customers. With PolyWorks 2016, the definition of what constitutes a universal platform takes on an entirely new meaning. A universal hub that interfaces with any type of 3D metrology measurement device, and offers a universal workflow for performing all inspection tasks. This innovative end-to-end approach will significantly lower the total cost of software ownership for industrial manufacturers as it eliminates metrology workflow silos, decreases the cost of training, facilitates broader collaboration between teams, ensures consistency in measurement results, and increases workforce mobility."

With PolyWorks 2016, portable metrology and CNC CMM operators are now able to:

- Define a measurement plan without being physically connected to a specific measurement device
- Specify geometry controls on measurement objects and prepare inspection reports
- Connect to a non-contact or a contact-based portable metrology device, or to a CNC CMM controller (from Hexagon, Mitutoyo, Nikon, Pantec, Wenzel, and I++ servers), to play the measurement sequence
- Review measured object geometry controls and reports, or multipiece inspection results through the built-in SPC functionality.

Operating portable metrology and CNC CMM devices within a common framework is now possible with the introduction of two new major components in PolyWorks 2016: the measurement sequence editor and the offline simulation.

Measurement sequence editor

Since 2012, PolyWorks has offered the powerful Play Inspection tool that automatically generates a step-by-step guided measurement sequence to capture 3D datasets of a new piece using portable metrology devices. PolyWorks 2016 expands the capabilities of the Play Inspection technology by allowing the customisation of its automatically generated sequence.

Using the new sequence editor, users can now:

- Configure the order of measurement operations
- Control device position moves
- Trigger CMM-specific operations, such as moving the probe head to a specific location or changing the orientation of a measurement tool
- Easily add guidance messages and images
- Create conditional blocks of operations
- Insert macro scripts, opening up unlimited process customisation possibilities.

Offline simulation

PolyWorks 2016 also delivers a new easy-to-use offline simulation functionality that automatically generates simulated point cloud data and probed points from a CAD model of the measured part, while going through a simulated measurement workflow. Offline simulation allows users to quickly create simulated measured object components, data alignments, data color maps, geometry control tables, 3D scene snapshots, and inspection reports before the real measurement task, without needing access to a measurement device. The PolyWorks 2016 offline simulation also fully supports CNC CMMs, allowing users to control the probing and laser scanning tool orientations and trajectories on a virtual device.

Universal inspection projects

Thanks to the universal 3D metrology architecture of PolyWorks 2016, only minimal changes will need to be made to a PolyWorks inspection project so that it can be used with multiple hardware platforms to optimise object measurement methodologies and adapt them to different measurement principles. As a result, PolyWorks 2016 opens a new era for universal inspection projects and device interoperability, ensuring total flexibility for customers to select the appropriate measurement devices for their needs and maximise the return on their 3D metrology investments.

Global business partners are 3D digitizer manufacturers that have signed a global distribution agreement with InnovMetric for the distribution of PolyWorks bundled with their own 3D measurement systems. These include AICON 3D Systems GmbH, Automated Precision Inc., Creaform, Faro Technologies, Hexagon Metrology (which includes brands such as Brown & Sharpe, Leica Geosystems, Romer, CogniTens, and DEA), Leica Geosystems, Nikon Metrology and Carl Zeiss.

For more information contact Retecon Machine Tools on TEL: 011 976 8600 or visit www.retecon.co.za or www.innovmetric.com, or George Sansoni on 083 443 2018 or email george.sansoni@retecon.co.za ■

Victor CNC introduces new 5-axis machining centre

As a machine tool builder with a reputation for uncompromising build quality and longevity, Victor CNC has now extended its impressive line of machine tools with the introduction of the new VCenter-AX800 vertical machining centre. Taking flexibility to a new level, the new AX800 incorporates a swivelling head B-axis and a C-axis rotary table to fully facilitate 5-axis machining of large parts up to 1m diameter.

The new VCenter-AX800 has rigidity and precision built into every aspect of the 5-axis offering. This is characterised by the C-axis table with its spacious 800mm diameter that is clamped at high torque (3433Nm) for heavy cutting — ideal for heavy duty machining without compromise. In addition, the B-axis swivel head includes a hirth coupling with 1° increment that further enhances the rigidity to deliver 4 + 1 axis machining capability.

Incorporating a rotary table that is built into the fixed table, this innovative Vcenter-AX800 is equipped with a swivel head on the travelling column to implement 5-axis machining on large parts. Furthermore, with a Rollercam-drive® mechanism for both rotary axes; the AX800 ensures sufficient rigidity for 4+1 axis heavy machining with high rotation compared to less robust conventional worm gear mechanism machines. This combination ensures maximum rigidity that eliminates vibration when conducting particularly heavy cutting on difficult materials.

The robust new machine has a BBT-40 taper spindle that is fed by a 40 tool ATC that has a twin arm type ATC. This tooling configuration performs quick and reliable tool change-overs beyond most machine tools, and a 60 tool magazine is also available as an optional extra. The new AX800 has a 15,000rpm spindle that delivers a power output of 22kW for conducting heavy machining processes to optimise material removal rates. To support heavy machining, the AX800 has large diameter ball screws coupled with the servo motor to maximise rigidity and performance levels. What's more, the roller gear mechanism minimises the backlash and guarantees high accuracy at an arbitrary angle.

With regard to flexibility, the new AX800 provides a whole host of options that include 8+1 hydraulic/pneumatic ports to direct the power through C-axis and pallet for multiple point clamping and air sealing detection to assure clamping forces are maintained. In addition, the VCenter provides the option of a chip conveyor, through spindle coolant, linear scales/angular encoders, auto tool length measurement, auto part measurement, and also a selection of control units that include the Fanuc 0i, 32i and the 31i control, or the Heidenhain TNC620 and 640 control units.

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

Yaskawa unveils ArcWorld C-30 work-cell for the job shop market

Featuring a single station with a welding table suitable for customised part fixtures in a compact footprint, the ArcWorld C-30 work-cell from Yaskawa is designed as an affordable solution for the welding of small- to medium-sized parts typical to many job shops applications.

The ArcWorld C-30 solution offers all the components needed for arc welding, including a 6-axis MA1440 arc-welding robot, DX200 controller with menu-driven arc welding application software, integrated welding package, operator station, pneumatic powered slide-up doors and a safety-based working environment.

Powered slide-up doors are interlocked with robot operation to safeguard the operator during part load/unload. In addition to barrier guarding with solid sheet metal side and back walls, safety features include a single point of operator control, functional safety unit to monitor the robot, enhanced e-stop functionality, safety interlocked gates, integrated speed monitoring, and manual brake release for the robot.

Mounted on a common base for quick installation and relocation, parts up to 1,800 by 690mm can be accommodated, while the table has a payload capacity of 150 kg. The robot offers a 6 kg payload and a reach of 1 440mm.

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

Inspection Made Innovative

Not CAD specific

Streamline the creation of inspection documents by leveraging your existing 2D & 3D CAD data, TIFFs or PDFs.

- Quickly create ballooned engineering drawings and inspection reports with stand-alone SOLIDWORKS Inspection or the SOLIDWORKS Inspection add-in
- Automatically add balloon callouts with Inspection Dimensions specified by the designer or mechanical engineer
- Compare drawing revisions and originals to quickly identify changes
- Record inspection measurements and import CMM results
- Export finished ballooned drawings as a PDF and inspection sheets to Microsoft® Excel® spreadsheets using industry standard and custom templates.

Save time and virtually eliminate errors by speeding up this repetitive manual process.

MECAD SOLIDWORKS

Robert Pereira
Product Manager
086 111 2236
robert.pereira@mecad.co.za
www.mecad.co.za

Haas expands its line of drill/tap/mill centres

Haas Automation's small-footprint DT-1 Drill/Tap Centre and DM-1 Drill/Mill Centre are well known for their speed, accuracy, and ability to increase throughput while optimising floor space.

Haas has now expanded its successful Drill/Tap/Mill product line with a pair of high-speed, lean-style machining centres — the DT-2 and DM-2 — that provide the same high acceleration rates, fast axis speeds, and short tool change times as their smaller brethren, while offering an additional 203mm of X-axis travel and table length, with only a slight increase in footprint.

The new DT-2 and DM-2 are identical in specifications, except for spindle taper and tool changer. The DT-2 is a BT30 taper machine, with a 15 000rpm inline direct-drive spindle and a high-speed 20+1 side-mount tool changer. It is available with an optional 20 000-rpm spindle.

The DM-2 is a 40-taper machine, with a 15,000rpm inline direct-drive spindle and a high-speed 18+1 side-mount tool changer. The new DT and DM both allow high-speed rigid tapping to 5000 rpm, with up to four times retract speed to shorten tapping cycles.

Both machines offer a 508 x 406 x 394mm work cube and an 864 x 381mm T-slot table. The increased table size, longer X-axis travel, and larger work envelope easily accommodate multiple fixtures and multi-spindle rotary tables for increased production and setup flexibility. Yet, their compact footprint still allows multiple machines to be placed side-by-side for efficient use of valuable shop floor space.

The spindle on both machines features an 11.2 kW vector drive system that provides 62 Nm of cutting torque. The spindles are coupled directly to the motors to reduce heat, increase power transmission, and provide excellent surface finishes. Cutting feedrates for both machines are 30.5 m/min, and 61 m/min rapids and high acceleration rates combine to shorten cycles times and increase throughput.

For efficient chip removal, the DT-2 and DM-2 feature steeply sloped internal sheet metal. Optional twin chip augers transport chips to exit at the rear of the machine, allowing multiple machines to be placed close together. A rear chip-lift auger is also available for higher-volume applications. A 170 litre flood coolant system is standard, with options for a programmable coolant nozzle, and high-pressure through-spindle coolant systems. A wide selection of options is available to further boost productivity, including high-speed machining software, wireless tool and work probing, 4th- and 5th-axis capability, and much more.

For further details contact Haas Factory Outlet South Africa on TEL: 011 974 2301 or visit www.Haassa.com

Hypertherm introduces new gouging shield for Powermax air plasma systems

Hypertherm, a manufacturer of plasma, laser, and waterjet cutting systems, is now offering a new gouging shield for people wanting even greater control when gouging with Powermax® air plasma systems.

This new Max Control Gouging shield is designed for jobs in which the operator needs to remove a very precise amount of metal. The tip of the shield is engineered and machined in a way that allows the operator to create a very shallow gouging profile.

The introduction of the Max Control gouging shield expands the offerings of Powermax gouging consumables, which includes the existing Max Removal Gouging shield and HyAccessTM extended gouging consumables. Max Removal shields are designed to remove a large amount of metal and leave a deeper gouging profile while HyAccess provides the extra reach needed when gouging in hard to reach or confined spaces.

Max Control, Max Removal and HyAccess Gouging consumables are available for Powermax systems using a DuramaxTM or Duramax HyampTM torch. This includes the Powermax65® through the Powermax125® and older systems with Duramax retrofit torches such as the Powermax600®, Powermax900® and Powermax1650®.

"Hypertherm is continuously investing in market research and engineering development to ensure we meet the needs of our customers. The end result is eleven different patented torch styles for our Powermax systems alone, plus an array of unique consumable offerings that make it easy for people to choose the right tool for each job," explains Brenda Mahoney, a torch and consumable product manager.

Hypertherm is seeing a steady increase in the use of plasma for gouging as more companies realise the many advantages of plasma instead of alternative methods such as carbon arc. Plasma gouging allows for cleaner gouges with no carbon contamination, easier clean-up, and a safer work environment for the operator since it produces fewer fumes, creates less noise, and does not blow metal shavings back into the operator's face. Customers who have converted to plasma gouging report operational efficiencies between three and ten times faster than carbon arc gouging, which translates into a significant cost savings.

For further details contact Craig Sterley of Hypertherm on email craig.sterley@hypertherm.com or visit www.hypertherm.com

AKIRA - SEIKI

FACTORY OUTLET SOUTH AFRICA

PC460 - Tapping Centre

X Travel : 460mm Y Travel : 320mm Z Travel : 300mm
Spindle nose to table surface : 180mm - 480mm
Spindle : 12,000rpm Spindle Motor : 9HP
21-Station BT30 quick change turret type toolchanger
Feedrate XYZ : 1.2G Rapid XYZ : 60M/min
Max. Table Load : 250kgs

SR3 XP - Machining Centre

X Travel : 762mm Y Travel : 430mm Z Travel : 460mm
Spindle : 11,000rpm Spindle Motor : 15HP
20-Station Arm type BT40 toolchanger
Spindle Oil Chiller Coolant through spindle
Screw chip conveyor
Mitsubishi Mi745 control

V4 XP - Machining Centre

X Travel : 1050mm Y Travel : 540mm Z Travel : 560mm
Spindle : 12,000rpm Spindle Motor : 36HP
28-Station Arm type BT40 toolchanger
Spindle Oil Chiller Coolant through spindle
Screw chip conveyor
Mitsubishi Mi745 control

V5.5 XP - Machining Centre

X Travel : 1350mm Y Travel : 640mm Z Travel : 660mm
Spindle : 12,000rpm Spindle Motor : 36HP
28-Station Arm type BT40 toolchanger
Spindle Oil Chiller Coolant through spindle
Screw chip conveyor
Mitsubishi Mi745 control

MJH Machine Tools cc
www.mjhmachinetools.com

Durban
031-705-7514
Martin
083-276-0128
martin@mjhsa.co.za
Ricky
079-510-4144
ricky@mjhsa.co.za

Johannesburg
010-005-0634
Mark
083-326-0556
mark@mjhsa.co.za
Chris
082-416-2263
harpermt@icon.co.za

Holemaking and drilling options from TaeguTec

One of the industry's favorite choices when it comes to drilling into everything from alloy steel to stainless steel is DrillRush says TaeguTec — a versatile indexable drill that is constantly being expanded to provide dependable, optimal hole drilling performances on any material.

The various DrillRush geometries and sizes such as 1.5xD, 3xD, 5xD, 8xD and 12xD not only increase productivity but improve on tool life due to their reinforced edges and coating that are suitably designed for optimal chip control and hole quality on any material.

TaeguTec recently introduced two new sizes; the 12xD drill that produces deep holes accurately, repeatedly and economically, and the DrillRush 6mm to 6.9mm diameter range drill heads, which were designed to handle 1.5xD, 3xD and 5xD drilling depths.

All DrillRush products eliminate the need to remove the entire drill from the spindle in order to replace the head, a process that shortens cycle times and substantially increases productivity.

For producing cost effective large diameter holes, TaeguTec's SpadeRush, a recently introduced line of high productivity head changeable drills for large diameter hole making that stays within the cycle times necessary to be competitive due to its optimised cutting edge and unique rigid clamping system, generates higher productivity and performance.

Available as a standard drill in 3xD and 5xD for a diameter range of 26mm to 41mm, the SpadeRush's clamping technology enables operators to quickly change drill heads without removing the clamping screw from the holder.

For cost effective machining and productivity the TopDrill line has been built to satisfy a growing market demand for flexibility and performance. Additionally its true 4-corner inserts are suitable for both internal and external pockets,

which reduces inventory and promotes cost reduction.

From top to bottom, the TopDrill has been built for improved tool life and is equipped with a new insert grade for enhanced durability. The newest member of TaeguTec's drilling family is the TwinRush — a product that guarantees excellent performance and productivity on large diameter holes. The main feature of the TwinRush is that it joins together a centering insert with a pair of precise square inserts on either side in order to combine two different drill types onto one drill body, and protects them with TaeguTec's TT9080 PVD multi-layered coated grade. By doing so, this doubly effective design increases productivity.

For more information contact TaeguTec SA on TEL: 011 362 1500 or visit www.taegutec.com ■

All DrillRush products eliminate the need to remove the entire drill from the spindle in order to replace the head, a process that shortens cycle times and substantially increases productivity.

Thick sheet.
Perfect edges.
Big profits.

TRUMPF

.NEW

Laser cutting with BrightLine fiber.
Now also on the TruLaser 3030 fiber.

With BrightLine fiber, the solid-state laser becomes a universal tool. Now you can unlock all the benefits of the innovation on the TruLaser 3030 fiber, achieving outstanding edge quality also with thick sheet while maintaining unbeatable productivity working with thin sheet. Profit from stable processes, fine contours and effortless part removal. It's a win-win.

www.retecon.co.za

Sole agents for TRUMPF in South Africa for over 40 years.

Contact Graham or Milne
Tel: 011 976 8600 • Fax: 011 394 2471 • machines@retecon.co.za
Cape Town: 021 555 2270/1 • Port Elizabeth: 041 453 2720 • Durban: 031 701 8149

RETECON (PTY) LTD
Your Partner in Metal Working

MTMA

The all-new BLM Lasertube LT8: 3D fiber laser cutting

LT8 is the first machine in its size range to provide 3D cutting capability using a fiber laser, says BLM.

LT8 is the new top-of-the-range BLM Lasertube system that expands and enhances the performance boundaries of the LT8 system, from which it is derived both conceptually and technically.

The possibility of 3D cutting utilising a fiber laser source followed a path that included the development of a new “Tube Cutter” focusing head, designed at Adige especially for the 3D cutting of tube. The new LT8 goes beyond this goal by offering other important news regarding the size of the workable tubes, the achievable performance and the usability of the system.

3D cutting with fiber laser

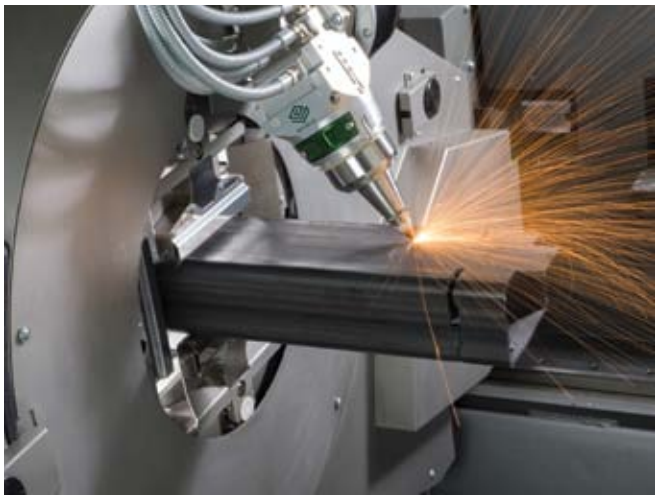
LT8 makes use of the new ‘Tube Cutter’ focusing head, specifically designed at Adige for the 3D laser cutting of tubes and profiles with fiber laser sources, to achieve excellent performance throughout the wide size range that this system allows you to work. The range was expanded in both tube size and weight. LT8 is able to cut, with excellent dynamic performance, tubes with diameters from 10 and 240mm with a weight up to 40kg/m.

This important expansion in capabilities meets the needs of the 3D machining that is particularly required in larger and thicker tubes that require bevels or weld preps.

The ‘Tube Cutter’ head, thanks its tapered geometry and its easy handling has increased the capabilities for processing open profiles or asymmetrical sections with both quality and precision.

Graphical interface

The first change is the new user interface, now used on all laser systems, which is easier, more intuitive and efficient. The new interface guides the operator in the different operating phases of the work cycle with appropriate suggestions on the programming parameters.



In terms of CAD / CAM programming the latest innovations introduced into the Artube3 package allow for a better and easier handling of tubes and profiles with "open" sections and the cutting of common of tubes.

Active tools

‘ActiveScan’ is a measuring system that measures the deviations of the actual section of the tube with respect to the theoretical tube shape / size and to automatically adjust to achieve the highest part accuracy in the shortest time. With ‘ActiveScan’ you can measure the position of the tube, and center the geometry to the actual tube location.

‘ActiveSpeed’ is a function that dynamically modulates the cutting parameters according to the real working conditions to insure the best results in every situation. Where previously an expert was needed to make complicated parts, now ‘ActiveSpeed’, available on all the Adige systems, makes everything very simple and affordable for everyone.

Handling systems, flexibility

The loading area for tubes still has two distinct stations - front and rear - to which you can connect modular loading solutions for different production requirements.

The part unloading is optimised to take into account the huge variability of size and geometry of the tubes to be machined. The centering system, which is used to provide accuracy on the long pieces, quickly clears the working area for downloading short pieces and enables maximum productivity to the system.

LT8, with its fully automatic adjustments and a very high load/unload speed, is proposed as the optimal solution with maximum flexibility.

For more information contact First Cut on TEL: 011 614 1112, email info@firstcut.co.za or visit the website www.firstcut.co.za ■

25 – 29 October 2016
Hannover, Germany

TRADE FAIR TRAVEL, in association with METALWORKING NEWS and with the Southern African German Chamber of Commerce and Industry, have organised a carefully chosen tour to EuroBlech 2016, the world's leading exhibition for the sheet metal working industry.

EUROBLECH

TOUR ITINERARY WITH TURKISH AIRLINES

Sun 23 Oct	**Depart Johannesburg International Airport**	**TK 039**	**18:45**
Mon 24 Oct	**Arrive Istanbul**		**05:15**
	Depart Istanbul	**TK1553**	**06:40**
	Arrive Hannover		**08:55**

On arrival our coach driver will meet you and transfer you to the Andor Hotel Plaza. This hotel is a modern three-star superior hotel which is 100m away from the railway station. 140 modern rooms ensure a comfortable stay, equipped with satellite and pay TV, modem connection (partially ISDN), mini-bar, safe, hair-dryer and soundproof windows. There is a floor reserved only for the smoking guests. 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 Esprit restaurant with the Orbit Bar has a capacity for 130 people. The Tropical Bar in the foyer invites you for a cup of espresso or draught beer. An express breakfast is available for guests who have to leave early. There are many entertainment facilities nearby, from bistros and discos to opera or music hall.

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 Trade Fair Travel to order the entrance ticket when the cost is known and add to the final invoice, we will be pleased to do so.

- **Bookings close on 26th August 2016.** Due to severe demand for hotel accommodation, all unsold rooms will be returned back to the hotel on this date. Any reservations made after this date will incur a late booking fee of R250 per reservation and accommodation will be subject to availability.
- Tour costs based on exchange rates prevailing at 13th April 2016 and final tour costs will be recalculated when the tour balance is due on 26th August 2016.
- Please complete and sign the tour reservation form which can be found and downloaded from the website. It is vital that we are supplied the full first and last name as showing in the passport. No nick names such as "Jannie" or "Mike".

UNDER OWN ARRANGEMENTS TO VISIT TRADE FAIR UNTIL:

Fri 28 Oct	**Make your own way to Hannover Airport**		**18:00**
	Depart Hannover	**TK 1556**	**20:05**
Sat 29 Oct	**Arrive Istanbul**		**00:05**
Sat 29 Oct	**Depart Istanbul**	**TK 040**	**01:30**
Sat 29 Oct	**Arrive Johannesburg**		**10:30**

TOUR PRICE **

*** Please read notes concerning the airfare below*

R20,900.00 pp sharing a twin bedded room

R27,480.00 in a single room

** Please note that due to the exorbitant cost of group airfares and a demand for large deposits, as well as high "published" airfares we have used the cheapest available fares at the time of arranging this tour (13 April 2016). Turkish Airlines offered the lowest airfare/taxes of R9,500 and we have used this current fare. No flight bookings have been made. It is important to note that this fare will increase and it is vital to purchase this ticket now at the current fare. Should you wish to leave your booking to a later date, we will still charge the cheapest available fare. In view of the urgency to purchase air tickets we will not ask for a tour deposit, but will invoice the balance of tour eight weeks before departure. We hold an allotment of rooms at the Andor Hotel Plaza which we used in 2014.

NB: Please be advised that Hannover Messe has withdrawn the facility whereby fairground entrance ticket holders were allowed to travel free on the rail system. Visitors are now offered a variety of HannoverCards valid for 1,2 or 3 days. The current (18/02/2016) cost is 1 day €9.50, 2 day €15.00 and €18.00 for a 3 day ticket. These can be purchased online by visiting www.hannover-tourismus.de.

PRICES INCLUDE

- Return economy class airfare and taxes Johannesburg to Hannover
- Airport to hotel transfer on arrival
- Accommodation for 4 nights at the superior 3 star Andor Hotel Plaza
- Full American breakfast daily
- Full medical/cancellation/travel insurance
- Hannover city maps

N.B.

- No discounts or refunds given to passengers not utilising airport transfers
- Rates of Exchange Prevailing at 18th February 2016 and are subject to change
- We regret to advise that credit cards cannot be accepted

TOUR PRICE EXCLUDES

- Passport and visa fees. All meals not mentioned in tour cost. All items of a personal nature such as telephone calls, laundry etc., Trade Fair Entrance tickets as cost unknown at time of preparing this tour.

TRADE FAIR TRAVEL

Please return a completed booking form which can be downloaded from the website www.tradefairtours.com to Trade Fair Travel,

Tel (031) 916 1414 • Fax (031) 916 5674 • email peter@tradefairtravel.com

www.tradefairtours.com

Iscar 'in-the-groove'
with a parting gift for efficient machining

Iscar's progressive policy of unceasing product enhancement is reflected in the recently launched additions to Iscar's comprehensive Grip range of parting and grooving tools, and now provides one of the most comprehensive range of products for all parting and grooving situations. Included in the range is an extensive choice of insert geometries, chip breakers and carbide grades.

Tang-Grip- A unique tangential single-ended insert with a revolutionary clamping method

Iscar's Tang-Grip is a high quality, single-ended insert that was developed to enable highly efficient parting. A revolutionary, secure clamping method using a tangentially orientated pocket provides pocket life three times that of any other conventional self-grip system. Tang-Grip's robust clamping method enables machining at high feed rates and provides excellent straightness and surface finish characteristics.

Iscar's latest Tang-Grip innovation is the introduction of cost effective blades. Tang-Grip flat top economical blades now feature four pockets compared to the previous version that had two pockets, whilst the integral shank tools feature two pockets compared to its predecessor that had a single pocket.

By doubling the number of insert pockets, when compared with other tools and blades, the advanced new shank tools and blades deliver the cost-effective advantage of half the price per pocket.

The new Iscar Tang-Grip blades and tools are extremely rigid and are capable of bearing heavy tooth loads (high feeds). They resist lateral loads and deliver excellent surface straightness. The 35mm blades, that are 30mm longer than any other standard blades, can be used for deep grooving and parting applications.

Due to Tang-Grip's beneficial flat top configuration, no chip obstructions are encountered under all possible machining conditions.

Covering all parting and grooving applications, the Tang-Grip range of inserts is available with a wide variety of chipformers, with both neutral and angular frontal cutting edges. The extensive range comprises blades and inserts in 1.4-12.7mm widths in IC5400, IC830, IC808, Sumotec grades and includes an easy to use clamping and extracting device.

The Tang-Grip blades feature an engraved ruler to assist in overhang adjustment and are supplied in standard sizes that fit Iscar's blocks.

Penta-IQ-Grip — A 5-star pentagonal parting and grooving insert for up to 20mm depth of cut

Following the successful introduction of the Penta 24 and Penta 34 inserts, Iscar has introduced the latest evolution of the Penta family Penta- IQ-Grip.

As the Penta prefix suggests, Iscar's advanced new parting insert boasts five cutting edges. Penta-IQ-Grip inserts, available in 2 and 3mm widths, are ideal for parting up to a 40mm part diameter or up to a 20mm depth of cut.

An innovative dovetail wedge clamping system ensures very stable Penta-IQ-Grip insert clamping, secure edge indexing and rapid insert replacement. In addition, the robust structure enables the application of high machining parameters, resulting in much reduced cutting time.

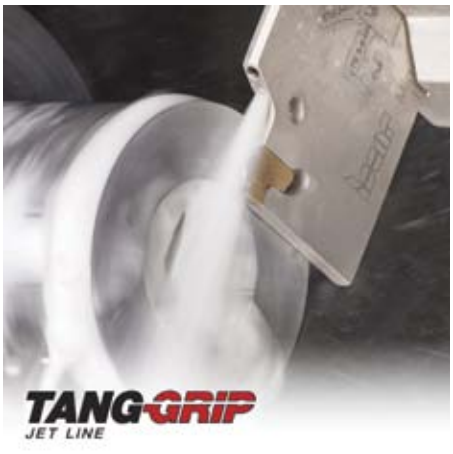
As well as delivering significant performance advantages, Penta-IQ-Grip provides excellent straightness and surface finish characteristics in parting applications.

Penta-IQ-Grip assures prolonged insert tool life, at least double that of single, double or triple ended parting inserts. Penta-IQ-grip inserts are available in three sizes for parting: D22 (up to 22mm part dia), D32 (up to 32mm part dia), and D40 (up to 40mm part dia). D22 and D32mm sizes can also be used on Swiss-type and small CNC machine tools.

All inserts feature C- and J-type chipformers to accommodate a wide variety of machining and material applications. Penta-IQ-Grip is produced from grade IC808G, a hard, fine grain substrate with excellent chipping resistance, whilst a TiAlN PVD coating provides impressive wear resistance.

Do-Grip — The one and only double-sided twisted parting insert with no depth of cut limitation

In addition to highly efficient parting inserts in single and



double-ended conventional configurations, Iscar offers a unique double-ended twisted geometry for unlimited depth of penetration. The Do-Grip range also includes the largest choice of parting widths available in today's market, covering all application ranges. Iscar offers a wide variety of chipformers and advanced grades to ensure unbeatable performance and extended tool life.

Jet HP — A cool answer to a hot problem!

In grooving and parting operations, applying high-pressure coolant provides excellent chip breaking results on all materials. On exotic alloys such as Inconel and titanium, it is usually impossible to break the chips with standard external coolant pressure. High-pressure coolant reduces or even eliminates built-up edge phenomenon, especially when machining stainless steel and high temperature alloys.

Jet-Cut, part of the Jet HP family, is Iscar's Do-Grip parting insert that features an internal coolant channel that passes through the insert. This advantageous arrangement ensures that the insert's body is internally cooled while also delivering an efficient coolant jet close to the cutting edge.

Materials such as titanium, Inconel, or austenitic stainless steel tend to harden during the cutting process and to form long and tangled chips. The delivery of coolant to the cutting zone by the use of Jet-Cut Do-Grip parting inserts improves chip formation and slashes flank and cratering rates.

A common problem encountered when using conventional cooling in grooving and parting applications is that the chips can prevent the coolant from reaching the cutting edge, thus reducing the insert's life. Jet-Cut DGNC inserts enable the efficient delivery of high levels of coolant contributing substantially to prolonged tool life.

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

You Ji YV-600E2T vertical turning centre machines large parts with 100-hp spindle

Designed for large lot-size machining of big aluminium wheels or similar parts.

The You Ji YV-600E2T VTC has a maximum swing is 850mm and the maximum turning diameter is 750. This compact, high-precision machine can operate as a stand-alone machining cell or can be integrated with other machines to form a complete, flexible manufacturing system.

The rigid vertical column and base are made of Meehanite castings, heavily ribbed for reduced thermal distortion and improved vibration damping. The X and Z axes employ roller-type linear guideways. By using sliding covers inside the machine, problems with chips in the guideways are virtually eliminated, the company says. All ways are completely enclosed, while a forced lubrication system ensures precise production. The high-speed way systems enable rapid traverse rates of 20 mpm. The Class 3 ballscrews are driven directly by the servomotors, eliminating belts or gears, for more exact machining.

The spindle construction incorporates double roller bearings as well as 45-degree angular contact thrust bearings. It is also protected from coolant contamination. The NN-type spindle bearings support high centrifugal loads as well as high spindle loads. A 75kW, high-torque motor drives the spindle via belts, providing power for heavy-duty machining and high speeds necessary for fine finishing. Twin six-position hydraulic vertical hex turrets are mounted on the rams with bolt-on tooling. Turret index time is 0.8 sec. with fast tool selection.

Chips and coolant wash directly into the standard caterpillar-type, right-side-discharge chip conveyor. The machine's interior is sloped toward its front, directing the chips and coolant to the conveyor running across the front of the machine. A chip wash system aids in chip removal.

For further details contact Machine Tool Promotions on TEL: 016 931 1564 or visit www.mtpsa.co.za

Tongtai five-axis machining centre provides torsion-resistant column

The Tongtai CT-350 VMC offers a small footprint and five-axis machining capability.

The new CT-350 five-axis vertical machining centre from Tongtai features state-of-the-art performance in a small footprint. The CT-350 boasts high-end machine construction and performance at an affordable price. The structure of the CT-350 is a "C" frame-type machine and was designed around high level mould-type machining centres to ensure rigidity during cutting. The column of the CT-350 has a wide span making it torsion-resistant while cutting a 5-axis part. Rigidity is enhanced by using 45mm roller type guide ways and pre-tensioned, large-diameter ballscrews.

The CT-350's table size is 13.78" diameter and can handle a maximum load of 440 lbs. The integrated rotary table uses the roller gear cam in both the tilt and rotation axes. The roller gear cam design provides zero backlash, high rigidity, and fast rotation speeds. The stroke on this machine is 15.75" in X, 20.08", in Y and 20.08" in Z. The A-axis stroke is +30° through -120°, and the C-axis stroke is 360° with rotation speeds of 40 rpm and 33 rpm, respectively. The CT-350 is truly high performance with rapid feed rates of 1,418"/minute in X and Y, and 1,182"/minute in Z. A 20HP direct-drive 15,000-rpm Big Plus 40 taper spindle with air/oil mist lubrication is standard in the CT-350, however an optional 20,000-rpm integral spindle is also available. For enhanced productivity, the standard 24-position arm type tool changer is equipped with a roller gear cam mechanism to reduce tool change time to only 2 seconds. Larger 30- and 40-tool ATCs are optional.

The CT350 is equipped with a FANUC OiM-F CNC control to perform 4+1-axis cutting. However, if 5-axis simultaneous cutting is necessary, a FANUC 31iM-B5, Siemens 840D or Heidenhain iTNC-640 can be installed.

Tongtai has several different models of 5-axis machining centres. The HTT-1250 is a large horizontal machine for aerospace applications with 50" tilt/rotary table. The GT-800 and GT-630 are gantry-type high-speed, high feed rate machines with 31.5" and 25" tilt/rotary tables, respectively. The MDV-551-5AX is a small, double-column-type machine with high-speed rotation and a 20" tilt/rotary table. The new CT-350 is Tongtai's smaller 5-axis machining centre with a small footprint for shops that need a 5-axis machine, but do not have the floor space for a larger machine tool.

For further details contact PBS Machine Tools on TEL: 011 914 3360 or visit www.pbsmt.co.za

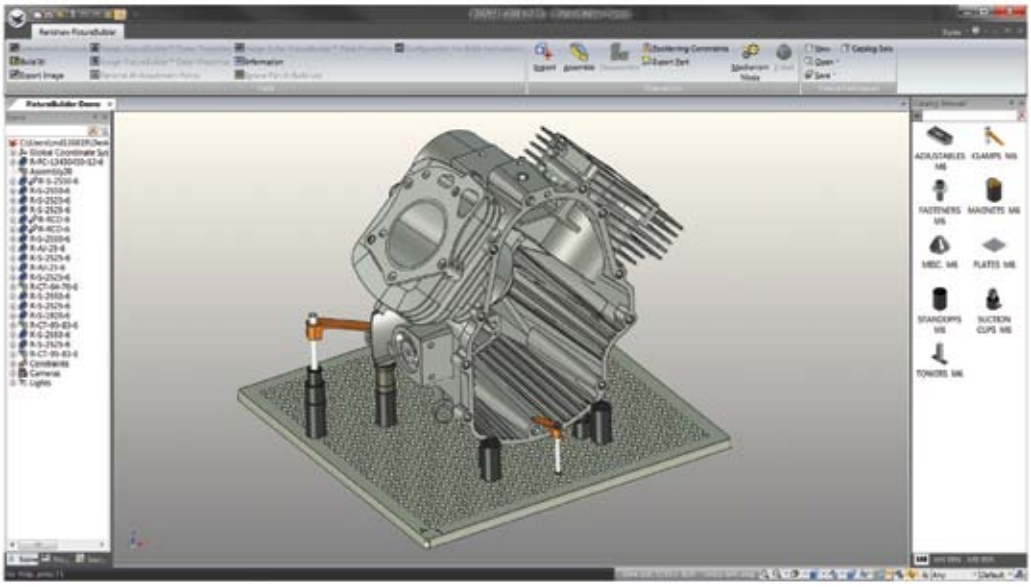
Renishaw launches FixtureBuilder 3D-modelling software

to create fixturing set-ups, and assist with documentation and off-line programming

Renishaw launched FixtureBuilder at Control 2016 which took place in Stuttgart, Germany from 26th to 29th April.

FixtureBuilder is a 3D-modelling software package designed to allow the off-line creation and documentation of fixturing set-ups.

FixtureBuilder offers a wide range of customer benefits, derived from Renishaw's outstanding understanding of metrology best practice and part inspection.

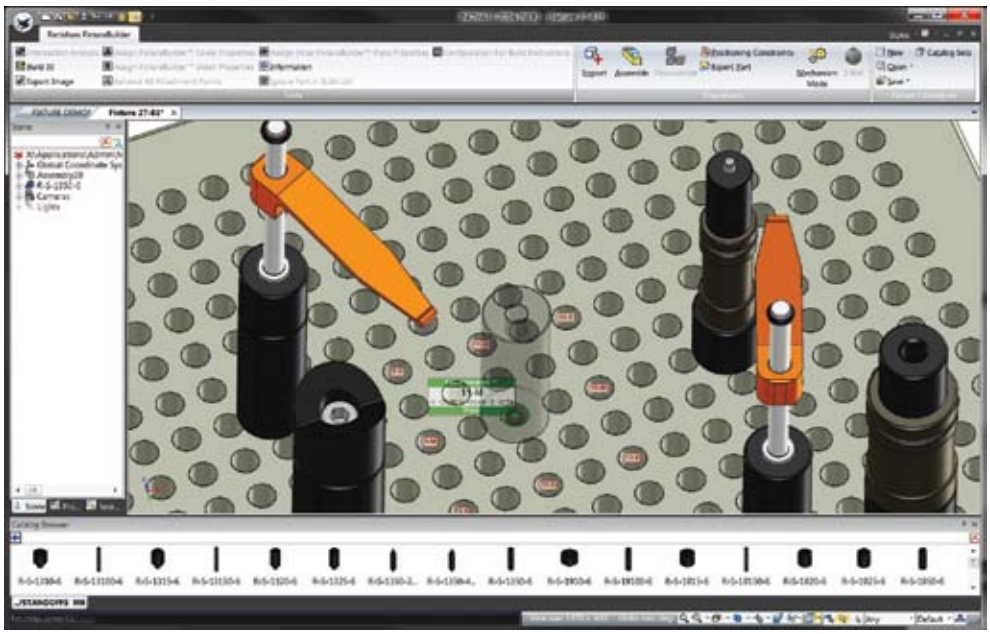


FixtureBuilder offers unparalleled ease of use thanks to:

- Clear and well-organised component libraries;
- Intelligent 'Drag and drop' functionality;
- Quick manipulation of parts;
- And easy-to-use constraint mechanism.

User experience is further enhanced by the software's full CAD compatibility and the availability of custom libraries.

The 'Build it' function is one of the key benefits available to all FixtureBuilder users. It automates the production of work instructions and Bill of Materials for every fixture set-up, to help ensure compliance with quality standards and assist with product ordering.



The software is available to all existing and future Renishaw customers to complement and further improve the productivity of their Renishaw fixtures and other inspection equipment. It is available for purchase through the Renishaw distribution network as well as the Renishaw Web shop. A free 7-day demo is also available upon request.

For further information on Renishaw's fixturing products, visit www.renishaw.com/fixtures ■

Laser welding with Alpha Laser

Improves surface finish and yields less rework.

Today's small precision welding shops specialising in mould, die and tooling repair have a wide range of new technologies available to enhance their ability to provide the highest level of quality, craftsmanship and service to their clients. One of the fastest growing technologies is the use of laser welding

Laser welding benefits

With laser welding, the tool steel doesn't have to be preheated because the heat input is so minute it doesn't disrupt any of the surrounding area, that is, it doesn't harden, soften or crack the area. In that respect it keeps distortion and weld sink down.

It makes the moulds look a lot better because minimal amount of weld and shrink is actually added to the areas (other welding methods cause shrink). There also is no heat affected zone because the laser doesn't affect the surrounding area. Plus, there is no preheating and less rework. When the customer gets a laser job back, they save a ton of money because it was laser welded versus TIG or micro TIG welded where they would have to spend extra time taking weld off. In some cases this time can be cut in half.

The good controllability of laser energy even allows welding of materials with high melting points or high conductivity.

Other advantages over the usual welding techniques include Punctual energy input, exactly localised, even in very fine structures, very little or no work piece deformation, high mechanical strength of welded seams, slim and flat welding seams, with an oxide-free surface, contactless welding, without the effects of mechanical force on the work piece and excellent process control, ensuring a consistent manufacturing quality.

Alpha Laser GmbH in Puchheim near Munich, Germany is an owner-run, medium-sized, high-tech company which specialises in the development and manufacture of industrial laser-welding and laser-cutting machines. The lasers are used in industry and also by craftsmen, as well as in small-batch-production. They are used in various industrial sectors, for example tool and mould construction, die casting, manufacture of sensors, sheet-metal works, mechanical engineering, jewellery and dental technology. In particular the company has developed unique systems for mobile welding tasks.

For further details contact MicroStep South Africa on TEL: 011 397 6356 or visit www.microstep.co.za ■

The S121 from Studer

Smaller universal cylindrical grinder offers two-spindle turret.

The S121 from Studer, a brand of United Grinding, is a universal internal/external cylindrical grinding machine for medium-sized workpieces, particularly chuck components and drive elements, in individual and small-batch production. Equipped with the technology of its sister machines — the S131, S141 and S151 — this series model has been limited to the essential equipment. The spindle turret swivels through 180 degrees to a stop and is equipped with two grinding spindles. A fixed spindle is also available. The StuderGuide guideway system for the X and Z axes ensures geometrical traverse movement and guidance accuracy through the entire speed range, together with high load capacity and cushioning levels. The guideway system combined with linear motors and direct measuring systems provides high interpolation accuracies, according to the company.

Although the S121 has the smallest space requirement in its series, it can handle larger diameters than the S131. The grinder has a swing diameter over the table of 400mm and a maximum workpiece length of 300mm, with a maximum grinding length of 175mm for internal and 100mm for external diameters.

The machine can be equipped with a fixed spindle or a spindle turret with two spindles. When using a spindle turret, the turret swivels hydraulically 180 degrees to a stop, and one spindle can be fitted with an external grinding wheel. Additionally, a workhead with manual cylindricity correction is adjustably mounted on the workpiece table, and a high-resolution C axis with direct measuring system is ideally suited for form and thread grinding. The machine concept is designed for optimum accessibility, whether for workpiece changeover, dressing or changing the grinding wheel.

The Granitan S103 machine bed's cushioning and thermal qualities support high grinding precision and surface finish quality. The cushioning behavior can also extend the service life of the grinding wheel, which in turn reduces auxiliary times. As the machine bed largely equalises temporary temperature fluctuations, high dimensional stability is ensured throughout machining. The large distance between guideways and rigidly constructed slides further contribute to precision work.

StuderWin software is said to make programming reliable and operation efficient. Through integration of in-process gaging and sensor technology for process monitoring, contact detection, and automatic balancing systems in the control enable standardised programming of the different systems.

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

Hurco VCX600i vertical-spindle, 5-axis machining centre

The travelling-column Hurco VCX600i vertical-spindle, 5-axis machining centre has a 600mm diameter rotary table mounted on a swivelling trunnion, a configuration popular amongst users as it allows components to be machined on five sides in a single set-up. An octagonal support for the table means that clamps can be positioned clear of the surface, ensuring that the full area is available to accommodate workpieces weighing up to 350 kg.

The integral, ± 110° B-axis trunnion offers generous Z-axis clearance and unrivalled undercutting capability. Together with a 16 kW/12,000 rpm/109 Nm direct-drive spindle, 30 m/min rapids and a 40-station magazine for 40 taper tools, the machine is suited to applications across manufacturing industry but is especially applicable to motorsport and aerospace.

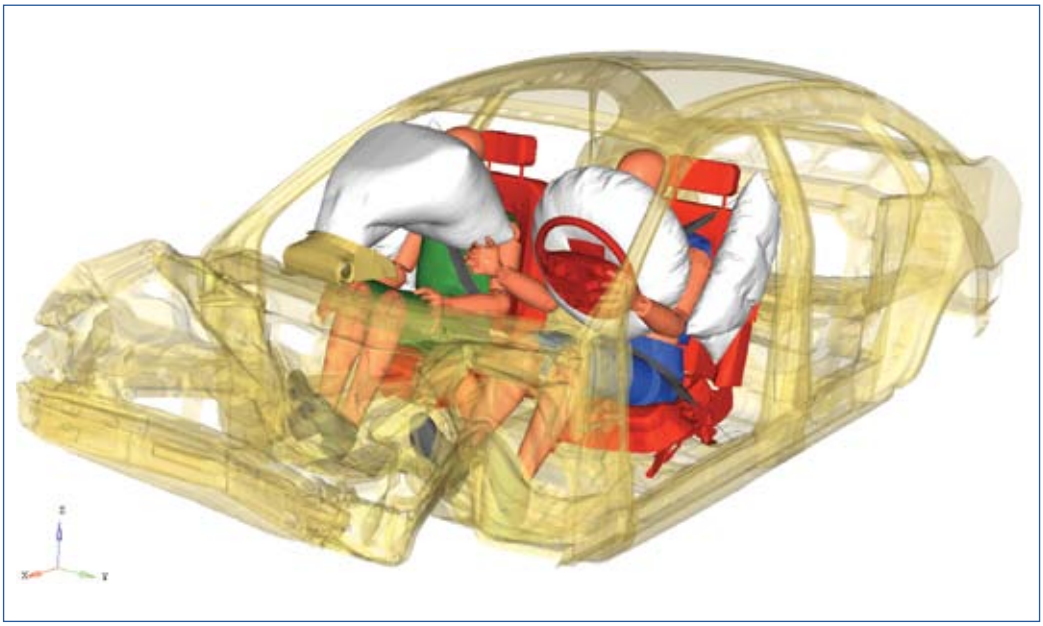
The manufacturer's proprietary WinMAX control includes patented Ultimotion software, which ensures smooth, high-speed contouring of 3D surfaces.

Machining accuracy and effective vibration damping are promoted by wide linear roller guideways and a base frame made from the concrete and steel composite, Hydropol. Axis travels are 750 by 550 by 500mm (in X, Y and Z), glass scales ensuring high precision positional feedback to the control. Similarly, absolute encoders provide feedback from the rotary axes. The table is of robust construction and is supported on the non-driven side by a counter bearing, the load on which can be transmitted through to the floor. This provides greater rigidity than that offered by other cantilever designs. The doors, which open on two sides of the working area, simplify access for automation systems.

For further details contact Hurco South Africa on TEL: 011 849 5600 or visit www.hurco.co.za

Release of HyperWorks 14.0
and solidThinking Inspire 2016 by Altair

Users get further advanced capabilities in CAE simulation software suite.



Altair has officially launched HyperWorks 14.0. According to the company, this release has new products, updates, licensing methods to help users get to the right design, save time and access the latest technologies.

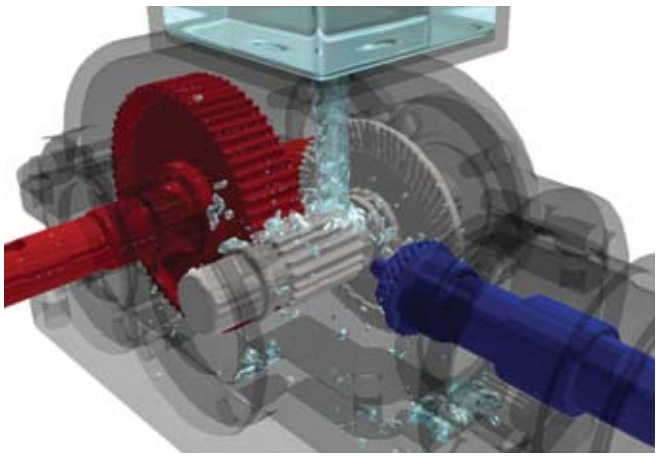
OptiStruct now includes more nonlinear analyses, new contact and optimisation algorithms and improvements in solution speed. A solution for the design and optimisation of lattice structures has been developed to support additive manufacturing.

HyperMesh has a new part and assembly workflow which promotes data flow directly from product data management (PDM) data structures. Combined with the new graphics engine tuned to handle even the largest models, HyperMesh 14.0's performance is up to 15x faster for large FE models with solid elements and up to 60x faster for geometry models, while using less hardware memory, Altair states.

HyperWorks 14.0 also includes Multiscale Designer, FEKO, MotionSolve, HyperWorks Unlimited Solver Node and Click2Cast.

"With this release of HyperWorks we've introduced parts and assemblies in HyperMesh that directly correspond to those in the CAD and PDM world," said James P. Dagg, chief technical officer, User Experience at Altair.

"The new assemblies are extremely flexible, allowing for modular modeling where entire subsystems can be replaced or updated automatically, keeping your CAE model synchronised with design."



solidThinking Inspire 2016

Additive manufacturing accelerated with introduction of PolyNURBS; cost-saving benefits for broad range of production processes

The new featured-packed release of solidThinking Inspire® 2016 introduces groundbreaking PolyNURBS functionality allowing users to quickly and easily flow optimised designs into manufacturable products by wrapping topology results with NURBS geometry.

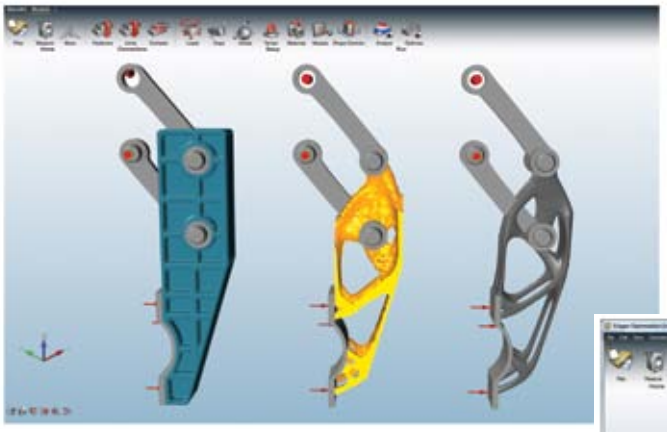
"Our new PolyNURBS toolset is a game changer, allowing users to create geometry from optimised results much faster than traditional CAD modelling," explains Andy Bartels, Program Manager.

"The result is an incredibly robust tool that has not only expanded the use cases for Inspire, but also accelerates the path to cost-effective manufacturing."

Key updates for Inspire 2016 include

- PolyNURBS — Create manufacturable designs from topology optimisation results with NURBS geometry using a simple workflow.
- Results Comparisons — Easily identify the best design directions by comparing multiple loading scenarios in one table.
- New Load Types — Consider temperature loads, velocity, acceleration, G-loads, and enforced displacement to simulate precise loading conditions.

"Inspire embodies our vision to make simulation available across multiple user communities to facilitate innovation. We are excited to be deploying this technology through our global channel partners with their deep domain knowledge and expertise," says James R. Scapa, Altair



A sequence showing evolutionary models in solidThinking Inspire 2016 with optimised geometry in the middle and final design model on the right

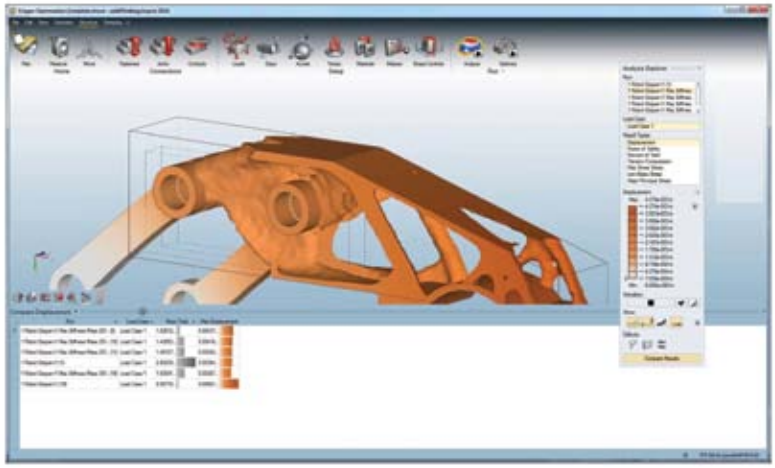
Founder, Chairman and CEO.

"Inspire does what few programs can; it takes a complex process and makes it easy to understand. My whole team was able to use the program after just a few hours of training and it has led to dramatic time savings in the design process," said Doug Hedges, President of Sintavia, LLC.

Inspire 2016 is available through more than 120 channel partners worldwide, and through Altair's patented HyperWorks licensing model. Inspire is also available as part of the solidThinking Suite, which includes Evolve 2016, released earlier this year.

Visit www.solidThinking.com/Inspire to see Inspire 2016 in action.

For further details contact Fiona Richardson of Altair South Africa on TEL: 021 831 1500, email frichardson@altair.co.za or visit www.solidthinking.com or www.altair.com ■



Nikon Altera CMM series

Nikon Metrology has developed the Altera range of bridge co-ordinate measuring machines (CMMs) for shop-floor metrology. Altera CMMs are available in three probing configurations: the Essential series, the Optimum series and the Ultimate series. Each configuration offers a different level of functionality to suit a variety of metrology applications.

With a range of motorised and manual probe heads and accessories, the Altera Essential series touch-trigger probe CMMs are suitable for general measurement and inspection applications.

The Altera Optimum series five-axis CMMs are available with the PH20 infinite positioning touch-trigger probe head, and have been optimised around four key requirements for measuring complex internal geometry: productivity, probe access, accuracy and best use of the CMM volume.

Providing a combination of productivity and flexibility, the Altera Ultimate series of multi-sensor-ready CMMs is both touch-trigger probe and scanning probe ready. Its scanning function provides a more complete and detailed insight, while dimensional deviation is displayed graphically.

Key features and benefits

- The Altera CMMs are available in seven sizes ranging from small to medium and with various measuring volumes.
- Each CMM has key structural components made from ceramic, which helps to provide the best possible stiffness-to-weight ratio, a greater resistance to temperature shifts and long-term dimensional stability.
- Passive anti-vibration and fully enclosed covers protect the guideways from contamination and accidental damage.
- Two software options are available with Altera: CMM-Manager and Camio. CMM-Manager features intelligent path planning with real-time workpiece and probe simulation.
- Nikon Metrology non-contact laser scanners can be added to the Altera Ultimate series.

For more information contact W.D. Hearn on TEL: 021 534 5351 or visit www.wdhearn.co.za ■

Mastercam X9 for SolidWorks

Mastercam X9 for SolidWorks is a CAM application that is fully integrated into Dassault Systèmes' SolidWorks. The latest release features dynamic motion technology improvements, 3D milling enhancements, multiaxis improvements, and much more. And, Mastercam for SolidWorks lathe, mill, or multiaxis is included with your purchase of the comparable standalone Mastercam X9 product.

"Mastercam for SolidWorks combines one of the world's leading modeling software with the world's most widely used CAM software so you can program parts directly in SolidWorks, using Mastercam's toolpaths and machining strategies," says Suchit Jain, Vice President, Strategy and Business Development, SolidWorks.

Dynamic motion technology

Dynamic motion toolpaths follow a proprietary and sophisticated set of rules that take into consideration a broad data set. To create the most efficient cutting motion possible, Dynamic toolpaths calculate not only the area where material will be removed they also take into account the changing condition of the material throughout various stages of machining. With Mastercam for SolidWorks X9, 2D HST Dynamic Mill, Peel Mill, and 3D Dynamic OptiRough support a conventional feed rate when you are set to a zigzag cutting method.

3D milling enhancements

3D HST roughing has been consolidated from six toolpaths down to two toolpaths — dynamic optirough and area roughing. The efficiency of rest roughing linking heights for 3D HST toolpaths has been greatly improved. 3D HST waterline toolpaths now include an option to machine your part from bottom to top. And, hybrid flat area processing is now available. You can choose to include the flat areas of your part in the toolpath, ignore the flat areas, or only machine the flats.

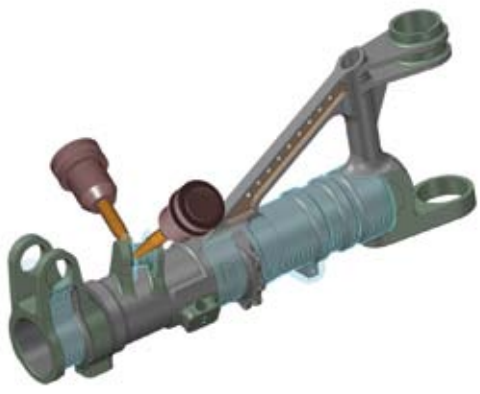
Multiaxis improvements

Now available for Port Expert, minimise tilting creates the most efficient toolpath possible through a port. Multiaxis toolpaths are displayed as normal tool motion instead of vectors in the graphics window. All advanced multiaxis toolpaths, such as Port Expert and Blade Expert, are now processed through the multi-threading manager, leaving users free to work while processing. And, the new multiaxis link toolpath allows users to link multiple toolpaths together to create a safe linking move between them.

Also available in Mastercam X9 for SolidWorks

- Option to project the selected items to the toolplane has been added to the Chain Manager for 2D toolpaths and for 3D toolpath containments. When SolidWorks Solid Bodies, Faces, Features, or Surfaces are selected, a silhouette of the selected items will automatically be generated
- Multiple Mastercam simulator improvements such as the new adaptive quality tool, motion controller support, and more
- Lathe C-Axis operations, as well as lathe misc op operations, are now available.
- Ability to insert, delete, or otherwise rearrange holder segments using the right-mouse context menu
- Barrel tool support, as well as thread mill support, has been added

Now available for Port Expert, minimise tilting creates the most efficient toolpath possible through a port. Multiaxis toolpaths are displayed as normal tool motion instead of vectors in the graphics window



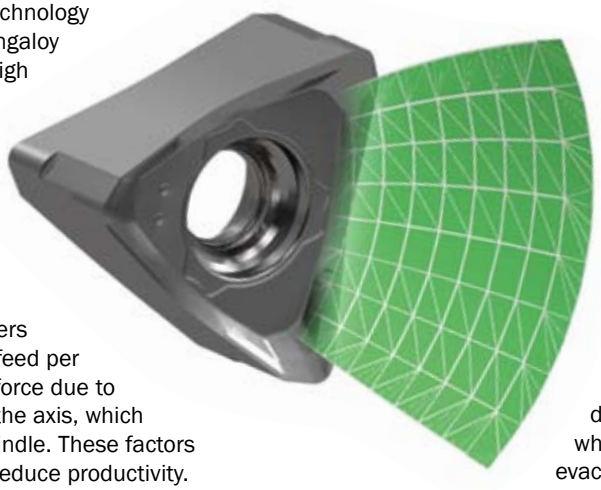
For more information contact the local agent Mecad Systems on TEL: 086 111 2236 or visit the website www.mecad.co.za ■

Cost-effective shoulder milling cutter for higher productivity — Tungaloy's DoForce-Tri

Shoulder milling has become one of the most popular forms of milling, amounting to more than 30% of all milling operations worldwide, says Tungaloy.

Shoulder milling has always been the most popular style for not only milling a shoulder or a wall but also milling close to a jig or a fixture to avoid interference. Generally, in machining automotive components, the first operation OP10 for machining datums is done by the shoulder mills.

Starting with a two-cornered single-sided indexable insert, the design changed to a four-cornered single-sided insert in a square shape that was popular for a long time. This square insert had a very small clearance at the bottom when positioned at 90 degrees and was unable to use all four cutting edges as secondary cutting edges were often damaged during use. Ramping was also impossible with this design. Countering this challenge and with advancements in design and manufacturing technology of pressing and sintering, Tungaloy developed a four-cornered, high helical, double sided insert - Dorec.



In shoulder milling, chip thickness (hm) is directly proportional to the feed per tooth, unlike the operation by 45° cutters where the hm is 70% of the feed, or high-feed cutters where the hm is 30% of the feed per tooth. Moreover, the cutting force due to the feed is perpendicular to the axis, which may result in bending the spindle. These factors increase the vibrations and reduce productivity.

In continuation to the development, Tungaloy has recently launched a new six-cornered, double-sided insert in its Tungforce MillLine, DoForce-Tri. The key to the design philosophy behind the development of DoForce-Tri was offering accelerated machining to customers while adding flexibility and prolonging tool life.

DoForce-Tri is a new series of tools with a double-sided triangular insert performing general milling applications.

The unique corner geometry of the DoForce-Tri insert features a dedicated wiper and corner radius for each cutting edge without compromise on the length of the cutting edge. Unlike other six-cornered inserts, DoForce-Tri has the ability to use the full cutting edge length of the insert. The wiper edge was also designed with a large radius, delivering a smooth finish. Its barrel- shaped chips ensure that, even at full depth, there is no chip jamming in the gullet. It also prevents chips from hitting on the work surface, maintaining a clean end result.

Another key aspect of the cutting edge design is its concave shape, designed to form barrel-shaped chips, which is a sign of smooth curling and easy evacuation.

The insert features six cutting edges with the cutting edge full usable length for larger depth of cut up to 11mm, compact chip formation due to the concave cutting edge, the NMJ type chip splitter produces small chips and helps reduce chatter in demanding applications, the long wiper edge achieves good surface finish and the insert's triangular shape provides high rigidity.

For further details contact Star Tooling on TEL: 011 818 2250 or visit www.startooling.co.za or www.tungaloy.com ■

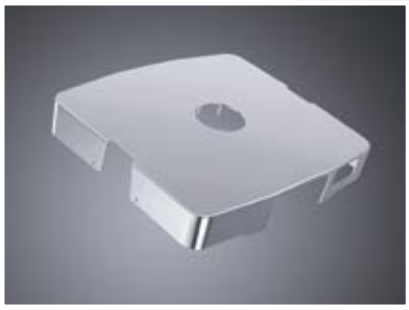
Laser welding for sheet metal parts — Trumpf

With reduced investment costs and a small footprint, the new TruLaser Robot 5020 Basic Edition, made by Trumpf, paves the way to automated welding using the laser.

The new TruLaser Robot 5020 Basic Edition, built by Trumpf, is especially tailored to those making their debut in laser welding for sheet metal. It is less expensive than its big sister TruLaser Robot 5020 and it requires less floor space. In spite of this, it produces seams with excellent surface quality and high-strength, narrow and deep seams in every conceivable shape. The compact and affordable robot system has six axes and welds mild steel, stainless steel and aluminium at sheet thicknesses up to four millimeters in the best and highly reproducible quality. Parts measuring up to 1,200 x 800 x 600 millimeters can easily be worked. The rotate and tilt positioner makes for superb productivity and a high utilisation rate. It permits complete 3D processing of the parts while ensuring good accessibility.

Economical laser welding

The TruLaser Robot 5020 Basic Edition is available in two reasonable models. Those who order the complete system, including the laser source, receive the machine with a TruDiode direct diode laser. With its 40 percent efficiency, users benefit not only from the reduced entry price for the system, but in addition from low operating costs. And the user also saves on floor space, since this solution requires far less space.



If the company already owns a punching and laser cutting machine or a 2D laser unit incorporating the TruDisk solid-state laser, then a second variation is possible. The laser can power an additional unit integrated into its laser network, for instance the TruLaser Robot 5020 Basic Edition. This reduces the investment costs by up to 50 percent when entering the field of laser welding and ensures ideal utilisation of the beam source. The TruDisk switches in just milliseconds from the punch laser or the laser cutting machine to the robot welding cell. In this way set-up or tool changing times at the cutting unit can be utilised efficiently for laser welding.

Laser welding is better

Those who make this step and invest in the TruLaser Robot 5020 Basic Edition will be moving up to a fully new quality class in sheet metal processing. This starts with the superior seam quality. Heat conduction welding, in particular, produces seams with outstanding surface quality. This makes it possible to weld visible seams without any retouching work at all. And since less heat enters the part during laser welding, there is almost no distortion. This also eliminates the need for subsequent leveling of the sheet.

Another advantage of this technique is the high strength of the welded seam. Deep penetration welding scores here because this procedure generates narrow, deep, high-strength seams. In addition, they make for a better bond than conventional seams. In tension testing at materials inspection laboratories, the latter invariably come apart at or near the seam while the laser-welded seam holds tight. In fact, the specimens fail in the material being welded. This shows that the tensile strength of a laser-welded seam is not only higher than that of a conventionally welded seam. It is actually higher than the material being bonded.

In terms of flexibility and speed, as well, the laser is more than convincing. Especially during deep penetration welding, the laser reaches a speed of up to five meters per minute. In addition, it can handle every conceivable kind of joint and every geometry — even if the area being welded is accessible only from one side. Lap seams, a hidden T-joint, and even materials of differing thicknesses can be welded with the laser. This opens a wealth of new options for part design.

For more information contact Retecon Machine Tools on TEL: 011 976 8600 or visit www.retecon.co.za ■

TaeguTec
Member IMC Group

10 YEARS

Holemaking

DRILL•RUSH

>>> NEW DRILLRUSH HEAD FOR PREMIUM QUALITY HOLEMAKING

SPADE•RUSH

>>> HIGH PRODUCTIVITY HEAD CHANGEABLE DRILL FOR LARGE DIAMETER HOLEMAKING

TaeguTec SA (Pty) Ltd

Tel (011) 362 1500 • Fax (011) 362-1511
43 South, Main Reef Road, New Era, Springs • Email info@taegutec.co.za

AGENTS **Cape Town** - SBB Machine Tools - 021 939 9170
Durban - Rodney - 082 923 3487 • **Port Elizabeth** - Johan - 084 587 6186
Secunda - Jimmy - 082 654 6164 • **Bloemfontein** - Kevin - 083 407 1668

RELIABILITY. PRICE. REPUTATION.

Haas VF-2SS Super Speed
Vertical Machining Center

= TOTAL CUSTOMER VALUE.

WE KNOW what it's like.
We're MACHINISTS, too.
We CUT METAL every day.

That's why we're driven to make sure that every Haas CNC machine is trustworthy, affordable, and always backed by the industry's best after-sale service.

Haas Factory Outlet - South Africa

CNC Machine Tools South Africa (PTY) LTD | Johannesburg: 27 11 974 2301 | www.HaasCNC.com