LOGIQ MILL

ISCAR CHESS LINES

MILL 4 FEED

HIGH FEED

Square Insert for High Feed Face Milling with Higher Productivity

4 Cutting Edged Square Insert

Member IMC Group

www.iscar.co.za
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

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

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

- Laser and Plasma Consumables
- Press Brake Tooling
- Eccentric Presses
- Press Feeding Equipment and Compressors

Local: 08600 DURMA (38762) | International: +27 11 865 4090 | sales@durma.co.za | Byron 083 231 1955 | Sean 073 167 5913

DURMA
Simple, inexpensive, compact
• Variety of materials
• Enhanced productivity in thin sheets
• Low investment and operating costs
• Simple design and short installation time

FIBER LASERS

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

Other machines available:
• CNC punching machines
• Variable rake swing beam and mechanical shears
• CNC plasma cutting systems
• L angle processing centers
• Plate roll benders
• Profile benders
• Iron workers
• Bandsaws
• Corner notchers

The Winning Force

LASER PIPE CUTTING MACHINES

Local: 08600 DURMA (38762) | International: +27 11 865 4090 | sales@durma.co.za | Byron 083 231 1955 | Sean 073 167 5913

Auto loading system

Tube transfer system

Chain transfer system

Auto loading gripper system

Measuring profile length

Hydraulic profile holder

Z Axis

Durma

Auto loading system

Tube transfer system

Chain transfer system

Auto loading gripper system

Measuring profile length

Hydraulic profile holder

Z Axis

Durma
FIBER LASER CUTTING MACHINE  1 KW - 15KW

- Italian Machine with CE Rating
- High speed applications for thinner materials
- 4020 / 4025 / 6020 / 6025 / 8025 cutting area selection
- Up to 4G acceleration
- Up to 200m / min travel speed
- 4kW / 6kW / 8kW / 10kW / 12kW / 15kW laser power source options
- Exchange table and camera system standard
- CNC Cutting
- Slab cutting
- Multiple torches

• Conventional • High definition
• 2D or 3D Bevel • Pipe cutting
• Plasma and oxyfuel combination
• Hypertherm consumables

- For pipes from 100mm diameter to 1250mm diameter
- Optional pipe lengths and types

- Drill & Tap up to 80mm diameter holes
- Drill plates up to 100mm thick
- Numerous plates can be stacked up to 100mm thick and drilled

Tel: (011) 552-8265 or Ampie 083 430 9844 / Robin 082460 4049
Email: info@linda.com   |   Web www.lindsa.com
COMPLETE MACHINING OF ADVANCED MATERIALS WITH ENHANCED ULTRASONIC

Sporting a new look, and more capacity throughout for all functions, the new ULTRASONIC 20 linear impresses with ultrasonic machining of advanced materials.

For many years, DMG MORI has been offering high-performance machine tools with ULTRASONIC technology for 5-axis machining of complex workpieces made of advanced materials. With the new ULTRASONIC 20 linear, this series now captures a completely new class. Spindle speeds with optionally up to 60,000 rpm, more powerful drive motors, an even smaller footprint plus CELOS with apps specifically developed for the ULTRASONIC are all part of the innovations which users from the fields of optics, precision engineering and clocks, medicine and high precision mould manufacturing will benefit from in the future.

Reduced process forces for filigree structures, surface qualities up to Ra <0.1 µm and longer tool service life

Included with the most important technological innovations of the ULTRASONIC 20 linear are a new, completely digitally controlled ultrasonic generator and the ULTRASONIC actuators with higher capacity and rotational speeds of up to 50,000 rpm. The tool holders with adapted actuator technology can be easily and fully automatically replaced in the milling spindle. Each of these holders is equipped with piezo elements, which are activated via a program-controlled induction system with high frequency between 20 and 50 kHz. The original tool rotation is thus superimposed with additional tool movement with defined amplitude in longitudinal direction. The resulting deflection of the cutting edges or grinding areas is controlled via the NC program and can be in a range of up to 10µm or even higher. During grinding, drilling and milling, these superimposed vibrations have a direct, positive impact on the process forces, the removal volume and the tool service life and thus result in reduced costs and higher productivity.

In detail, the ULTRASONIC technology achieves a higher removal volume, more precise edge processing and up to 40 percent reduced process forces during machining of advanced materials like glass, ceramics, sapphire, hard metal and composite materials as well as carbide. The precision of the workpieces and reliability of the process are increased at the same time. Furthermore, the oscillating interruption of the tool contact with the workpiece results in an improved lubrication and cooling of the cutting edges and the optimum removal of stripped particles from the work area. The outcome is longer service life of the tools and excellent surface quality of up to <0.1 µ for hard-brittle high-performance materials. The ULTRASONIC 20 linear ideally combines high speed cutting with highly efficient ULTRASONIC grinding of advanced materials on a single machine. It enables the machining of an unprecedented range of different materials.

Intelligent ULTRASONIC technology with process-optimized amplitudes

“ULTRASONIC Parameter Detection” of the ULTRASONIC 20 linear ensures automatic detection of the ultrasonic frequency most suitable for the actuator and tool with powerful functions for process monitoring. Another function used for the first time worldwide is the monitoring and tracking as well as of frequency and amplitude during the ongoing machining process. For this purpose, UAT (Ultrasonic Auto Tuning) automatically tracks the frequency response and compensates all exterior influences like the dampening of ultrasonic vibrations by means of the primary process forces. This way, a consistent readjustment to the nominal amplitude or the value specified in the NC program can be achieved. With this, users can fully exhaust their processes and increase tool utilization, reduce cycle times and, particularly by reducing the process forces, achieve even more filigree, precise and high quality machining results.

Highly dynamic, long-term stable 5-axis machine concept – compact on just 3.5 m² footprint

With the ULTRASONIC 20 linear, DMG MORI relies on a long-term stable gantry machine design, to be able to safely meet all demands of ultrasonic machining. Despite this, the machine tool manufacturer was able to reduce the footprint of the machine to only 3.5m². A double drive for the Y-axis and the concept of integrated cooling, which uses the temperature monitoring of drives, spindles and the control as well as all media guarantee highest precision and workpiece quality. The linear measuring systems from MAGNASCALE are a good example for the high-tech components which DMG MORI has used here.

DMG MORI has significantly increased the capacity of the drives for the new development: by 47 percent for the A-axis, 27 percent for the C-axis and 34 percent for the Z-axis. The linear drives achieve maximum acceleration of more than 2 g and provide rapid traverse speeds of up to 40 metres per minute. Due to the large swivel range of the A-axis of the work table, ranging from -15° to 130° and the fully integrated 360° endless rotation axis – both with torque technology, the ULTRASONIC 20 linear is optimally suited to 5-axis simultaneous machining. The rotational speed of 1500 rpm that can optionally be achieved for the C-axis also enables circular milling/circular grinding as well as turning/milling operations.

After the revamp, the ULTRASONIC 20 linear can now be used with larger tool diameters of up to 50mm and an increased maximum...
workpiece weight from 10kg to 15kg. The basic version of the machine is equipped with a powerful 15 kW motor spindle and a HSK-32 tool holder, the maximum rotational speed is at 42,000 rpm. Higher demands on the rotational speed can be achieved with an optional spindle, which reaches an impressive 60,000 rpm. The range in this segment is rounded off by an HSK-40 spindle with permanent lubrication.

The modular concept of DMG MORI enables a wide-ranging application-specific configuration of the machines – of course this also applies to the ULTRASONIC 20 linear. For example, the machine can be supplied with a 1,500 rpm turning/milling table, which extends complete machining of rotation-symmetric workpieces in a single setup to the operations of milling, turning and grinding. In addition to the tool magazine with 24 pockets and minute wheel, a 60-pocket chain magazine is optionally available.

Unique integration of technologies

The ULTRASONIC 20 linear with its special features enables the use of ultrasonic support for specific materials, namely the milling and drilling of nickel or titanium super alloys or of materials like magnesium, tungsten as well as composite materials. Process forces have been reduced for milling applications in titanium by up to 30 percent. For steel, double feed speeds are possible, for other materials, like magnesium, the feed speeds can be increased by up to five-fold. In addition, an improved surface quality can be achieved. The ULTRASONIC process has a significant impact on chip breaking behaviour and chip removal from the tool. Further to shorter chips, this also results in drastically reduced tool wear, making the technology interesting for almost all future-oriented target markets with high-tech products. The specific benefits associated with the option of using the ULTRASONIC technology have also taken the flexibility to a new level. It is now possible to machine workpieces from very different materials from soft to hard-brittle, in five axes for mould making, medical technology, the automotive and aerospace industry.

TURN & MILL COMPLETE MACHINING OF LARGE WORKPIECES

With the compactMASTER Turn & Mill spindle, the additional turret including Y-axis and a bar diameter of ø 102mm, the new NTX 3000 2nd Generation from DMG MORI combines maximum productivity with a footprint of just 16.5 m². Hard on the heels of the NTX 2500 2nd Generation exhibited at EMO 2017, DMG MORI presented the latest model of its compact turning-milling centres in the form of the NTX 3000 2nd Generation at the Open House in Pfronten. This world premiere is designed for larger bar diameters of 102mm and is also capable of machining the most complex of components with a torque of up to 1,194 Nm. As with its smaller siblings, the experience gained from more than 1,000 installed NTX 2000s is also brought to bear in the NTX 3000 2nd Generation. The latest model is therefore endowed with high process stability and flexibility with a generous work area (675mm in the X-axis and ±150mm in the Y-axis) on a footprint of only 16.5m².

The decisive core component here is the B-axis with the company’s in-house compact-MASTER spindle for demanding 5-axis machining with up to 122 Nm. With 1,194 Nm torque and optional counter-spindle, the main spindle extends the performance of the NTX 3000 2nd Generation into the realm of 6-sided heavy-duty machining in the...
Milling & Machining Centres

The B-axis with Direct Drive allows 5-axis simultaneous machining of complex workpieces.

aerospace industry, the automotive sector and medical engineering.

Turn & Mill machining centres are in the premier league of modern machining. This is also borne out by the new NTX 3000 2nd Generation from DMG MORI. It is based on the robust machine bed together with stable roller guides. Added to this are comprehensive cooling systems in the spindles and ball screw drives. These ensure stable temperature conditions as a basic prerequisite for precision machining in continuous operation with 5 axes.

A further important criterion of the world premiere is the short, 350mm compactMASTER spindle on the B-axis, which, along with its actual performance data, provides additional space in the working area. Like the Turn & Mill spindle, the second tool holder in the form of a BMT turret with driven tools also has a Y-axis (±40 mm). The company’s in-house toolSTAR tool magazine with 38 stations, which, at the customer’s request, can be expanded to up to 114 pockets, makes for short setup times.

The NTX 3000 2nd Generation embodies the trend towards automation from two perspectives. While the integral tool measurement and tool breakage monitoring system and tool measurement in the work area ensure efficient machining, a choice of needs-oriented handling systems takes care of tool loading and unloading, the robot version being just one example.

On the control side, the NTX 3000 2nd Generation follows the Path of Digitization, on the basis of which DMG MORI is promoting the digitalization concept. The latest turning-milling centre is therefore equipped with the CELOS APP-based control and user interface and large, 21” multi-touch display. On the one hand, CELOS enables consistent management, documentation and planning of job orders in production engineering and in the workshop. On the other, CELOS APPs such as CONDITION ANALYZER and PERFORMANCE MONITOR offer the user a detailed insight into the machining processes and the status of the machines as a basis for a continuous improvement process. CELOS works to an ever-increasing extent as an IoT interface and thus provides the basis for cross-company interaction in production networks of the future.

DMG MORI Technology Cycles are also available for the NTX 3000 2nd Generation. Easy Tool Monitoring enables spindle load and axis feed to be monitored. Technology cycles make it easy for operators to carry out demanding machining, setting up and measurement with universal machines as well as standard tools and fixtures. Special machines, programmes and tools were previously necessary for this.

ULTRASONIC 20 linear with new design and CELOS

High-quality, long-lasting covers as an external distinguishing feature with functional added value thanks to optimum accessibility are the most important properties of the new standardized DMG MORI design. The ULTRASONIC 20 linear also has this new look, whose impact on value retention must not be underestimated and furthermore, the machines offer CELOS. This user interface with its unique multi-touchscreen can be used as easily as a smartphone. The user friendliness is further increased by CELOS apps which were specifically developed for ultrasonic machining. They visualise the ULTRASONIC technology cycles and the most important process parameters like frequency, amplitude and output power. At the same time, the apps monitor the process forces of the actuators and also support configuration of the tools.

Complete machining of an orthopaedic implant made of HIP zirconium.

For more information, please contact Retecon – Tel: 011 976-8600.
Five-axis universal milling machines

DMU monoBLOCK® Series

The New Benchmark in all Sectors!

PRODUCTIVITY

+ High dynamics
+ Short secondary processing time
+ Pallet changer with 3 pallets in standard (DMC 65 / 85 mB); up to 6 pallets possible

UNIVERSALITY

+ Large spindle variety
+ High workpiece dimensions and weights
OKUMA 5-AXIS MACHINING CENTRES – MU-8000V-L AND MU-4000V-L

Both the MU-8000V-L and the MU-4000V-L provide the power of process-intensive machining and high-speed, high-accuracy cutting through a combination of turning and 5-axis multitasking machining.

Okuma’s 5-axis machining centres MU-8000V-L and MU-4000V-L grant the unrivalled accuracy customers have come to expect from the manufacturer. Both machines are ideally suited for use in die and mould construction, in medical applications or for the manufacturing of very complex aerospace or automotive components. While the MU-8000V-L features a more generous working area, the MU-4000V-L is smaller in its overall dimensions. Both models deliver high traversing speeds and high cutting performance and offer maximum flexibility in 5-sided or 5-axis simultaneous machining of complex shapes. Process reliability, dimensional stability and geometrical accuracy are ensured thanks to a sturdy portal construction and the Thermo-Friendly Concept. The latter combines control technology and machine design to minimise the amount of heat generated and enable extremely accurate thermal deformation compensation. The MU-8000V-L and the MU-4000V-L are operated with Okuma’s OSP suite, which delivers the best IT-applications in one package.

Plenty of options for specific challenges

Okuma provides several options that can be used on both machines to meet the specific demands of their customers. As part of Okuma’s Intelligent Technology, the 5-Axis Auto Tuning System allows operators to take precision to the next level. It effectively compensates geometric errors that can naturally occur when machining with a 5-axis CNC machine tool – including volumetric accuracy. Adjustments can be performed within approximately ten minutes, whereas manual methods can take several hours.

Key specs of the GENOS M560-V vertical machining center include a max machining volume of 1,050 x 560 x 460mm, table size of 560 x 1300mm and a max. load capacity of 900kg. Add to this a spindle speed of minй 15,000, spindle motor power of 22/18.5 kW (hp), a rapid traverse of X-Y 40 m/min and Z: 32 m/min and magazine capacity of 32 tools.

The system is easy to use and allows the operator to focus on machining. Thus, the 5-Axis Auto Tuning System is an effective way to efficiently prevent problems, such as shape defects in curve machining and steps in slope machining.

All MU-V series machines are fit for options like Dynamic Tool Load Control, the monitoring and skiving functions and the ECO Hydraulic Unit.

OKUMA’S GENOS M560-V WITH LARGER WORK ENVELOPE

A high column design, CAT 40 spindle and intelligent technologies enhance this CNC machine’s ability to cut a variety of exotic metals

The GENOS M560-V vertical machining center, combines a high column design and CAT 40 BIG- PLUS® spindle to cut large, complex parts. The larger work envelope minimizes restrictions on workpieces, tool lengths and the rotary table. A highly rigid, thermally-stable, double-column construction gives this CNC machine the ability to withstand thermal deformation, resulting in improved machining performance. It’s also one of the heaviest machines in its class.

A powerful 30 hp spindle with 146 ft. lbs. of torque allows this machine to cut challenging metals such as titanium and Inconel as well as stainless steel and aluminium. A separate automatic tool changer door makes tool changing seamless without interrupting the machining process. The table moves only in Y, while the spindle moves in X & Z, enabling a smaller machine footprint, rapid feed rates, precise cutting and smooth surface finishes. Coupled with a user-friendly design and energy-saving technology, the GENOS M560-V truly delivers machining excellence.

Thermo-Friendly Concept, Okuma’s proprietary thermal deformation compensation technology is standard on this machine. Pretension ball screws and bi-directional spindle cooling allow for better control of the machining process. Optional Collision Avoidance and Machining Navi Intelligent Technologies are available.

For more information, please contact F&H Machine Tools – Tel: (011) 397-4050.
• Travel X, Y, Z axes: 1100 x 600 x 600mm
• Spindle Motor a12/12000i (11/15kw)
• Rapid Travel (X, Y, Z): 36, 36, 36m/min
• Fanuc Power Failure Backup Module

• Belt Head 10,000rpm, Taper BT-40
• Table Dimension: 1200 x 600mm
• Fanuc AICC II Function
• Fanuc Manual Guide 0i
• Coolant Through Spindle at 20bar

Scan to view more F&H products

www.fhmt.co.za
+27 (0) 11 397 4050 / fhmt@fhmt.co.za

Superior machine tool solutions
HURCO INTRODUCES
DOUBLE COLUMN
BRIDGE-TYPE
MACHINE

The stability of the BX40i double-column bridge-type CNC machine design and the overall weight (20,062 lbs.) provide exceptional accuracy and outstanding surface finish capabilities. While designed specifically for the mold market and aerospace industry, the BX40i meets the needs of any high speed machining application that requires tighter tolerances while allowing the machine to operate at optimum spindle speeds.

With the double-column design, there is less tool deflection and less vibration compared to a single column CNC machine and less thermal deformation due to the fact that the heat only affects the bridge structure in a straight line instead of occurring on both the X and Y axes. Another advantage is the fact that the spindle is closer to the mass of the machine on a double-column machine, which provides increased rigidity. Additionally, the BX40i is built with size 45 roller rails on all axes and linear scales are standard.

The Hurco BX40i differs from other bridge type CNC machines due to the integrated Hurco control powered by WinMax® control software and the patented motion system called UltiMotion®. The flexibility of the Hurco control makes machinists more productive and job shops more profitable because it supports multiple programming methods: conversational programming that minimizes idle time that occurs when waiting for the CAD/CAM station; industry standard NC programming; and a Hurco-specific feature called NC/Conversational Merge that optimizes efficiency even further.

UltiMotion is the sophisticated motion control software system Hurco invented that determines the optimal trajectory to run the tool and achieves programmed feed rates more consistently, reducing cycle time by as much as 30 percent or more, depending on the complexity of the part, while improving surface finish quality. With UltiMotion, cornering velocity is 2.5 times faster than conventional motion and machine jerk is reduced by at least 50 percent. Instead of fixed look-ahead, UltiMotion includes dynamic look ahead that is smart enough to adapt as required by the tool path. UltiMotion is different than the smoothing features offered by CAD/CAM software and improves upon even excellent CAM output because it provides better handling of the machine mechanics and dynamics. All Hurco CNC machining centers are equipped with UltiMotion.

For more information, please contact Hurco – Tel: 011 849-5600.

Just cut, bend and fabricate it!!

One source your best source

Durma South Africa have made it easier and faster to get just what you need – your forming and fabricating source for machines, consumables, accessories and systems

Hypertherm®
Authorized Partner
cutting products,
systems and software

DURMA machines

CENTRICUT®
laser and plasma consumables

ITMAMachiningCentres

Authorized Partner for
Lantek Sheet Metal Solutions

EuroStamp compressors

Tamsan press brake tooling

We are a distributor for

We are an authorised service centre for

Authorized Partner

Precitec Laser Heads

Local: 08600 DURMA (38762)
International: +27 11 865 4090
sales@durma.co.za
Byron 083 231 1955 | Sean 073 167 5913
IN THE SHOWROOM

TM6i Turning centre

Special price
R599,000.00
excl vat, options & delivery

SMALL PACKAGE
BIG PUNCH

• Max5 control, 19 inch, touch-screen, colour graphics
• Renishaw tool probing, parts catcher, swarf conveyor
• 6,000RPM, 13kW spindle, 12 position slotted turret

CALL 011 849 5600/1 NOW FOR MORE DETAILS
HYUNDAI WIA XF6300 5-AXIS VMC

HYUNDAI WIA recently introduced the XF6300 5-axis vertical machining center designed by a European R&D center in Germany. The machine provides high speed, simultaneous 5-axis precision and optimal rigidity combined with outstanding user convenience.

The XF6300 comes with a 19" large monitor for enhanced visibility and the SIEMENS ShopMill customized technology package as standard. ShopMill provides simple operation, supporting all operator actions with graphic help displays and functions for quick and practical machine setup, including calculating the workpiece position in the machine. The control panel has the same configuration as a computer keyboard for easy usage. Mold Package is provided as standard for a highly efficient mold process with the aid of various NC options and automatic tool measurement.

While the integrated bed and column have been designed by using HYUNDAI WIA’s unique analysis method, the XF6300 features a 4-way structure box type saddle inside the cross-beam to increase stiffness and minimize thermal displacement. The Box-in-Box structure design accomplishes thermal equilibrium, while minimizing thermal deformation. The direction of the main axis’ center of gravity and z-axis moving direction are in the same line, providing more precise machining.

The XF6300 features X-axis 650mm, Y-axis 600mm and Z-axis 500mm with 60 m/min rapid traverse and 1G of X/Z-axis acceleration and deceleration and a linear scale to all linear axes plus rotary scale to rotating axes as standard.

Various multipurpose built-in spindles are available, providing 15,000 rpm or optionally 24,000 rpm and 40,000 rpm for high quality mold machining. The main spindles produce almost no noise and vibration even at high speed machining, while ensuring highly stable machining performance.

The XF6300 main spindle features an oil cooling device as standard promoting high accuracy for long periods of time and a HSK tool holder for high positioning accuracy and precision.

The XF6300 is designed with a 5-axis rotary table which can be moved 30 degrees to the front side of the machine and 120 degrees to the rear side of machine based on A-axis and C-axis and can rotate 360 degrees. A-axis and C-axis achieve 70rpm and 110rpm, respectively.

The HYUNDAI WIA Europe R&D Center has also developed a rack-type magazine providing various options. XF6300 is equipped with 34 tools, which has a single layer as a standard. Tool magazines can be upgraded to accommodate 68 tools and 102 tools, respectively.

For more information, please contact Rothco – Tel: 011 970-1930.
HYUNDAI WIA MACHINE TOOL

XF6300

5-AXIS VERTICAL MACHINING CENTER

Cutting Edge Technology - High Precision & Lightning Fast
5-Axis Vertical Machining Center

EXPERIENCE THE NEW TECHNOLOGY

With its top-quality HYUNDAI WIA machine tool creates a new and better world.

 Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table Size</td>
<td>Ø630</td>
</tr>
<tr>
<td>Load Capacity</td>
<td>600 kg</td>
</tr>
<tr>
<td>Tool Shank</td>
<td>inch</td>
</tr>
<tr>
<td>Spindle Speed</td>
<td>r/min</td>
</tr>
<tr>
<td>Spindle Motor (Max./Cont.)</td>
<td>kW</td>
</tr>
<tr>
<td>Travel (X/Y/Z)</td>
<td>mm</td>
</tr>
<tr>
<td>No. of Tools</td>
<td>6A</td>
</tr>
</tbody>
</table>

http://machine.hyundai-wia.com

HYUNDAI WIA Machine Tools
Global Links
INDEXABLE TOOLS
CHALLENGE SOLID CARBIDE FOR SMALL DIAMETERS

Rotating one-piece solid carbide tools traditionally dominate the market for diameter ranges of up to 20mm (.75”) and indexable tool manufacturers have not yet succeeded in penetrating this solid stronghold. Several important factors contribute to the historical perception of solid carbide as a better bet for tooling reliability.

Solid carbide tool accuracy compares favorably with that of indexable tools, particularly for small-diameter endmills and for tools with diameters beyond the range. However, the role of reduced accuracy for tools of small diameter (for example, a milling cutter’s radial run-out) increases in significance as a factor affecting tool life.

An indexable tool is made up of a tool body, replaceable inserts and mechanical parts such as clamping screws or wedges, which secure the inserts in the body. Decreasing the tool diameter necessitates reducing dimensions of the assembly components. Reducing the size of the securing elements leads to weakening their strength and the tool becomes unable to withstand cutting loads under normal machining data. This seriously limits the tool application; further decreasing may cause degradation of the entire assembly structure.

The prices of small rotating tools are often high compared to the assembled concept, which adds to the perceived limitations of indexable tools in the small diameter range.

The Indexable Option

Indexable tools possess several distinct advantages that makes applying these tools within the above range very attractive in the eyes of the customer. In many cases, especially in rough machining, changing a worn cutting edge by simple indexing provides economic benefits compared with having to replace a whole life-expired solid tool with a new tool. In addition, there is no need to use up time and resources on regrinding and recoating worn-out one-piece cutters.

Tool manufacturers have made significant progress in developing reliable designs that could be commercially viable against the solid carbide concept. Work in this direction has shown results already and assembled mills and drills with interchangeable cutting heads are proving to be a realistic alternative to solid carbide tools.

Competitive performance

The introduction of tools with replaceable solid carbide cutting heads signifies a change in focus. ISCAR provides two examples of this concept with the ISCAR MULTI-MASTER milling line and the CHAMDRILL line in drilling.

Performance and accuracy characteristics have positioned the new tools to be functionally competitive with solid carbide designs. Versatility of these lines, where a head can be mounted in different bodies and vice versa where a single body can carry different heads, facilitates various assembly combinations and contributes to reducing items in tool stock.

Another important design approach - “no set-up time” - characterizes these lines, as a worn-out head does not require spending time on set-up and can be replaced while the tool is still clamped in the machine tool spindle. This cuts cycle time and consequently, reduces production costs. In contrast, replacing a worn-out solid carbide mill or drill inevitably leads to a new set-up procedure.

In addition, the concept ensures sustainable use of cemented carbide with all the associated advantages. The principle of indexable carbide tools has distinct merits and features strongly in tool design within the diameter range that is under discussion. The minimal diameter of MULTI-MASTER milling heads is 5mm and that of SUMOCHAM drilling heads is 6mm, while the MULTI-MASTER combined countersink heads for center drilling feature a minimal 1mm diameter.

The LOGIQ factor

ISCAR has recently introduced a new range of small-size indexable rotating tools under its new LOGIQ line campaign. The company proposes several families of cutters with a nominal diameter of up to 20 mm. A brief look at some of these families can provide a clearer understanding as to whether the new tools will be able to breach the solid stronghold wall.

The new families of indexable milling cutters within the diameter range of 8-16 mm attract the most interest. They have several common features: the cutters carry triangular-shape inserts with 3 cutting edges and the mechanical part that secures the inserts is represented by a screw. These families are intended for milling square shoulder or fast feed (high feed) milling. But here the similarity ends, and the difference begins. While the design of the HELI3MILL and MICRO3FEED families for tool diameter 10-16 mm is committed to the classical principle of insert securing, by clamping screw through the central hole of an insert, the NANMILL and NANFEED families for tool diameter 8-10 mm have adopted another concept.

Within such a small diameter range, the central clamping screw, as noted previously, does not provide an acceptable solution. According to the new concept, the screw is located above the insert, and the screw head plays the role of a wedge (Pic. 1). This approach provides reliable and rigid clamping, ensures a durable homogeneous insert structure with no hole, and allows insert indexing to be quick and simple.

Pic. 1

Cont. on page 18
High Performance
Large Diameter Deep Drilling

Deep Drilling
Super Surface Finish
Innovative

MACHINING INTELLIGENTLY

ISCAR SOUTH AFRICA (PTY) LTD
TEL: (011) 997-2700 | FAX: (011) 388-6820

www.iscar.co.za
IC882 AND IC5820
NEW HIGH PERFORMANCE MILLING GRADES FOR MACHINING TITANIUM, STAINLESS STEEL AND HIGH TEMPERATURE ALLOYS

Today, as more and more titanium parts are necessary for the construction of modern airplanes, the aerospace industry is in constant demand to increase cutting tool performance for machining titanium. To comply with this high market demand, ISCAR introduces new IC882 and IC5820 carbide grades that feature a more productive means of machining titanium alloys.

These include the common Ti6Al4V and tougher, harder to cut titanium alloys such as Ti-5Al-5V-5Mo-3Cr (Ti 5-5-5-3), Titanium Ti-10V-2Fe-3Al (Ti 10-2-3) and other super alloys.

Grade IC882 features a particularly tough and strong substrate. The fracture toughness (K1c) that measures the resistance of material to the propagation of a crack in the substrate is at least 20% higher when compared to competing carbide grades. The IC882 with its tough carbide substrate, new PVD hard coating and SUMO TEC® post-coating treatment substantially improves impact strength, hot hardness, oxidation resistance, notch wear and built-up edge formation resistance. These contribute to longer tool life, reliable wear and chipping resistance. The IC882 grade enables the increase of cutting speeds that result in higher metal removal rates and reduced production cost per part; it is mainly used for milling titanium.

Grade IC5820 has a very tough, strong carbide substrate combined with CVD new hard coating and SUMO TEC® post coating treatment. It features a substantially improved impact strength, higher hot hardness, oxidation, notch wear and built-up edge formation resistance. These contribute to longer tool life, reliable wear and chipping resistance. The IC5820 grade enables the increase of cutting speeds that result in higher metal removal rates and reduced production cost per part; it is mainly used for milling titanium.

The new IC882 grade is intended mainly for machining titanium alloys and heat resistant steels. In addition, it can be used successfully for milling stainless steel and high-temperature super alloys (HTSA) at medium to high cutting speeds, even under unfavourable machining conditions or interrupted cuts. The ISO application range of grade IC882 is M25-M45 / S20-S30.

Grade IC5820 has a very tough, strong carbide substrate combined with CVD new hard coating and SUMO TEC® post coating treatment. It features a substantially improved impact strength, higher hot hardness, oxidation, notch wear and built-up edge formation resistance. These contribute to longer tool life, reliable wear and chipping resistance. The IC5820 grade enables the increase of cutting speeds that result in higher metal removal rates and reduced production cost per part; it is mainly used for milling titanium.

The ISO application ranges of grade IC5820 are M20-M35 / S15-S25. With 20% – 30% higher cutting speeds vs. existing known carbide grades, the grade requires high flow rate and pin-pointed coolant; its best performance can be achieved with high-pressure coolant.

Cont. from page 16

It is predicted that these new families will be particularly effective in manufacturing compact parts and in machining small-in-size cavities, pockets and small parts utilized in industrial sectors such as die and mold making, as well as in producing miniature components.

Small change, large impact
A 1mm change in size: is this a lot or a little? For indexable tools in the small diameter range, it makes a noticeable difference. ISCAR’s new SUMOCHAM 5mm diameter drilling head represents an important step ahead in expanding the application fields of indexable drills (Pic. 2).
DVF 5000

Compact, Simultaneous 5-Axis Machine for High-Speed Multitasking

- Diverse solutions are available for machining diverse complex shapes.
- The tool length measurement device is provided as a standard feature for precision machining.
- The tool magazine capable of holding up to 120 tools and the multi-pallet system enable unmanned automation.
EVEN BETTER GROOVE MILLING

Key updates to proven groove milling solution

Trouble-free precision groove milling in an easy-to-use format is what manufacturers are set to enjoy by using the latest CoroMill® 331 indexable insert cutter from cutting tool and tooling systems specialist Sandvik Coromant. New features set to deliver multiple advantages to customers include internal coolant and light cutting geometries for stable and secure machining.

“We have introduced a number of new features that help meet customer demands such as process security, component quality and cost,” explains Jenny Håll, Product Manager Groove Milling at Sandvik Coromant. “Arguably most notable is the addition of internal coolant, which helps regulate heat in the cutting zone for long and predictable insert tool life. This factor is especially beneficial in ISO M and ISO S materials [stainless steel and heat-resistant alloys], which exhibit poor thermal conductivity. Additionally, internal coolant provides excellent chip evacuation, a key factor for groove quality and process security.”

Enhanced process security promotes trouble-free machining, a factor that is further supported through the introduction of light cutting geometries. For ISO M and ISO S materials, L30 and L50 geometries replace the company’s existing assortment for good conditions/light applications and tougher conditions/heavy applications respectively. For ISO P (steel) and ISO K (cast iron) materials, the M30 geometry now complements the existing assortment. M30 is purpose-designed for the delivery of secure machining where weak set-ups and long overhangs are present.

Another factor underpinning process security is enhanced cutter rigidity. In applications where long overhang or elevated levels of vibration are likely to be present, CoroMill 331 can be deployed with Silent Tools™ damped adaptors. Here, the shorter arbor cutter bodies of CoroMill 331 bring the cutting edge closer to the Silent Tools damping mechanism, thus providing an even more stable tool with a reliable performance.

Extra process security and stability deliver higher component quality to manufacturers in industries such as energy, aerospace and automotive. Typical parts to benefit include hour glass valve bodies, aerospace brackets, flap tracks and steering knuckles, to list but a few. CoroMill 331 offers high levels of versatility that render it suitable not just for groove milling, but for parting, double half-side machining, shoulder milling, face milling, back-face milling, gang milling and circular interpolation.

Better security in machining also promotes productivity. CoroMill 331 offers true 90° corners and excellent metal removal rates that make this cutter the most productive of its kind.

Ease-of-use is a further requirement of machine shops the world over. For this reason, CoroMill 331 makes use of spring-loaded cassettes with serrations that provide security and easy setting for the desired width. Moreover, a pin-controlled adjustment range enables manufacturers to set the cutter with high accuracy for precise groove dimensions.

Available is a wide range of tools in an extensive choice of diameters, widths, insert geometries, corner radii and grades, along with a large selection of mounting options.

For more information, please contact Sandvik Coromant - Tel: 011 570-9615.
Need to lower your cost per part?

The global automotive industry is extremely competitive. High volume production and tight deadlines mean that your focus is probably to achieve an optimized and safe machining process, a high level of automation and an intense hunt for cost savings to lower your cost per part.

Sandvik Coromant can not only ensure the quality you demand, but also optimize your machining processes. Our comprehensive application knowledge, high quality tooling solutions and global support will help you get just what you are looking for, a lower cost per part produced with the right quality.

Shaping the future together.

www.sandvik.coromant.com/automotive
4 Covora Street, Jet Park • PO Box 25038, East Rand, 1462
Direct Sales: 0860 101 008 Fax: 0860 101 006
MILLING & MACHINING CENTRES

HIGH PERFORMANCE TAPS
FOR HIGHER CUTTING SPEEDS
AND TOOL LIFE

NORIS taps for processing a wide variety of steel alloys, cast iron and various non-ferrous alloys are well known under the names SALOREX UNI for blind holes and STABIL UNI for through-hole. REIME NORIS now extends the UNI series to high performance taps made of HSSE-PM (HSS-PS) with improved cutting geometry and TiCN coating.

NORIS SALOREX UNI – the specialist for deep blind hole threads up to 3 x D thread depth – has 42° right-hand helix flutes. These provide secure chip removal against the cutting direction.

NORIS STABIL UNI stands for the production of through hole threads up to 4 x D thread depth. The special STABIL-flutes move the chips in the cutting direction.

The drills are available in metric sizes from M3 to M20 and M8 x 1 to M16 x 1,5 in stock. In both versions, the use of powder metallurgical high-speed steel permits higher cutting speeds while increasing tool life. The user benefits by increasing the cycle times and a reduction in tool costs. With the ability to process a very wide range of materials, additional cost of storage and tool investment can be reduced. The proven cutting edge geometries were further optimized in detail. They are specially adapted to the characteristics of the HSSE-PM substrate and the coating. REIME NORIS thus promises significant performance gains and expects especially in the production of small- and medium-sized series, the greatest economic advantages of using these high performance taps.

For more information, please contact Duncan Macdonald – Tel: 011 444-4345.
The milling cutter with a 90° approach angle

According to Walter, their soft cutting action

Walter AG is presenting a shoulder milling cutter that is a logical continuation of the M4000 system concept in the form of the M4130. The idea behind this is to reduce costs through the ability to use universal system inserts in different applications and tools. In the case of the M4130, this applies to the system inserts with rhombic basic shape and a 15° clearance angle, which can also be used either in the routing cutters or porcupine milling cutters from the M4000 range. The double-edged inserts with sintered circumference are available in three sizes each with three CVD-coated and three PVD-coated grades. In addition to its high level of flexibility, it also stands out thanks to its cost efficiency.

The issue with many square shoulder indexable milling cutters is the stair-step effect they leave on workpiece walls.

Two years ago, Kennametal introduced a double-sided 90° milling platform that eliminates this issue while providing manufacturers a cost-effective machining solution to boot. The Mill 4™ Series of indexable shoulder mills is now a proven performer, offering high metal removal rates, excellent tool life and surface finish that frequently eliminates semi-finishing operations — and in some cases, can even be used as a finishing cutter, reducing reliance on expensive solid carbide end mills.

Kennametal is expanding its game-changing Mill 4 family with a new cutting tool, the Mill 4-11. Designed for smaller machining centers, the Mill 4-11 accommodates 40-taper CAT and BT, HSK50 and similarly-sized spindles. Due to its free-cutting capabilities, it is ideal for successful metal removal in less-than-rigid setups and on light-duty machine tools, multitaskers and live-tool lathes.

Tim Marshall, Senior Global Product Manager for Indexable Milling, says the Mill 4-11 enjoys the same strong insert design as its larger cousin, the Mill 4-15, but is 24% shorter and 34% narrower. With an 11mm maximum cut length, this addresses the needs of those job shops and manufacturers producing smaller parts and part features while still offering high metal removal rates and excellent tool life.

“What’s unique about it is the step down,” says Marshall. “Because of the insert design and precision, there’s very little mismatch between passes — for example, using a 63mm diameter tool and our SGE geometry, we were able to achieve less than 8µm deviation between successive 6mm deep passes. One of our largest automotive customers completely eliminated a finishing operation on a steel alloy housing because of it, saving them thousands of dollars annually.”

The Mill 4-11 is also easy to use. Each insert is securely locked in place with a single M3 screw and marked with a series of dimples to indicate geometry and insert style. Marshall recommends customers keep the tool clean and the screws lubricated with a small amount of grease, and says it’s a good idea to mount all of the inserts with the dimples or markings facing the same direction. “This improves accuracy during indexing, no matter whose cutting tools you’re using.”

The cutter has uneven pocket spacing designed to break up machine harmonics and reduce chatter. Because of its complex insert geometry and positive placement in the pocket, it has an effective radial rake angle between 1° to 11°, depending on the cutter diameter, and an axial rake angle of 3°, this despite the Mill 4-11’s double-sided design.

When taking cuts up to approximately 6.5mm axial engagement, the cutter is essentially stepless, although Marshall says cuts up to 11mm deep are possible while still maintaining square, smooth walls. Best of all, it removes material quickly. “We’ve performed extensive testing,” Marshall says. “Time and again we beat the competition, in some cases by 35% greater metal removal rates and 40% or longer tool life. It’s quite simply a great addition to our portfolio.”

Staying positive: with a unique insert geometry and extremely accurate pocket positioning, the Mill 4-11 offers the free cutting action of a single-sided insert at the low cost per edge of a double-sided. The Mill 4-11 is also available in a variety of mounting options, with cutter diameters ranging from 16mm to 80mm.

The Mill 4-11’s has a complex, double-sided geometry that provides low cutting forces for light duty machine tools and less-than-rigid setups, and one of the lowest tooling costs per part in the industry.

For more information, please contact Spectra Carbide – Tel: 0860 23 23 23.
Schnell Lasers

- Laser power ranging from 500W - 12000W
- 26mm maximum cutting capacity for mild steel
- Sizes available from 1300 x 900mm up to 13000 x 2200mm
- Economical and affordable to run

- Optional exchange/shuttle table
- Optional tube cutting attachment for cutting round and square tube up to 6000mm long

Our Service Includes:

- Delivery and installation of the machine
- Training the operator on how to use the laser to its full potential
- Fast backup support as well as a full range of spares kept in stock to minimise downtime

Walker Machine Tools
Specialist Suppliers of New and Used Machines

Durban Tel: 031 700 1575  E-mail: info@walkertools.co.za  Website: www.walkertools.co.za
One of the world's leading Machining Center manufacturers

The MCV Series

Over 25 different Machining Center models available

Walker Machine Tools
Specialist Suppliers of New and Used Machines
German high-tech company TRUMPF sees major opportunities for its business and for German industry as a whole in the two megatrends of Industry 4.0 and e-mobility. “The mechanical and systems engineering industry in Germany can reap big benefits from connectivity in industry and e-mobility,” said Mathias Kammüller, Chief Digital Officer at TRUMPF, at the company’s in-house trade show INTECH. “Two key areas are connected manufacturing, as the next stage of technology on the shop floor and future mobility. These two factors will help safeguard jobs in development, manufacturing and application engineering – and even create new ones,” he said.

TRUMPF has witnessed a surge in demand for manufacturing technologies in the realm of e-mobility. Battery manufacturing already makes up 10 percent of TRUMPF’s turnover in the automotive sector, a figure that is continuing to climb. The company has already sold more than 500 lasers worldwide for use in battery manufacturing. “We have the right manufacturing methods to enable the commercially viable production of key components of future mobility solutions: lasers really are the only technology that can offer such a flexible, highly productive way of mass-producing batteries, high-power electronic systems and electric drives,” said Christian Schmitz, Chief Executive Officer Laser Technology at TRUMPF. Finding an affordable means of producing electric vehicles by the millions requires robust manufacturing methods that can be scaled up quickly from today’s relatively low volumes to full-scale mass production.

At the INTECH trade show, TRUMPF demonstrated a series of laser techniques that can weld all the seams on an electric motor in just one minute. “Our welding process for what we call the ‘hairpins’ is just one of the techniques we use to make the production of electric motors faster, more reliable and more economical. It eliminates the costly and time-consuming process of winding thick copper wire around the coils of powerful electric motors. And that makes it much easier to produce them in bulk,” said Schmitz. The hairpin method involves using a compressed-air pistol to fire a rectangular copper wire, similar to a hairpin, into a slot on the side of the motor. The protruding parts of the wire are then twisted together and welded using a laser.

TRUMPF technology also plays a key role in manufacturing batteries for electric vehicles. The batteries consist of multiple layers of wafer-thin copper and aluminium foils that are cut to size using lasers. After adding liquid electrolyte, the battery is welded shut with a cap. It is essential that the welds seal the cell completely, because battery failure during operation could pose a risk of fire and injury. From the battery cells and battery modules to the battery pack, all the welding is carried out using a laser. The laser systems feature sensor systems as well as a software program that connects them to a cloud solution. The sensors provide data for quality assurance and documentation purposes, but they also help control the welding process itself. “One problem for battery manufacturers is that they can’t test whether a battery actually works until the very end of the manufacturing process. They need the process to be monitored continuously to ensure that the battery comes out the other end working properly,” said Schmitz.

“Our lasers for the automotive sector are a good example of how important digital transformation is to TRUMPF. To ensure our own production processes remain fit for the future, we are constantly expanding our in-house digitalization efforts,” said Kammüller. TRUMPF already has over 500 employees working on more than 30 digital transformation projects. “That’s helping us to improve efficiency, cut costs, and boost our competitiveness,” he says.

This year’s edition of INTECH played host to some 2,200 visitors from all over the world. The show gave them the opportunity to find out more about TRUMPF’s full range of products, including the company’s...
Global Leadership with high-tech Solutions

LOW ENERGY CONSUMPTION, HIGH-SPEED PRODUCTIVITY

**LCG 3015 AJ** Fiber Laser Cutting System

- Low energy consumption
- High-speed productivity

**HG 1003 ATC**

- Introduce rush jobs seamlessly
- Triple or quadruple the amount of set-ups performed each day

**NEXT GENERATION SERVO ELECTRIC PUNCH MACHINE**

**EM Z 3612 MII**

- Set-up time reduction
- Process integration

The Amada Product Portfolio includes:
- CNC TURRET PUNCH PRESSES
- CNC LASER CUTTERS, CNC PRESS BRAKES
- NC HYDRAULIC/MECHANICAL SHEARS, SOFTWARE
- BANDSAWS, BANDSAW BLADES

**Gauteng:**
Tel: (011) 453-5459  
Fax: (011) 453-5442  
e-mail: barry@amadajhb.co.za

**Cape Town:**
Tel: (021) 706-0502  
Fax: (021) 706-0503

**Durban:**
Tel: (031) 700-5070  
Fax: (031) 700-5077

**VPSS**

MTM®
Making a visit to EMO and METAV simpler, faster and better is the goal pursued by the Club of Metalworking, which the VDW launched recently. Membership is free of charge and offers attractive services for international metalworking experts. Within a few hours, more than 1,000 registration enquiries were received from all over the world.

Following free-of-charge registration at www.clubofmetalworking.de, members receive an individual welcome package with their personal club card. A newsletter informs them every six to eight weeks about news from the sector and important trade fairs, while the club automatically provides free-of-charge season tickets for EMO Hannover and METAV. In addition to free use of the public transport network for visiting the fair, members can also use their club cards to enjoy numerous services free of charge, like a fast lane for accelerated admission, the cloakroom or the Club of Metalworking’s lounge. What’s more, exclusive club meetings provide ideal opportunities for networking, so as to give the club a personal face.

In a first step, visitors to EMO Hannover and METAV were invited to join the Club of Metalworking. The registration figures so far thus reflect the perceived international importance of these fairs. The majority of members already registered come from all parts of Europe, besides Germany primarily from Scandinavia, the Baltic states, plus Central and Eastern Europe. The Club of Metalworking is also seeing strong registration figures both in the traditionally important markets of Japan, USA, South Korea, China and Taiwan and in the emergent markets of Mexico, Russia, India and Brazil. Even in Iceland, Australia, Thailand and South Africa, trade visitors have been enthusiastically applying for membership.

"We’ve been receiving positive feedback from all over the world, which is of course very gratifying. But we also see this as a vote of confidence that we have to live up to," says Dr. Wilfried Schäfer, Executive Director of the VDW. "It is accordingly our declared goal to progress the capabilities of the Club of Metalworking and to bring additional partners on board. We’re already talking to some initial interested parties and are confident we’re on the right track."

For example, after a successful first contact, the aim is also to place communication on a broader basis. The club is open to all metalworking experts, irrespective of their job descriptions and qualifications, emphasizes Schäfer, “what our members have in common is a passion for metalworking. From trainees to purchasers, from skilled workers to managing directors, every member is more than welcome.”

The INTECH fair showcased the TruLaser Weld 5000, a new robotic welding cell that can process parts up to four meters long. The company also unveiled two new laser tube cutting machines: the TruLaser 5000 and the TruLaser Tube 7000 fiber, the latter of which can handle tubes with diameters up to 254 millimeters. Cutting speeds are high, thanks to its solid-state laser and RapidCut feature.

The show marked the world premiere of the new TruLaser Cell 5030. This machine expands TRUMPF’s portfolio of 2D and 3D laser cutting systems. The TruLaser Cell 5030 features a new disk laser that offers outstandingly high cutting speeds, particularly when machining thinner sheets.
CNC Fiber Laser Cutting Machine

High Productivity • Maximum Precision • Extremely Reliable
• Low Maintenance • Compact and easy to operate

TF EDGE+
Series

TRM SUPPLIES cc
- TOOLROOM MACHINES SUPPLIES -

Hypertherm
Field Service & Consumables

SUPPLIERS OF NEW:
Pressbrakes & Guillotines (CNC & Conventional) • CNC Lathes & Machining Centres • Full Range HVAC Equipment • Hi Def & Conventional Plasma Cutters • Band Saws

Tel: (011) 974-7744 • Fax: (011) 974-2288
www.trmsupplies.co.za

Contact: Güenter Schmitz - Cell: 082 553 0250
Contact: Thys de Villiers - Cell: 071 362 4582
**BOEING STATEMENT ON WTO RULING**

WTO determines EU has refused to honor rulings on massive European subsidies to Airbus

The World Trade Organization (WTO) recently in its final decision found that the European Union (EU) has failed to honor multiple previous rulings and has provided more than $22 billion of illegal subsidies to European aircraft maker Airbus. After examining this case for more than a decade, the WTO has determined the EU must end its unfair business practices and remedy the ongoing harm caused by the illegal subsidies.

**Today’s final ruling sends a clear message: disregard for the rules and illegal subsidies is not tolerated. The commercial success of products and services should be driven by their merits and not by market-distorting actions,** said Dennis Muilenburg, Boeing chairman, president and CEO. “Now that the WTO has issued its final ruling, it is incumbent upon all parties to fully comply as such actions will ultimately produce the best outcomes for our customers and the mutual health of our industry. We appreciate the tireless efforts of the U.S. Trade Representative over the 14 years of this investigation to strengthen the global aerospace industry by ending illegal subsidies.”

The U.S. government, with Boeing’s full support, has complied with WTO rulings stemming from the two cases the EU brought against the United States. One case has already ended in favor of the United States and in the other, the vast majority of the allegations the EU made against the United States and Boeing were dismissed. Where there were narrow rulings against U.S. practices, they have been fully addressed to the WTO’s satisfaction.

Just one finding against the United States now remains before the WTO, which concerns a Washington state tax measure. It is under appeal and should be decided later this year or in early 2019. Boeing believes that ruling will be reversed, but if not, Boeing has pledged to do whatever necessary to come into full compliance in the interest of upholding rules-based trade, which is essential to fairness and the future prosperity of the global aerospace industry.

**BOEING HORIZONX INVESTS IN REACTION ENGINES UK**

Boeing announced its investment in Reaction Engines Limited, a leader in advanced propulsion systems based in Oxfordshire, United Kingdom. Reaction Engines’ technology will contribute to the next generation of hypersonic flight and space access vehicles.

Reaction Engines is known for its Synergetic Air-Breathing Rocket Engine (SABRE), a hybrid engine blending jet and rocket technology that is capable of Mach 5 in air-breathing mode and Mach 25 in rocket mode for space flight. As part of the SABRE program, Reaction Engines developed an ultra-lightweight heat exchanger that stops engine components from overheating at high speeds, thus improving access to hypersonic flight and space.

“As Reaction Engines unlocks advanced propulsion that could change the future of air and space travel, we expect to leverage their revolutionary technology to support Boeing’s pursuit of hypersonic flight,” said Steve Nordlund, vice president of Boeing HorizonX.

Founded by three propulsion engineers in 1989, Reaction Engines produces robust technical designs for advanced heat exchangers, air-breathing engines and the vehicles they could power. These capabilities may lead to high-speed point-to-point transport that is cost-effective and sustainable.

“Boeing is a world-leader in many fields, bringing invaluable expertise in hypersonic research and space systems. I am thrilled and honored that Boeing HorizonX has chosen Reaction Engines as its first UK investment,” said Mark Thomas, CEO of Reaction Engines. “This is a very exciting step that will contribute to our efforts to develop a commercial technology business and accelerate opportunities to further the future of air and space travel through SABRE technology.”

Boeing HorizonX Ventures participated in this $37.3 million Series B funding round alongside Rolls-Royce Plc and BAE Systems. The Boeing HorizonX Ventures investment portfolio is made up of companies specializing in technologies for aerospace and manufacturing innovations, including autonomous systems, energy storage, advanced materials, augmented reality systems and software, machine learning, hybrid-electric propulsion and Internet of Things connectivity.
UltraFan is a scalable jet engine design suitable for widebody or single-aisle aircraft and offers a 25 percent fuel efficiency improvement over the first-generation of Rolls-Royce Trent engine.

One element of the UltraFan programme is planning for ground and flight tests and to support this, Rolls-Royce has signed an agreement with Airbus to provide both nacelle and engine/aircraft integration architecture and technology enablers.

Airbus’ integration solutions will play an important part in achieving the overall fuel efficiency improvement of higher bypass ratio engines such as UltraFan, through innovative architecture and associated technologies.

UltraFan features a new engine core architecture and lean-burn combustion system which will contribute to improved fuel burn efficiency and lower emissions, along with a carbon titanium fan blade system and composite casing which reduce weight. The engine also introduces a geared design to deliver efficient power at high-bypass ratios.

For Airbus, the project will enable it to fully integrate the overall powerplant system – composed of engine, pylon and nacelle – onto future long-range aircraft products, as well as facilitating scalability for future short-range aircraft. It will also build on Airbus’ expertise in advanced manufacturing technologies, such as high-deposition-rate additive manufacture, welded assembly and high production rate thermoplastics.

UltraFan is a scalable jet engine design suitable for widebody or single-aisle aircraft and offers a 25 percent fuel efficiency improvement over the first-generation of Rolls-Royce Trent engine.

One element of the UltraFan programme is planning for ground and flight tests and to support this, Rolls-Royce has signed an agreement with Airbus to provide both nacelle and engine/aircraft integration architecture and technology enablers.

Airbus’ integration solutions will play an important part in achieving the overall fuel efficiency improvement of higher bypass ratio engines such as UltraFan, through innovative architecture and associated technologies.

UltraFan features a new engine core architecture and lean-burn combustion system which will contribute to improved fuel burn efficiency and lower emissions, along with a carbon titanium fan blade system and composite casing which reduce weight. The engine also introduces a geared design to deliver efficient power at high-bypass ratios.

For Airbus, the project will enable it to fully integrate the overall powerplant system – composed of engine, pylon and nacelle – onto future long-range aircraft products, as well as facilitating scalability for future short-range aircraft. It will also build on Airbus’ expertise in advanced manufacturing technologies, such as high-deposition-rate additive manufacture, welded assembly and high production rate thermoplastics.

UltraFan is a scalable jet engine design suitable for widebody or single-aisle aircraft and offers a 25 percent fuel efficiency improvement over the first-generation of Rolls-Royce Trent engine.

One element of the UltraFan programme is planning for ground and flight tests and to support this, Rolls-Royce has signed an agreement with Airbus to provide both nacelle and engine/aircraft integration architecture and technology enablers.

Airbus’ integration solutions will play an important part in achieving the overall fuel efficiency improvement of higher bypass ratio engines such as UltraFan, through innovative architecture and associated technologies.

UltraFan features a new engine core architecture and lean-burn combustion system which will contribute to improved fuel burn efficiency and lower emissions, along with a carbon titanium fan blade system and composite casing which reduce weight. The engine also introduces a geared design to deliver efficient power at high-bypass ratios.

For Airbus, the project will enable it to fully integrate the overall powerplant system – composed of engine, pylon and nacelle – onto future long-range aircraft products, as well as facilitating scalability for future short-range aircraft. It will also build on Airbus’ expertise in advanced manufacturing technologies, such as high-deposition-rate additive manufacture, welded assembly and high production rate thermoplastics.

UltraFan is a scalable jet engine design suitable for widebody or single-aisle aircraft and offers a 25 percent fuel efficiency improvement over the first-generation of Rolls-Royce Trent engine.

One element of the UltraFan programme is planning for ground and flight tests and to support this, Rolls-Royce has signed an agreement with Airbus to provide both nacelle and engine/aircraft integration architecture and technology enablers.

Airbus’ integration solutions will play an important part in achieving the overall fuel efficiency improvement of higher bypass ratio engines such as UltraFan, through innovative architecture and associated technologies.

UltraFan features a new engine core architecture and lean-burn combustion system which will contribute to improved fuel burn efficiency and lower emissions, along with a carbon titanium fan blade system and composite casing which reduce weight. The engine also introduces a geared design to deliver efficient power at high-bypass ratios.

For Airbus, the project will enable it to fully integrate the overall powerplant system – composed of engine, pylon and nacelle – onto future long-range aircraft products, as well as facilitating scalability for future short-range aircraft. It will also build on Airbus’ expertise in advanced manufacturing technologies, such as high-deposition-rate additive manufacture, welded assembly and high production rate thermoplastics.

UltraFan is a scalable jet engine design suitable for widebody or single-aisle aircraft and offers a 25 percent fuel efficiency improvement over the first-generation of Rolls-Royce Trent engine.

One element of the UltraFan programme is planning for ground and flight tests and to support this, Rolls-Royce has signed an agreement with Airbus to provide both nacelle and engine/aircraft integration architecture and technology enablers.

Airbus’ integration solutions will play an important part in achieving the overall fuel efficiency improvement of higher bypass ratio engines such as UltraFan, through innovative architecture and associated technologies.

UltraFan features a new engine core architecture and lean-burn combustion system which will contribute to improved fuel burn efficiency and lower emissions, along with a carbon titanium fan blade system and composite casing which reduce weight. The engine also introduces a geared design to deliver efficient power at high-bypass ratios.

For Airbus, the project will enable it to fully integrate the overall powerplant system – composed of engine, pylon and nacelle – onto future long-range aircraft products, as well as facilitating scalability for future short-range aircraft. It will also build on Airbus’ expertise in advanced manufacturing technologies, such as high-deposition-rate additive manufacture, welded assembly and high production rate thermoplastics.

UltraFan is a scalable jet engine design suitable for widebody or single-aisle aircraft and offers a 25 percent fuel efficiency improvement over the first-generation of Rolls-Royce Trent engine.

One element of the UltraFan programme is planning for ground and flight tests and to support this, Rolls-Royce has signed an agreement with Airbus to provide both nacelle and engine/aircraft integration architecture and technology enablers.

Airbus’ integration solutions will play an important part in achieving the overall fuel efficiency improvement of higher bypass ratio engines such as UltraFan, through innovative architecture and associated technologies.

UltraFan features a new engine core architecture and lean-burn combustion system which will contribute to improved fuel burn efficiency and lower emissions, along with a carbon titanium fan blade system and composite casing which reduce weight. The engine also introduces a geared design to deliver efficient power at high-bypass ratios.

For Airbus, the project will enable it to fully integrate the overall powerplant system – composed of engine, pylon and nacelle – onto future long-range aircraft products, as well as facilitating scalability for future short-range aircraft. It will also build on Airbus’ expertise in advanced manufacturing technologies, such as high-deposition-rate additive manufacture, welded assembly and high production rate thermoplastics.
Volvo Cars recently announced it is working with Google to embed the voice-controlled Google Assistant, Google Play Store, Google Maps and other Google services into its next-generation Sensus infotainment system, based on Google’s Android operating system.

Volvo Cars’ intended partnership with Google will further enhance the way Volvo customers engage with and interact with their cars. Apps and services developed by Google and Volvo Cars are embedded in the car, plus thousands of additional apps are available through the Google Play Store that is optimized and adapted for Android-based car infotainment systems.

Since the next generation of Sensus will run on Android, new apps and software updates will be available in real-time and can be automatically applied. This allows future Volvo cars to react to customer needs and offer drivers up-to-date information and predictive services.

The Google Assistant provides a central voice interface for the car that allows drivers to control in-car functions such as air conditioning, and use apps to play music and send messages. This integration contributes to reducing driver distraction, helping drivers keep their eyes on the road at all times.

Google Maps will also enable the next generation of Sensus to provide refreshed map and traffic data in real time, keeping drivers informed about upcoming traffic situations and proactively suggesting alternative routes.

This announcement builds on the strategic relationship between Volvo Cars and Google, which began in 2017 when Volvo Cars announced the new generation of its infotainment system will be based on Google’s Android platform. The first Android-based system is intended to be launched in a couple of years from now.

Volvo Cars partners with Google to build Android into next generation connected cars.

Volvo Cars to embed Google Assistant, Google Play Store and Google Maps in next-generation infotainment system.

"The digital transformation is momentarily an important topic in the industry. This requires a close collaboration along the entire value chain, from production control to maintenance," says Evelyn Warwick, Exhibition Director of EuroBLECH, on behalf of the organiser Mack Brooks Exhibitions. "The biggest challenge for companies in the sheet metal working industry is to create an intelligent manufacturing environment which is based on the secure exchange of data and the networking of machines and processes. EuroBLECH 2018 offers its visitors the possibility to find solutions for these challenges and to connect with business partners to help them with the integration of these processes, machines and systems into their production," concludes Evelyn Warwick.
**MAXXMILL 400 Compact Milling Centre**

5-axis performance for small workpieces

Is the ideal vertical milling centre for complex 5-axis machining of small workpieces in small or medium quantities. MAXXMILL 400 can accurately and economically process workpieces on 5 sides in a single set-up.

**MMV 2000 Travelling Column Machining Centre**

High precision for heavy weights

Ideal for 3, 4 or 5 axis machining for small to medium lot sizes. Rapid travel up to 50 m/min with the utmost in precision. The super-structure is highly rigid even for heavy workpieces weighing up to 2 200kg.

---

**Are you in need of Sheet-Metal or Engineering Machinery?**

LSG Machine Tools offers huge stocks of NEW and Used Sheet-Metal and Engineering Machinery with more than 550 machines that can be viewed and tested under power on our premises.

**Sheet-Metal Machinery:**
- Treadle Guillotines
- Bending Folders
- Iron Workers
- Plate Rollers
- Pressbakes
- Guillotines

**Engineering Machinery:**
- Vertical- & Horizontal Boring Mills
- Eccentric- & Hydraulic Presses
- Pedestal- & Radial Arm Drills
- Milling Machines
- Grinders
- Lathes
- Saws

For more information on stock or pictures visit our website at www.Lsgmts.co.za

Contact us on +27 11 873 3446 / 9938 or e-mail info@Lsgmts.co.za

We are situated at 2 Tide Street c/o Euclid Street, Industries East, Germiston.

www.Lsgmts.co.za
US DECISION TO IMPOSE LARGER TARIFFS ON SA STEEL INDUSTRY

The Steel and Engineering Industries Federation of Southern Africa (SEIFSA) is worried about the impact the US’s decision to permanently impose large tariffs on the importation of steel and aluminium products would have on the broader South African steel industry.

Despite South African exports of steel and aluminium to the US accounting for only 1.4 percent and 1.6 percent of U.S global imports respectively, these were still deemed as significant enough to threaten or impair US national security. The import tariffs of 25% on steel and 10% on aluminium products initiated under section 232 of the action plan on the basis of safeguarding US national security are effective from June 1 2018.

“The decision by the US to reject SA’s application for exemption is a travesty. It is clear that efforts by the South African government representatives, including the formal submission by the Minister of Trade and Industry, Dr Rob Davies, to the US requesting the exclusion of South Africa from the imposition of the duties on the basis that steel and aluminium exports to the US are a source of strategic primary and secondary products used for further value-added manufacturing in the US, thereby contributing to jobs in both countries, did not prevail,” SEIFSA Chief Economist Michael Ade said.

He added that it now seems the only option available for South African exporters is to individually convince their buyers in the US to lobby for exclusions for individual companies from SA on a case-by-case basis, rather than all South African exporters benefitting from a blanket exemption.

The decision by the US government still favours the original list of countries and regions that were initially temporarily excluded, including the European Union, Argentina, Australia, Brazil, Canada, Mexico and South Korea.

“The proclamation by the US will directly cost South African exporters roughly R3 billion worth of steel products and R474 million worth of aluminium products, respectively. This will not only starve the local industry of foreign currency, but it will also have a negative impact on the country’s foreign reserves. A further disruption on trade will include possible reductions in the quantity of steel and aluminium products exported to the US as local companies seek alternative export markets, thus negatively affecting exports competitiveness,” Ade said.

He added that the second-round effects will invariably be felt by South African companies largely dependent on the US market for exports. He warned that local companies facing the stiff duties may effectively seek ways of reducing costs, including cutting jobs, given their increasing input costs baskets.

In conclusion, Ade said that given the reduction in demand from the US and a possible oversupply from China, there is a possibility of a fall in global commodity prices and eventual dumping of steel and aluminium products into the SA markets.

“In this regard, SA needs to establish a steel import monitoring system that will verify any significant change in imported volumes, given the implementation of the US Section 232 tariffs, should exports to SA rise due to the US restrictions,” said Ade.

SKILLS DEVELOPMENT IS CRITICAL

Skills development is critical to the economy and non-negotiable. This was said by the Minister of Trade and Industry Dr Rob Davies recently at the launch of Lesedi Skills Development Academy in Atlantis, Western Cape.

An Atlantis based Lesedi Skills Development Academy was established to address the need for skilled artisans and to close the skills gap in the nuclear and broader energy sector as well as associated industries.

Davies said it was increasingly evident that as a requirement to get any industrial job one needed to have skills. He said at all levels of employment one now requires to be skilled. Government is aware that skills development in the past was limited to the minority and the majority of the people had less access, yet it is a critical requirement for the majority to get jobs.

“This is the reason why every time we engage with business we insist on skills development which is a non-negotiable for all. To underpin the importance of skills development government launched the Youth Empowerment Service Programme. This programme aims to improve the grim employment outlook for young job seekers by offering work opportunities and therefore inclusion in the economy,” added Davies.

He indicated that Business agreed to partner and create 300 000 internships per year for the unemployed youth for the next three years.

“Every bit counts as a means to address the issue of skills development and unemployment. We therefore cannot compromise if we need more people to participate meaningfully in the economy. The skills that the academy develops will assist the Atlantis people to tap into the proposed Atlantis Special Economic Zone amongst others. The zone is anticipated to be designated by the end of 2018,” concluded Davies.
CONTINUOUS IMPROVEMENT OF METALS AND ENGINEERING OUTPUT

The Steel and Engineering Industries Federation of Southern Africa (SEIFSA) is encouraged by the continuous improvement in production in the metals and engineering (M&E) sector, given that this is the third consecutive annual acceleration from January 2018, the Federation said recently.

“The progress shows that local businesses are gradually responding to the generally improving consumer and business confidence, which is characteristic of the Ramaphosa era. Hitherto, the concern had generally been that despite improving sentiments from the start of the year, supply-side data as evidenced by lead economic indicators were still nondescript.

“The output data for the M&E cluster is encouraging, considering its significance to gross domestic product and the fact that the economy cannot entirely depend on positive sentiments to expand,” said SEIFSA Economist Marique Kruger.

The latest preliminary seasonally-adjusted production data for the M&E sector published by Statistics South Africa (Stats SA) today indicated that output improved to 10.3 percent in March 2018, on a year-on-year basis, when compared to March 2017. The performance is recorded despite a reduction in production in the broader manufacturing sector, which decreased by 1.3 percent in March 2018, compared to March 2017. Similarly, the M&E sector performed well on a month-to-month basis, registering a growth of 9.0 percent in March 2018 when compared to February 2018, in line with the broader manufacturing which increased by 1.3 percent.

“Businesses in the cluster should build on this performance by capitalizing on existing initiatives aimed at igniting domestic growth by both the public and private sectors, expand output, boost sales and margins and possibly claw back lost jobs,” Kruger said.

She added that SEIFSA expects a continuous improvement in output in the M&E sector, given an up-tick in the composite purchasing managers index (PMI), which is a lead indicator for the sector. She said the constant improvement of the business activity sub-index of the PMI also provides solace to potential investors and stakeholders.

“Accordingly, higher productivity and better capacity utilization is necessary for businesses to cushion the negative effects of volatile and increasing input costs,” said Kruger.

SEIFSA ENCOURAGED BY PMI

The Steel and Engineering Industries Federation of Southern Africa (SEIFSA) is encouraged by the improvement in the Absa Purchasing Managers Index (PMI) released recently, with the data showing that businesses are slowly responding to a buoyant consumer, business and investor confidence.

SEIFSA Chief Economist Michael Ade said that, following Cyril Ramaphosa’s election in December as new ANC president, domestic economic data were expected to catch up with growing domestic sentiments resulting from the Nasrec conference. He said that was more so after Ramaphosa assumed the country’s presidency.

However, Ade cautioned that, in addition to positive consumer and business confidence, there was a need for an equal up-tick in demand and supply side dynamics.

SEIFSA is, therefore, encouraged by the improvement in the latest PMI numbers, which had previously dipped below the 50-neutral level, which separates expansion from contraction, in February 2018," Ade said.

The latest seasonally-adjusted preliminary PMI data show that the composite PMI improved to 50.9 in April 2018, from a lower 46.9 in March 2018. However, the headline PMI data still exhibit a lot of uncertainty and the volatility is driven by volatile input prices, because of factors affecting supply, including the variable exchange rate. Enhanced volatility is also evident in the oscillating performance of the business activity, inventory levels and new sales orders sub-indices of the composite PMI index, which have been largely unpredictable.
FIRST BMW X3S LEAVE ROSSLYN FOR EXPORT TO EUROPE

BMW Group South Africa despatched the first BMW X3 cars for export recently, transporting more than 100 units on 27 wagons via train to the Port of Durban. This marks a significant day for BMW Group South Africa as the company’s manufacturing plant at Rosslyn continues to ramp up production of the BMW X3.

In terms of the Automotive Production and Development Programme (APDP), BMW Group announced a R6.1bn investment to prepare the Rosslyn facility and the associates who work there, for X3 production. It is one of the biggest single automotive investments in South African history. In February 2018, Plant Rosslyn produced the last of 1 191 604 BMW 3 Series cars built over five model generations and 35 years.

Upgrading the plant for X3 production has represented the largest infrastructure upgrade in the plant’s history, but it has gone ahead on time and without any unplanned disruptions. The BMW Vehicle Distribution Centre in Rosslyn can accommodate up to three train despatches a week, with each transport capable of carrying up to 160 cars.

BMW Group Plant Rosslyn is a state-of-the-art facility, with BMW X3 production initially planned with a maximum capacity of 71000 units a year. However, BMW under-estimated the phenomenal demand for the new BMW X3 and after a further R160m investment to increase linespeed, the maximum capacity of the plant was raised almost 10% to 76000 units a year. Within this maximum capacity, BMW Group South Africa is confident that the plant will produce record volumes next year. This will add to the growing success of BMW’s X models across the world, which now make up more than 30% of BMW’s global volume.

FAW BECOMES SA’S SECOND BIGGEST TRUCK EXPORTER

First Automotive Works, also known as FAW, has moved three places up the rank from fifth to a top two position behind the Volvo group.

The fortune 500 company with a truck assembly plant worth R600 million and located at the Coega Special Economic Zone (SEZ) spent the greater part of 2017 raving up its export numbers to 212 units.

“Nothing gives us greater pleasure than to see the extent of success that accumulates with investments located at the Coega SEZ. It validates the findings of an independent study on the Coega SEZ, which found that 90% of operational investors described the SEZ and its logistics park as the ideal location for industries,” says Dr Ayanda Vilakazi, Marketing, Brand and Communications.

The success of FAW in the year 2017, is compounded by a further record year in terms of domestic sales having grown from 929 units in 2016 to 1 032 units in 2017.

“As the CDC we were very proud to hear of the company having rolled of its 3 000th locally built truck off the production line in 2017,” concludes Vilakazi.
The inaugural NAACAM Show in April 2017 announced that the NAACAM Show 2019 will be hosted by eThekwini Municipality in partnership with the Durban Automotive Cluster (DAC). This will take place at the Durban International Convention Centre (ICC) (Inkhosi Albert Luthuli ICC Complex) on 12 – 14 March 2019.

The inaugural NAACAM Show in April 2017 was held at the Durban ICC and saw 1 304 delegates participate in a two-day conference and exhibition. Delegates engaged with 46 speakers on nine conference themes, including manufacturing best practice; black supplier development and transformation; the future of the automobile; and the South African Automotive Masterplan. The NAACAM Show 2017 exhibition saw 183 automotive component manufacturers, government and support service agencies present their offerings to delegates and key automotive stakeholders – this included the profiling of 38 black-owned suppliers. A highlight of the 2017 Show was the facilitation of 122 pre-arranged buyer-supplier linkage meetings, as a key goal of the Show is to deliver significant localization benefits.

In 2019, with the support and endorsement of the Department of Trade and Industry, the Original Equipment Manufacturers (OEM) Purchasing Council, Automotive Supply Chain Competitiveness Initiative (ASCCI), as well as National Association of Automobile Manufacturers of South Africa (NAAMSA) and National Union of Metalworkers of South Africa (NUMSA), the NAACAM Show aims to be the premier automotive manufacturing growth, technology, transformation and stakeholder engagement forum in Africa.

The NAACAM Show is an initiative wholly owned by industry, with senior component manufacturing leaders providing oversight to its delivery. Renai Moothilal, NAACAM’s Executive Director stated that “direct supplier oversight of the initiative is key to ensure that we deliver an event which reflects on the sector’s most relevant issues and opportunities, whilst also clearly showcasing the capability and capacity of the SA automotive value chain.”

The NAACAM Show 2019 will have an increased focus on Sub-Saharan African opportunities and alignment with the Automotive Masterplan objectives. The attraction and hosting of international technology suppliers and foreign direct investors is also a priority for the 2019 iteration of the Show.

MANUFACTURING INDABA LAUNCHES IOT / INDUSTRY 4.0 CONFERENCE

On 21 June 2018, to be held at the Sandton Convention Centre, Johannesburg, South Africa, the Manufacturing Indaba will host a one-day conference that will focus exclusively on the Internet of Things (IoT) and Industry 4.0, otherwise known as the Fourth Industrial Revolution. The event will reveal how these revolutionary technologies impact manufacturers, providing attendees with a thorough understanding of this pertinent subject; enabling knowledge sharing and engaging dialogue discussions, as well as offering valuable insights to the latest global trends affecting the manufacturing industry.

An annual 12% increase on average is expected on the number of connected Internet of Things (IoT) devices worldwide, from approximately 27 billion in 2017 to 125 billion in 2030. This emerging IoT movement not only has a significant impact on almost all aspects of the manufacturing industry, but on all facets of the economy as a whole.

As the Fourth Industrial Revolution gains momentum, decision-makers from public and private sectors are confronted with a new set of uncertainties regarding the future of production. Smart technologies are transcending computing capabilities associated with the digital revolution, transforming the physical world through robotics and innovative production methodologies; enhancing human beings on a physical, mental and experiential front; and permeating the environment to facilitate greater interconnectivity, monitoring and efficiency of resource utilization.

Rapidly emerging technologies, such as the Internet of Things, Artificial Intelligence (AI), wearables, robotics and additive manufacturing, are spurring the development of new production techniques and business models that will fundamentally transform global production. Furthermore, these technologies have the capacity to foster new, more distributed and collaborative supply chains. Together, the speed and scope of change contribute to the complexity of existing challenges associated with the tasks of developing and implementing industrial strategies that promote productivity and inclusive growth.*

As the premise of this year’s conference, discussions centered around IoT will cover the fundamentals of connect, collect, compute and create, highlighting how manufacturers can capitalise on these innovations to optimise operations, create unique business models and solutions and enhance their ability to collate and use data through advanced, autonomous computation methodologies.

45 Years’ Service to the Industry

VISIT OUR WEBSITE http://www.apdesign.co.za
e-mail gpike@mweb.co.za

SPECIAL PURPOSE MACHINERY

SHAWN TECH

New Range of Autofeed drills, tappers and rotary index tables at unbeatable prices.

MILLING/DRILLING MACHINING CENTRE

Cut to Length/Slit from 0.4 to 8mm Flying Shear

Strip Feeders for your press shop. Material 50 to 450mm width and length.

Servo Roll Feeders
Cut To Length Lines .4 To 8mm
Flying Shear
Pay Off & Recoil Equipment
Steel Strip Straightening Machines
PLC & Microprocessor Control
Automatic Assembly Machines
Drilling Machine
Jig & Tool

ECCENTRIC PRESSES
45 TO 250 TON.
PRICES FROM R125 000.00

2 IN 1 STRAIGHTENER DECOILER

PO Box 741, Isando 1600
Cnr Nuwejaarsvoël & Element Roads, Chloorkop Ext. 1, Kempton Park.
Tel : +27 100 100 495
Cell : 083 626 6216 Graham Pike
Fax : 086 503-7256

HYDRAULIC PRESSES

30 To 1000 Ton

Adjustable multi-spindle heads

VISIT OUR WEBSITE http://www.apdesign.co.za
e-mail gpike@mweb.co.za
Baoji Machine Tool Group, one of the largest machine tool manufacturers in China, recently signed a cooperation agreement with Boksburg based Harp Machine Tools. Under this agreement Harp is now the company’s sole agent in South Africa and responsible for marketing, sales and service of the entire range of machine tools produced by the Chinese manufacturer. The Baoji Machine Tool Group is based in China’s Shaanxi province and employs 3500 people.

The official ceremony which took place at Harp’s premises was attended by over 20 people from China, which included Mr Du Hangwei, Vice-Governor of Shaanxi Province, China and Mr Li Qiang, President of Baoji Machine Tool Group.

“In order to develop the South Africa market, especially for our range of CNC machine tools, we have come to cooperate with Harp Machine Tools and authorize them as our overseas Sales and Service Center in South Africa, so that we can offer local customers our full range of products,” said Qiang.

Managing Director Seamus Thompson expressed his confidence that the cooperation agreement will grow from strength to strength and lead to a long and fruitful business relationship. “We are proud to announce to the local market that we are now Sole Agents and the Baoji Machine Tool Group Overseas Sales & Service Center South Africa.”

Seated and signing the cooperation agreement are Seamus Thompson, Managing Director, Harp Machine Tools (left) and Mr Li Qiang, President of Baoji Machine Tool Group (right).
HARP BAOJI CENTRE LATHE

SOLE AGENTS IN SOUTH AFRICA
In stock now!!!

HARP BAOJI Centre Lathe – Model CS6266C
- Distance between centres 3000mm – Swing over the bed 660mm – Swing in gap 870mm - Spindle bore 105mm - 3 & 4 Jaw chuck – Fixed steady – Travelling steady – Quick Change Toolpost – Coolant system

HARP BAOJI Centre Lathe – Model CS6250C – Distance between centres 1500mm – Swing over the bed 500mm – Swing in gap 710mm – Spindle bore 105mm - 3 & 4 Jaw chuck – Fixed steady – Travelling steady – Quick Change Toolpost – Coolant system

HARP BAOJI Centre Lathe – Model CS6240 – Distance between centres 1000mm – Swing over the bed 400mm – Swing in gap 630mm – Spindle bore 52mm - 3 & 4 Jaw chuck – Fixed steady – Travelling steady – Quick Change Toolpost – Coolant system

www.harp.co.za
E-mail: harp@icon.co.za
SPOTTED AT
REEF AND SA POWER INHOUSE EXHIBITION
COMPLETE SOLUTIONS FOR THE METAL FORMING INDUSTRY

With decades of experience you can rely on

REEF Presses

REEF Press Feeding

• Servo Roll Feeders
• Straighteners
• Feeders
• Schnutz Precision Levellers

• Mechanical
• Hydraulic
• Special Purpose

REEF SERVICES

COMPLETE PRESS REBUILDING, PRESS MAINTENANCE, SPARES, SPECIAL PURPOSE MACHINES

11 Roll Precision Straightener

Coil Processing Lines

www.reefeng.com

Engineering & Manufacturing Co. (Pty) Ltd

Tel: (011) 864-1730 • Fax: (011) 864-1405 • e-mail: info@reefeng.com
Creating deep holes in some of the most difficult materials created takes not only nerves of steel but also the right cutting tool that alleviates the stress of standing over the machine hoping that the work is performed efficiently and effectively.

In order to make sure that deep hole drills are following the correct path, TaeguTec offers solid carbide guide pads for the T-Deep line of deep drilling heads and gun drills.

The numerous advantages of solid carbide guide pads make their use more economical both in price and performance over brazed guide pads. TaeguTec’s guide pads are ideal for any industry that needs to drill deep through various materials.

TaeguTec’s solid carbide guide pads used to achieve economical and productive deep hole drilling are utilized in the automotive industry’s fabrication of diesel engines and truck bodies, the energy industry’s production of heat exchangers, the creation of oil holes used in hydraulic parts and heavy industry’s manufacture of ship propeller shafts.

Also, guide pads are equally important in the aerospace industry where landing gears and gas turbines have to follow strict safety requirements, the defense sector where the barrels of any number of canons need to follow precise manufacture requirements in order that ordinances reach their intended target, die and mold’s very important coolant holes, the steel industry’s billets, machine builders’ spindles and the construction machinery sector’s production of the incredibly resilient track shoes. The line of guide pads is available from PAD-06 to PAD-18 sizes and two grades.

For general deep hole drilling where both oil and emulsion coolant are needed, the SB grade is suitably adapted to these cutting conditions. Where higher tool life is needed, a supplementary SA grade using only oil coolant aimed at preventing insert failure in stable cutting conditions is the perfect choice.

Solid carbide guide pads are wholly precision ground providing superior tool life and productivity relative to their brazed equivalent.

Drilling deep into any material can be a challenge that is best answered by the right cutting tool. TaeguTec’s indexable gundrill and deep drilling heads with unique trigonal insert evacuate chips without damaging the surface finish and deliver coolant directly onto the material, while offering accuracy, repeatability, an excellent surface finish and minimizing cycle times.

TaeguTec’s addition to the T-Deep line covers single and double tube systems and is designed with a direct mounting system that reduces down time. With a diameter range from 16 mm to 28mm, the T-Deep indexable gundrill is a versatile tool that can be applied to industries including mold and die, power generation, windpower, automotive, shipbuilding, machine tool, railways as well as oil and gas.

To accompany the additions to the T-Deep family, TaeguTec offers the TOGT line, a series of inserts specifically designed for deep hole machining. An important feature of the TOGT insert is a three cutting edge chip splitter that generates optimized chip shapes, a positive rake angle as well as a wiper for excellent hole surface quality and high feed.

By combining both products into one powerful tool, chips will be reduced into small pieces, making it easy for them to move up the tool’s flute and out of harm’s way, a procedure that minimizes damage to the surface finish and reduces premature tool wear or breakage.

The T-Deep’s rigid clamping system and low spindle run-out repeatedly hits targets accurately, while its coolant delivery mechanism that shoots spray directly to the tool’s tip, forces the chips out of the hole with ease so that the T-Deep and workpiece remain cool even under the hottest temperatures.

Furthermore, the insert line is available in five sizes from 8mm to 12mm and coated with TaeguTec’s versatile TT9030 PVD grade, an important factor when choosing a tool that cuts cost and increases the productivity of high quality parts.

The TBTA-TR Deep Drilling Heads works in perfect unison with the T-Deep gundrill in order to reduce downtime due to its direct mounting system design and is available in either a single or double tube system.

The TBTA-TR head is offered either as a single tube with a diameter range of 16mm to 28mm or as a double tube with a diameter range of 18.4mm to 28mm.

The TRGD / TRGDL type gundrill holder comes as a driver type or mounting system design and is available in either a single or double tube system.
NEW INDEXABLE GUNDRILL & DEEP DRILLING HEADS WITH UNIQUE TRIGONAL INSERT

- Unique cutting edge geometry generates optimized chip shape
- Highly accurate ground insert achieves high hole quality and accurate hole diameters (IT10)
- The TOGT insert’s unique wiper guarantees an extra fine surface roughness
- Reduced down time due to direct mounting system design
CFRP RECYCLING – INTO THE BATTERY INSTEAD OF THE GARBAGE

The Fraunhofer ICT uses recycled, small chopped carbon fibers (top) to produce bipolar plates (bottom) for batteries and fuel cells. © Fraunhofer IDMT

Recycled CFRP can be used for additive manufacturing processes such as 3D printing. “This is also a trending topic in the industry that makes production processes more efficient and saves costs,” says Seiler. After all, aircraft manufacturers also have to comply with the European Union (EU) requirements that have been in force since 2015; up to 85 percent of the average weight of a used vehicle has to be recycled.

Pyrolysis with microwave radiation

The CFRP experts have developed a special process with which carbon fibers can be recovered from the plastic matrix. To do so, they use microwave radiation to burn the plastic matrix that surrounds the fibers. So that the fibers do not burn up at temperatures of up to 900 degrees Celsius, the combustion has to be performed without oxygen. “In technical jargon, this is called pyrolytic decomposition,” Seiler explains. The advantage of microwave radiation includes energy efficiency as a whole oven no longer needs to be heated, just the component itself. The colleagues of the Polymer Engineering department at the Fraunhofer ICT embed the recovered fibers in thermoplastic material. This composite material has similar properties to graphite and is suitable for the production of bipolar plates. “Our prototype passed all the tests for conductivity, density and corrosion resistance perfectly,” reports Seiler.

“We’ve proven that it’s generally feasible to use recycled CFRP fibers to produce bipolar plates for batteries and fuel cells. This shows that recycling works in a holistic approach. This is particularly interesting for the aviation industry,” says Seiler in summarizing the added value of the research work. The next steps are the characterization of the bipolar plates in the battery cell network and studies concerning the life cycle assessment. “Then, we want to tune the technology so that we can manufacture bipolar plates from recycled CFRP in series – for example, with an aviation partner,” concludes Seiler.

Carbon fiber-reinforced plastics are gaining importance as components of aircraft. The trend is increasing the need for sustainable recycling concepts. At the ILA in Berlin recently Fraunhofer presented a technology that converts recycled carbon fibers into materials for batteries and fuel cells. This saves costs, improves the CO2 balance and opens up new means of recycling in aircraft production.

Modern wide-body aircrafts today consist of over 50 percent carbon fiber reinforced plastics (CFRP). The material is installed, for example, over a large area in the wings or fuselage. With carbon fibers embedded in a plastic matrix, the composite is lighter than previously used materials, while still being very stable. The decisive advantage for aviation: due to their lower weight, airplanes need less fuel. “The manufacturing and processing of the CFRP is currently very time-consuming. The demand for sustainable recycling concepts is therefore steadily increasing,” observes Elisa Seiler, scientist at the Fraunhofer Institute for Chemical Technology ICT in Pfaffstätten, Germany. The amounts of CFRP recycling material are tremendous: for the Airbus 350, for example, they add up to over 65 tons. “In addition to this there are other relevant scrap quantities that already arise during production,” adds Seiler.

The Fraunhofer ICT has many years of experience in the development of technologies for fiber-reinforced plastics. At the ILA, the aviation and aerospace innovation trade fair, the scientists are presenting a concept that will be used to recover materials for batteries and fuel cells out of recycled carbon fibers. Together with partners, it has been possible to use recovered carbon fibers to produce a prototype of a bipolar plate – an electrode – on an industrial scale. The result is based on research from the “Graphit 2.0” and “RETRO” projects.

“Electric drives are now also a serious topic in the aviation industry. Manufacturers can directly perform value-preserving recycling by transferring materials from one application to the next,” says Seiler. The carbon fibers are electrically conductive and are suitable as a substitute for natural graphite, which also consists of carbon, a resource-critical raw material for the German economy that currently has to be imported from China at great expense.
2018

TRADE FAIRS & EVENTS

2 - 4 May 2018
FABTECH MEXICO
Showcasing metal stamping, forming and fabricating equipment.
Centro Citibanamex, Mexico City
www.mexico.fabtech.com

10 - 13 May 2018
KONMAK 2018
International Metal Processing Machines, Welding, Drilling, Cutting Technologies, Materials and Hand Tools Fair.
KONMAK has become one of the most important trade shows in the region thanks to the concentration of industry in Konya
Konya Chamber of Commerce - Tüyap Konya International Fair Center, Turkey
www.konmakfuari.com

14 – 18 May 2018
METALLOOBRABOTKA
19th International Specialized Exhibition for equipment, instruments and tools for the metalworking industry.
Expocentre Fairgrounds, Moscow
www.metobr-expo.ru

15 – 18 May 2018
INTERTOOL
Intertoool is Austria’s only trade fair for manufacturing technology in the metal processing sector.
It focuses on machine tools and precision tools for separating and forming work piece processing, as well as fixtures and fittings, techniques, technologies and systems along the entire process chain.
Messe Wien, Austria
www.intertool.at

15 - 18 May 2018
ELMIA PLÅT
After a strong premiere in 2016 Elmia Sheet Metal is back. This is the industry’s own trade fair offering a wide range of machines, tools and accessories for the sheet metal working industry.
Together with five other fairs held in parallel, this is a platform for the industry of tomorrow.
Elmia Exhibition Halls, Sweden
www.elmia.se

16 - 19 May 2018
MTA 2018
The International Precision Engineering, Machine Tool and Metalworking Exhibition and Conference.
Bangkok International Trade & Exhibition Center (BITEC)
www.mta-asia.com

23 - 26 May, 2018
METALTECH
Malaysia’s main trade event for metalworking and machine tool industries.
Putra World Trade Centre, Kuala Lumpur, Malaysia
www.metaltech.com.my

28 May - 1 June, 2018
30 BIEMH
The participation of the world’s leading machine tool manufacturers makes this event practically unique in its field. The BIEMH is a market driver event that shows off the latest trends and needs of industries and brings visitors up to date in the field of manufacturing.
Bilbao Exhibition Centre
biemh.bilbaoexhibitioncentre.com

5 – 7 June 2018
LASYS
International Trade Fair for laser material processing.
Messe Stuttgart, Germany
www.messe-stuttgart.de

11 - 13 July 2018
WOODEX FOR AFRICA
WoodEx for Africa is the largest exhibition in Africa dedicated exclusively to the timber trade and with the support of strategic industry partners. WoodEx for Africa is hosted biennially and offers a unique business and networking platform to connect, unify and grow the African timber, tooling and machinery markets.
Gallagher Convention Centre, Midrand, Johannesburg
www.woodexforafrica.com

10 - 14 September 2018
ELECTRA MINING AFRICA 2018
Ranked as the second largest mining show in the world and with global recognition for its broad reach across mining, construction, industrial and power generation industry sectors, Electra Mining Africa once again proves its status as a world class event attracting high numbers of quality exhibitors and visitors
Expo Centre, Nasrec
www.electramining.co.za

10 – 15 September 2018
IMTS 2018
International Manufacturing Technology Show. Industrial decision-makers attend (IMTS) to get ideas and find answers to their manufacturing problems.
McCormick Place Convention Center, Chicago, USA
www.imts.com

18 – 22 September 2018
AMB
AMB, the international exhibition for metalworking, is the leading industry trade fair and is one of the top five trade fairs worldwide for metal-cutting technology.
New Stuttgart Trade Fair Centre, Germany
www.messe-stuttgart.de

25 – 28 September 2018
MICRONORA
Biennial microtechnology and precision trade fair for cutting edge technology.
Besançon, France
www.micronora.com

2 - 4 October 2018
TOOLEX
International Fair of Machine Tools, Tools and Processing Technology.
Expo Silesia Exhibition Centre, Poland
www.exposilesia.pl

9 - 11 October 2018
ALUMINIUM 2018
Aluminium is the world’s leading B2B tradeshow for the aluminium industry and its key application areas. The show unites manufacturers, technology suppliers and end users through the entire production chain from raw material to finished products.
Messe Düsseldorf, Germany
www.aluminium-messe.com

Cont. on page 48
## Trade Fairs & Events

### 2018

**9 - 13 October 2018**
**31. BI-MU**
International exhibition dedicated to the Italian machine tools, robot, automation systems and ancillary products industry.
*Exhibition Grounds, Fieramilano, Italy [www.bimu.it](http://www.bimu.it)*

**16 - 18 October 2018**
**MTA HANOI 2018**
The 6th International Precision Engineering, Machine Tools and Metalworking Exhibition & Conference.
*International Centre for Exhibition (I.C.E.) Hanoi, Vietnam [www.mtahanoi.com](http://www.mtahanoi.com)*

**23 - 26 October, 2018**
**EURO BLECH**
The 25th International Sheet Metal Working Technology Exhibition will open its doors again in Hanover, Germany. As the world’s leading exhibition for the sheet metal working industry Euro Blech offers a global platform for the presentation of the latest technology to a specialized audience of the industry’s key purchasers and decision makers.
*Exhibition Grounds, Hanover, Germany [www.euroblech.com](http://www.euroblech.com)*

**1 - 6 November 2018**
**JIMTOF 2018**
The 29th Japanese International Machine Tool Fair.
*Tokyo Big Sight (Tokyo International Exhibition Center) [www.jimtof.org](http://www.jimtof.org)*

**6 - 8 November 2018**
**FABTECH 2018**
North America’s largest Metal Forming, Fabricating, Welding and Finishing event.
*Georgia World Congress Center, Atlanta, GA USA [www.fabtechexpo.com](http://www.fabtechexpo.com)*

**7 - 11 November 2018**
**TMTS 2018**
Featuring metal cutting machines, metal forming machines, machine tool accessories, components, parts, fluid power, CNC control systems and auxiliary equipment, cutting tools, toolholding and workholding devices, measurement instruments and smart manufacturing systems.
*Greater Taichung International Expo Center (GTIEC) Taiwan [www.tmts.tw](http://www.tmts.tw)*

**20 - 23 November 2018**
**PRODEX**
International Exhibition for machine tools, tools and production measurement.
*Messe Basel, Switzerland [www.prodex.ch](http://www.prodex.ch)*

**28 - 29 November, 2018**
**FASTENER FAIR FRANCE**
International Exhibition for Fastener & Fixing Technology.
*Paris Expo - Porte de Versailles, France [www.fastenerfairfrance.com](http://www.fastenerfairfrance.com)*

**21 - 24 November 2018**
**EMAF 2018**
17th International Fair of Machinery, Equipment and Services for Industry.
*EXPONOR - Porto International Fair Leça da Palmeira, Portugal [www.emaf.exponor.pt](http://www.emaf.exponor.pt)*

**24 - 26 July 2019**
**KZN INDUSTRIAL TECHNOLOGY EXHIBITION (KITE)**
An industrial trade show that showcases products, services and solutions appropriate to the KwaZulu Natal region. It provides an excellent platform for trade discussions between exhibitors and visitors and a forum for business networking.
*Durban Exhibition Centre, KwaZulu Natal [www.kznindustrial.co.za](http://www.kznindustrial.co.za)*

**15 - 18 May 2019**
**LAMIERA**
The international exhibition dedicated to the metal forming machine tool industry and to all innovative technologies related to the sector.
*Milan, Italy [www.lamiera.net](http://www.lamiera.net)*

**21 - 23 May 2019**
**SOUTH AFRICAN MANUFACTURING EXPO**
A showcase of South Africa’s manufacturing capabilities across a wide variety of industry sectors.
*Expo Centre Nasrec, Johannesburg [www.localmanufacturingexpo.co.za](http://www.localmanufacturingexpo.co.za)*

**12 - 14 March 2019**
**NAACHAM SHOW 2019**
The NAACHAM Show is the authoritative trading and networking platform for automotive component manufacturers, their suppliers and industry stakeholders in South Africa.
*Durban International Convention Centre, South Africa [www.naacamshow.co.za](http://www.naacamshow.co.za)*

**2 - 7 October 2019**
**MAKTEK EURASIA**
Fair for the metalworking sector.
*TÜYAP Fair & Congress Centre, Büyükçekmece, Turkey [www.maktekfuari.com](http://www.maktekfuari.com)*

### 2019

**20 - 23 November 2018**
**PRODEX**
International Exhibition for machine tools, tools and production measurement.
*Messe Basel, Switzerland [www.prodex.ch](http://www.prodex.ch)*

**15 - 18 May 2019**
**LAMIERA**
The international exhibition dedicated to the metal forming machine tool industry and to all innovative technologies related to the sector.
*Milan, Italy [www.lamiera.net](http://www.lamiera.net)*

**28 - 29 November, 2018**
**FASTENER FAIR FRANCE**
International Exhibition for Fastener & Fixing Technology.
*Paris Expo - Porte de Versailles, France [www.fastenerfairfrance.com](http://www.fastenerfairfrance.com)*

**21 - 24 November 2018**
**EMAF 2018**
17th International Fair of Machinery, Equipment and Services for Industry.
*EXPONOR - Porto International Fair Leça da Palmeira, Portugal [www.emaf.exponor.pt](http://www.emaf.exponor.pt)*

**24 - 30 January 2019**
**IMTEX 2019 & TOOLTECH 2019**
*IMTEX 2019*
Imtex - the 19th Indian Metal Cutting Machine Tool Exhibition. IMTEX is a flagship event for the Indian metal cutting industry.
*Bangalore International Exhibition Centre (BIEC) India [www.imtex.in](http://www.imtex.in)*

**21 - 24 May 2019**
**MOULDING EXPO**
International Trade Fair for Tool, Pattern and Mould Making.
*Messe Stuttgart, Germany [www.messe-stuttgart.de](http://www.messe-stuttgart.de)*

**16 – 21 September 2019**
**EMO HANNOVER**
EMO Hannover – the world’s premier trade fair for the metalworking sector.
*Hannover Fairground, Germany [www.emo-hanover.de](http://www.emo-hanover.de)*

**28 - 29 November, 2018**
**FASTENER FAIR FRANCE**
International Exhibition for Fastener & Fixing Technology.
*Paris Expo - Porte de Versailles, France [www.fastenerfairfrance.com](http://www.fastenerfairfrance.com)*

**12 - 14 March 2019**
**NAACHAM SHOW 2019**
The NAACHAM Show is the authoritative trading and networking platform for automotive component manufacturers, their suppliers and industry stakeholders in South Africa.
*Durban International Convention Centre, South Africa [www.naacamshow.co.za](http://www.naacamshow.co.za)*

**2 - 7 October 2019**
**MAKTEK EURASIA**
Fair for the metalworking sector.
*TÜYAP Fair & Congress Centre, Büyükçekmece, Turkey [www.maktekfuari.com](http://www.maktekfuari.com)*
CNC CLEAR CUT

STANDARD Machines
Industrial strength tables with bed sizes from 1300x1300mm up to 3000x1500mm. World class motion with pierce capacity of up to 20mm thick. Also available with HVAC extraction bed.

These machines are ideal for the artwork, signs and ornamentation, automotive, farming and agriculture, general fabricators, job shops, and HVAC contractor industries. Very affordable!

MID-RANGE Machines
A combination between our Entry & Advanced Machines, with bed sizes ranging from 4000x2000mm up to 13000x3000mm, or bigger. Extremely robust machines with a pierce capacity of up to 25mm thick.

These machines work well in the construction, energy, general fabricators, job shops, mining, shipbuilding & structural steel industries.

ADVANCED Machines
We manufacture a range of Advanced machines with table sizes ranging from 3000x1500mm up to 13000x3000mm, or bigger.

Our Advanced machines are ideal for manufacturers with most demanding production lines.

CNC Clear Cut’s Advanced machines deliver the highest production rate available, with Scribing, True Bevel, True Hole & Rapid Parts technology.

MADE IN AFRICA
CNC Clear Cut plasma tables are designed, engineered and manufactured in South Africa. The organization develops its products according to the specific needs and standards of African organizations. The company’s research, structure, support system and over-all service has revolved specifically around plasma cutting for the past decade, which is why we are the industry leaders.

OPEN DAY 2018!
In-house Open Day, 21-22 June 2018. XPR300 cutting capabilities on Stainless Steel & Aluminum. New Rhino Machine launch. See website for more details!
Suppliers of Fine Equipment

The E-volution in sheet metal working

LEADERS IN THE INNOVATION OF SERVO ELECTRIC PRESS BRAKES

SafanDarley E-Brake
Bending with the E for ergonomics

SafanDarley M Shear
Superior cutting technology with hybrid drive

Euromac meets your ambitions

EUROMAC
punching machines

• Strong
• Affordable
• Easy
• Fast
• Flexible

620 Series Fiber Laser

www.cmlmachines.co.za

Unit 7, 39 Michelson Road,
Westwood, Boksburg
Tel: 086 142 2423
Fax: 086 553 9975
e-mail: luis@cmlmachines.co.za