MTM®
Machine Tool Market
SOUTHERN AFRICA
July/August 2021
Volume 30 No.4

TIMESAVERS®

22 RB SERIES

THE 22 RB SERIES IS THE MOST COMPACT ROTARY BRUSH MACHINE FOR DEBURRING, EDGE ROUNDING, FINISHING AND LASER OXIDE REMOVAL OF VARIOUS SHEET METAL PARTS

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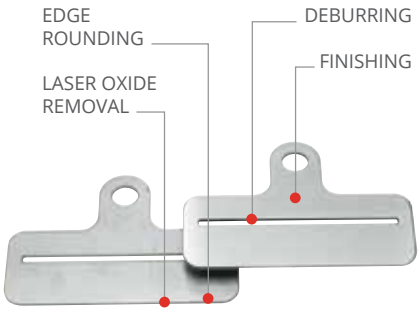

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VPSS
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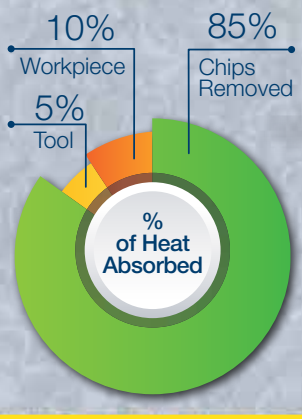

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MACHINING EXOTICA

What are exotic metals, why are they so rare, and how are they machined? To understand this subject, let's start by defining it.

Mainstream engineering materials are iron-based alloys such as steel, stainless steel and cast iron. Another group of regularly used materials includes alloys based on nonferrous metals, such as aluminum alloys, brass and bronze.

In addition, there are exotic types of material that were developed to answer specific demands. These exotic materials feature a dedicated application, while they are rare, not commonly used and generally more expensive to fabricate.

A strict agreed definition of an exotic material does not exist. Many experts refer to them as metals like Beryllium, Zirconium, etc. and their alloys, ceramics, composites and superalloys. When considering the use of structural materials, superalloys and composites should be distinguished first. The metalworking industry mainly deals with these types of materials for several reasons, including the machining of exotic materials is problematic. Superalloys, or more specifically, high temperature superalloys (HTSA), are intended for operating under a heavy mechanical load in combination with high temperatures. They are largely used in gas turbines and in various valves and petrochemical equipment. The "exoticism" of superalloys is their metallurgical design, which provides high creep resistance to keep strength at high temperatures. According to the main component, HTSA can be divided into three groups: Nickel (Ni)-, Cobalt (Co)-, and Iron (Fe)-based superalloys. A superalloy chemistry, especially in case of Ni- and Co-based HTSA, results in poor machinability.

Composites are multicomponent materials. When compared with a traditional engineering material, such as steel or aluminum, composites workpieces are nearer-to-net shape and do not require significant material removal. Nevertheless, the components of a composite have different properties and when combined, they produce a heterogeneous structure that makes machining problematic. The process of machining composites differs from machining metals and it often looks more like shattering than cutting. High composite abrasiveness can lead to intensive tool dulling and various performance problems, such as a degradation of accuracy or non-repairable machining defects.

The metalworking industry has made significant progress in machining exotic materials. Advanced machining tools and effective machining strategies have already lifted the performance of machining operations to a totally new plane. An impressive leap forward in 3D printing, which may significantly diminish machining operations, looks very promising. But there is one "exception", which still limits taking full advantage of the considerable increase of machine tool capabilities. This "exception" is the cutting tool. Despite the distinct progress, cutting tools remain the bottleneck for machining efficiency. Hence, the plans for a breakthrough in the productive machining of exotic materials have much to do with the cutting tool.

Cutting tool manufacturers keep up their efforts to find productive and reliable solutions for machining exotic materials. Sometimes, it may seem that traditional sources for a major advance are almost non-existent and that a great step forward is only connected to a real novelty. Regardless, cutting tool manufacturers still manage to provide interesting products that combine available means and resources with new ideas. Recent ISCAR developments are a good example of such products and ISCAR's attempt to resolve the existing bottleneck, while finding new ways to move forward.

Exotic for Exotic: advantageous ceramics

Cemented carbide is still the main cutting material for machining. Introducing carbide tools revolutionized the metalworking industry ensuring a significant growth of productivity due to sharply increased cutting speeds. However, despite this, even today cutting speeds for difficult-to-machine Ni- and Co-based high-temperature superalloys (HTSA) are low, typically within the range of 25-50 m/min (80-160 sfm). How do we expand the speed boundaries?

Exotic ceramic materials have already found themselves as cutting materials. Using exotic ceramic material ensures a totally different level of cutting speeds. For example, machining the superalloys by ceramic tools, the cutting speed 1000 m/min (3300 sfm) is completely real. Therefore, ceramic tools become more and more common in machining HTSA.

Recently, ISCAR developed a family of indexable shell mills carrying double-sided inserts made from ceramics. The mills are intended mostly for rough and semi-finish machining of planes and 3D surfaces at extremely high cutting speeds. The economical double-sided insert design provides high ceramics utilization. The inserts are made from several ceramic grades such as "black" ceramics, whisker reinforced ceramics and SiAlON (a type of silicon-nitride-based ceramics). Applying the new mills is directed on maximizing metal removal rate (MRR) and dramatic reduction in cycle time.

One more example of successful usage of cutting ceramics is another of ISCAR's latest products – a family of solid endmills from SiAlON. The endmills were designed specifically for productive rough machining Ni-based superalloys, such as various grades of Inconel, Incoloy, Haynes, etc. in the aerospace industry. In comparison with typical solid carbide endmills, SiAlON endmills allow an increase in cutting speed of up to 50 times!

It should be noted that ceramic tools behave differently from carbide tools. Generally, the end of a tool life is determined by the acceptable level surface finish or generated burrs and not by tool wear size.

Cutting Diamond

In manufacturing parts from composites, drilling is widely regarded as the major cutting operation. Improving capabilities of drilling tools has had a direct impact on the effectiveness of machining composites and composite stacks.

Most recently, ISCAR introduced a series of new solid drills, in the diameter range of 3.3-12 mm (.130-.500"), which are specially designed for composites. The common feature of these tools is the use of polycrystalline diamond (PCD) or diamond coating to ensure high abrasion wear resistance. There are several types of these new drills; one of them is based on using a PCD nib as a central point of a drill, and another type has a diamond wafer. Both drill types offer a large area for multiple regrinding.

The third type of drills is solid carbide tools with a diamond-coated cutting area. Their wavy cutting edge

facilitates reducing burr formation, specifically when drilling carbon fiber reinforced plastics (CFRP) and CFRP-Aluminum stacks.

Coolant Solver

In machining exotic superalloys, effective coolant supply is a cornerstone of success. Pinpointed high-pressure cooling (HPC) can be a significant tool to improve cutting performance. It is a real source for greater tool life, better chip control and higher productivity.

One of the latest ISCAR's developments is a family of turning tools with ISO-type indexable inserts . The tool design utilizes an upper clamp for reliable securing of the inserts even during heavy and interrupted cuts. The previous turning tools with the HPC option had a lever clamping mechanism as an upper clamp would obstruct a jet of coolant from reaching the cutting edge.

The newly developed tools integrate a hollow upper clamp that allows for solving two problems:

- strong and rigid insert clamping
- eliminating any obstacle for the coolant jet on its way to the cutting edge

Hence, the clamp, which serves in the new tools as a coolant nozzle, received an additional important functional feature.

The new products with through-tool coolant supply are beneficial not only in machining with HPC. Their applying to turning with conventional external "low" pressure cooling (10-15 bars) also provides better performance.

In parting and grooving, especially in deep grooving, efficient chip forming has crucial significance. Pin-pointed high-pressure cooling of a cutting edge significantly diminishes chip jamming and reduces built-up edge. Within the past year, ISCAR expanded the range of its HPC products by introducing new face grooving tools with HPC option. These tools are suitable for coolant pressure of up to 140 bars.

Geometry Innovation Never Stops

Improving cutting geometry does exhaust all possibilities. Good evidence of such a conclusion is the variety of new solutions that have upgraded existing indexable inserts. Usually, such solutions relate to advanced chip forming, reinforced cutting edge and progressive edge preparation.

ISCAR's new chipformer **F3S** for finish turning exotic superalloys was designed for popular ISO-type inserts (CNMG, WNMG etc.). A typical finishing operation is characterized by shallow depth of cut and low feed. Therefore, the success of a chipformer lays in a small area that adjoins the insert cutting edge. It will take real engineering "art" and a lot of effort to redesign this area for much better performance when compared with the existing inserts.

F3F gives an example of how to do this successfully. It has a reinforced cutting edge to prevent notch wear as well as a specially designed deflector for efficient chip control in finish turning HTSA. In combination with a positive rake, these features ensure a smooth and easy cut, notable chip breaking capabilities and significant reduction in cutting forces.

Machining exotic materials places tool manufacturers before different challenges. In developing a cutting tool that will lead to a breakthrough, tool manufacturers try everything. Sometimes their solutions are really "exotic", and other times innovative thinking allows going ahead in the traditional direction. In the case of ISCAR, it can be clearly seen that progress towards finding the right response to the needs of the metalworking industry for exotic materials has not stopped.

For more information, please contact ISCAR South Africa (PTY) LTD – Tel: 011 997-2700.

T-FACE – NEW SMALL DIAMETER SOLID CARBIDE FACE MILLS WITH SP SPLINE CONNECTION

ISCAR introduces the T-FACE family of assembled tools with interchangeable solid carbide heads for applications that require small diameter face mills.

The tools are comprised of heads mounted on steel shanks by means of a unique SP spline connection, one of ISCAR's latest innovations that has already proved itself in the extremely successful T-SLOT line of slot milling cutters. The connection has been designed to ensure a very durable assembly that can carry significant loads in face milling and to withstand bending forces caused by high overhang in long-reach applications.

The unique general-duty cutting geometry of the heads makes them suitable for effective face milling of various engineering materials. A high-tooth density and greater accuracy provide better productivity than typical milling cutters with indexable inserts, while the design ensures that head clamping and replacement is user-friendly.

The new heads are available in 32 mm diameter with 8 teeth, an SP15 spline connection and a maximum 8 mm depth of cut, 40 mm diameter with 10 teeth, an SP17 spline connection and 10 mm depth of cut and in 50 mm diameter with 12 teeth, an SP19 spline connection and 12 mm depth of cut.

The cutters' small dimensions allow them to be applied effectively to face milling operations in space-limited environments or with small-envelope machine tools, particularly on multi-function machines. The new shanks are available in cylindrical and Weldon-type configurations.

TAEGUTEC HUSH-BORE SLEEVE

Vibration free HUSH-BORE boring bars are cylindrical shank type products with no flat parts for deep internal turning operations in 7xBD to 10xBD (BD: shank diameter) range. Therefore, based on the flat surface design of the head, set-up time can become an issue.

To solve this issue, TaeguTec has launched HUSH-BORE sleeves that can be easily set up in the machine's toolholder.

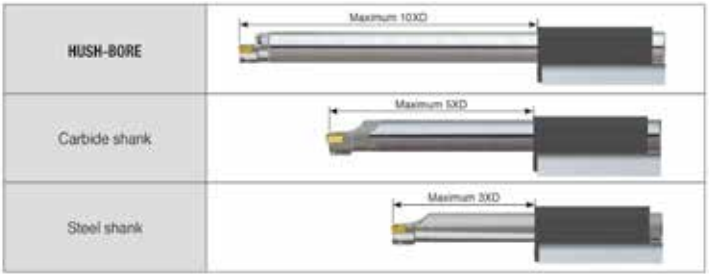
These specific sleeves with one-sided slit maintain a robust clamping force and high precision because of its wide contact area when combined with the new HUSH-BORE shank. First, gently tighten the flat surface onto the sleeve with a screw onto the holder. Second, match the HUSH-BORE's shank line with the sleeve-line. Third, check the zero setting with the dial gauge, ensure it is within ±0.01 mm. Fourth, secure the sleeve by screwing tightly to the tool holder, thereby promoting easier, faster setting time with better accuracy.

HUSH-BORE – VIBRATION FREE BORING BAR LINE WITH EXCHANGEABLE HEADS

Machining depth in internal turning differs according to the shank materials of bars used, while steel boring bars are used up to 3XBD (bar diameter) and carbide boring bars up to 5XBD. Deep internal turning, however, is very difficult to machine even with carbide boring bars. With the HUSH-BORE's damping system, TaeguTec has provided an internal turning solution up to 10XBD.

The HUSH-BORE's damping system located inside the shank is capable of deep internal machining more than 5XBD, this dramatic damping capability enables very good surface roughness of the workpiece and results in longer tool life and stable machining. It also means increased feed and cutting speed, making it more productive.

Shanks for the HUSH-BORE line are available as standard items in 7 different diameters (Ø16, 20, 25, 32, 40, 50, 60 mm) and in 2 lengths (7XBD, 10XBD). The various exchangeable heads can be securely fastened with serrated couplings located in the boring bars.



For more information, please contact TaeguTec – Tel: 011 362-1500.

SFEEDTEC

HUSHBORE
ANTI VIBRATION BAR

Head Changeable Anti-Vibration Boring Bar

- Anti-vibration shank up to 10 X BD
- Variety of exchangeable heads
- Stable and rigid clamping system
- Internal coolant supply

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INDUSTRY 4.0 TaeguTec Member IMC Group

A NEW DIMENSION WITH 15 KILOWATTS

Speed, precision, flexibility: Thanks to the new laser output of 15 kilowatts, the ByStar Fiber cuts steel, aluminum, and stainless steel with a thickness from 1 to 30 millimeters and brass and copper up to 20 millimeters with high precision. This increases the laser power by up to 50 percent, enabling sheet metal processing companies to further optimize their production processes.

In order to offer sheet metal processing companies even better support in an increasingly competitive environment, Bystronic is now advancing into a new dimension of fiber laser cutting, the 15 kilowatt ByStar Fiber. The high-end fiber laser stands for high-precision Bystronic technology, a reliable cutting process even with the highest laser outputs and a wide range of applications. The technological leap from conventional 3 to 12 kilowatt systems to the new 15 kilowatt level is tremendous.

Bystronic is advancing into a new dimension of fiber laser cutting, the ByStar Fiber with 15 kilowatts for extra-high speed and an extended cutting spectrum.

On average, thanks to the 15 kilowatt laser, the cutting speed of the ByStar Fiber increases by up to 50 percent (when cutting with nitrogen) compared to a 10 kilowatt laser source. This means that sheet metal processing companies can benefit from higher productivity at low unit costs, because thanks to its 15 kilowatts, the new ByStar Fiber cuts steel, aluminum and stainless steel precisely and reliably in thicknesses between 1 and 30 millimeters and brass and copper in thicknesses up to 20 millimeters. The 15 kilowatt laser output now also enables extended applications in steel and aluminum of up to 50 millimeters and thus offers maximum flexibility for large series and urgent customer orders. Regardless of whether cutting aluminum, non-ferrous metals or steel, the high-performance Bystronic cutting head excels with maximum precision in both thin and thick sheets and profiles. The new power level is available for the ByStar 3015 and the ByStar 4020.

Regardless of whether aluminum, non-ferrous metals or steel – The high-performance Bystronic cutting head excels with maximum precision in both thin and thick sheets and profiles.

High cutting quality in up to 30 millimeter thick steel, aluminum and stainless steel – The BeamShaper ensures particularly high cutting quality.

Perfect cuts thanks to the BeamShaper

The BeamShaper function ensures clean cutting edges and high operational reliability across the entire range of sheet metal qualities with thicknesses up to 30 millimeters. This function can be selected as an option when purchasing a new 15 kilowatt ByStar Fiber or added later as an upgrade. The "BeamShaper" enables the shape of the laser beam to be optimally adapted to thicker sheets and fluctuating sheet metal qualities. In thicknesses between 20 and 30 millimeters, the new function thus enhances the quality of the cutting edges and increases the cutting speed by up to 50 percent compared to conventional 10 kilowatt machines. Bystronic's new high-performance flagship is controlled using the ByVision Cutting software via a 21.5-inch touch screen. Operating the machine is as simple as using a smartphone.

Automation optimizes the material flow

In order to provide an optimal material flow to the high speeds of laser cutting, Bystronic has a broad selection of automation solutions available for the ByStar Fiber. The offer includes loading and unloading systems, sorting solutions, and individually configurable storage systems. Based upon the existing manufacturing environment and available space, a seamlessly integrated automated laser cutting process is developed.

ByTrans Cross is the newest loading and unloading solution on offer from Bystronic. The automation can be flexibly adapted to changing order situations and production rhythms in the laser cutting. Various utilization scenarios are possible.

As an automation bridge, ByTrans Cross can be integrated between a laser cutting system and material storage in order to direct the material flow. ByTrans Cross can also be used equally well as a stand-alone solution without a storage connection, to provide the laser cutting system with raw sheet metal of differing strengths and materials. In its basic version, ByTrans Cross has two loading carriages that serve as material storage for stand-alone utilization.

ByTrans Cross becomes even more versatile during clean-up, with the BySort sorting solution, which Bystronic integrates as an add-on solution on request. Thus, users have the option to clear away sorted, completed parts into an attached storage area or to store them in an additional unloading position next to the laser cutting system.

The latter supports the processing of large series, for example, for which individual cut parts need to be sorted separately according to job. A big advantage of BySort is the repeated, precise storage of all parts in one location – a task that is difficult to complete manually, particularly with large cut parts. The parts, exactly positioned on a palette, can be processed more easily during manual and automated subsequent processes, as their location is precisely defined.

Automation optimizes the material flow – Matching automation solutions increase the machine utilization and process reliability.

For more information, please see www.bystronic.co.za or contact Bystronic on 010 410-0200.

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HD-TC PROFILE-PIPE CUTTING LASER MORE STABLE WITH ADDED LASER SENSORS

DURMA shortened process time by improving centering with the newly added laser sensor centering option added to the HDTC machines. It is possible to control the size and irregular structure of the profile during cutting or before cutting with the help of sensors to ensure that the internal contours to be cut are at the right point.

In existing HD-TC machines, the centering measurement is achieved by scanning the profile surface through capacitive sensors. The advantage of the laser sensor system is that it gives more precise results in a shorter time. The user can take measurements at the distance determined by the user, and precise results are obtained in a shorter period of time as the process of measuring by the sensor is shortened for parts requiring precise measurement with internal contours.

The advantage being fast set-up time, less problems during cutting, best solution in a short time and measurement frequency is dependant on operator request.

DURMA HDF/HDFL 3015

An integrated shuttle table maximizes productivity and minimizes material handling times. The shuttle table and pallet change system allows convenient loading of new sheets or unloading of finished parts, while the machine is cutting another sheet inside the working area. The available shuttle table is fully electric and maintenance free; there are no hydraulic oils to handle and table changes are fast, smooth and energy-efficient.

Durma HDF/HDFL 3015 Fiber Laser.

An optional lateral automatic scrap conveyor allows the removal of scrap pieces from the working area without the need to interrupt the cutting process. The sideways operation of the short conveyors allow for easy maintenance and trouble-free running.

The Durma HDF/HDFL 3015 fiber machine achieves highest dynamics and fastest laser processing cycle times thanks to the combination of rigid mechanics and a state-of-the-art numerical control and drive system. Programmes can be loaded easily into the machine with a USB stick or over a fast Ethernet connection with the company network.

In the high-pressure auto-focus cutting head for the fiber laser the cutting lens is shielded from the laser process by an exchangeable low-cost protection window. The 1µm wavelength light is very sensitive to dust or other contamination produced in the cutting or piercing process, therefore the cutting head is being well protected in an additional cover to ensure that all critical parts remain as clean as possible.

The integrated capacitive distance sensor is capable of having the head follow height differences in the sheet even at the extreme high cutting speeds that can be achieved with the fiber laser technology, while state-of-the-art linear motors promote accuracy and increase productivity.

The CAD/CAM software provided has all the tools to import or draw parts, prepare and optimize automatically different geometries for the laser cutting process and make efficient nests.

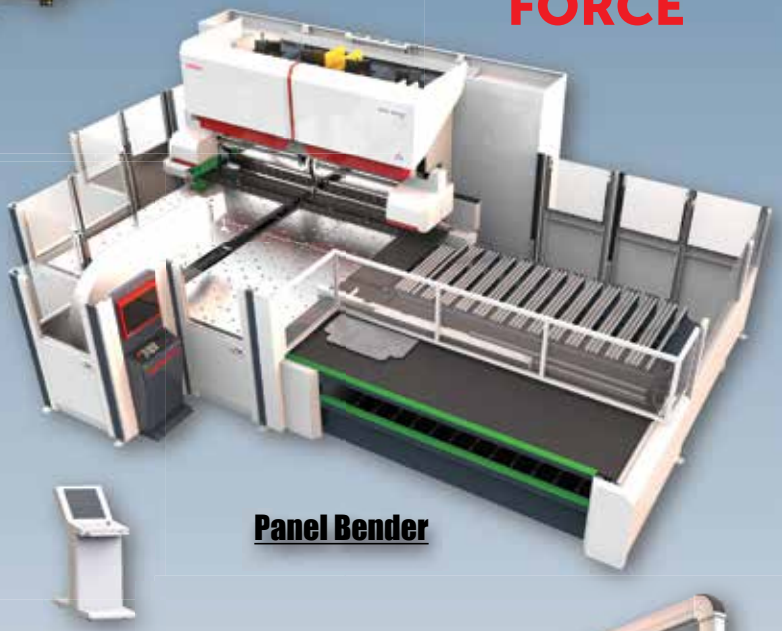
The all-solid-state fiber laser technology reduces maintenance requirements, and offers the lowest possible running cost with a wall-plug efficiency of 30% and without the need of any laser gas. When the application requires a broader spectrum of material types to be cut and the maximum thickness range is limited, the fiber laser is the ideal solution and it will cut faster at lower cost than any CO^2 laser at the same laser power.

For more information, please contact Spectrum Machine Tools – Tel: 011 865-4090.

DURMA

THE WINNING FORCE

HD-TC Series
Tube FIBER Laser System



Panel Bender

HD-FA 3015
5-Axis FIBER Laser System

AD-ES 1240 RobotCell

AD-Servo Press Brake

HD-FL FIBER Laser 10 kW & D-Server

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MTM®

SAFAN M-SHEAR

The Safan M-Shear's extremely functional design satisfies current and future requirements with possible expansion plans, such as material-handling systems, already provided for. At its core is the advanced hybrid drive for the cutting beam consisting of a servo-electronic motor and hydraulic pump, a combination producing a remarkably quiet and energy-saving system.

While the robust hydraulic systems are controlled by modern electronics increasing both productivity and quality of products, the servo-electronic motor powering the hybrid drive only runs when the cutting beam is in motion thus saving energy and reducing noise levels while cutting.

Maximum ease of operation is provided by the Safan Touch Screen control TS 200 while the settings are indicated by clear symbols on the TFT colour monitor. The control operates with Microsoft Windows®.

With blades having four cutting edges, on both top and bottom, shearing is done very economically as blade wear is spread over the blade's entire length, thanks to the programmable starting position of the cutting beam. Another feature includes independent left and right clearance adjustment and built-in measuring sensor with an accuracy of ±0.01mm. Due to the special frame construction, clearance is self- compensating so that, even with a load in the middle of the shear, the clearance remains constant over the entire length. When the clearance is changed, the back gauge setting is automatically corrected. Size of cut can be directly entered, after which the position of the back gauge is adjusted. The back gauge adjustment occurs by means of play-free guides and ball screws. Setting precision is 0.01mm and repetitions are accurate to within ±0.03mm.

The shear has extensive guards on the back and sides. These consist of mechanical side covers on the right and left sides plus a photo-electrical guard on the back. The machine's foot-operated console is fitted with an emergency stop. Robust finger guards have been installed. For up to and including 6mm cuts, openings have been made in these guards, allowing the operator to safely get closer to the blade.

As an option, the M-Shear can be supplied with pneumatic sheet support equipment making cutting easier, especially when dealing with larger-size blank sizes. The sheet to be cut is supported at the back of the shear, ensuring it can be accurately positioned against the back gauge, which can be equipped with sheet support arms, if requested.

In combination with the pneumatic sheet support system, a scrap separation feature is available.

SAFANDARLEY E-BRAKE ERGONOMIC

With the Ergonomic design of the E-Brake, SafanDarley enables the operator and the press brake to work as a unit. The operator is partially seated inside the machine, surrounded by an edging table with his legs in a spacious cut-away below the lower beam, where the foot pedal is located.

Ergonomic ease of operation is assured as the seating position as well as the height and angle of the footrest can be adjusted.

The SafanDarley E-Brake Ergonomic can easily be adapted to changing work situations, such as a different product or a different operator. The edging table can be adjusted enabling users to achieve perfect pick-up height, working height and cast-off height every time. In addition, the edging table can be fully or partially collapsed, enabling the operator to bend whilst standing up. Finally, the entire edging table can easily be removed from the machine to make the front freely accessible.

While the height of the rotating 17" Touch Screen is adjustable, the unit can be placed to both the left and right of the operator, meaning that left-handed operators can use the machine with the same level of ease as right-handed operators.

The double-function safety light screen, integrated into the control panel secures the bending zone and allows the axis to move, while the operator turns, picks up or removes the product. These simultaneous actions of operator and machine lead to very fast cycle times.

While the innovative back gauge can be used across the full working length, it has a maximum depth of 1000mm and a height adjustment of 150mm. Combined with the possibility of setting the upper beam at a 5° angle, this means unparalleled flexibility. The back gauge comes with an X axis and an R axis as standard features, but can be expanded, depending on the model, with 5 optional axes.

For more information, please contact CML Machine Tools – Tel: 082 232 9470.

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AMADA – MORE AND MORE ECO-FRIENDLY

By Barry Page, Amada

Machinery is becoming more eco-friendly, thanks to the reduction or in some cases elimination of oils in their drive systems. Some of the latest technological advances allow more machinery and bigger machinery to be operated with less power consumption and a smaller carbon footprint, while ensuring higher throughput. These advantages are seen through the new A.C. servo drive systems used on punching, bending and stamping machines, as well as through the latest fiber technology on lasers.

Today's technology in the fiber laser field is something that not many people saw coming. The efficiency of fiber systems is greatly attributed to the eradication of costly internal components such as tubes, internal optics, turbo blowers, vacuum pumps etc, as well as the elimination of laser gas being used to generate the laser beam. The latest generation 3 fiber laser systems is even more compact and efficient than the 1st and 2nd generation units.

Amada has incorporated features that subsequently contribute towards reducing costs, such as automatic nozzle changing, automatic nozzle cleaning and automatic nozzle recalibration. An added advantage is a scheduler function, which can be used, while full production planning and scheduling is executed in the planning office.

Automatic material handling systems can be supplied with machines or retro-fitted at a later stage. These systems are capable of storing materials, while automatically feeding them to the machine as required.

Amada offers automated material storage and manipulation systems for full blanking and bending operations. The "entry level" manipulation systems referred to as "MPL's" consist of two material pallets and are capable of holding up to 2000kg raw material each. There is a third pallet for offloading of finished sheets with parts either held in by micro-ioints or not.

HG1003 ATC – With Automated tool loading unloading.

The MPL uses an array of vacuum suction cups to lift and separate the sheets from sticking together, while loading the cutting or punching table. Checking of material thickness according to the part or nesting program is accomplished by the sheet thickness detector.

While the sheet is being processed, the MPL will then prepare and lift the next sheet and get ready for changeover. Priority is given to unloading the cut sheet and reloading a new sheet before the stacking of the processed sheet happens. This ensures speedy changeover and minimal machine idle time. The same principle applies to the Amada ASF series of sheet storage and manipulation systems.

These systems have various shelves for raw materials with each shelf holding up to 2 tons of different thickness and types of materials. The advantage of these systems is that longer, uninterrupted production runs are possible.

Both these systems, MPL & ASF, can be enhanced with the addition of a "TKL" automatic parts removal system which can be retro- fitted. The TKL also uses an array of different sized suction cups to pick desired components out of the skeleton and sorting them into desired piles depending on the next process required. This is especially advantageous when cutting nestings of different jobs. Parts are automatically sorted from the skeleton before the operator intervenes. Up to 3 different packing stations are available for part-sorting.

A higher level of automation can be achieved with the Amada MARS system, which is designed according to customers' requirements. Accessible from either side, each shelf can hold up to 2 tons of different materials. Machinery is then connected to the MARS system via intermediate MPL systems. Material is fetched, checked for thickness and loaded automatically. Once sheets are processed, the full sheet can be removed or the TKL can be used before the skeleton is taken away for storage. Parts are then returned to the MARS system for storage until they are needed for the next process. By utilizing this latest technology, 24 hour production is possible without the need for staff to be present.

Semi-automatic or fully automatic bending available from Amada, offers the latest technology, namely the HG – ATC press brake series. Available in either a 100 ton x 3 meter or 220 ton x 4 meter configuration, these ATC machines are ideal for the reduction of tool change down-time, especially in today's production environment of small batch runs, requiring quick change over times.

All programming, sequencing and tool fitting is done in the production office before reaching the shop floor. The programs are sent via network to the machine, where the operator can see a full 3D view of the component, both blank and bent. The machine automatically loads the required tooling into position from the onboard tooling magazine. Once the bending process is completed, the machine will automatically change tooling again. A full 3 meter tool change can now be done in just over 3 minutes, while a similar manual tool change would take 15 to 45 minutes.

Tool life is substantially extended and incorrect tool usage and tool damage are eliminated. Programming software identifies tool capabilities such as maximum permitted tonnages etc. thanks to each tools' unique identification code.

For longer production runs together with total operator elimination, Amada offers the "AR series" of robotic benders. These benders incorporate robotics which pick the parts, bend the parts and stack or place as required. These, too, are available for different tonnages

EG 6013 – With light weight robotics for bending automation.

For more information, please contact Amada – Tel: 011 453-5442.

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FAS 7-AXIS SYNCHRONETTE CNC LATHES

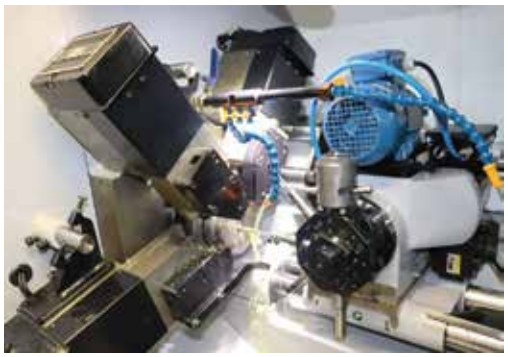
By Peter Frow, CEO of FAS Machine Tools

After a price-performance comparison against imported machines, FAS Machine Tools recently was awarded a contract by a Pretoria company for the supply of a 7-axis Synchronette CNC lathe to manufacture male and female pins for multi-pin plugs.

The specification of the Synchronette was a perfect match for the application as the machine boasts extremely quick cycle times, due to its ability to have as many as four tools working simultaneously on the workpiece. Also, the unique electromechanical chucking system allows bar feed-up times of less than a second.

Peter Frow, CEO of FAS Machine Tools.

The machine features an 8-station turret which moves in two axes, a dedicated turning slide and dedicated forming slide which both move in two axes and a dedicated parting slide. The turret is equipped with live tooling.



For this particular contract the parts are required to come off the machine complete with centring and drilling of the rear of the component. This is achieved by means of the rotating pickup head which transports the semi-finished part to the rear of the machine where a gang-tool array completes the machining of the part.

As the machine is intended to run twenty-four seven, it is equipped with an automatic magazine bar loader so that it can run unattended for extended periods of time.

FAS Machine Tools has larger Synchroturn CNC lathes running successfully in the field, which can handle bar sizes up to 60 mm and are supplied with either 26 mm or 36 mm spindles.

FAS Machine Tools 7-axis CNC lathes are significantly cheaper than equivalent imported machines, almost like a Porsche with a Volkswagen price tag.

For more information, please see www.faslathe.com or contact FAS Machine Tools on 031 702-7318.

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Manufactured By:

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MACHINING UNUSUAL MATERIALS WITH WIRE EDM FROM MITSUBISHI ELECTRIC

First. Unique. Different. This is the slogan of Hublot. The fact that Hublot belongs to a special world is already evident from its picturesque location. Nyon lies on the shores of Lake Geneva, in which in calm weather the snow-capped peaks of the Alps are reflected. The site is home to assets worth millions in a handy format: Hublot wristwatches are top-of-the range products of Swiss watchmaking, whose price range starts at CHF 7,000 and is in principle unlimited. This is also where the most expensive Swiss watch to date, worth CHF 5 million, was manufactured. Mitsubishi Electric's electrical discharge machines in the production shops with a total area of more than 8000 m² have also contributed in the production of some of these iconic timepieces.

On entering the reception area, the eye is immediately caught by large format pictures underlining the bond between Hublot and its ambassadors. These include celebrities from the worlds of sport, art and music, as well as personalities from charities and environmental protection. Working closely with them, Hublot is constantly creating new watch models using high-tech materials and with unique designs. Thanks to its creative designers and innovative materials specialists, these timepieces in the typical Hublot style are available in an almost overwhelming variety of versions, often in limited editions and, thanks to the masters of the watchmaking craft, equipped with various ingenious technical features such as tourbillons or power reserves of up to 50 days. The ambassadors include such illustrious names as Pelé, Usain Bolt, Kylian Mbappé, José Mourinho, Bar Refaeli and Chelsea FC. But one well-known company name also stands out in the list: Ferrari, the legendary sports car from Maranello.

Hublot and Ferrari as natural partners

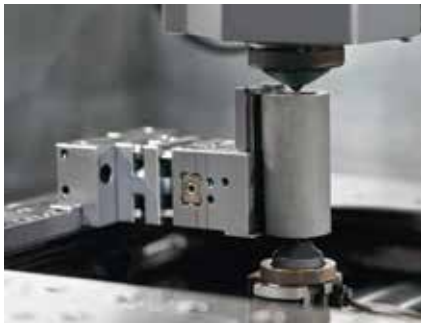
Hublot and Ferrari have much in common: you don't buy a Hublot watch because it tells the time more accurately than a mobile phone, and you don't drive a Ferrari on the in most cases speed-limited European motorways to be faster than other drivers. Instead, buyers choose these products for lifestyle reasons and also in order to enter the «family» of these brands (Hublotistas and Ferraristas). Manufactured with tradition and a great deal of craftsmanship, they are elevated to a standard that mass products cannot match. Buyers make their choice with greater deliberation on the strength of the products' beauty, aesthetics, progressiveness and crafted perfection. It therefore comes as no surprise that Hublot and Ferrari have been working in close partnership since 2011 to create watches that combine innovation, excellence and performance at the highest level. The first of these models, called Big Bang Ferrari Magic Gold, was launched in 2012, and one of the special features of its development was the use of a new, patented composite material made of ultra hard sintered boron carbide ceramic and 18-carat gold.

With its Mitsubishi Electric MV1200R, Hublot succeeded in making considerable progress in the machining of its globally unique material "Magic Gold".

Unlike gold as a metal, which is soft in any alloy and therefore easily scratched, this matt-gold dark material is extremely hard, thanks to the boron carbide, and scratch-resistant. The drawback, however, is that it is also extremely difficult to machine. All the same, Hublot chanced its hand with this project and successfully mastered the challenge. This success in turn marked the beginning of a story culminating in what are now four Mitsubishi Electric EDM systems in Hublot's production facilities: one MV1200R, two MX600 and one Start 43Ci EDM drilling machine.

Constant innovation – in the materials sector as well

"Hublot's strength is based on its distinct identity – the art of fusion – this unique ability to create timepieces that combine tradition and innovation," is how Ricardo Guadalupe, the company CEO, sums up the manufacturer's philosophy. This applies not only to the multitude of different models and versions constantly being created by its designers, but also to the wide range of materials used. These include not only such familiar materials as stainless steel, aluminium and titanium, but also such precious metals as gold, platinum and palladium as well as exotic metals like tantalum, tungsten, zirconium and osmium. As an alternative to metals, ceramic, carbon fibre and rubber are also used. Incidentally, the term "fusion" also has to do with the fact that Hublot, as part of its research and development activities, operates its own metallurgy department with a foundry enabling the watch manufacturer to develop and produce the desired materials itself.



1.5 to 2 kg of 18-carat gold goes into such a Magic Gold blank, depending on the version.

Production of individual parts in advanced industrial processes

"My department has to supply the watchmakers with individual parts that meet the highest quality standards," is how Production Manager José Almeida describes his area of responsibility. State-of-the-art technology is used for this purpose, because the watchmakers who later assemble the movements by hand from hundreds of individual parts with meticulous care must be able to rely totally on the quality of these components. Dozens of high-precision automated milling, drilling, turning and electrical discharge machines are lined up in production, producing small to tiny components, often with very complicated shapes, for the assembly of watch movements and cases. This combination of modern industrial

production methods for the manufacture of individual parts with the traditional, entirely manual watchmaking craft is also an expression of Hublot's specific "fusion" philosophy, the creative blending of tradition and innovation.

Another machining process is wire-cut EDM, which is used especially for components that cannot be milled owing to their extreme hardness or clamping problems. EDM is also frequently used for the production of small series or prototype components, as no complex clamping devices or special tools are required for this. In view of Hublot's commitment to innovation, this is of considerable importance

Machining of brass watch components in the oil bath of a Mitsubishi Electric MX600.

Mitsubishi Electric steps into the breach

"Because of its extreme hardness of 1200 HV, Magic Gold can only be cut or drilled by electrical discharge," Almeida adds. The company contacted Mitsubishi Electric. The initial advice given proved to be excellent, and, in addition, Mitsubishi Electric generously provided Hublot with an MV1200R water bath machine as a test system for several months.

And not only that: engineers were also sent to Hublot for several days to assist with the tests. In the course of three months of joint development work, all problems were satisfactorily solved and the procedure for the task was validated. For Hublot, quality and productivity improved significantly over the previous state of affairs, and Mitsubishi Electric succeeded in acquiring an attractive customer. All in all, a fine example of benefits all round.

Success also with oil bath machines

"After this achievement, it was only natural for us to also talk to Mitsubishi Electric when the two outdated oil bath machines were taken out of service," Almeida recalls. These machines are mainly used for materials that are used in watch movements. These include steels that would be at risk of rusting in a water bath. Other materials used in this area are brass, copper-beryllium and carbides. In addition to watch movement parts, the oil bath machines are also partly used to machine jigs and fixtures. In a comparison with different suppliers, the machines' ability to take changing material thicknesses into account during the cutting process proved to be the decisive criterion. In coping with sudden changes in material thickness – such as those that occur with pre-milled components – the Mitsubishi Electric systems proved superior. In the Hublot workshop, two MX600 oil bath machines are now also gently humming alongside the MV1200R.

For more information, please contact WD Hearn – Tel: 021 534-5351.

TIMESAVERS 22 RB SERIES ROTARY BRUSH MACHINE

At the end of last year, WWD Metaal from Nederweert took a new tube laser into use. It is now the first company in the Netherlands to purchase a Timesavers 22 RB series rotary brush machine. Owner Waelbers let his company grow, even during the corona crisis. "We look further ahead. No longer busy with tomorrow, but with next week."

Wil Waelbers walks through the large hall of his factory in Nederweert. A few people are working on making frames. His company is relatively young, just 21 years old. Waelbers founded his company in 1999 in an old barn in a farmer's yard. In the past two decades, WWD Metaal has grown to its current size – thirty employees, 3,150 m^2 of surface area and a production capacity of more than 50,000 hours per year.

WWD Metaal mainly processes stainless steel and aluminium in the broadest sense of the word, performing machining, glass bead blasting, water jet cutting (2D and 3D), tube and plate welding, robotic welding, (certified) welding and lately even manual laser welding. The company supplies the food industry, machine construction, medical sector and various mechanical applications in a wide range of industries. In addition, it produces customised design articles. The 'design' is also the explanation of the third letter in the company name: WWD stands for Wil Waelbers Design.

The 22 RB series is the most compact model in the Timesaver rotary brush machine range for deburring, edge rounding, finishing and laser oxide removal of various sheet metal parts.

Products without burr

WWD Metaal is a relevant player in the manufacture of frames that serve as the basis for customers' machines. Especially in the food and medical sectors, it is crucial to work with stainless steel and to be able to deliver burr-free.

"We have to think along with our customers. That means that we have to find solutions together with the customers, while not losing sight of the economic aspect," he says. Because price always plays a role and WWD can offer good quality at a price that is in line with the market, precisely because it pays a lot of attention to its own processes.

"When you start an assignment, you get to look at the way your customer has set up his business. We take a look at the way they are set up, and together we find out how we can make things run even more efficiently. Which order is best? Where are the possible obstacles? Helping a customer starts with looking and listening."

Planning

This attention to our own processes is also a must to be able to compete in this day and age. WWD therefore invests, even when the economy is tough in the Netherlands. During the previous crisis in 2014, Waelbers had a new building built that was three times the size of the previous one. He invested in the machinery by purchasing, among other things, a blast cabinet and a water jet. WWD Metaal therefore had the space, the machines and the knowledge to be able to offer a total concept when the economy picked up. Thus, the investments had helped.

A second improvement to his own process is through better planning. "It is difficult to get skilled workers, because everyone is looking for them. So we looked for a new approach. Instead of trying to speed up the process, we started to make it smarter.

Process optimisation with a deburring machine

In the past, a product that was processed in one department would sit for too long before being processed again in another department. Because the flow of work in the departments has improved, employees ask for work sooner. They can therefore move on to the next product sooner, which means that more work can be generated. Waiting times are shortened and rush orders or firefighting are now a thing of the past. In the past, orders would pile up in every department and rush jobs would result in a lot of overtime.

Chosen Timesavers compact deburring machine 22 RB series

Even now WWD Metaal is investing. At the end of last year, the company bought a tube laser from Bystronic. This was intended to speed up the production process of the frames. Now Waelbers has purchased the Timesavers 22 RB series. It is a new step in a better process at WWD Metaal, says Waelbers. The 22 RB series is a compact dry machine for deburring, edge rounding, finishing and removing laser oxide from sheet metal. The machine offers a solution for companies that do not have large capacity needs, but still want to have the commonly used features of the 32 RB and 42 RB series. Customers with limited production demand and budget can still use it to optimally deburr, round and finish parts. The 22 RB series can cost-effectively automate heavy-duty tasks such as grinding and manual edge routing, helping to optimise processes. Thanks to the Siemens PLC and HMI, the process and parameters can be adjusted automatically. In addition, the 22 RB series supports the use of cobots and can be integrated into a Smart Industry software platform.

WWD Metaal deliberately chose a small machine. "Our customers are mostly small and medium-sized enterprises in the central Netherlands. They come with smaller products and smaller series. A machine that is too large would not fit. For that matter, the size also plays a role. If you set up a line like us, it is also important that you can manage it spatially. Now the Timesavers is in line with the laser cutter.

Nesting

"This new development by Timesavers provides a more compact machine, but with the performance of a 'big boy'. We see that the quality is high. It has to be, because we have to make finishes that are perfect. The user in the food industry cannot damage his hands. That is a hard requirement. With this concept of Timesavers with the rotating brushes, the product is perfectly finished."

22-RB-Series Brushes.

Again, Waelbers cites the bigger picture. "In the overall picture, it is very important that our people do not have to work with a grinder or file." For a good flow, pieces must be completely deburred. The work process at WWD is structured in such a way that the laser is controlled by the work planner. The software takes care of the nesting. The operator then places the plates on the laser. After picking, the journey continues through the Timesavers deburring machine. Each product passes 'through the Timesaver' to be deburred.

For more information, please contact First Cut – Tel: 011 614- 01112.

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Max Operating Width	3734 mm
Max Operating Depth	2464 mm

TOS Table type boring machine - W100A

Cross travel of table in X Axis	1600 mm
Longitudinal travel of table in Z(W)	1250 mm
Working Surface of Table	1250 x 1250 mm
Max Workpiece Weight 3000kg	3000 mm

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- Mazak CNC Lathe - QTN200M
- Harrison Lathe - Alpha550
- Shenyang Lathe - CW6280C
- Kiheung CNC Milling Machine - Combi-U6
- Kiheung CNC Milling Machine - Combi-U3
- Haas Big Bore Lathe - TL-3B
- EMA Radial Drill
- Union Table Borer -BFT130-6
- Kiheung KNC - U1000 (2005)
- Kiheung KNC - U1000 (2007)
- Femco Slant-Bed CNC Lathe, Model HL-55S
- TOS Table type boring machine - W100A
- Stiefelmayer Coordinate Measuring Machine
- DEA 3-D Coordinate Measuring Machine

Data sheets for machanes available on **www.mtpsa.co.za**

Union Table Borer - BFT130-6

X Axis	3000 mm
Y Axis	2500 mm
Z Axis	1200 mm
Table length	1800 mm
Table width	2000 mm

Harrison Lathe - Alpha550

Ø over the bed	554 mm
Spindle bore	90 mm
Distance between-centers	1500 mm
Width of gap bed	216 mm
Bed width	400 mm

Kiheung KNC- U1000

Table clamping area	3600 x 900 mm
Max. Table loading	8000 kg
X-axis (table long travel)	3100 mm
Y-axis (spindle stroke)	1000 mm
Z-axis (vertical stroke)	1600 mm

Machine Tool Promotions (Pty) Ltd is facilitating the sales of assets on behalf of Tenacious Engineering (Pty) Ltd.

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BODOR LASER – A SUPER FACTORY

Bodor Laser, a huge manufacturer based in Jinan, the capital of eastern China's Shandong province and a forerunner in the ultra-high-power field of the global laser cutting industry impresses visitors with a white floor and at almost 30,000 square meters, the largest laser cutting equipment production workshop in the world. Bodor's R&D center is staffed with more than 100 top researchers, and millions of dollars are invested in R&D projects each year.

Bodor's almost 30,000 m² laser cutting equipment production workshop.

While production strictly meets European standards and international quality control, the company also leads the high laser power laser machine sector, with the first 30kw laser cutter and the first 40kw laser machine launched recently. To date the company has almost 700 12kw machines and over 40 20kw machines installed all over the world.

High Power Machine P model 12kW

The Bodor product portfolio includes high power laser cutting machines, fiber laser metal sheet cutting machines, high precision laser cutting machines, metal sheet and tube laser cutting machines, sheet cutting automation devices and coil laser cutting machines.

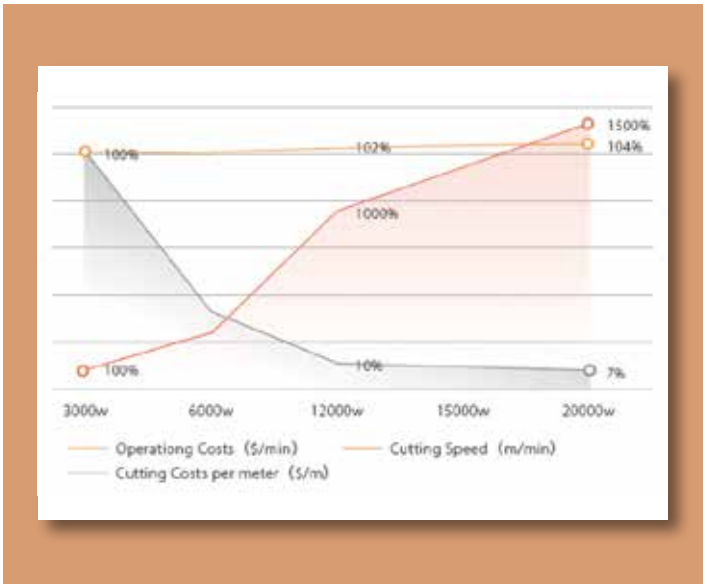
In 2019, Bodor Laser completed its 25kW and 30kW global debut, becoming a weather vane for ultra-high power laser applications in the industry.

Sheets and tubes cutting samples

The Bodor Laser 40kW ultra-high power fiber laser cutting machine made its global debut at the Bodor Laser Innovation and Research Center a few months ago. Now, the world's first 40kW laser cutting machine is redefining laser cutting.

During a press conference, Mr. Yang Xuguang, General Manager of Bodor Laser Research and Development said, "The ability of 40kW laser cutting breaks through the bottleneck of cutting thickness and creates new standards. With the all-round upgrading of cutting thickness, cutting accuracy and cutting speed, Bodor Laser 40kW makes more laser applications a reality and becomes a new benchmark in the laser cutting industry."

"While the maximum cutting thickness of Bodor Laser 40kW can reach 200mm, the comprehensive processing efficiency of Bodor Laser 40kW is increased by 50%–80%, the cutting of 20mm carbon steel can reach 6m/min and 30mm carbon steel can reach 2.4m/min."



Faster Cutting Speed + Less Costs = More Profit

This chart shows the trend of machine operating costs, cutting costs per meter and the cutting speed when cutting 10mm stainless steel. From 3kW to 20kW as you see, the cutting speed becomes faster and cutting costs lower as the power grows. However, operating costs in the same condition change rather stably. Comparing 12kW with 3kW in the chart, for example, the data shows you that operating costs increase only by 2% under 12kW, but prominently, the cutting speed increases by 10 times, and cutting costs are only one-tenth of a 3kW machine.

Professional Tube laser cutting machine T model

For more information, please contact Bodor – Email: Pauline.xu@bodor.com or Tel: +86 186 6039 2325.

SHARES OF BYSTRONIC AG NOW TRADED UNDER THE "BYS" TICKER SYMBOL ON SIX SWISS EXCHANGE

May 3, 2021 is a historic day for both, Bystronic and all its employees, customers, partners, shareholders and investors, because for the first time, the shares of Bystronic AG were traded under the "BYS" ticker symbol on the SIX Swiss Exchange.

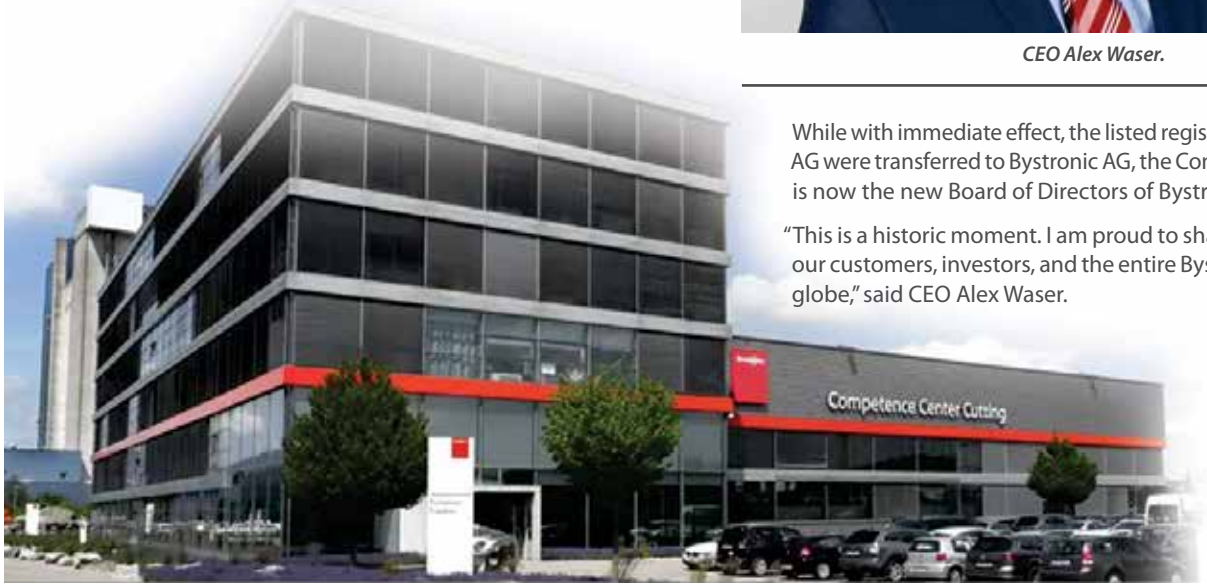
Bystronic is establishing itself on the capital market as an independent and future-oriented company. At the Annual General Meeting of Conzzeta recently, shareholders approved the change of name from Conzzeta AG to Bystronic AG. Bystronic AG is traded on the SIX Swiss Exchange under the new ticker symbol "BYS".

The change of name is the result of the strategic transformation focusing on the sheet metal processing segment (Bystronic) and the divestment of all other business operations announced by Conzzeta in late 2019.

CEO Alex Waser.

While with immediate effect, the listed registered shares of Conzzeta AG were transferred to Bystronic AG, the Conzzeta Board of Directors is now the new Board of Directors of Bystronic AG.

"This is a historic moment. I am proud to share this special day with our customers, investors, and the entire Bystronic team around the globe," said CEO Alex Waser.



Bystronic AG.

For more information, please see www.bystronic.co.za or contact Bystronic on 010 410-0200.

CHANGE AT THE TOP OF TRUMPF MACHINE TOOLS

Long-time Group Managing Director and CEO Machine Tools (CEO MT) Dr.-Ing. Heinz-Jürgen Prokop is leaving the company upon reaching the contractual age limit. Dr.-Ing. Stephan Mayer will become the new CEO MT and a member of the Group Management Board on July 1, 2021.

A change in leadership in the Machine Tool Business Division of the high-tech company TRUMPF: Stephan Mayer (40) will become the new CEO Machine Tools (CEO MT) and succeed Heinz-Jürgen Prokop (63), who will leave TRUMPF at the end of the fiscal year after reaching the age limit for members of the Group Executive Board. Stephan Mayer has been with TRUMPF since 2012, initially as head of the Organizational Development and Production and Quality Management central departments.

On July 1, 2015, Mayer took on the management of TRUMPF Hüttinger in Freiburg and led the subsidiary back to success. On October 1, 2017, he returned to Ditzingen as Managing Director of Production and Purchasing at TRUMPF Machine Tools.

Since 2019, Stephan Mayer has been responsible as President China. Stephan Mayer is responsible for all TRUMPF activities in China and manages the two locations in Taicang/Jiangsu and Jinfangyuan CNC Machine Co., Ltd. (JFY) in Yangzhou.

Dr.-Ing. Stephan Mayer, new CEO MT at TRUMPF in Ditzingen.

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PLASMA CUTTER 70 CT	
Description	**Article-Number**
Plasma Cutter 70 CT incl. Handtorch	77021810

BASISKIT STABLECUT PLASMA		
Description	**Scope of supply**	**Article-Number**
STABLECUT Kit Handplasma	Torch guide, plasma torch holder, packed in practical case	71607787

FAW TRUCKS COMMITTED TO KEEPING UP WITH MARKET TRENDS

Ongoing research and development (R&D) are key to the sustained growth and survival of any vehicle brand. The same goes for FAW Trucks which has, over its 27-year history in South Africa, become renowned for its quality products and ability to cater to the unique needs of the South African commercial vehicle market.

With the FAW Group Corporation – China's oldest and largest vehicle manufacturer – as its majority shareholder, the local operation is able to provide South African customers with products that have been researched and developed to excel in even the harshest working environments, without compromising on innovation, technology and comfort.

FAW Trucks places a high premium on R&D in order to not only maintain its leadership in the Chinese market, but also to ensure that it keeps up with the rapid advances being made in technology. Its R&D facility is based at the FAW Trucks manufacturing facility in Qingdao, China.

"The R&D centre greatly enhances the brand's technological research and development capabilities, accelerates development of new products, and strengthens its position in global markets," says Jianyu Hao, CEO of FAW South Africa. "One such global market is South Africa, where FAW Trucks is consistently ranked amongst the top sales performers on the sales charts."

The brand's local popularity can, in part, be attributed to the fact that all models sold in South Africa undergo testing to prove that they can withstand the unique – and often harsh – working conditions associated with African markets. In order to ensure that products live up to their reputation of being trucks that are built in South Africa, for Africa, most of the current model range such as the 6.130FL and 8.140FL as well as newer models such as the JH6 28.500FT are Euro 3 compliant.

Adding further peace of mind for buyers in South Africa and in other countries on the subcontinent, FAW Trucks offer warranties of up to three-years/600 000 km.

"In the highly competitive South African commercial vehicle market, durability and quality are key factors," explains Hao. "Customers expect their trucks to withstand a rough operational environment, but also expect the vehicles to be fuel efficient, lightweight and technologically advanced. They also want a wider choice. Thanks to the R&D facility in China, we are able to bring to market robust, high-quality vehicles."

A prime example of this continued innovation and progress is the fact that FAW Trucks is on the verge of introducing a new automatic model in the heavy commercial vehicle (HCV) segment of the local market. A new model in the eight-tonne segment will also go on sale here before the end of the year.

"These new models will carry all the hallmarks that FAW products are renowned for, namely strength, reliability and ease of operation," Hao explains. "They will also bolster our sales performance even further as we head into the second half of the year."

FAW Trucks achieved a significant milestone in its local history by taking the top spot in the Heavy Commercial Vehicle (HCV) segment of the local market for the first time in the first quarter of this year.

FANUC TO SUPPLY FORD PLANT IN COLOGNE WITH 500 ROBOTS

Automation specialist and world-leading industrial robot manufacturer FANUC has received another major order in the field of e-mobility. Scheduled for delivery in 2022, the company will supply the Cologne plant of Ford with around 500 robots to assist in the construction of electric car bodies.

The Ford manufacturing facility in Cologne is currently undergoing transition into the Ford Cologne Electrification Center, a development and production site for electric vehicles that will serve the entire European market. In 2023, the carmaker expects its first purely electric high-volume passenger model to roll off the plant's production line. Ford has also announced that it will only offer battery-electric passenger cars in Europe from 2030.

Automation specialist supports conversion to e-mobility.

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