decomagazine

THINK PARTS **THINK TORNOS**

62 03/12 ENGLISH

Who is able to manufacture such parts?

MultiSwiss: six out of six

Three generations, one name and one destiny

Almac CU 2007 & 3007
Micro 8/4
Delta II
Delta 38
Swiss ST 26

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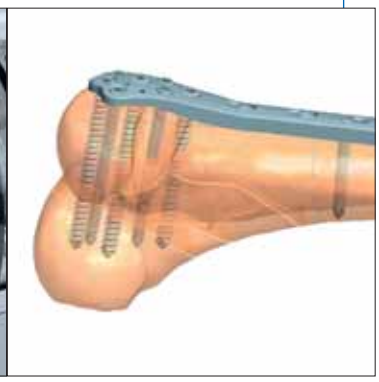

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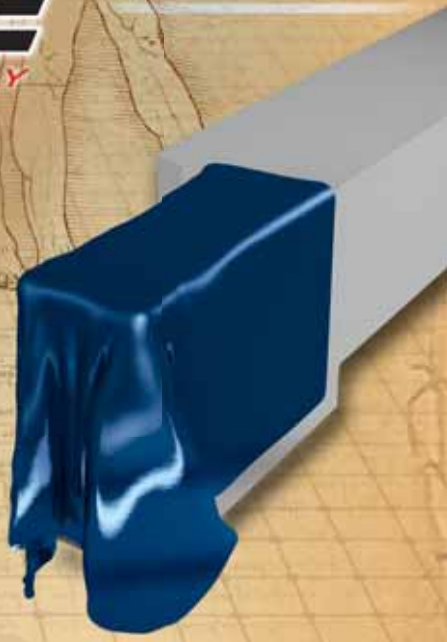

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TIME FOR IMTS…

As we move through a very interesting 2012, we are quickly informed that, once again, it is time for the International Machine Tool Show (IMTS) in Chicago! 2012 has so far been a year of much apprehension with many of our customers. Questions as the political elections hanging in the air and watching as the global markets work to establish a firm footing have been holding many companies back in an "wait and see" mode and, at the same time, giving these companies the opportunity to look internally on what they can do to improve processes and efficiencies. The result, smarter and more informed customers will be showing up at IMTS with a set goal and expectations of what they need and how the products they purchase will drive them to their end goals.

For Tornos, this is a very exciting time. As luck and planning would have it, the opportunity to be able to show the US market the diverse range of new products Tornos has to offer will definitely help our customers to reach a successful conclusion to their goals and set new standards for their future success!

This year at IMTS, Tornos will be spreading the news of our new Cyklos surface processing equipment which is a self contained anodizing and plating system with a very small footprint to fit into any size shop and, just like the other Tornos products, the system is designed to handle large volume manufacturing ranging from 5 to 10 million parts a year. Although we would love to have a system at the show, this year we are going to "virtually" have the Cyklos and, along with the Cyklos Product Manager, be able to answer any of our customer's questions.

We will are also very excited to be able to show and demonstrate for the first time in the US market, the MultiSwiss machine. The MultiSwiss has been designed from the ground up with the operator and productivity in mind. While giving the benefits of a Multi Spindle machine, the control simplifies the process to the ease of a Single spindle mentality. The control with the built in TB Deco software along with the large color touch screen help make this machine one of the simplest, most powerful controls in the market. From an operator standpoint, the integrated barfeeder and chip conveyor with the ease of set up and accessibility to the work zone makes this machine simple to run even the most complex of parts.

Along with the MultiSwiss, we also have the new EvoDeco line of machines. The new EvoDeco 16 will be demonstrated on the show floor. Not only is the machine thermal stabilized but the base of the machine offers increased rigidity allowing for higher quality finishes and precision. The new control with integrated PC and large color touch screen is partnered with the new EvoDeco line and allows the operator ease of programming at the machine and utilizing the on board TB-Deco ADV.

The Almac FB1005 bar milling machine will be demonstrating at the show why this customizable machine has unlimited possibilities for any market sector while still providing excellent productivity and cost effectiveness.

From the ESCO side, we will be demonstrating the D5 Ultra coil fed machine. ESCO, long known for its quality, productivity, and reliability is a perfect compliment for the Tornos line.

We also have one more machine being launched into the Tornos US family at IMTS and the first showing on the International stage! In order to see and hear about this machine, you will just have to visit booth S-8666. I can guarantee, you will not be disappointed!!!

We look forward to welcoming you at IMTS!

Jon Dobosenski
Vice President of Operations,
North America

EVER CLOSER TO THE CUSTOMERS' NEEDS

Users of machines designed for creating straightforward parts have found a solution that offers a very competitive quality and options to price ratio. After three years on the market with the Delta 12 and Delta 20, Tornos is now offering new versions of these machines that feature improvements to further consolidate their efficiency.

Tornos Product Manager, Mr Serge Villard comments: *"Delta machines have really proved their worth and are an important part of our product range. As always, the market wants to be able to do more with straightforward machines, without an increase in price. Today, we are unveiling new versions that are a step in that direction"*. When asked about the risks that these Delta II machines pose for EvoDeco products, Mr Villard was emphatic: *"Even though the Delta machines offer more, there is no chance that they can replace machines as comprehensive and complete as EvoDeco machines. They do however enable customers that create straightforward parts to slightly increase the scope of their activities."*

See the improvements via the menu

Improved rigidity of the counter spindle

The new counter spindle system allows more demanding machining to be carried out in secondary operations. Users that face these problems were shown the new version of the Delta 20 and placed great emphasis on the importance of this improvement. It is clearly a benefit that increases the machining possibilities.

Improved rigidity of the 20 mm spindle

The 20 mm model not only houses the reinforced counter spindle but also a new main spindle with increased rigidity. This enables the machine to carry

out larger numbers of axial and radial machining operations. The clamping force has consequently been adapted and the maximum speed of the spindle has been optimised to 10,000 rpm to efficiently meet the needs of customers.

New radial rotating tools

Continuing this strategy of improvement, the engineers at Tornos have increased the rotation speed of the radial rotating tools with the aim of boosting the machining performance. The latter is now capable of reaching speeds of 8,000 rpm. Until now, Delta and machines in the same category had the speed limited to 5,000 rpm. Thanks to this new unit, Delta can offer machining performance that is normally reserved for products in a higher range.

Numerous other improvements

To make best use of these various developments and to expand the scope of parts that can be created on this product, the ejector stroke has been increased from 40 mm to 75 mm.

In addition to these mechanical improvements, significant steps have been made to increase user comfort for this machine. For example, in terms of connectivity, the machine houses an ethernet connection and a USB port. Delta II retains all the advantages of previous models, namely the excellent access to the machining area and significant autonomy.

There is no doubt that the Delta II will quickly find its niche in the market and will continue to meet the needs of a customer base looking for a straightforward machine able to efficiently produce precision parts.

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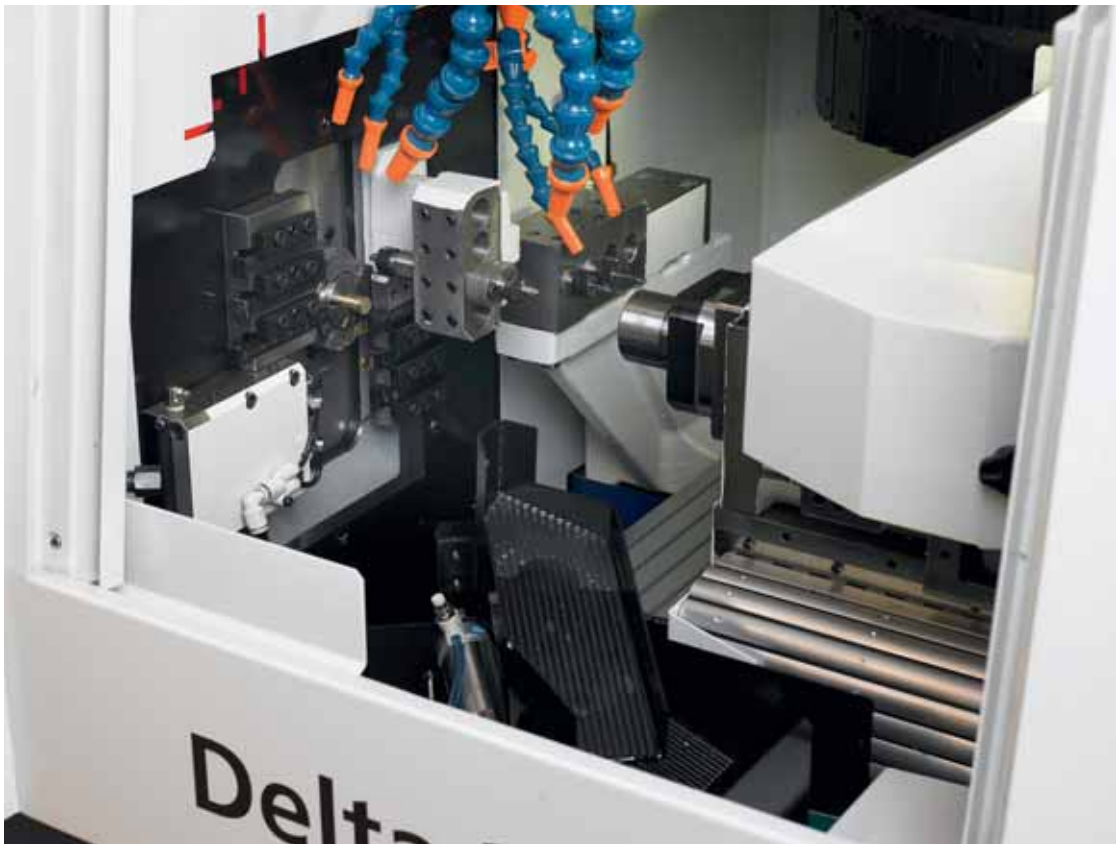

BEYOND THE 32 MM BARRIER

With the arrival of the Delta 38/5 machine, Tornos has slightly increased the range of parts that can be produced through traditional bar turning. With a capacity of 38 mm, this turning machine, which has 5 linear axes and two C axes and can hold up to 31 tools, offers a number of concrete advantages to boost its market appeal. Customers are not mistaken.

John McBride, the General Manager of Tornos UK, explains: *"The Delta 38 machine has provoked a lot of interest among our customers; not only does it offer them a lot of extra dimensional capacity, it's also a very robust and rigid machine that allows them to remove a great deal of material. The spindle/guide bush system with integrated motor also allows the drop length to be drastically reduced compared to conventional technology".* Tornos has just unveiled a new version of this machine: The Delta 38/5BL operating without a guide bush. The Delta 38/5 machine is now a little closer to an 'all-purpose' machine.

High torque and power

The turning machine is ahead of the main direct competitor machines in terms of both diameter and power. Weighing 4.6 tonnes, with a main spindle generating a maximum power of 11 kW and a torque of 70 Nm, combined with 20 x 20 cross section turning tools this is a high-performance machine that can remove large quantities of swarf.

With or without guide bush? It's up to you

For producing short parts (length up to around 2.5 times the diameter, maximum 100 mm), Tornos recommends the Delta 38/5BL. Operating without a guide bush, this machine can be used to machine bars with a lower level of finish than is obtained on a version with a guide bush. This can result in savings on the cost of materials.

Substantial savings

Not only is the loaded material less expensive; the drop length is also reduced as much as possible. *"For short parts, the BL machine is a must. The diametric*

tolerance of the raw bar becomes less critical and the drop length is reduced to its simplest form; this helps to bring down material costs", explains marketing manager Brice Renggli. The machine is very competitively priced, meaning users benefit on all fronts.

Two basic versions

The versions with and without a guide bush offer a comprehensive range of equipment. Both include a 4-position radial tool holder block (3 x ER16, 1 x ER20) offering 8 turning tool positions, as well as a horn with 5 positions for axial machining in both operation and secondary operation. The Delta 38/5 is also equipped with a motor on the rear platten, allowing a dual drilling/milling device that can be fitted with up to 4 rotating tools (without rigid tapping) to be mounted for both operation and secondary operation. The secondary operation tool holder block can be fitted with up to 5 fixed or rotating tools. This means that the Delta 38 versions with and without a guide bush can be equipped with up to 13 rotating tools.

For straightforward to medium-complexity parts

In addition to the well-known Deco and Sigma machines, the Delta range offers all the equipment necessary for producing straightforward to medium-complexity parts at a very attractive price. It's a safe bet that the Delta 38 machine will achieve the same level of success as the Delta 12 and Delta 20 machines.

The Delta 38 will be on show at AMB (hall 3, stand C14). Find out more at www.tornos.com/fr/content/delta-38-1

MAIN ADVANTAGES OF THE DELTA 38/5

- Productivity
- Power
- Precision
- Quick and easy to adjust
- Wide machining area allowing efficient swarf removal
- Operates with oil and soluble oil
- High autonomy
- Very attractive price

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ONE AIM: SIMPLICITY

Purchasers of the latest generation EvoDeco and Deco machines may have noticed a few changes in the way they are used. These changes, which might seem confusing at first, are intended to simplify the use and increase the reliability of the machines.

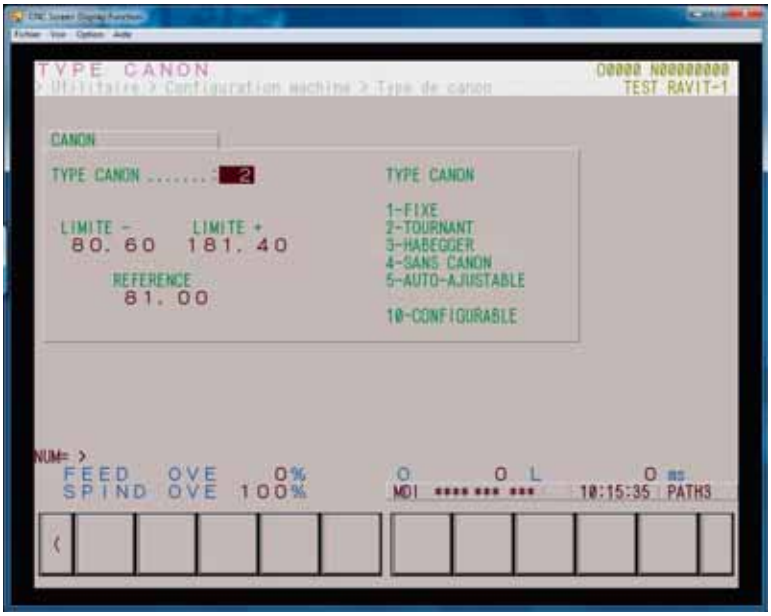
The Fanuc company, a long-time partner and supplier to Tornos, supplying numerical controls, took the decision to discontinue delivery of its 16itb CNCs, that were used for Deco and EvoDeco machines. To comply with new European standards governing safety and technology, the PNC system has been abandoned in favour of PTO technology on a new generation control, the 31iB. Tornos has therefore had to adapt the management software for its products to comply with the new standards. An in-depth study was undertaken into the software architecture, in order to make it more ergonomic and efficient for users.

decomag met with Michael Lanz, in charge of machine software at Tornos.

decomagazine: Mr. Lanz, what are the main differences for customers?

Michael Lanz: First of all, I must stress that we are talking about the machine software. The programming is still done using TB-Deco, with all of its well-known advantages. We adopted a modular and evolving approach for our new machine software. For example, it is possible for us to easily add on extra modules. They are immediately applicable on all machine platforms. This reduces the development time. In addition, developments to one type of machine are automatically applied to all the others. Our customers therefore benefit from a more extensive offering as well as more stable and reliable software, as it has been tested on more machines.

It is also easier for us to incorporate the customer's requirements into the software; thus, specific developments, such as the integration of a special OEE management system, can now be done easily. And EvoDeco machines are also equipped with a PC. This opens up completely new horizons for our customers. The machine can be controlled remotely if it is connected to the network. This enables our technicians to carry out initial diagnostics straightaway, via computerised access from the after-sales service. The system allows them to quickly identify all the machines.

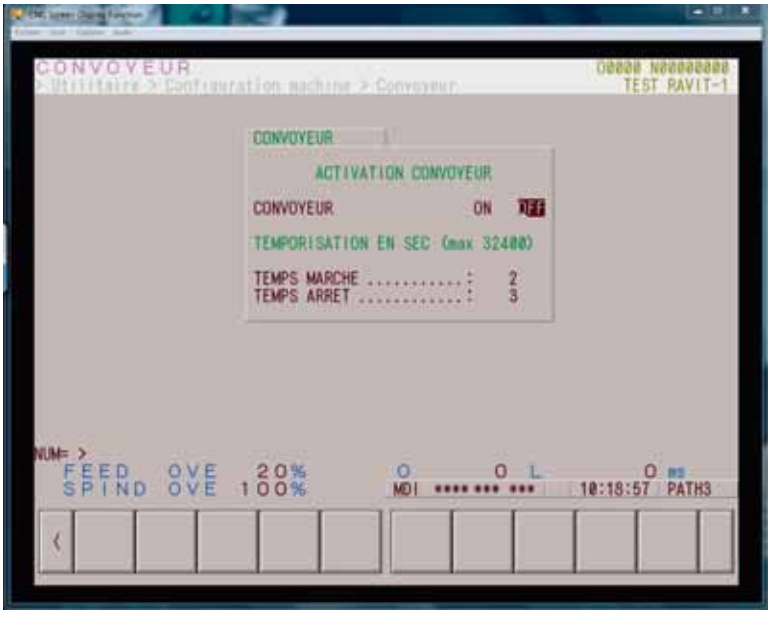


dm: Are there major changes compared to a Deco or EvoDeco equipped with a PNC control?

ML: Yes, as we decided to switch all the functions to the new software right from the start. We felt it was essential for these changes to happen in one go, rather than bit by bit, to make the learning process easier.

dm: Can you give us an example of how things have been simplified?

ML: Of course. All the functions are now organised into menus and pages. Certain functions, such as the guide bush change, have been automated. Below you can see an example of an EvoDeco 16 machine. Only one parameter needs to be entered to switch to 'work without guide bush' mode (the machine software is available in 5 languages).



Another example: it is now very easy to activate the conveyor and set its time delays via this very simple menu.

dm: You mentioned the future - how will the software evolve?

ML: We have planned four updates for each year, and all will be announced in the deco magazine. This will give us the opportunity to explain the changes to our customers in detail.

We'll be looking at this new section in the next edition of decomagazine.

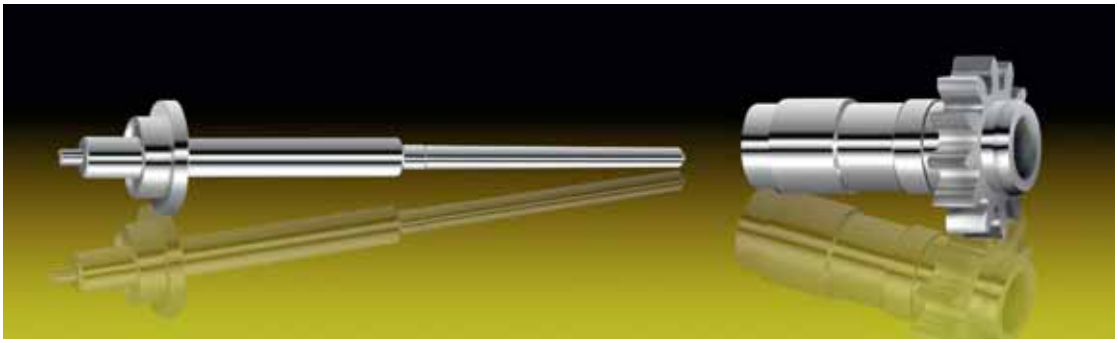
THE WATCHMAKING SPECIALIST… NOW WITH A GUIDE BUSH SYSTEM

Since 2006, watchmakers and bar turners creating small and very precise short parts have been able to rely on the Micro 8 turning machine from Tornos. Originally designed for creating spindles for hard disks, the very high level of precision offered by this machine quickly won over specialists from the watchmaking world. Now, a new version is on its way!

With almost 200 machines installed with watchmaking suppliers in Switzerland (out of over 400 machines sold), this turning machine, which works without a guide bush has been championed by the specialists in this domain. Mr Schockle, in charge of Tornos' operations in German-speaking Switzerland, explains: *"The Micro 8 is the machine most suited to creating watch screws. Our customers are very pleased with both the simplicity and the performance offered by the machine"*. Mr Almeida, his counterpart for French-speaking Switzerland, adds: *"Five customers own more than 20 machines and the only thing limiting a greater take-up is the length of the parts that we can machine"*. For a machine working without a guide bush, the length is limited to approximately three times the diameter. This explanation serves as an introduction to the birth of the Micro 8/4: the same machine, but fitted with a guide bush!

A guide bush at a bargain price

Brice Renggli, Head of Marketing at Tornos comments: *"Watchmaking is no different to other*



markets when it comes to the cost price of parts. By taking the tried and tested Micro 8 machine as our basis, we are able to offer a new version fitted with 4 axes and working with a guide bush at a highly competitive price. We are convinced that the machine will appeal to watchmakers as well as manufacturers from many other sectors." To be able to put forward a highly attractive product, two tools have been removed from the 'conventional' Micro 8 machine range (X2) and it is available in three basic versions.

Three versions to meet the needs of the market

Mr Villard, the Tornos product manager behind this product, explains: *"The Micro 8/4 turning machine is available in a 'turning' version, fitted with an 11-position tool holder plate and 4 fixed axial tools for main and secondary operation. Additionally, there is a 'milling' version with a plate for 8 chisels, 4 fixed axial tools for main and secondary operation and the S11 motors with two transverse devices and a 'gear hobbing' version with a plate for 8 chisels. It also offers the S11 motor with a gear hobbing device. All these versions are equipped with a fixed guide bush."* Depending on the equipment, prices range from CHF 135,000 to 155,000 (€ 112,000 to € 130,000 Euro).

Simple to set/adjust

The collet replacement and the settings are the same type as those offered to users of the Deco 10 whereby everything can be set from the front. Mr Schockle explains: *"For our customers, this does not just affect comfort, it also offers significant*

savings in time and therefore money". The Z1 stroke is 50 mm (more if required) and the tools and devices fitted on the platten of Micro 8s are already on the market.

With or without guide bush?

While the Micro 8 has been incredibly successful, this is only because the market for a machine that creates short parts was waiting for an effective solution. But for some users, the length of the parts that can be created is highly restrictive. They no longer have to choose! The Micro 8/4 machine is equipped with a fixed guide bush that opens up the market for 'long parts', but with a simple kit, it is also possible to work without a guide bush, as it is with a conventional Micro 8.

The end of cam-type machines?

Since the arrival of the Tornos Deco in 1996, many generations of machines have followed and more than once, the cam-type machine has been written off. When asked about this, Mr Renggli tells us: *"Yes, Tornos has regularly put forward machines with dimensions more or less identical to cam-type machines with the aim of replacing them. And this is what has been happening! The universal cam machine does not exist just as the universal NC does not exist. Depending on the complexity of the parts, the size of the runs, the desired productivity and so on; some customers have replaced cam-type machines with the Deco 10, the Micro 8 or the Delta 12, for example. The Micro 8/4 is not going to replace all cam-type machines, but we are convinced that the market will react very positively to this new machining solution".*

Another section of the market covered by cam-type machines may well switch straight to the Micro 8/4.

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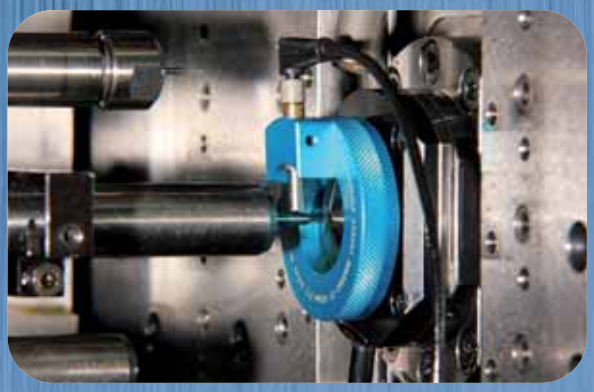

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WHO IS ABLE TO MANUFACTURE SUCH PARTS?

A number of companies work in the field of bar turning and often, despite having skills that deserve recognition, they barely market themselves, relying purely on word-of-mouth to bring them new contacts and orders.

From left to right, Juan Arrieta, CEO, Heinz Krattiger, former CEO, Heidi Widmer, administrative manager and Erich Krattiger, production manager, all members of the Supervisory board.

A. Krattiger AG in Oensingen, Switzerland, fits this trend. Mr. Juan Arrieta, the company CEO and son of the company founder states: *"We offer strengths and special skills of course but we rely heavily on word-of-mouth to promote our ability and our expertise. We often acquire new contacts when potential customers are looking for a company using cutting-edge skills and our name is mentioned to them".*

Everything for TB-Deco

The first strength highlighted by the manager of the company is the fact that everything was focused on Deco and TB-Deco: *"We quickly decided that Deco was going to give us significant competitive advantages and we pushed the concept to the full,"* explains Mr. Arrieta. And this desire translates into providing intensive training for the company's bar-turners, who must be versatile and able to perform all the programming, set-up and maintenance operations.

PTO, Transmit and much more

The company's bar-turners know the machines inside out and the CEO has spent several years working within the single-spindle Business Unit at Tornos - needless to say, there's no point trying to pull the wool over their eyes! *"We have a real command of the PTO language of the new EvoDeco range, as well as the TB-Deco software. Whether we need to programme an eccentric or complex milling operation into the Transmit function, we always find the right solution,"* explains the CEO.

KRATTIGER AG IN BRIEF

Founded:	1946
Developments:	Moved to Oensingen in 1948. 1962: Current plant constructed; extended in 1974 and 2004.
Machine inventory:	18 Deco 10, 13 and EvoDeco 10 and 16. Constant renewal.
Capacities:	Parts 0.5 mm to 16 mm in diameter of all complexities and for all production runs.
Markets:	Watchmaking, medical, electronics and equipment.
Countries:	Switzerland, Europe and USA.
Skills:	bar turning, deburring, ending, polishing, rolling, assembly.

EvoDeco, even closer to perfection

On the topic of the new EvoDeco range, Mr. Arrieta is very positive: *"The Deco 10 machines no longer need to perfect their reputation; they have been recognised by the market for a long time. With the new EvoDeco, Tornos is moving even closer to perfection. The working conditions are better due to powered spindles that are quieter than the previous solution. With regard to temperature stabilisation, the temperature of the machine rises much faster and then remains perfectly stable. Products are manufactured every day in our workshops with tolerances of +/- 3 microns without any tools requiring corrections"*.

Customised tools to go the extra mile

The second strength which is important in the eyes of the company's manager is the extensive tooling knowledge of Mr. Erich Krattiger, who is the nephew of the former CEO and extremely passionate about bar turning. He explains: *"If we want to produce parts at competitive prices, we must be able to rely on tools that have been manufactured intelligently and which optimise production"*. The company develops and therefore manufactures its hard metal tools in-house (treatment operations are performed by a network of regional partners). This not only enables the company to create tools that are specifically adapted to the operations being performed, but also offers the possibility of being ultra flexible.

Mastering processes - a success story

Having the best machine and the best tools is not enough. Mr. Arrieta tells us: *"We very much have to manage all of the processes with skill. For example, reducing the cycle time by a few seconds but having to re-grind the tools more often isn't very logical. The same is true for the cutting oil; wanting to make*

savings on the product price but having a reduced tool life isn't an astute approach". With extensive experience in bar turning and considerable knowledge of the processes, Krattiger guarantees that all of the processes will always be optimal, for the greater benefit of its customers.

Swiss quality; not taken lightly

The company makes a point of always delivering parts of exceptional quality and no parts have been returned for several years. To achieve this level of excellence, not only is production optimised but quality control has formed an integral part of all of the processes. Meticulous cleanliness and attention to detail with a view to achieving perfection complete the equation. In the workshop housing 18 Deco machines, nothing distinguishes the first Deco 10 delivered in 1997 from the last 3 EvoDeco delivered this year; all shine brightly as if new. Mr. Krattiger tells us: *"The working environment influences the quality of our products, but also the quality of life of our employees - it's very important".*

A triumvirate of skills

The CEO concludes: *"In order to ensure customer satisfaction, we have had to implement the triumvirate that includes: the machine manufacturer, our partners in all of the processes and our own skills. We all come from the same region located in the heart of the micro-technology sector, we speak the same language and share the same "micron genes"; this is the recipe for success that we apply in order to always offer our customers made-to-measure solutions".*

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ALMAC CU 2007 & 3007: UNIVERSAL MACHINING CENTRES

In 2008, Tornos purchased Almac: a company specialising in compact, very high-precision machining centres. The machines produced by Almac were primarily intended for the watchmaking field. Highly specialised and customised solutions were still being produced for the watchmaking industry.

This division enabled Tornos to offer solutions in addition to its turning centres, opening up new markets to both Tornos and Almac, particularly in the medical sector. In order to continue developing these complementary solutions, the Tornos group division is unveiling a new machining centre offering an unrivalled price/performance ratio at the BIMU and AMB trade fairs. Decomag interviewed Roland Gutknecht, Director of Almac SA.

decomagazine: Mr. Gutknecht, why this new development?

Roland Gutknecht: The joining together of Almac and Tornos opened up new markets to us. We benefit fully from Tornos' worldwide sales network, and our two flagship products, the CU 1007 and the FB 1005, have been very well received on the market. However, we quickly realised that in order perform well in these markets we needed a new product with an increased stroke and a more affordable price to meet the new demand coming from the market. And in fact, we presented not one, but two new products: the 2007 and the CU 3007!

dm: What is the difference between the two products?

RG: Why don't we start with what they both have in common. Both machines are equipped with HSK 40E tool holders, which means we are evidently in a different league to our CU 1007 product. Both machines are equipped as standard with a 24-position tool magazine, with the option of 40 positions. The chip-to-chip time is less than 3 seconds. The spindle can reach speeds of up to

20,000 rpm at a torque of 24 Nm, with feed speeds of up to 48 m/min on both machines. Both machines offer a very high level of performance, and the CU 3007 has a longer X-axis stroke than the CU 2007; the stroke distance has increased from 500 mm to 700 mm. A Y-axis stroke of 400 mm and a stroke of 330 mm take us beyond the dimensions seen up to now on Almac machines; and all at a very competitive price.

dm: So is this what you would call a straightforward machine?

RG: No, both machines offer two additional axes as an option: a C-axis and a B-axis. The FANUC 31iB-5 allows us to offer 5-axis simultaneous machining on both products. Like the Group's turning division, our division specialises in the supply of machining solutions rather than machines, and we're continuing in the same vein with our new products.

dm: The market is highly competitive - how do you stand out?

RG: There are many ways, but there are certainly a lot of strong competitors in this market; however none of them has our machining experience so our knowledge and our service are our major differentiators. Another factor is that Almac has always designed production machines, a concept deeply rooted in the DNA of our company. This also applies to the CU 2007 and 3007, and experienced observers will notice immediately that the machines are larger than their direct competitors. This is because the main problem encountered by our customers was swarf removal. To ensure optimal processing of the swarf flow, we spent a lot of time defining the ideal evacuation angle in the base of the machine. The machine has several automatic cleaning systems which enable any swarf trapped inside the machine to be dislodged. We also incorporated a large oil tray to ensure efficient overall management. Of course, the machine is equipped with a cleaning gun, and also has a removable chip conveyor. An oil mist extractor is also included as standard.

dm: Where does the machine sit in the existing range of machining centres?

RG: With strokes of 250 mm x 120 mm x 230 mm, the CU 1007 covers the market for small parts requiring very high levels of precision and finish. The CU 1007 is meeting the needs of many customers operating in the microtechnology sector; even the most demanding are impressed by its performance. We hope that the CU 2007 and CU 3007 will enable us to meet the need for a larger dimension range, and to bring to the market the expertise we have developed to provide solutions for our demanding customers.

dm: In terms of customers, which markets are you targeting with these two products?

RG: We are primarily targeting 4 of Tornos' market segments, namely automotive, electronics, medical and micromechanics. These machines are particularly well suited to these sectors thanks to their high performance and very competitive price.

dm: And when will these two new products be available to customers?

RG: The CU 2007 will be available in the autumn; it will also be on show at the AMB and BIMU trade fairs. Come and see this surprising machine. The CU 3007 will be available at the start of 2013. It represents a new approach for Tornos in the field of milling. With our renowned turning solutions we are now positioning ourselves as a supplier of complete machining solutions in both turning and milling.

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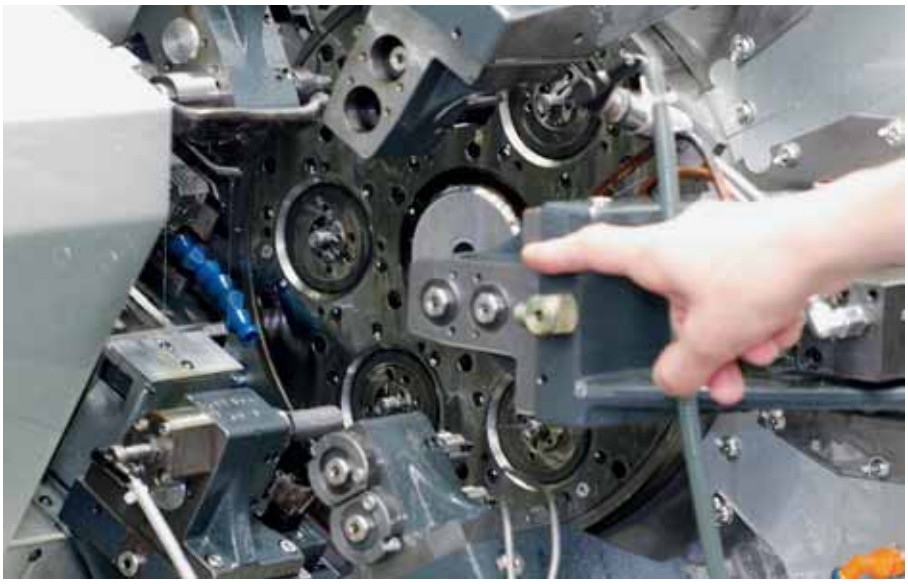
MULTISWISS: SIX OUT OF SIX

Michel Präzisionstechnik AG is a leading manufacturer that supplies some of the biggest automotive subcontractors, including Bosch and Continental. The parts it produces must meet rigourous specifications. In order to ensure continued profitability and quality into the future, the company has invested in a Tornos MultiSwiss. Equipped with six spindles, this machine uses torque motor technology and offers high levels of thermal stability, productivity and flexibility.



Overview of the 6-spindle MultiSwiss from Tornos. Beautifully versatile: the Z axis guided by hydrostatic bearings, variable indexing and the spindle speed enable a wide variety of highly complex parts to be machined.

It is rare for a company to make such a positive impression as Michel Präzisionstechnik AG. In addition to its perfect technological organisation, its employees - from the machine operators to the director, and not forgetting the head of production - all conduct themselves with a warmth and politeness that can only be described as exemplary.

This welcoming atmosphere could well be the result of the recent investment in a Tornos MultiSwiss in January 2012, SMM's visit or other factors, however that is not the subject of this article. What is clear is that all of the MultiSwiss 6-spindle machine operators look decidedly happy. Only Tornos' competitors may seem downcast, but that's another story altogether.

The Tornos-developed MultiSwiss adopts a completely new technological approach. The head of the Multispindle turning team at Michel Präzisionstechnik AG, Mentor Ramadani, explains this in clear terms during an interview with SMM: *"Tornos has managed to develop a multispindle machine which combines the advantage of a single-spindle - flexibility - with that of a multispindle - productivity"*.

All but child's play

The Grenchen-based company, which employs 160 staff, has thus far had no such machine. As a subcontractor for major automotive manufacturers including Bosch, Continental, Caterpillar and Delphi, the precision manufacturer has to meet the most exacting specifications. Among other factors, high precision, productivity and thermal stability, not to mention process safety, are vital.

The company manufactures precision parts for injection systems (diesel and petrol engines), braking

Pierre Vogt, Sadik Cubukcu, Mentor Ramadani and Mustafa Semiz all four look very satisfied; the thought of being able to go back to work on the MultiSwiss after the photo...? The machine in the background operates as the three teams rotate.

systems and gearboxes, and a tolerance of 1/100 mm is almost always a must. And there is no shortage of challenges, with this tolerance often needing to be reduced down to 2/1000 mm for series production. This is by no means child's play. However, thermal stability is not the only field in which the MultiSwiss has proven its worth. With regard to thermal stability, a sophisticated cooling system ensures that the temperature of the oil used by the cooling circuit is kept within a narrow tolerance. This means that, following a brief heating period, the machine can produce high-precision parts in non-air-conditioned premises.

When asked whether the machine can meet the precision specifications for manufacturing the parts, Mr. Ramadani is clear and to the point: *"If it couldn't, we wouldn't have bought it".*

Complete machining thanks to the counter spindle

Anyone familiar with the world of bar turning knows the vast range of requirements that turning machines must meet. Process safety and precision are basic requirements, but there are many more which are designed to exploit the machine's full potential. Mr. Ramadani continues: *"At the moment, we use the MultiSwiss to produce parts for the automotive industry with a maximum bar diameter of 14 mm. We had previously been machining these parts using a multispindle machine. However, we couldn't produce each part fully on the machine as there was no counter spindle. This meant we had to finish machining the part on a second machine, a process which cost us time and money".*

The counter spindle allows parts to be machined in their entirety. Using a MultiSwiss equipped with two tools, an operation and a secondary operation can be performed in a single pass. In most cases there is no need to use a second machine, which not only reduces the required space but also boosts productivity by up to 30%.

Spindles mounted on hydrostatic bearings

Tornos has developed an innovative, high-end technological solution: hydrostatics. Mr. Ramadani gives an enthusiastic presentation of the solution: *"Thanks to hydrostatics, the machine has excellent damping characteristics which reduce vibrations during the machining process. This has positive results for the tolerance, surface quality and – a critical factor – process safety. The hydrostatic spindle bearings also reduce wear on the tools, resulting in lower costs. I would no longer want to do without hydrostatics. It's one of the key sales arguments for the machine".*

Great drilling and milling flexibility

In the automotive industry, there is a general trend towards reducing batch size and increasing machine flexibility. In addition to independent spindle speeds, the possibility of indexing the different spindles offers significant advantages in terms of flexibility. The machining operations - turning, drilling, sanding and milling - can be performed in all 6 positions. *"For certain parts, the variable spindle speeds are really useful"*, reveals Mentor Ramadani. *"The MultiSwiss also has a spindle stop with an indexing function, making it possible to drill and mill both axially and radially in all the working positions to meet the part requirements. Eccentric drilling and special offset centring are no problem for the machine. The polygon turning device can be used to machine polygons. Generally speaking, this machine concept offers a level of production flexibility which nowadays is indispensable, without compromising on productivity"*. The 6 independently-controlled powered spindles and the linear-drive tool holder, which offers great acceleration, also help to increase productivity.

SPINDLES AND BARREL

A compact structure

Pierre Vogt, Turning manager, highlights another critical aspect of the MultiSwiss: *"Although the MultiSwiss is a 6-spindle machine, it requires hardly any more space than a single-spindle machine. And it offers four times more productivity. The productivity per square metre is still a decisive factor when we are considering a new investment. If we had to produce parts on a single-spindle turning machine, we would need four machines to achieve the same productivity. That would give us four different batches, making it more difficult to guarantee quality than if we used a single machine to produce one batch. These are all aspects to be taken into account before investing"*.

The MultiSwiss is a compact masterpiece. All of the peripherals are built into the machine: electrical cabinet, loader, filtration device for spindle oil (5/1000 mm), filtration device for cutting oil (5/100 mm), water chiller, water/oil heat exchanger and coolant pump (up to 80 bar). And all in a unit measuring just 6 x 1.5 x 2.2 m (LxWxH) - quite a feat. And finally, the question of price/performance ratio. From our point of view, this does not tip the balance the other way - quite the contrary.

We only need consider the use of the shortest bars. The machine is designed for 1.5-metre bars. This length is unusual, however it offers extra advantages

AMAZING TECHNOLOGICAL EXPERTISE

This is the first MultiSwiss you've purchased. What are your initial impressions?

Stéphane Rogazy: The MultiSwiss is an extremely interesting machine with regard to our product range. Its precision and process safety are remarkable. The fact that the machine incorporates some amazing technological expertise is certainly something to do with this. More and more factors play a role in machining, and sometimes these are factors that are not immediately apparent; for example, the oil viscosity is critical to the entire process.

For Stéphane Rogazy, CEO of Michel Präzisionstechnik AG, the MultiSwiss from Tornos represents an investment in the future.

Are you planning to invest in other machines?

SR: We plan a very quick return on investment on our first MultiSwiss. We are currently working on a new project with Tornos. If this is realised, we will be investing in other machines.

In the machine-tools sector, machines often need to be adapted as closely as possible to the processes. How well do you work with Tornos?

SR: We have a great relationship with Tornos. We are very close, both literally and on a professional level. If there are ever problems, we always get quick answers and we can count on Tornos' support in any situation. We work best together when we are facing sophisticated technological challenges, for example, an order for complex parts which are difficult to machine. When we encounter a problem during the machining process, we always know who to call. We work side by side to find solutions that allow us both to progress.

What is the current financial situation at your company?

SR: Michel is part of the Ferton group. Michel has an annual turnover of CHF 35 million, with yearly growth of around 10%. This growth is due to the reduction in secondary operations resulting from the acquisition of modern equipment and the rotation of 3 teams, 7 days a week. Our main problem at the moment is the strong Swiss franc, which is affecting us badly.

in terms of compactness and, above all, precision: shorter bars help to reduce vibrations and offer great results on profile material with 6 and 4 edges.

To conclude, a little story that demonstrates again the wonderful atmosphere at the company: once SMM had finished the interview in the production division, the employees returned to their machines with broad smiles!

Matthias Böhm
SMM editor

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Type / Typ CNC

- Canon non tournant, à galets en métal dur
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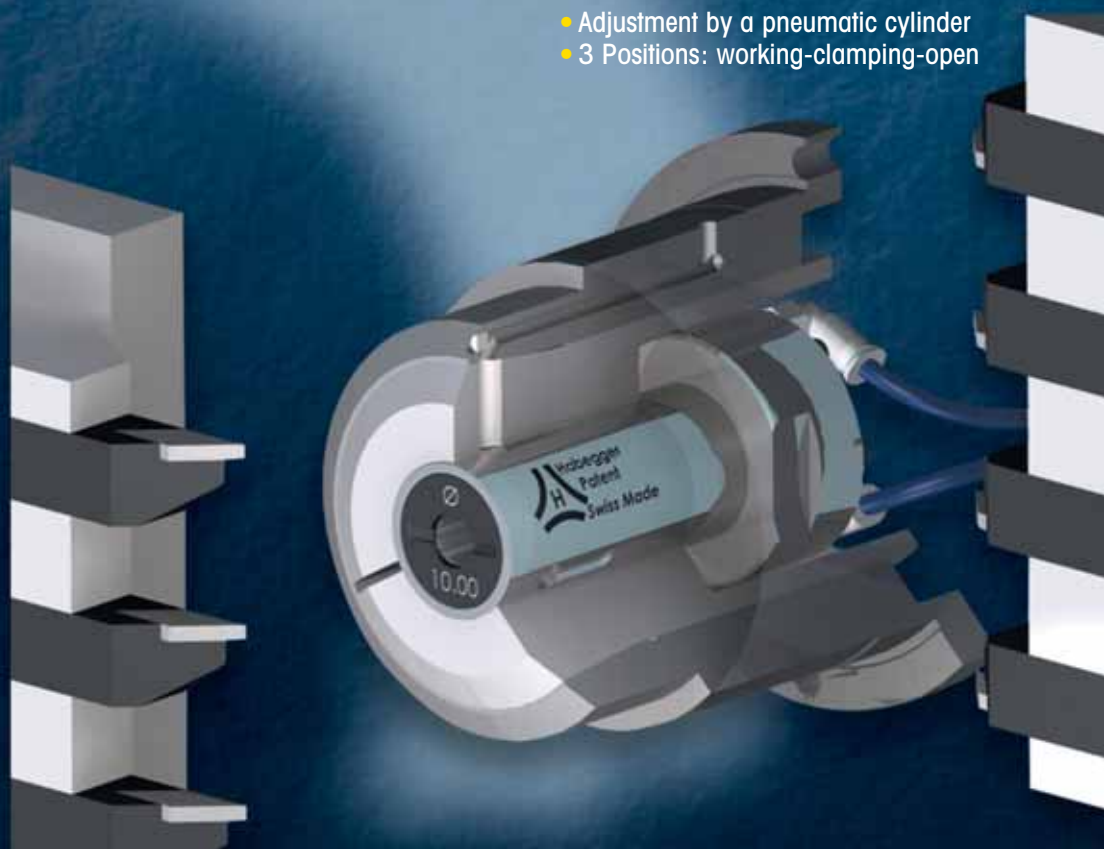
- *Vermeidet das axiale Festsitzen*
- Non revolving bush, with carbide rollers
- Avoids any axial seizing-up

Type / Typ C

- Réglable par l'avant, version courte
- Longueur de chute réduite
- *Von vorne eingestellt, kurze Version*
- *Verkürzte Reststücke*
- Adjusted from the front side, short version
- Reduced end piece

Type / Typ TP

- Réglage par un vérin pneumatique
- 3 positions: travail-serrage-ouverte
- *Einstellung durch einen pneumatischen Zylinder*
- *3 Positionen: Arbeitsposition-Spannposition-offene Position*
- Adjustment by a pneumatic cylinder
- 3 Positions: working-clamping-open



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SWISS ST 26 – THE PERFECT COMPLEMENT

With a long-standing presence in the market for producing parts with high added value, Tornos has been expanding its range for several years to cover fields requiring simpler solutions. The company now caters for a wide variety of needs. Although the European market is well serviced by current ranges, this is not the case in Asia and to a lesser extent, in the USA, where Tornos does not sell the Delta or Gamma ranges.

To address the need for a mid-range machine capable of competitively producing relatively complex parts, Tornos has created the Swiss ST 26. Everything suggests that this machine, with its seven linear axes, two C axes, high machining capacity and extremely competitive price, will be up to the task. Let's look in detail at the product's performance.

Tooling: large capacity

With a capacity of 26 mm and two totally independent tool systems that can be equipped with more than 36 tools, including special devices (polygon operation, thread whirling, inclined milling, etc.), the new Swiss ST can be used to produce moderately complex parts with large diameters. According to Serge Villard, product manager at Tornos: *"The Swiss ST is designed to competitively produce all types of parts. It is specifically intended for the medical and automotive sectors. Its kinematics and synchronous spindle motor make it up to 30% more efficient than its direct competitors with 5 or 6 linear axes".*

Kinematics: 7 axes for higher performance

The Swiss ST is intended for the mid-range market segment, which mainly comprises machines with 5 or 6 linear axes. As Serge Villard explains: *"With the Swiss ST we wanted to create a different type of machine from the outset. It would have been easy to copy an existing solution, but at Tornos this kind of challenge isn't in our DNA. Thanks to the motivation and ingenuity of our teams, the Swiss ST offers greater productivity and flexibility and is less expensive than many of its direct competitors. This machine will enable our customers to produce parts more quickly than on conventional mid-range machines, while still being able to produce more complex parts that up until now have required high-end machines."*

Optimised operating procedures

The kinematics of the Swiss ST enables perfect distribution of operations and secondary operations, and the rear platten can work on the bar and the rear face of the part at the same time. This makes it possible to optimise the use of both tool systems. *"The Swiss ST is the only machine to offer this function. On competitor machines, the secondary operation block is sometimes unused for over 80% of the total cycle time. During this period, the Swiss ST 26 can double the number of bar operations, which drastically reduces the cycle time",* concludes Serge Villard.

The spindle: responsive and efficient

As everyone knows, the spindle is the heart of the machine and the performance of an automatic turning machine depends on it. After the EvoDeco 16, Tornos decided to use synchronous technology on all its machines. This technology that has already proven successful on the MultiAlpha and MultiSigma multispindle machines, offers increased output compared to conventional asynchronous technology. The synchronous motor is a fundamental technological factor in Tornos' drive to reduce its environmental impact, a policy it has been implementing for 10 years. It also contributes to the productivity of the Swiss ST machine, whose acceleration and deceleration are explosive (from 0 to 10,000 rpm and vice versa in just 0.9 seconds), and the torque is constant irrespective of the spindle rotation speed. These characteristics, combined with an output of 9.5 (11) kW, make the Swiss ST 26 spindle a major asset.

3 packs to meet every requirement

The Swiss ST 26 can be equipped with up to 36 tools, including 20 driven tools. The modular concept enables optimal distribution of rotating tools on the machine's tool systems. The Swiss ST 26 is available with a complete range of devices, including a polygon tool, radial and frontal drilling/milling devices, inclined drilling/milling device, thread whirling tool and HF spindle. It is also possible to equip the machine with a variety of peripheral devices, such as high pressure pumps, oil mist extractor and coolant temperature stabiliser.

The Swiss ST 26 is available in 3 packs:

- Starter
- Advanced
- Medical

Perfect ergonomics

The Swiss ST 26 has been developed using the same ergonomics and comfort values as all new Tornos products. The operator is a central concern in the minds of the designers. The machine has a wide machining area that is accessible from either side, allowing two operators to work comfortably on the machine. The numerical control arm pivots completely around the machine, making it easily accessible from either side. The oil and swarf trays are easy to access and the cyclical lubrication device facilitates machine maintenance.

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The machine is only available in a non-EC version, and will therefore not be sold in Europe.

THE SUCCESS STORY OF A START-UP COMPANY

QUALITY, JUST IN TIME

What should you do when your former employer declares bankruptcy during the crisis and when you receive only rejections to all your applications based on market conditions? Lose hope or really get started? Horst Martin and his wife Sabine decided for the latter mid 2010 and established their own turning shop in Pforzheim with the support of Tornos with a Gamma 20/6. Only two years later they already have three machines and are thinking about further expansion. What are the reasons for this success story?

Horst Martin is a man who works hard and does not let life get him down. He originally trained to be a papermaker, but as this job no longer offered good perspectives in Germany, he retrained himself during the 90's as a CNC milling technician. He moved up the career ladder step by step, from a team leader in a milling shop to becoming the production manager of a renowned turning shop. As this company had to declare bankruptcy due to the financial crisis in 2009, Horst Martin was left for the first time with nothing. At that time, no one wanted to hire personnel, but he knew of a few companies who needed turned parts, especially small series and sample components. During an intensive discussion with his wife and his family, Horst Martin started coming up with a plan to go into business for himself. He was lucky to find a competent advisor who was able to support him in his plan and help him develop his business concept. But, he was also not able to solve the greatest difficulty: How could he purchase the right machines with a limited financial budget? At the time, banks were very cautious when issuing credit and also

the machine manufacturers were very careful with their leasing contracts. Horst and Sabine Martin approached almost all manufacturers and tried to convince them of their concept. With Jens Küttner, the Managing Director of Tornos Technologies Germany and Achim Günther, he succeeded at the AMB 2010 exhibition. Both were inspired by the energy and ability of the 'Martins' and created a specially adapted financing solution with the managers in Switzerland. Shortly after, in December 2010, the first Gamma 20/6 was delivered and commissioned. Additionlly, the barfeed manufacturer, FMB in Faulbach, provided the couple with highly competent start-up support through Mr. Heribert Gertung.

Everything is hard at the beginning

Everything was very new for Sabine and Horst Martin at the beginning. They had to find customers and calculate and prepare offers. At the same time they also had to familiarise themselves with the machine and the control system in order to take full advantage of the machine's potential. For this, Tornos provided extremely valuable help during the start-up period. The Gamma 20/6 machine is easy to set-up and very simple to program, but there are still a few tricks that should be learned. The Tornos Team in Pforzheim were happy to teach these to Horst Martin, who was a good student.

He soon became extremely skilled with his Gamma and produced top quality products. Being both the owner and machine operator, he didn't have a quitting time. He was able to complete the first orders quickly, flexibly and with high precision. They were mostly orders for a small series with 5 to 10 workpieces or sample parts. Here the Gamma 20 scored points due to its easy setup. But Horst Martin was able to see other advantages. First was its small space requirement, which he really appreciated as a founder of a new business. Then there was the practical short boring spindle kit as well as the super equipment with a 20 bar high pressure pump, CO_2 extinguishers, automatic shaft unloading as well as the mobile phone radio link via SMS. As a one-man-show, it was important for Horst Martin to let the machines run as long as possible. Just before leaving, he set up the Gamma one more time so that it could continue producing for a couple more hours on its own. News about the flexibility and quality of the young business man spread quickly and he soon continued to receive more orders from neighbouring companies from dental, jewellery and mechanical engineering industries.

A steadily climbing success curve

The main advantages Horst Martin sees in his company are the fair and direct collaboration with his customers. He gives his mobile phone number to every customer, so they can immediately get the "boss" on the phone. Horst Martin does not need any overhead, rather he sells, calculates and produces his parts on his own. It is due to this direct contact that a quick and uncomplicated solution can always be found. While the machine is running he is already calculating his next order. Three months after commissioning its first machine, the company came up against its

capacity limits for the first time and wanted to/had to expand. The Martin family clearly decided again for the Gamma 20/6 from Tornos. On the one hand, Tornos again demonstrated itself to be a fair partner during this phase, fully supporting the expansion. On the other, there was of course the standardised operation, the use of existing tools and the universal programming as the most decisive factors. The Gamma 20/6 covers a wide range of parts, from simple to complex components. Furthermore, the machines can be used for numerous milling operations and provide high surface quality. This was an invaluable advantage especially for the long, thin needles with multiple recesses. In the meantime, as not only the number of orders but also the batch sizes continued to increase quickly, Horst Martin developed special pick-up devices in order to optimise machine use. As he was still a lone warrior like before and in spite of this optimisation, the machines were operated almost around the clock, seven days a week. With approx. 200 products in only 18 months and batch sizes with up to 80,000 pieces, this was also absolutely necessary.

Further expansion is not excluded

With this rapid development, it was foreseeable that a new machine had to be purchased. It was delivered in January 2012 and was again, of course, a Gamma 20/6. Customer trust has grown so high over the past months that many orders are placed without a previous offer and the number of recurring orders continues to increase. The ratio of requests to orders lies now at about 60 percent, and for some customers, Martin Präzisionstechnik now keeps its own contingent stock. If asked about future development, Horst Martin laughs and thinks that a fourth machine is a real possibility. But, he does not need to stop there. His two sons, Marcel, 22 and Patrick, 24 are already working hard in their free time and are providing their father with solid support. It is this family atmosphere that makes this company so likeable. The whole family, including the baby of the family Letisha and the family dog Lucky are all working together and fully support their father. Tornos has just as much confidence in Martin Präzisionstechnik and we can wait to see when an even dozen will be reached.

martin präzisionstechnik

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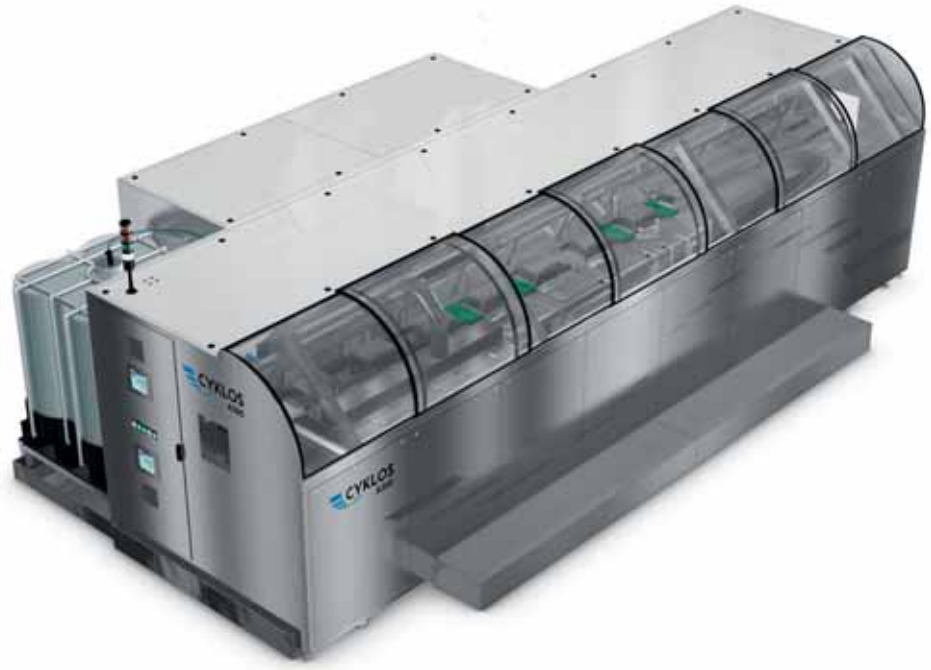
CYKLOS: COMPLETE, AUTONOMOUS ECO-DESIGN

We all know that the environment now has a major impact on industrial entities in terms of how systems operate, the way processes are defined and the development options for production units.



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Integrating the environment into industrial policy.

Legislation tends to implement rules for environmental protection that are primarily based on the 'polluter pays' and precaution principles. This standardises the emission of potentially pollutant substances into the atmosphere and watercourses, generating significant costs.

Cyklos offers a complete surface treatment management solution, using technology that incorporates at-source reduction of all environmental impacts from the design stage. The patented technology employed by Tornos guarantees a completely autonomous solution with reduced energy and water consumption and, most importantly zero waste from the user/customer. Crucially, this means it has finally become possible to integrate reliable, productive surface treatment at all industrial sites with no environmental restrictions.

The Cyklos solution was awarded the gold trophy at SIMODEC 2012 for its innovative technological concept and its positioning in the value chain for the production of surface-treated parts. However, a world first was achieved with the installation of an anodising machine at a professional trade show, made possible thanks to Cyklos' 'zero waste' expertise. The installation of a working machine at a trade show proves that Cyklos machines can be integrated into any machining unit without the need for special adaptation.

How Cyklos benefits global environmental performance

Traditionally, environmental performance is based on the addition of standard treatments for gas- and water-based effluents in conventional surface treatment processes, with waste monitoring by independent bodies following treatment of the effluent.

Cyklos' innovative approach involves optimising surface treatment as soon as it is implemented in order to reduce, capture and treat waste to guarantee a 'zero waste' solution. Cyklos thus represents genuine global progress in environmental performance.

Cyklos technology has been designed to minimise all industrial and environmental impacts on a global scale, while respecting essential productivity and quality criteria. Cyklos' environmental performance is based on 3 main principles: environmental optimisation of surface treatments, a reprocessing system guaranteeing a 'zero waste' solution and a production flow management process called lean manufacturing.

Surface treatment optimisation

The Cyklos concept is based on the automatic transfer of parts from one bath to another by a transferring system and a rotation system that submerges the parts in the bath. The parts are placed on split-capacity baskets (approximately 1:10 of conventional baskets). The combination of this movement, which alternates between transfer and rotation and the split-capacity baskets ensure quasi-continuous surface treatment operations. The stability of the treatment performance is ensured by a computerised integrated management system.
The design of the Cyklos part transfer system has two major environmental benefits compared to traditional solutions: It eliminates on-site waste thanks to an economical process and it improves operating safety by reducing the size of the baths.

In terms of the process, the complete rotation of the baskets, in conjunction with improved treatment uniformity through agitation, enables parts to be thoroughly drained: this considerably reduces the movement of chemical products from one bath to another, which means lower consumption of these products and less rinsing water. The latter is essential in ensuring autonomous operation and zero waste on site. High consumption of rinsing water would necessitate the construction of a water reprocessing installation on site, an essential part of traditional installations. The low requirement of the Cyklos solution means that the rinsing water can be recycled or evacuated, free from chemical products, using evaporation techniques that cost less because of the low volumes used.

Smaller baths, a continuous process with split-capacity baskets and keeping the baskets in the baths or just above the surface of the baths allows the vapour (hydrogen) and mist (acid) emitted by the anodising baths to be captured very efficiently and economically. This enables the Cyklos solution to significantly reduce the risk of fire or pollution through leakage. Additional functions such as automatic leak checks, a safety enclosure and automatic vapour filtration monitoring increase the operating safety of the Cyklos solution.

Waste treatment

Any optimised waste requiring treatment passes through recycling loops that concentrate and filter the gas and water-based effluents. The vapour treatment process is made more efficient thanks to a full enclosure that provides an additional barrier between the atmosphere in the treatment area and that in a machining workshop with no special corrosion protection, which may contain organic vapour or dust.

Water-based effluent is managed just as efficiently. There is no wastewater to be treated on site and therefore no need for a connection to the sewer system. The final liquid effluents are concentrated and stored in a low-volume canister (800 l) inside the machine; an external contractor collects the contents for treatment every month. Cyklos' global environmental performance is guaranteed by a treatment process based on a complete, innovative eco-solution combined with an integrated 'zero waste' treatment solution.

Lean manufacturing flow management process

Cyklos technology facilitates flow management; the only requirement is a supply of electricity and fluid (water/compressed air). Chemical consumption is monitored by computer, with chemicals delivered ready for use in easily interchangeable containers. This simplified operation ensures easy calculation, monitoring and optimisation of the surface treatment process.

Thanks to its global integration and managed automation, the Cyklos process requires fewer operators than a conventional treatment line and makes the work less demanding. The transfer of parts via split-capacity baskets, combined with the rotation of the baskets in the treatment and rinsing baths, makes the automatic loading and unloading of parts considerably easier. It is no longer necessary to check the orientation of the parts on the basket, which is a requirement on conventional systems with no rotation: the part can be placed on the basket by a highly simplified, low-cost automated loader. The Cyklos solution completely eliminates manual loading and unloading operations that account for over 40% of the treatment costs in conventional systems and are a common cause of muscular-skeletal disorders (MSDs) owing to the need for manual compression and decompression of the part mounting springs.

COMPLIANCE STUDIES

During development of the Cyklos A300, a compliance study was carried out by industrial risk management company BUREAU VERITAS on the surface treatment equipment, in accordance with the REACH and ATEX (Registration Evaluation Authorisation of CHemical Substances and "ATmosphère EXplosive") European regulations.

With regard to the chemical risks, BUREAU VERITAS concluded that: 'the chemical risk analysis reveals that all risks are controlled'.

For ATEX, BUREAU VERITAS concluded that 'no ATEX zones are present', guaranteeing personal and industrial safety.

CYKLOS SURFACE TREATMENT SOLUTIONS COMPLY WITH THE FOLLOWING STANDARDS:

Directive 2006/42/EC relating to machinery

Directive 2004/1 OS/EC relating to electromagnetic compatibility

Directives of DIN standard EN292-1

Directives of DIN standard EN292-2

Directives of DIN standard EN60204-1

Directives of DIN standard ENS09

Directives of REACH standard

Simple integration

Thanks to its compactness, its 'zero waste' operation and its automation, the autonomous Cyklos solution can be easily integrated into machining systems. Cyklos technology makes it possible to carry out in-line machining and surface treatment operations, enabling just-in-time production and considerably reducing stock and logistical costs in cases where surface treatment is outsourced.

In conclusion, the innovative Cyklos process that is reinforced by compliance studies and adherence to standards, guarantees optimal global industrial and environmental performance while offering a 'zero waste' solution that can be integrated into all standard machining systems.

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UTILITÀ – THE CHALLENGE OF COMPLEXITY

Located in Costabissara, in the province of Vicenza and founded in 1992, Utilità specialises in producing parts with very high added value. The company was originally developed to machine precious metals for the watchmaking and goldsmith industries. 1997 represented a critical turning point for Utilità, with the decision to invest in a Tornos Deco 10 machine as the first step in replacing its bank of cam machines.

The Deco 10 allowed the company to diversify its activities into the aeronautical sector and into implantology; this diversification would prove to be key in 2000. When the crisis in the goldsmith industry took hold in Italy, the company's new specialisation enabled it to smoothly overcome this difficult period. Utilità continued its specialisation policy to become a specialist in machining noble materials such a gold, platinum, palladium, as well as others such as titanium and special stainless steels that are particularly difficult to work with.

Up to 3 setups a day…

Its workshop comprising 12 Tornos machines and two machining centres enables Utilità to meet the requirements of its highly demanding clientele. The extreme flexibility of the Deco machines is perfect for meeting the challenges set by the company's customers, with the highly visual TB-Deco software enabling programmes to be quickly analysed. The ability to prepare the tooling in concurrent operation time and the flexibility of the Deco concept allow Utilità to carry out up to 3 setups a day on the same machine. The size of the runs varies between 100 and 30,000 parts.

Rapid response and exceptional quality are Utilità's watchwords; in fact, to ensure the company can offer maximum flexibility, one machine is set aside for urgent orders. To better understand their success, decomag met Andrea Zamberlan, one of Utilità's associates.

decomagazine: Why did you choose Tornos?

Andrea Zamberlan: For us it was a choice based on our history of machining small diameters. We studied the competition in depth and very quickly saw that not only did Tornos offer the best machine on the market, with the Deco 10 at the time and now the

EvoDeco 10, but that the company's level of expertise in the watchmaking and goldsmith industries, and also in the medical sector was incomparable.

dm: Do you now regret this choice?

AZ: No, choosing Tornos has allowed our company to expand. The service offered by Tornos Italie is first class, both in terms of sales and after-sales service. The reliability of the machines is remarkable and the company still offers the best performing kinematics available on the market.

dm: How many machines do you have in your bank?

AZ: We have six Deco 10 and four Deco 13, plus two machining centres and two recently acquired Gamma 20 machines.

dm: How are your two new arrivals working out?

AZ: They are certainly not as flexible or productive as our Deco machines, however these products offer excellent value for money, and we do not regret our investment. The machines are reliable and accurate, and we use them to create medical parts up to a diameter of 15 mm. Generally speaking, Deco offers the best performance, but for this type of part, Gamma machines seem to be an excellent alternative: we are achieving good quality parts.

dm: Coming back to the Deco; Why do you think this solution continues to offer such good performance?

AZ: Deco is not simply a machine, it is a complete solution that enables us to create a very high quality product. TB-Deco helps us to optimise programmes and machine pre-heating allows us to quickly obtain the correct parts whilst allowing us to optimise the working time of our staff. The kinematics allow us to be incredibly productive and the number of rotating devices compatible with the Deco system enables us to create highly complex parts.

UTILITÀ IN BRIEF

Staff:	11 staff members
Bank:	12 Tornos machines (Deco 10, Deco 13 and Gamma 20), two machining centres (continuous 5-axis) + turning module
Countries:	Italy: 90% External 10%
Markets:	Goldsmith: 12% Implantology: 82% Orthopaedics: 6% Miscellaneous: 5%

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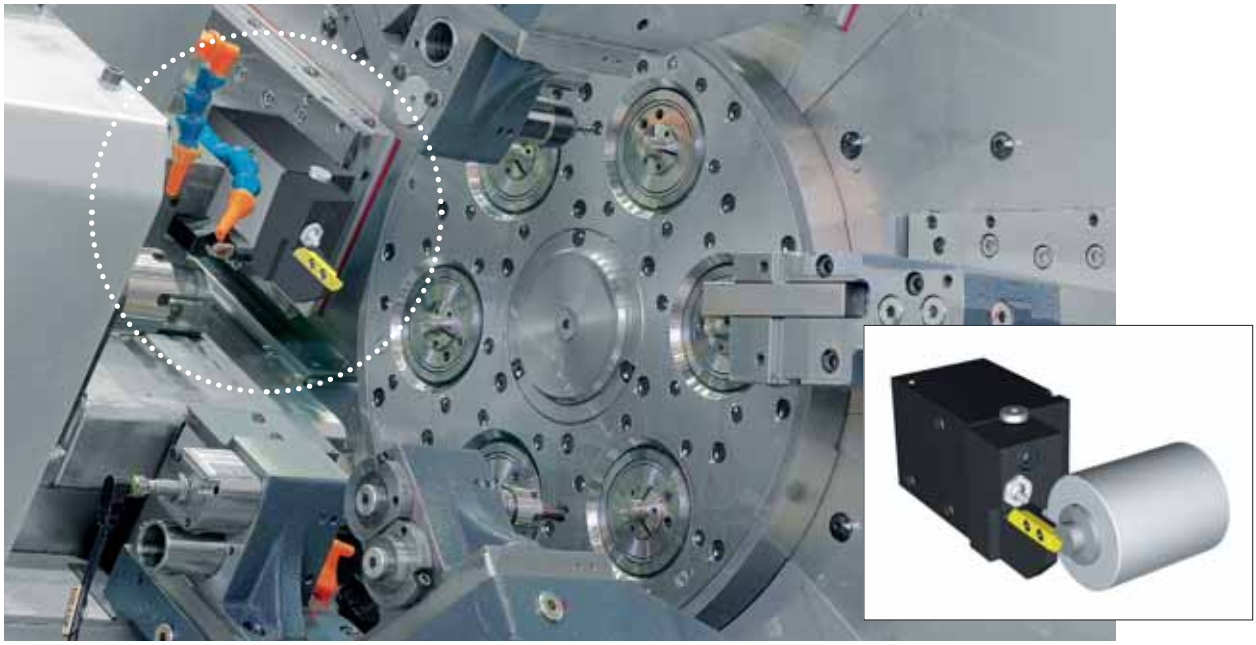
APPLITEC : A NEW CUTTING TOOL HOLDER BLOCK FOR THE MULTISWISS

The new MultiSwiss machine from Tornos is already making a big impact in the market. As its presence grows, additional product suppliers are starting to bring out solutions that extend its possibilities. A case in point is Applitec, which has now produced a tool holder head designed for cutting.



As specialists in bar turning tools, Applitec provide solutions that are specifically designed for machining parts from a few tenths of a millimetre to 32 mm. By using this dedicated cutting tool holder, MultiSwiss can benefit from this manufacturer's well-known Top-Line range of inserts.

Perfectly interchangeable

The standard solution is a 16x16 bar on the tool, clamped in a tool holder, which is then fixed on the tool slide. Tornos also offers its customers a second version composed of a solid base that houses a tool holder head. This offers advantages in terms of ergonomics, thanks to the improved accessibility and increased rigidity. Applitec, along with other suppliers, offer this type of tool holder head that is compatible with the Tornos block.

The benefits

The height of the Applitec tool holder can be adjusted; it is secured with two easily accessible screws and the integrated coolant spray system comprises a standard and modular spray tube. Depending on requirements, it can be easily changed to allow coolant to be sprayed closer to the cut. The compact dimensions of this tool holder mean that very short workpieces can be picked up with the counter spindle, without the need for a special extended collet.

A cutting tool adapted to the highest requirements

The machining objectives for small diameters are sometimes difficult to achieve, as the parts need to be not only of perfect quality (no burrs), but also the cutting force needs to be reduced to the minimum to prevent any deformation of the workpiece. The different cutting geometries of the Top-Line inserts have been custom developed to overcome this kind of difficulty. The Applitec tool holder has a mounting system standardised across the Top Line family that ensures perfect rigidity and precise repositioning of the insert on the tool holder.

For all diameters…

This tool holder provides the rigidity required for all cutting operations, including the most demanding. For smaller diameters, the manufacturer recommends the 730R-Multiswiss tool holder supporting inserts from the 731R range. For larger diameters, the 750R-Multiswiss tool holder for 751R type inserts is recommended. These enable the machine's entire capacity to be covered. For customers who only cut workpieces with small diameters, the most economical choice would be the 731R.

… and all applications

The Top-Line inserts are available in several grades of fine grain carbide with or without a coating (N, TiN, TiALN and HN, HTiN, HTA). Depending on the materials and diameters of the parts to be machined, a choice of different geometries allows the tool to be adapted to the application.

Pascal Kohler, development manager at Applitec, explains: *"Top-Line inserts are perfectly adapted to the MultiSwiss machine and the tests carried out with Tornos have confirmed our wish to ensure their compatibility with this extraordinary machine".*

For further information, please contact your usual Applitec agent or Applitec Moutier SA at the address below.

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THREE GENERATIONS, ONE NAME AND ONE DESTINY

A grandfather founded a small workshop in 1957, the son managed its growth and transformation into a big company and the grandson is now facing the challenge of converting it into a company for the 21st Century.

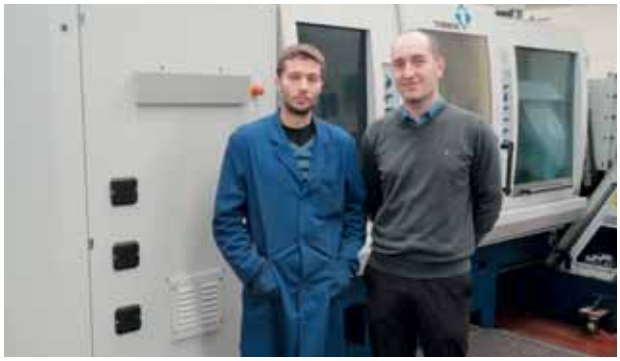
Joarjo has a modern facility of more than 2600 m².

It was March 1957 when Armando Mozota, together with two partners, founded a workshop that gave no hint of what the future would bring. With the initiative of his son and current manager of the company, Armando Mozota II, the Mozota family took full control of Joarjo and instigated a period of impressive growth, culminating the inauguration in 1997 of a new storey of more than 2600 m².

The third generation is the present and the future. Armando Mozota III has worked for the company since the age of 16, combining his studies in engineering with an apprenticeship that has culminated in him becoming the current production manager. His challenge has been to modernise the company, bring in fresh new management ideas and convert the whole machine fleet to CNC.

Today the company works mainly for the automotive sector, although it is making a big impact in the defence sector and also produces for other sectors such as food, electronics, hydraulic fittings, lifts and car washes. Most of this production (around 80%) is aimed at export to a variety of countries such as France, Poland, Italy, Brazil, Germany, Sweden or Portugal.

Certified under the ISO standards 9001 and 14001, Joarjo has also received welcome distinctions such as "Entity Promoting Equal Opportunities between Men and Women", awarded by the Instituto Aragonés de



THE FIRST SUCCESS OF THE MULTIDECO

One of the reasons for bringing in a MultiDeco to Joarjo was the growth that the company was experiencing in the defence sector. The first part to be worked in the machine was from that very sector. A part that was being produced on a Miyano fixed double headstock with two turrets in a time of 2 and a half minutes is now produced on the new machine in less than 1 minute. Without a doubt, there is a promising future on the horizon for both partners: Joarjo and Tornos.

la Mujer [Aragon Women's Institute]. Furthermore, in 2001 the multi-national Hutchinson, part of the Total-Elf-Fina Group, awarded the company the title of Best European Supplier.

First steps with Tornos

In 2009, when the company was operating with a fleet of 9 CNC lathes (Okuma, Miyano and Danobat), all with fixed headstocks, it took the decision to purchase a Tornos Delta to replace the last three cam-type single-spindle machines still at the company. This rounded off the conversion of the entire fleet of single-spindle machines to CNC. With 10 machines installed, this started the Tornos era.

Their intention with this decision was to get to know Tornos and its technical service through the purchase of an economic machine, while also getting rid of the cam-type multispindle machines, which were causing problems. The result was very positive in both respects, and as Armando Mozota II says: *"It heralded a future-oriented collaboration between Joarjo and Tornos."*

One of the parts that they began to manufacture with the Delta had a dimension with a tolerance of 0.02 mm, which was causing big problems when manufactured with a Wickman multispindle machine. With the Delta all the problems were eliminated, as were all the extra checks that the part had to undergo. In another case, when a part also manufactured with a multispindle machine, with a Ø 2 mm drill hole 40 mm in depth, was switched to the Delta where its cycle time was only 2 seconds more than with the multispindle machine. However, the productivity difference of the machines was so great and so many unproductive stoppages were avoided, that ultimately the new Delta produced more parts than the old cam-type machines. Joarjo was so satisfied, not only in terms of production times and precision achieved, but also in terms of technical service. One year later in 2010, while others were still suffering the worst of the economic crisis, Joarjo ventured to purchase a new MultiDeco 32/6 multispindle machine.

This purchase was made with an eye on the defence sector, in which the company is making a big impact with the intention of gradually replacing the 10 cam-type multispindle machines with CNC machines. With the inauguration of the new machine, two of the cam-type multispindle machines were withdrawn from service.

Objective: Single-phase production

All this technological effort with a view to replacing all the cam-type machines with CNC machines, had a clear objective: completely eliminate secondary operations. Indeed, they reviewed all the manufacturing processes in an attempt to finish all the parts in a single phase.

Thanks to Joarjo's current machine fleet and to the effort to completely eliminate secondary phases, the company managed to go from more than 30 people exclusively dedicated to secondary operations to a total workforce of 30 people, with only 2 dedicated to secondary operations.

The complete computerisation necessary to achieve a better service

In addition to eliminating supplementary phases, Armando Mozota III undertook the project of fully computerising the company stock management. Now all stocks of materials and end products are controlled in real time from an IT system that reduces costs, production waste and inefficiencies and above all, brings the customer a better service. As they explained to us, instant information access and instant situation appraisal are essential for providing good customer service.

According to the Mozota family, the characteristic that best defines Joarjo is customer service. As they explained to us, *"If the customer has a problem or an*

Every year Joarjo manufactures 15 million aluminium flanges for customers as important as Hutchinson, Maflow and TI-Automotive.

emergency, this problem or emergency becomes our problem or our emergency. And we always provide a solution." They recall how they opened the company during the holidays to help a customer, or how they stopped machines to produce a small batch for a customer with problems.

In the final analysis, Armando Mozota says, *"We are not cheap, but we are very economic."* In other words, with a near-market price level, they offer such a high-level service and quality that they prove to be highly economic. This level of customer service is partly due to the company's honesty. Above all, Joarjo aims to be an honest company comprising honest people who "prefer to say that something is not possible rather than end up leaving the customer in a difficult position at the last moment."

ABOUT JOARJO

Founded:	1957
Surface area:	2600 m^2
Number of employees:	30
Exports:	80% of production
Certification:	ISO 9001:2008 and ISO 14001:2004
Machinery:	10 CNC mono-spindle machines (Tornos, Okuma, Miyano and Danobat), 1 MultiDeco 32/6, 8 cam-type multispindle machines, 4 transfer machines, 2 CNC cutting saws, 3 artificial vision machines and other auxiliary machines.

Some examples of parts machined by Joarjo, including fittings of their own design.

A COMPANY WITH NO SALES REPS

The most curious fact that we found out about Joarjo is that they have never had sales reps. Armando Mozota explains that "customers have always called us without us needing to look into that." Their good work in terms of quality and service were sufficient to bring in new customers through word-of-mouth, who have always kept relying on them and sending them more and more orders. The latest development on this subject is the recent hiring of a full-time sales rep dedicated to the Spanish market.

The day that Europe beat China

One of the fields in which Joarjo completely dominates the market is manufacturing aluminium flanges for air conditioning pipes. Originally Joarjo started out producing parts in support of Chinese suppliers that manufactured this type of part.

Once they began to produce small quantities of parts to resolve the problems relating to logistics, quality and tiny batches that the Chinese suppliers caused, they ended up overtaking their Eastern competitors in the market thanks to their quality, service and price. Indeed, with a price not very different to those of the Chinese suppliers, Joarjo was used to working with ppm (parts per million) quality levels and with service as the priority (as we have just seen).

As such, it is no surprise that today Joarjo is the absolute leader in the manufacture of aluminium flanges for air conditioning pipes, manufacturing more than 15 million parts per year for customers as important as Hutchinson, Maflow and TI-Automotive.

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AEROSPACE SUPPLY CHAIN COMPANY SELECTS TORNOS GAMMA FOR NEW PROJECT

Rugby based Technoset has been actively involved in the aerospace supply chain since the mid 1990s and has seen huge changes in the way the industry has reinvented itself since then to compete in the very demanding, technically and commercially, world of the aerospace industry.

Bank of Tornos Gamma 20 at Technoset.

As Technoset Managing Director, Mr Kevan Kane comments: *"To be competitive in the industry supply chain today has required sub contractors to commit to serious investment in latest modern technology plant and machinery and also, most importantly, into the training of staff to embrace and commit to lean manufacturing practices and processes"*.

Aerospace AS:9100 accreditation

Over the past six years Technoset has undertaken a gruelling, root and branch overhaul of its business and working practices, with the cooperation, support and commitment of everyone involved in the business. This has resulted in Technoset achieving aerospace AS:9100 accreditation four years ago, Mr Kane goes on to say that: *"As an early signatory to the aerospace SC21 programme and its associated service commitment levels, the company also received an SC21 Bronze award in 2011 recognising its success in delivering on its Quality and OTIF (On Time In Full) service commitment to its customers"*.

Constant monitoring

As a subcontractor operating all CNC sliding and fixed head machinery with capacity from 0.5 to 120 mm diameter Technoset constantly monitors, reviews and accesses its machine capacity,

Components machined on Tornos Gamma.

reliability and profitability to ensure the right mix of plant is available to fulfil its commitments to its customers. Recently, following one such review and compounded by a global aerospace OEM placing a long term order for parts in the 20 mm diameter range, the company decided to review the current market place for the best machine tool to most accurately fit the required profile capability and capacity to satisfy its needs. The Tornos Gamma machine fitted that profile most accurately.

Traditional and bush less working

A key factor in the decision to purchase the first Tornos Gamma was its ability to work not only as a traditional sliding head machine for long slender parts but also its quick and easy changeover to bush less working for production of short stubby parts. This system significantly cuts material wastage through reduced bar remnant sizes. Mr Kane states: *"A lot of our work is with very high value materials such as Inconel, Titanium, Monel and aerospace Stainless steel grades. In some cases very high value materials can cost as much as £50 per meter. The new Gamma can cut remnant lengths from 10-12 inches to 1-2 inches giving us significant material cost savings. In addition, with shorter length parts we can produce significantly more parts per bar".*

Simultaneous machining

From a productivity perspective, the Tornos Gamma has improved cycle times in some cases up to 20% when compared with previous production processes. The improvements result from the Gamma 20 having the cutting tools located close to the workpiece to reduce non-cutting times. Further improvements are derived from the back end tool stations. The Gamma 20 has 8 back end tool stations that offer 4 static and 4 driven tool configuration all having Y axis capability. Previous production only permitted a 2 static and 2 driven configuration. The benefit to Technoset is increased overlapping of the tools stations allowing overlapping to provide simultaneous machining, further reducing cycle times.

Technoset's Kevan Kane highlighting material savings with Tornos Gamma.

Technoset inspection department.

Impeccably high quality levels

As Mr Kane continues: *" The first Gamma 20 arrived at Technoset in July 2011. As part of the Techno Group that also incorporates Technoturn in Hastings we made a group decision to install and trial a Gamma 20 at the Technoturn plant based on the initial success of the first installation. Whilst the workload and machine tool requirements of the Hastings operation are more diverse than at Technoset, the Gamma 20 also fitted seamlessly into the Hastings business."*

"At Technoset, our business is 75% aerospace with the remaining work being in the telecommunications and fire detection industries. All three industry sectors are driven by impeccably high quality levels and rapid turnaround times, especially the aerospace work that is predominantly parts for aerospace engines. Our parts can range from simple to complex features that are machined in batches from 500 to 1,000 out of some pretty demanding materials. The Tornos Gamma lends itself to this type of work as it is rigid and robust whilst being easy to set-up and run, thus reducing our changeover times. Lending itself to this type of work, the machine has proven its worth not only at Technoset but also at Technoturn."

Highly capable cost effective machine tool

With the majority of Technoset's business being in the 20 mm diameter range and with business increasing through new orders, the company opted for an additional two Gamma 20 machines that were delivered in December 2011. *"We knew that despite our relentless drive for efficiency and improving our capacity that we needed more turning centres to cope with the influx of new work. In the 6 months of having our first Tornos Gamma's at both Technoset and Technoturn we were thoroughly impressed with the level of service and support we have received. With a highly capable cost effective machine tool that improves productivity and reduces waste and the associated costs, we were very comfortable with the prospect of acquiring two additional Tornos Gamma 20 machines. As our business prepares for the challenges of the aerospace market that will continue to grow over the next 3-5 years, we feel that we are now well positioned for the future growth with our new Tornos machines,"* concludes Mr Kane.

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HK PRECISION PARTS: SWISS QUALITY, MADE IN THE USA

When Hans Kocher came to the USA in the 80s, he brought with him a great deal of expertise and experience in bar turning, together with a love for the land of boundless opportunities. By founding HK Precision Parts Inc. in 1994, this Swiss man with an obsession for quality took the first step towards independence. Specializing in the high-precision production of a multitude of different parts has enabled the company to position itself very successfully in a highly competitive market to the present day. In order to achieve this, HK Precision deliberately makes use of Swiss technology, such as Tornos machine tools and Motorex machining fluids.

Small but perfectly formed – HK Precision Parts in Ronkonkoma/NY has established itself as a precision manufacturer of bar turning parts. In addition to the high degree of expertise of its motivated staff members, one of the major factors in the company's success is their particularly innovative use of production technologies.

Hans Kocher, who came originally from Meinisberg near Biel founded his company in New York State in 1994 together with his wife. Today, the firm, based in Ronkonkoma on Long Island/New York occupies around 1,115 m^2 of land and employs 8 members of staff. HK Precision Parts uses more than 18 different machines to manufacture turned parts made of non-ferrous metals, aluminium, a whole variety of different types of steel, titanium and even synthetic materials. The company covers the entire range of machining from demanding one-off production and small series on CNC-controlled machining centres right up to comprehensive series manufacturing on cam-controlled turning machines. One further advantage: Hans Kocher and his team can also offer in-house metal finishing processes such as milling, thread rolling and honing. The main customers for what are mostly pre-finished parts are companies from the following sectors:

- Aerospace
- Precision gear manufacturing
- Precision instruments
- Electric motor manufacturing
- Electric component manufacturing
- Pneumatic parts manufacturing
- Special screws
- Shafts
- Dental implants and tools

Internationality is the norm at HK Precision Parts: In this respect, people from 5 different nations work at the firm on machinery that is constructed to exactly match market requirements, and which is operated entirely with Motorex machining fluids.

The company can process bar stock with diameters from 3 to 65 mm. The company is currently working in accordance with ISO 9001:2008 and is aiming to gain certification in accordance with ISO 14001 with regard to environmental standards.

Specialising in 'Swiss-style turning'

In the United States, the term 'Swiss-style turning' is understood to mean the conceptual standard design of the long turning automatic screw machine to achieve the highest degree of precision. The required tolerances are in the micrometer range; one ten-thousandth of an inch or millimetre. This is used to hold and fix the workpiece using a collet chuck and a lathe barrel. Most CNC automatic turning machines are designed as multiple axle machines today and in this way enter into the highest performance class. Often, they are equipped with so-called 'live tools', which are tools driven by a small motor. For a long time, this type of machining combined with CNC

"TECHNOLOGY PAYS FOR ITSELF"

"The knowledge I had gained in Switzerland enabled me to quickly find the ways and means of accessing the hardware I know so well in the USA. This allowed me initially to find a niche in the field of high-precision parts manufacturing. This then gave us the opportunity to make a breakthrough with various different series orders. It was the combination of perfectly matched machinery, reliable tools and particularly Motorex's universally applicable cutting oil which produced the process safety we were looking for. Combined with our knowledge and ability, our commitment is paying off from an economic standpoint."

Hans Kocher, Owner
HK Precisions Parts Inc.,
Ronkonkoma/New York, USA

This approx. 1.5 cm long high-precision atomizer shaft made of brass for a textile machine was manufactured on a Tornos Deco 2000 shortly after a series of stainless steel parts using the same cutting oil (Ortho NF-X).

control was seen as quite exotic and the industry continued to work in the USA for many years with traditional turning machines (fixed head lathe). By his use of Tornos machining centres (13 machines, including a Deco 20A, 2000, ENC-167, Delta 20/5 and MS-7), Hans Kocher put his faith in high-tech machines and was thus able to produce parts that other companies had great difficulties with.

HK Precision Parts meets Euroline Inc.

While searching for qualitative and high-value performance machining fluids, Hans Kocher got to know Peter Feller in 1998, the owner of Euroline Inc. from New Milford. The company also has Swiss roots and has been importing Motorex products into the USA for more than 25 years. With a core competency in industrial applications, Peter Feller knows what many clients want in terms of modern cutting oils and cooling lubricants: universal application with high performance and easy handling. By means of comparison tests with traditional lubricants, Peter Feller was able to convince his clients in nine out of ten cases of the product advantages of industrial lubricants made by Motorex Swissline. The same is also true for the team at HK Precision Parts, who have been successfully using the universal high-performance cutting oil Motorex Ortho NF-X for many years, as well as the groundbreaking Magnum UX 200 cooling lubricant in the field of applications with emulsion.

A selection from the HK product palette: The universal high-performance cutting oil Swisscut Ortho NF-X is equally convincing in terms of processing high-alloy steels as well as non-ferrous metals, aluminium and plastics.

Breakthrough with Motorex Ortho NF-X

Every operator of a bar turning business understands the fundamental significance of the type of cutting oil used. Motorex was able to use Ortho NF-X, with its vast range of applications, to convince not only Hans Kocher, but several firms in the USA straight away. The universal character of its applications and the high degree of quality have a direct effect on convenience and economy. In this way, Ortho NF-X can be used to process stainless steel, aluminium and brass without the need for a fluid change. In addition, the cost of logistics (-60%) and recycling costs (-96%) could be reduced considerably. The latter is also true, since the cutting oil is periodically filtered and quantities that have been removed are supplemented with fresh Ortho NF-X. In doing so, a great deal of care is taken to ensure that no mixing with other lubricants takes place. This saves on having to dispose of even the tiniest amount of oil, which incidentally costs more in the USA than the new product itself! Using this tried and tested procedure, HK Precision Parts has been saving on costs for years and was therefore able to increase process safety and productivity sustainably in the face of tough competition. Workplace quality has also been improved by the use of the chlorine, zinc and heavy metal-free Swisscut Ortho NF-X.

Cutting costs – protecting the environment

Motorex Swisscut Ortho NF-X is an innovation in production technology - one single cutting oil is suitable for all machining processes. The removal of various complex procedures resulting from several types of cutting oil means that production lines can be utilised to capacity, even with mixed machining. The result is a considerable cost optimization. The current generation of Swisscut Ortho products is also harmless to people and the environment.

We would be delighted to provide you with information about the range of Motorex machining fluids and the options for optimisation within your area of application:

Assured quality: Quality control has always been of fundamental importance at HK. Each part the client receives must conform 100% to the strict quality regulations.

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Oil of Switzerland

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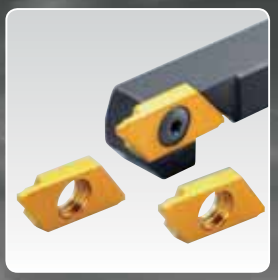

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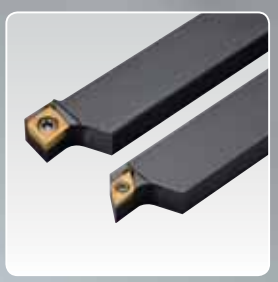

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IMPLANTS DESIGNED FOR BONES

Medimetál Kft. is a Hungarian company that is a reference in the manufacture of metal surgical implants. DecoMagazine visited the company as they took delivery of their fourth automatic sliding headstock turning machine from Tornos. With forty years of experience in producing solutions for bones, the company's product range includes bone screws and surgical instruments manufactured using Tornos machines.

Medimetál Kft.'s refurbished premises are located near the town of Eger in the Berva valley, Hungary. More than 60 staff are employed to manufacture surgical instruments and metal implants designed for traumatology. The company's success depends not only on guaranteeing an extreme level of cleanliness, but also on the flawless quality of the raw materials used and the precision of the production machines, as István Antal, the company's owner and director, explained. *"As a subcontractor in the Hungarian medical sector, we have adopted a policy of continuous development, and we regularly consult with renowned academics, however it is also vital for us to expand our presence abroad, given the state of the medical sector in our country".*

decomagazine: You supply your products not only to Hungarian hospitals but also to customers abroad. Who are your partners?

István Antal: Over forty years of experience in production and development, in addition to an extensive product range, make us a trusted supplier for Hungarian hospitals and also allow us to meet the needs of our European and Asian export partners.

dm: Most people think that implants designed for emergency surgery are made from a special titanium alloy. Which raw materials do you use?

I.A.: For production we only use the very best steel and titanium alloy we can source as raw materials. Only materials that come from a reliable source accompanied by documentation guaranteeing their quality are used. For our implants designed for emergency surgery, we primarily use steel in the form of an alloy composed of chromium, molybdenum and nickel with a very low carbon content. Maybe not everyone knows this, but once in place, a prosthesis (e.g. a hip replacement) can stay in the human body for up to 15 years, whereas emergency surgery implants only hold the bones in place until they have healed, after which they are removed - usually a few months later. We also produce a range of very sought-after Nano Titanium implants.

dm: In terms of surgical instruments, quality is also a basic requirement. How do you guarantee it?

I.A.: The implant load tests and trials are carried out in accredited laboratories (e.g. Endolab GmbH). Quality control on the finished products is part of the

process. A quality management system that meets EN ISO 13485:2003 requirements is used to ensure that the processes and products are fully verified, and to this end we have contracted the certification company Rheinland Product Safety GmbH as an audit partner.

dm: Planning software plays a major role in production development and preparation; how is this integrated into your company's production processes?

I.A.: Tornos machines also play an important role during installation of more or less the entire production/technology system. Tornos' TB-Deco programming software is particularly useful for us as it allows us to prepare offline for production of the next product (program creation, simulation, tool presetting, cycle time information, etc.). The processes are therefore efficient and can be optimised, and it's also possible to reduce the start-up times as much as possible. This applies not only to large runs but also to smaller ones which can almost be considered one-off production operations.

During our visit, Tornos' product distribution manager for Hungary, Attila Turbók, also explained to us how they use sliding headstock automatic turning machines. He revealed that Medimetál Kft. uses Tornos DECO 20a sliding headstock machines to produce, among other things, screws, pins and implants for bone surgery, as well as a variety of surgical instruments used in operations. However, Tornos machines also allow them to produce a range of pedicle screws and implants for hand and facial surgery. The machines used are dedicated variously to thread whirling (external/internal), high-frequency spindle (max. speed 80,000 rpm) for milling complex shapes, and high-pressure sprinkling (120 bar) for deep drilling.

ABOUT MEDIMETÁL KFT.

In 1971, development engineers István Antal and István Stefán, the owners of Medimetál Kft Sàrl, were pioneers in Hungary in terms of manufacturing implants designed for traumatology. After several years, Medimetál Kft became a reference company in the medical sector thanks to an ever-expanding product range and constant technological evolution. Its owners undoubtedly contributed to the development of Hungarian traumatology. Having built on this reputation, Medimetál Kft. has existed in its present form since 1993, and now operates from refurbished premises. Ongoing product development in close cooperation with hospitals is crucial, and this is aided by a state-of-the-art parametric modelling system used by the company's engineers.

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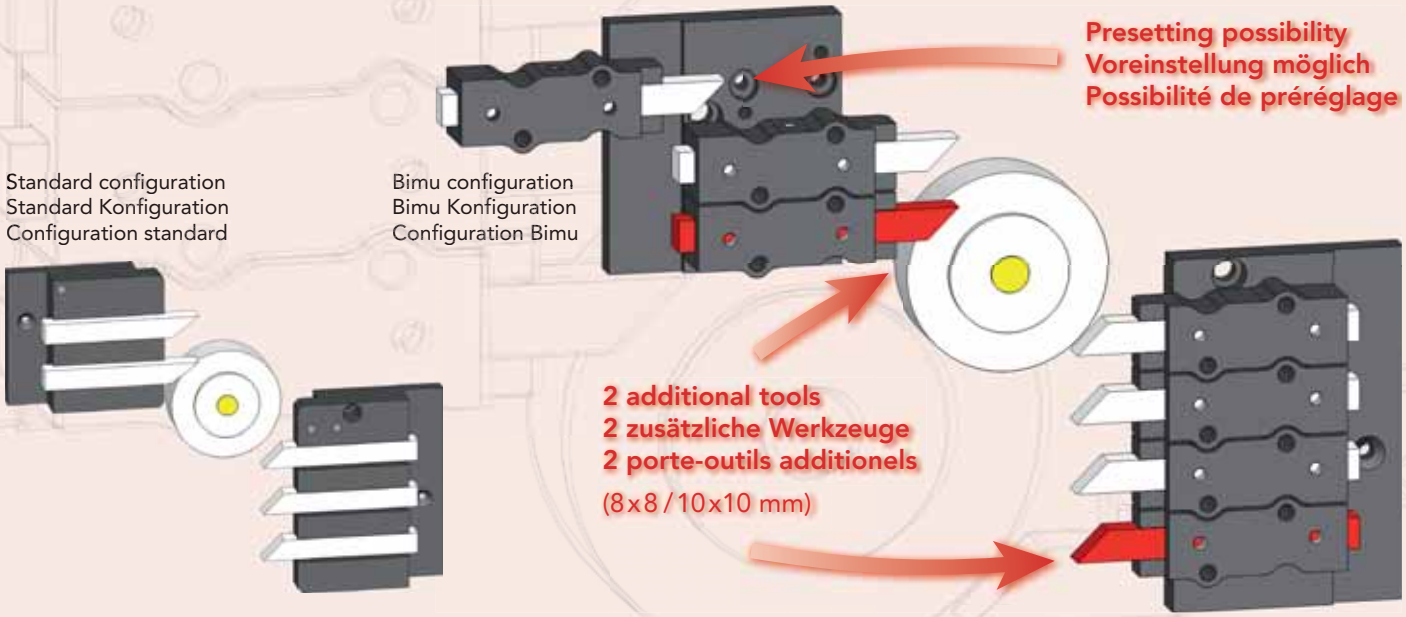

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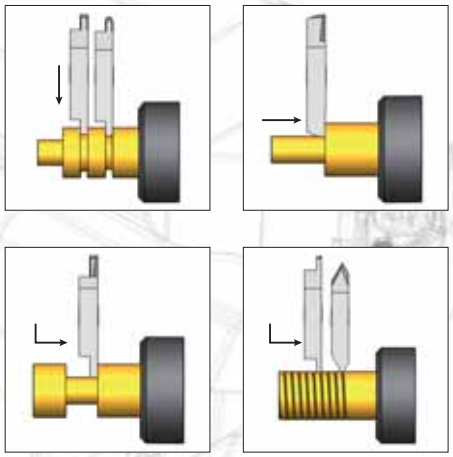

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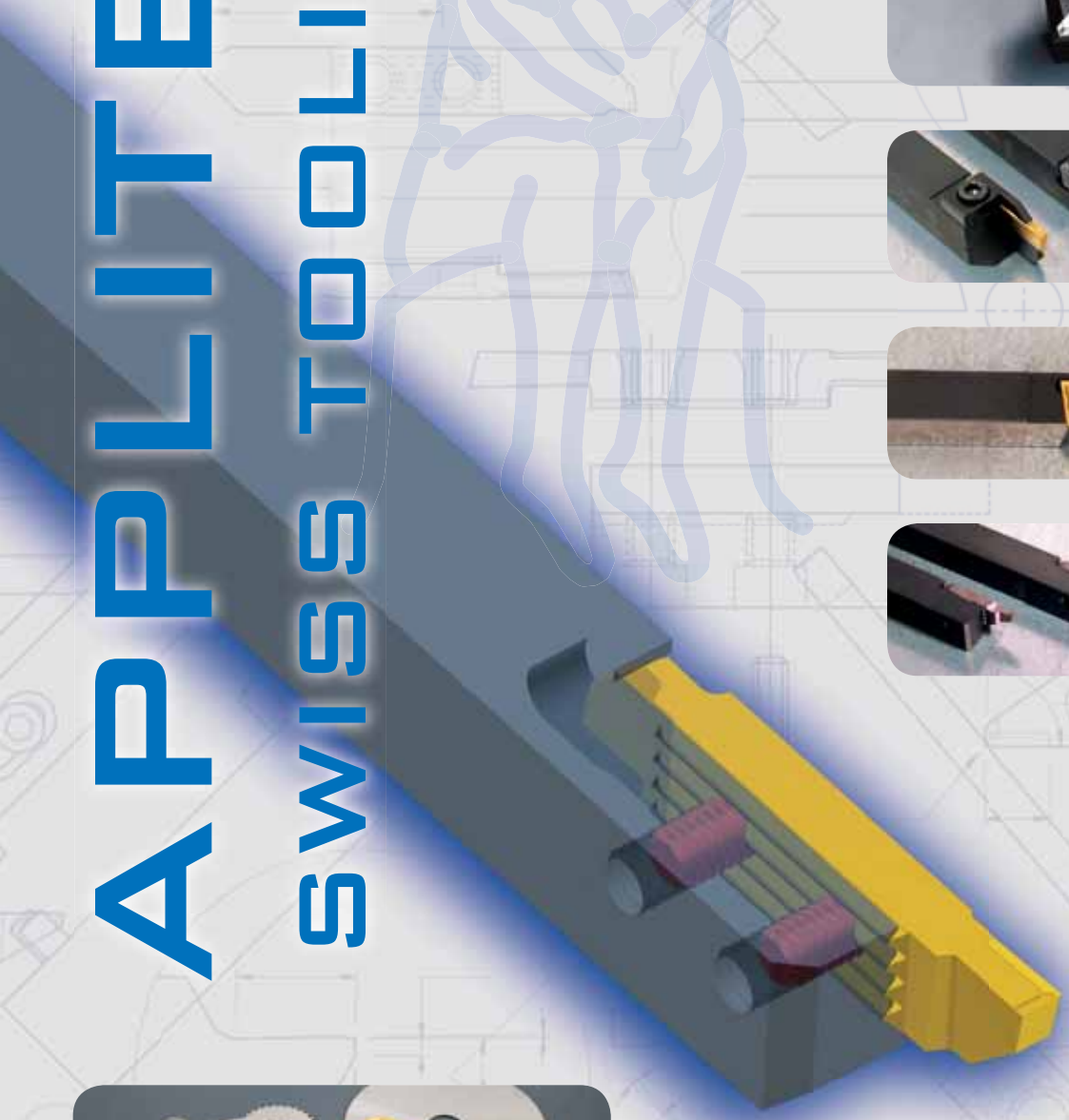

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