decomagazine

THINK PARTS THINK TORNOS 44 01/08 ENGLISH

Shared skills.

A company taking things one step further…

From zero to hundred
Connectors are essential components of modern technology.

5000 m² dedicated to customer service.

Laguna Seca – The Tornos Porsches finish second but the customers were first!

Micro 7 – MS 7 Contest at the summit during the Simodec trade fair.

A world first at Tornos: A high-volume thread-whirling process.

Closer to the operators than ever before.

IMPRESSUM

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TORNOS S.A.
Rue Industrielle 111
CH-2740 Moutier
www.tornos.ch
Phone ++41 (0)32 494 44 44
Fax ++41 (0)32 494 49 07

Editing Manager:
Pierre-Yves Kohler
Phone ++41 (0)32 494 44 34

Graphic & Desktop Publishing:
Georges Rapin
CH-2603 Péry
Phone ++41 (0)32 485 14 27

Printer: AVD GOLDACH
CH-9403 Goldach
Phone ++41 (0)71 844 94 44

Contact:
redaction@decomag.ch
www.decomag.ch

SUMMARY

The brand new 5000 square meters large hall at Tornos headquarters in Moutier is filling up fast. All machines from now on in the new premises go through an extensive final testing phase before shipment. A real eye catcher is the high number of MultiAlpha machines lined up perfectly. The multispindle machines have been assembled and tested half a kilometre away and time has not always permitted visitors an opportunity to see this product range. From now on, all visitors have the chance to scrutinize the multispindle technology. But what can be discovered?

Dr. Willi Nef
Head of Business Unit Multispindle

First, it is interesting to understand why the MultiAlpha is raised higher than the well known MULTIDECO machines. The reason is the different configuration of the pick-up spindle. On the MultiAlpha it is mounted on an independent, multi CNC axis slide, built on top of the machine for perfect accessibility, which explains the height of the machine. The benefits for the customer are tremendous; it allows the user to work with many tools from the back side to finish the part completely in only one setting avoiding the need for expensive secondary operations on other equipment. In many cases these back side operations are now becoming the station with the longest cycle time, a second pick-up spindle can be mounted, cutting the time of these operations in half – a genius solution from our engineers. Another benefit is the two pick-up spindles that can produce two parts at the same time, doubling your productivity!

Further, independent spindle speeds on each station allows perfect cutting parameters, added to this is advanced interpolation capabilities applied for special milling and deburring operations. Such capabilities are typically needed to produce complex parts. Therefore, a fully controlled part unloading system was integrated to avoid any potential for damaging parts. These parts are then passed by a robot onto a conveyor belt or into a pallet according to the customer's preference. All these benefits are packed into the MultiAlpha that is available in two models; an 8 station 20 mm machine and a 6 station 32 mm machine.

The great success of these new models has motivated us to extend the MultiAlpha line with the MultiSigma line. Applying the same technology allows Tornos to introduce the new MultiSigma 8 station machine in 2008 and the 6 station machine in 2009. The only difference between the MultiAlpha and MultiSigma is the number of tools used for the back-working operations. If a part does not require more than two tools from the back side, the MultiSigma is the machine of choice. It comes with two back-working units and can therefore be used to produce two parts at the same time; like the MultiAlpha. Independent spindle speed on each station and controlled part unloading are further highlights to ensure most efficient production of parts.

Now having three, and beginning of 2009 even four different machines, all with the same technology will allow customers to benefit from easy adaptation from one model to another and gain efficiency due to minimal time required for the operator to adapt from one model to another due to its similarity.

Another great benefit of a 4-machine model platform is the large number of accessories that can be applied on different models. Typically the y-axis units allow users to perform oblong holes and thread cutting from the front. Further, a 4-tool turret can be mounted increasing the number of available tools further or when set-up as sister tools increasing largely the autonomy of the machine.

A PC control with integrated remote diagnostics offers further flexibility and if needed an analysis of your actual machine configuration can be done directly by Tornos.

The most important benefit of these advanced multispindle machines is their flexibility. In the past, often only considered when huge quantities were required, multispindle machines have become extremely flexible. As a consequence the machines are applicable for smaller batch sizes. Hence, our customers have now a valid alternative when volumes increase – a Tornos multispindle machine.

The next time you come to see Tornos, make sure you visit the new hall – and have a look at the new multispindle machines.

LAGUNA SECA – THE TORNOS PORSCHES FINISH SECOND BUT THE CUSTOMERS WERE FIRST!

Middle October, California, next to the track, more than 40 customers are in the VIP tent of the Tafel Racing Team to enjoy a shared day under the sun… and be part of a very special event.

Scott Kowalski

Customers from across the country and from France (Mrs & Mr Martin, see article on page 13) are together with Tornos in a friendly environment to share something special. To know more about this event, **deco**magazine met Scott Kowalski, Head of Tornos USA.

decomagazine: Scott, you're the man behind this event, so, you think it's important to have such kind of business relationship… Why?

Scott Kowalski: I am only one of a team! But, you have the answer in the question, it's not just business, it's building relationships. Yes we are partners in business, but with events like these we are more than that. Sharing some fun makes every relationship stronger!

dm: You invited a certain number of customers to come during the weekend… was it successful in term of percentage? And weren't they reticent to spend so much time with some of their competitors?

SK: Yes, some of our customers are in competition, but that doesn't mean they can't have a good human relationship. Everyone came with their families and made the day a great success.

dm: Speaking of the event, do you think it's worth doing such a thing compared to an open house for instance?

SK: Those are two complementary events. In a car race or any "relationship event", we try not to speak business. Obviously if one customer would like to have some answers, we're there… but that is not the aim. For that we have the shows, open houses or sales visits.

dm: Do you invite your best customers only?

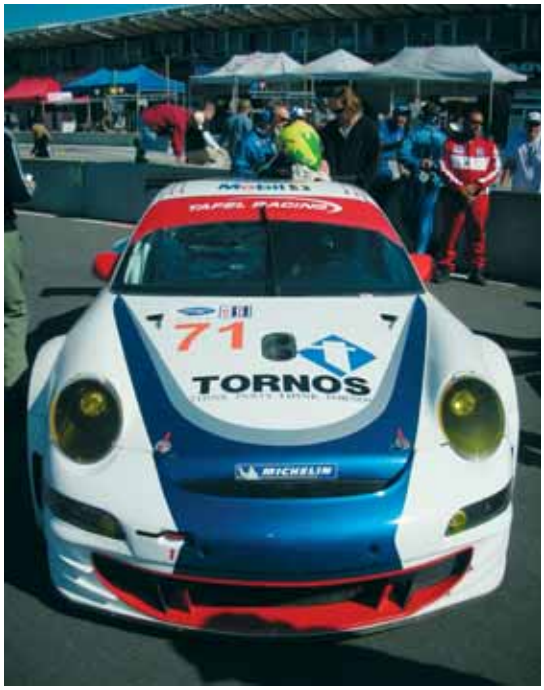
SK: Every one of my customers is my best customer; it's more a matter of opportunity, knowledge that

they would like such an event or sometimes it's proximity. For instance at Laguna Seca, there were customers who have bought many machines, and some who have purchased only one. We also had some who had never experienced Tornos.

While at the race, they were all there and got a feel for how we'll treat them… it's more valuable than any written report.

dm: Tom Peters wrote a book called Re-imagine in which he says that a customer no longer wants a product but "an experience" (let's say a positive one)… Can we say you're also providing such experiences to your customers?

SK: Yes we can say that. But you know it's also a great experience for us – having the opportunity to share one day with our customers in "another context" is very good.



dm: Do you think everybody can act so?

SK: Yes, in fact, even our drivers have great skills in communication and did a great job for our visitors. Everybody was able to talk to the drivers and the whole team and take pictures… Yes maybe a lot of people can put together an event like ours, but it cannot be fake; it has to be genuine.

dm: Why a car race?

SK: It's not a "free idea". We decided to sponsor the race team because we share some strong values with them. With racing, every person on the team is important – the person who changes the tires is just as important as the drivers. And the better they work together, the more they win. It's the same with the Tornos team – the people who pick the parts from inventory are as important as the people who sell the machines. This is what we mean by "The Winning Energy of Tornos." When we get together with customers and potential customers for an outing like this, it gives them a chance to see how we all work together – service technicians, product managers, salesmen, application specialists. We all respect each other and are enthusiastic about what we can accomplish as a team. From a corporate perspective, Teamwork, Accountability, Technology & Innovation and customer focus are key Tornos values and they are also the key values of the racing team.

dm: And what about your people…all the Tornos staff that had to work that weekend?

SK: It's an example of our customer focus… and our commitment to win! It's a mindset – we're always working for our customers.

dm: You also had some movie stars at the booth, why?

SK: We organized all the details to make our customers feel that they are special to us.

dm: Thank you Scott. I'll let you have the final word…

SK: I appreciate the great job done by our people, our team – especially Jim Schwartzbaugh and the North South team who showed us how to host these events… Thank you all!

SHARED SKILLS

At the competition run by Tornos during EMO 2007, the first prize was awarded to Mr. Laurent Martin from the company Joseph Martin SA based in Vougy in the Haute-Savoie (France). After a trip to California to watch an "American Le Mans" race where the Tornos Porsche distinguished itself, we arranged a visit for him to give an account of his trip and to speak about the "winning company".

decomagazine met Mr. Michel Martin, CEO and Mr. Laurent Martin, the man in charge of exports and were also joined by Mr. Alain Tappaz, Director of Tornos France and a working partner of Martin since 1960! Rapidly, this interview helps us to sketch out a portrait of a company ceaselessly in search of ways to achieve further improvements.

decomagazine: You won a competition with an "automotive" prize: did it seem appropriate to you for Tornos to be organising this kind of operation?

Laurent Martin: Absolutely, the automotive sector accounts for 65% of our company's activities. We are fully aware that making progress involves many fine-tuning steps and tests, and that car races have a part to play in this process. Having no wish to hide anything from you, I can reveal that many of the car manufacturers we saw at Laguna Seca use components produced on our turning machines and lathes.

dm: You operate in the automotive sector, but which other sectors do you work in? Could you, in a few words, elabhorate on your company profile for me?

Michel Martin: We are a bar-turning company and we have been on the scene since 1946. We work primarily for the automotive industry, but our skills are also called for in numerous other sectors, such as hydraulics, electronics and the medical sector to

Multispindle workshop of Joseph Martin SA, three generations of machines, from left to right: MULTIDECO, SAS and AS/BS. All the machines are 'as new' thanks to the meticulous standards of maintenance care.

name just a few. At present, we operate with a large number of cam-type and NC multispindle lathes and a further thirty or so numerically controlled single-spindle turning machines. We handle diameters from 0.5 mm to 20 mm.

dm: What are the skills that Joseph Martin can now put to greatest advantage in an increasingly competitive and high-tech market?

Michel Martin: For more than 45 years, we have linked the development of our skills to that of our hardware suppliers, most especially with our partner Tornos, and there are quite a few people in our design office who can testify to this. The concept of Tornos lathes and turning machines has always greatly favoured the installation of specialist equipment to deliver reliable manufacturing processes linked to optimum productivity. Nowadays, each manufacturing file calls for preparation down to the level of minute detail, for firm commitments in terms of reliability and for tight control of tolerances.

DECO workshop. In keeping with the multispindle units, each machine is linked to a centralised air purification system.

dm: By that, do you mean to say that components of this kind require specialist machines and processes? What about issues such as optimisation and cost reduction?

Michel Martin: Allow me to answer the first part of your question: it is certainly true that Joseph Martin achieves its breadth of operations in precisely this context. We provide and adapt solutions in close collaboration with our customers. These developments are then frequently turned into physical reality with Tornos.

Laurent Martin: And with regard to the issue of cost reduction, it is clear that we are always looking for new ways to achieve this. Components all form part of a system and it is very often possible to optimise costs by looking at the whole through the "eyes of the producer". Functions performed by combinations of components can be achieved in different ways and it is our job to find the most effective one. We regularly work in a "co-development" capacity with the people who place the orders with us for their projects.

dm: Would it be true to say that Joseph Martin is a company dedicated to the complex component?

Michel Martin: The notion of complexity is frequently associated with geometry, but sometimes we manufacture very simple components indeed … having said that, there is always some form of inherent challenge, either in terms of precision, the difficulty of machining or there again in terms of integration.

dm: You speak of integration: does that mean that you have diversified into other vocations in order to deliver entire sub-assemblies?

Laurent Martin: It would be fair to say that we have integrated different operations such as laser welding or precision assembly to enable us to offer a complementary suite of services to our customers. We have also invested a great deal in measuring equipment. We inspect components during the machining process and perform some inspection operations once the components are finished.

dm: You speak of "good" components: what ppm levels (number of defective parts per million produced) are required of you today?

Joseph Martin SA has an ultra-modern measuring laboratory, appointed to such a high standard that customers occasionally ask the company to perform measurement work for them.

Michel Martin: It's very easy to say, and much more difficult to achieve. The requirements are now for zero defective parts per million! And our customers also ask us to maintain raised cpk[1] levels!

To return to your question of "new vocations", our philosophy is that we should seek to adapt what we do rather than to diversify – this is a very important distinction to make.

dm: Is this a "new philosophy"?

Michel Martin: Absolutely not: we have always had a clear vision of what we should be doing. We are specialists, and the people who place orders with us can count on us to deliver. We develop and adapt our products in the way which best responds to their needs. Our thinking is always guided by two primary maxims: Firstly, we endeavour to complete as much work as possible on components on our own production facilities and secondly, we direct our investment efforts towards maintaining a homogenous range of machines.

[1] Cpk: This capability index measures the ability of a process to produce parts compliant with specifications. Measurement of capability involves sampling methods which can involve the use of inspection cards. The SPC tool delivers a straight forward measuring method for process capability with the indicators Cp ((upper tolerance - lower tolerance) / 6 sigma), Cm and Pp for distribution, and Cpk, Cmk and Ppk for centering.

Laurent Martin: Our move to multispindle units with numerical control enable us to access other markets and different kinds of demands. With these machines, we are able to manufacture production runs of 30 to 50,000 components very efficiently indeed.

dm: I can well imagine that you never launch yourselves into a new development without first carrying out very careful analysis?

Laurent Martin: We really do work in partnership with our customers. In many cases, we have fairly reliable volumes and forecasts to work with. This enables us to "right-size" our investments accordingly.

Michel Martin: We are very open-minded and always endeavour to inform ourselves as thoroughly as possible about trends and developments on the markets. Whenever we are not in some type of "close relationship", we analyse all of these environmental aspects. Given that we manufacture the vast majority of our components using "Martin" equipment and fixtures, we have to satisfy ourselves that we will obtain a return on our investment.

dm: Speaking of investment, you spoke of the use of high-performance inspection tools: is that not a heavy commitment to sustain?

Laurent Martin: These elements form part of what our customers ask us for, so it goes without saying that we should assure the quality of the components or assemblies that we supply to them. Our inspection facilities are at the cutting edge of technology and it is rare for us not to perform inspections on behalf of our customers.

Mr. Laurent Martin presenting a MULTIDECO unit in 'Martin configuration' to Mr. Alain Tappaz.

The ten or so CNC MULTIDECO machines enable the Joseph Martin SA workshop to manufacture production runs of 30 to 50,000 components in the most rational way possible.

dm: How is your company thriving and how many people do you now employ?

Michel Martin: We are benefiting from controlled growth, both in terms of annual sales and in terms of the number of employees on our payroll. At this time, we employ just under 100 people.

dm: What do you do to assure this "quality benchmark" with 100 people?

Laurent Martin: We endeavor to maintain an effective monitoring system based on having reliable manufacturing processes. With regard to our staff, we deliver plenty of in-house training to ensure that everyone can deliver optimum performance levels.

dm: If I am reading between the lines correctly, the Joseph Martin company is ceaselessly striving to find ways to improve, to find tailored solutions and to pursue further development: isn't that rather a heavy workload for you to shoulder?

Michel Martin: We work in a very demanding profession where investment levels are very high. It is a difficult profession which calls for us to have a wide range of skills.

Conclusion

Following this interview, Mr. Laurent Martin took us on a visit of the company and drew our attention to some specific developments. Their machine shop is most impressive in terms of cleanliness and overall quality. Mr. Tappaz, the Director of Tornos France who was accompanying us confided in me sotto voce that his final thoughts echoed those of Mr. Martin, in that both parties found it a very gratifying experience for Tornos to visit Martin. The first multi-spindle machine supplied in 1969 stands right alongside the most recent of the MULTIDECO units and the two could be photographed to advantage for a new brochure. Many thanks to the Martin company for this very interesting visit!

Mr. and Mrs. Martin in Laguna Seca: a short summary by Mr. Laurent Martin

We went to the EMO trade fair in Hanover and were impressed by the size and quality of the Tornos stand. After some technical discussions, Mr. Tappaz encouraged me to take part in his competition. That same day, I verified my number on the Internet.

A few days later, I received a telephone call from Mr. Tappaz informing me that luck had been on my side and that I was going to be able to fly off to California in a few weeks time!

On arrival in Monterey, a limousine was waiting for us at the airport and took us straight to the hotel. From the next morning, we were looked after by staff from Tornos who took us to the Laguna Seca race track: here we were able to meet the drivers and the entire team at Tafel Racing. The atmosphere was really friendly and open. In the course of the day, we had the opportunity to talk things over with customers of Tornos USA (on this subject, please refer to the interview with Scott Kowalski in this magazine), even though the kind of parts they manufacture is fairly different from what we do.

To crown the event, we were invited up onto the Porsche Tornos podium and even had the opportunity to be taken round the track with expert commentary.

We were most impressed by the professionalism demonstrated by the teams: nothing is left to chance and everything is monitored continuously. Vehicle telemetry enables all parameters to be optimised[2].

That evening, we returned to the hotel, our heads full of pleasant memories!

I would like to take this opportunity to thank the whole Tafel and Tornos team who organised this trip for us.

Laurent Martin

Mr. and Mrs. Martin in the company of Nathan Swartzbaugh, the man behind the wheel of the Porsche Tornos, number 73.

Teamwork, high-tech, motivation, continuous quality inspection ... so many shared values in the team comprising Joseph Martin SA and Tornos SA.

[2] NDLR: Exactly the same as at Joseph Martin!

INNOVATIVE PRECISION MECHANICAL ENGINEERING INNOVATIVELY PRODUCED

At Josef Ganter Feinmechanik in Dauchingen, a German town in the Black Forest, the entire company is characterised by an ethos of continuous innovation. This is reflected on the one hand by a product portfolio exceptionally rich in new ideas and on the other by a totally optimized production process. For the last 75 years, Josef Ganter has been manufacturing mandrels (disc carriers) as well as precision technical tools for the medical and dental sectors. A few of these are trailblazing in-house developments. The latest innovation at Josef Ganter: use of the unique universal cutting oil ORTHO NF-X from MOTOREX.

«In the Mandrel sector, we offer what has to be the world's most comprehensive range of items», states Roland Müller, the owner of the company. This sector is backed up by a range of precision turned components with diameters of up to 25 mm, predominantly for the medical technology sector. Specialist operators use eighteen CNC-controlled automatic lathes with up to 12 axes to manufacture short and extended production runs and can also turn their hands to the production of sample components.

Optimized production is essential to survival

Today, competition in the disc carrier market is intense and global – with the inevitable consequence of declining prices. The company was only able to

maintain quality standards at competitive prices by means of an optimized production process running on a 3-shift basis. When you talk to Roland Müller, you can immediately sense his capacity for getting really enthusiastic about all things new. This mindset was also the reason for his changing to a new machining fluid.

On the search for even better performance

The turning machine specialist from Dauchingen developed an interest in the MOTOREX ᵛMAX-TECHNOLOGY, with its capacity for enhancing feed and cutting speeds and extending tool service life. For some time now the machining parameters of components manufactured in various different production runs have been raised progressively. Up to a certain point, performance improvements of up to 60 % were achieved in operations such as turning, milling, boring and engraving!

Positive results were also obtained with extended tool service lives. The tools are now able to survive unmanned shifts without any problems. This greatly boosted efficiency, and since the changeover damaged tools have effectively become a thing of the past. High standards of dimensional integrity and surface quality were maintained.

The special case of 'Monel' material

A demanding component was manufactured from high-tensile Monel (a combination of nickel, copper and iron) for use in an endoscope. This nickel-copper alloy exhibits high tensile strength and is very resistant to atmospheric corrosion, salt water and a wide range of acids and alkaline solutions.

With conventional cutting oil used previously this component was very prone to discolouring and therefore required a subsequent polishing operation. In contrast, using MOTOREX ORTHO, the high-sheen surface finish was retained during and after the machining operation. Through special additives and the resultant thermal synergy benefits of ORTHO NF-X, it was then possible to dispense with the polishing process required at that time.

Monel 400

Comprises:

63 %	nickel
28-34%	copper
<2.5 %	iron
2 %	manganese

Wherever possible, Roland Müller commits his resources to meaningful innovation – for example, in summer, he cools the air in his manufacturing plant using underground heat sink equipment. With MOTOREX, he has found a flexible and innovative partner in the machining fluids sector.

Josef Ganter Feinmechanik grew to its present size on the strength of manufacturing mandrels (disc carriers). Today, challenging precision tools for the medical and dental technology sectors provide an important second string to their bow.

Through a process of regular repeat measurements, e.g. using a projector, and by keeping measuring logs during volume production, improvements in performance can be verified in a transparent manner.

Second string to the proverbial bow: Technical tools for the medical sector

There is a tradition of innovation at Josef Ganter. Over the last few years universal ratchets and torque wrenches have been developed for the medical technology sector, especially for use in dental and orthodontic applications. These small ratchets, only about 9 cm in length, are manufactured entirely in-house at Josef Ganter.

These ratchets are made of 1.4305 and 1.4197 grades of stainless steel. They are manufactured on various machines, including the 16 Tornos DECO 2000. This precision tool demonstrates clearly just how versatile modern Tornos machining centres now are, and just what level of freedom of movement they enable the entrepreneur to work with.

The way Roland Müller runs his business and the spirit he brings to bear in the process are also reflected in the company's infrastructure: lean and of the highest quality. Innovative ideas married to new kinds of technologies are what make it possible to blaze a trail into new dimensions of production technology and entrepreneurial activity.

It is now reality for production to be faster, more precise and more cost-effective than ever before. Also, thanks to the ORTHO NF-X success factor – this complex fluid technology took several decades to reach the advanced development status it has now achieved.

Roland Müller, the current owner of Josef Ganter Feinmechanik, a company with a proud tradition, is a man who loves challenges of a technical and entrepreneurial nature: "We are always striving to tease new solutions out of the ether, and our efforts are rewarded with success encouragingly often!"

Turning – milling - boring - thread-whirling - engraving and much more besides - all on one and the same machine tool. To this end, Josef Ganter Feinmechanik fields a wide range of specialist tools and fixtures which make the Tornos machines he uses even more versatile than ever.

Innovative partner discovered

It is a well known maxim that progress does not appear out of thin air - it also calls for entrepreneurs willing to embrace change and the right technology to meet up at just the right moment in time. With the changeover to MOTOREX ORTHO NF-X, Josef Ganter Feinmechanik really achieved meaningful levels of payback by tapping into the potential for further innovation this afforded. All the improvements were documented and can also be translated into Euros and Cents on each and every component produced.

We would be delighted to provide you with information about the new generation of ORTHO cutting oils and the scope for optimisation within your area of application:

MOTOREX AG LANGENTHAL
Customer Service
Postfach
CH-4901 Langenthal
Tel. +41 (0)62 919 74 74
Fax +41 (0)62 919 76 96
www.motorex.com

TB-DECO ADV 2009

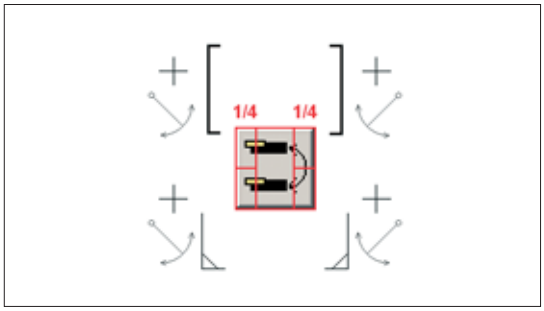
Following the progressive introduction of high-speed programming for ISO code in versions 2004, 2005, 2006 and 2007, the TB-DECO team has been working on the programming and modification of operations, constraints (i.e. bottlenecks) and synchronisation points.

These new improvements are the result of a Tornos strategy that consists not only of offering uncompromising standards of reliability but also great speed and simplicity for programming work.

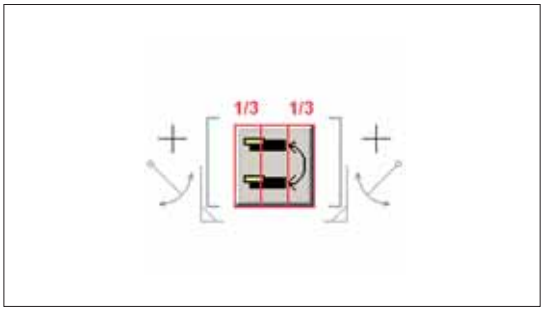
Programming of constraints and synchronisations

To simplify programming work at the end of a "constraint" or "synchronisation":

- The upper zone for programming a synchronisation point has been grouped together with the lower zone for programming a bottleneck constraint.
- In this way, it has been possible to extend the selection zone from 1/8 to 1/3 of the total surface area of the icon, i.e. a surface area 2.7 times larger.



TB-DECO ADV 2007

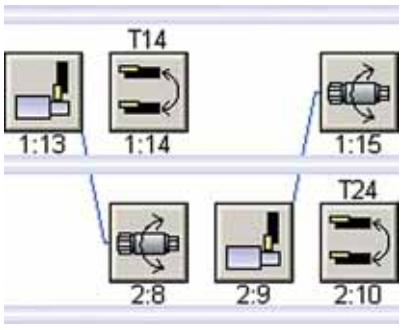


TB-DECO ADV 2009

The fact of having grouped together two zones (constraint and synchronisation) makes it possible to simplify the choice between a constraint and a synchronisation point. As a default, the most frequently used mode is enabled.

Programming between the end of one operation and the start of another is:

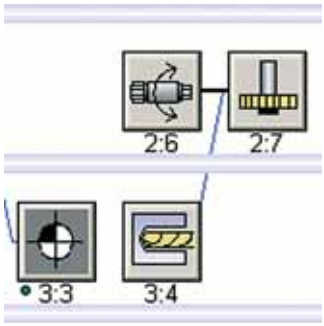
- a "constraint" if operations are on two different lines. (1:13 → 2:8) or (2:9 → 1:15)



Comment:

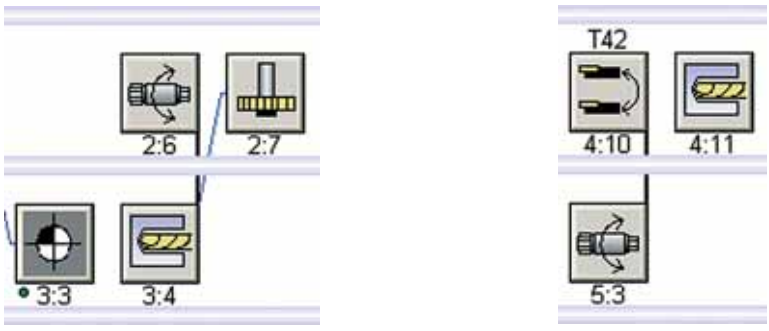
For DECO Sigma and Micro machines, these constraints are replaced by "synchronisations"

- A synchronisation occurs if the operations are on the same line. (2:6 – 2:7)



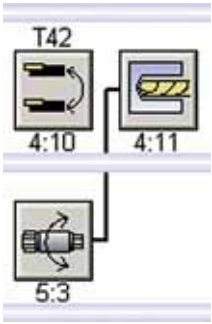
Programming involving two starts of operations constitutes a synchronisation
(1:17 – 2:12), (1:19 – 2:13) or(1:15 – 2:3)

Programming involving two ends of operations constitutes a synchronisation
(2:6 – 3:4) or (4:10 – 5:3)



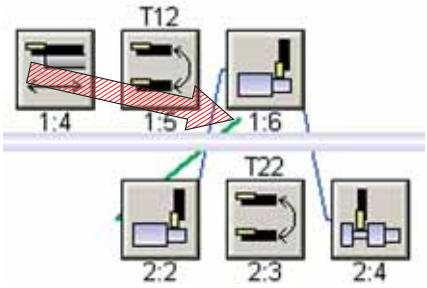
The aforementioned kinds of programming cover the majority of cases of operations involving constraints and synchronisations. To access less common applications, simply press the [Ctrl] key before releasing the mouse button.

For example, the [Ctrl] key makes it possible to program a synchronisation point between the end of one operation and the start of another, where these operations take place on two different lines (5:3 – 4:11).



Relocating constraints and synchronisations

With the old versions of TB-DECO ADV, it is possible to relocate a constraint or a synchronisation with the help of the [Shift] key and the mouse. To make this kind of relocation possible, it is necessary to select the constraint or synchronisation in advance.



The TB-DECO ADV 2009 delivers a significant simplification to this relocation function:

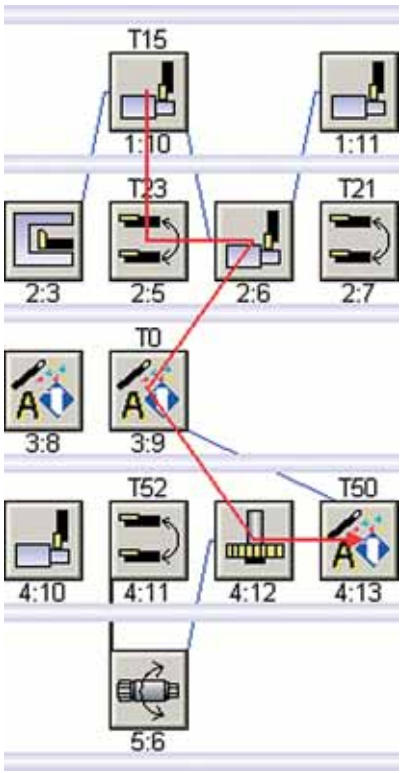
- The attachment area has been extended from 1/8 to 1/3 of the total surface area of the icon.
- It is not possible to mistakenly convert a constraint into a synchronisation, nor to convert a synchronisation into a constraint.
  a) A constraint is always maintained as a constraint when it is relocated.
  b) A synchronisation is always maintained as a synchronisation when it is relocated.

End of a constraint or a synchronisation

When the end of a constraint or a synchronisation has been located outside the main program window, all icons move automatically as soon as the mouse leaves the program window. This movement is a fairly slow process on previous versions of TB-DECO ADV. The fluidity of this movement has been greatly enhanced by the TB-DECO ADV 2009, which delivers much greater ease of operation.

Navigation between the different operations

As well as selecting an operation with the mouse, the TB-DECO ADV 2009 offers the option of navigating with the keyboard arrow keys. To use this new function, you need to have an operation selected in advance with the help of the mouse.



Example of navigation: 1:10 [↓] 2:5 [→] 2:6 [↓] 3:9 [↓] 4:12 [→] 4:13

Navigation with keyboard arrow keys enables the operator to move quickly and easily from one operation to another. It also enables you to select an operation in the Gantt diagram for which the duration is too short (icon too narrow) to enable it to be selected with the help of a mouse.

Once an operation has been selected it is possible to open it by pressing the [Enter] key.

TB-DECO 2009 programming on the machine

With the introduction of an "Interface PC" (XXX-7680) option on MultiAlpha and MultiSigma machines, users have felt the need to have new functions available to them using the keys on the keyboard. This is why new functions have been introduced.

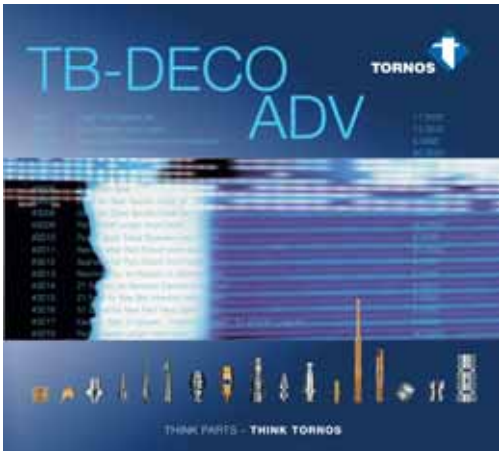
When an operation is selected:

- the [Insert] key on the keyboard enables you to insert a new blank operation after the selected operation.
- The keyboard keys [Home] and [End] enable you to move straight to the first or last operation on the line.

When any operation is selected:

- The [Home] key enables the first operation in the first line of operations to be selected.

Availability of TB-DECO ADV 2009 software



The new TB-DECO ADV 2009 will be available from April 2009. The free update for TB-DECO ADV customers will be issued during the month of August 2009.

Tornos also offers the option of spending three months discovering the numerous advantages of the TB-DECO ADV software. If you are interested, you can obtain a free copy of the trial version.

How do I get hold of a trial version?

You have the choice of:

- sending us an E-mail to the following address "software@tornos.com" with your contact details,
- filling out the enquiry form available from the software hotline on the Internet: "Technology – Software hotline",
- getting in touch with a Tornos site or agent.

MULTIDEC® WHIRLING THREAD-WHIRLING HEAD

Creation of a highly productive tool

The Multidec® external thread-whirling programme was recently launched at Utilis SA specifically to respond to the requirements of the American market.

The contents of this programme articulated some very interesting points for Utilis SA, a company already familiar with internal thread-whirling but for whom external thread-whirling was still viewed as a very serious challenge. Surface quality, productivity, service life of cutting edges and geometric integrity of profile were all fundamental points that had to be satisfied fully during implementation of this project.

The importance of surface quality

In the medical sector, regardless of the method for attaching screw to bone or for fitting a dental implant, the surface quality and condition are of fundamental importance. A sharp-edge and positive cutting tool is synonymous with reduced cutting efforts, clean surface finish and above all with a complete absence of encrusted impurities on the machined material.

A sharp cutting edge is of vital significance to the longevity of the implant. Under no circumstances can any traces of screw movement be allowed to appear on the machined surface of any implant intended to reside inside the human body, even if those traces are just a few hundredths of a millimetre in size.

The granulometry (i.e. determination of grain size) of the substrate is essential for assuring perfect sharpness of the cutting blade. You should be advised that the quality of the profile will always be dependent on the quality of sharpness of the cutting insert. A carbide tool with a submicroscopic grain size, i.e. one where the average grain size does not exceed 0.5 microns, delivers a superior quality of sharpness that will in turn deliver favourable outcomes in terms of surface quality and condition.

TA6V Medical screw

Productivity linked directly to the number of teeth.

The key feature of this thread-whirling tool is its production output! For Utilis SA, it is evident that the productivity of this tool greatly exceeds what exists elsewhere today in terms of number of teeth.

Nowadays, you would find it hard to find someone who is not seeking to optimise his machine tool investment and who is not seeking to gain a few tenths of a second, or even a few seconds in the manufacturing process, wouldn't you? The quest for optimisation is driven by self-evident logic.

Our choice was based on the following numbers of teeth: z=9 and z=12. This choice might look like an audacious and risky gamble! However, it has proven in the event to be a wise one, combining as it does all the fundamental points of the specification document.

Without increasing feed per individual tooth, it is the number of teeth that makes this tool so productive. Compared to a z=3 head and a feed of 0.02 [mm/z],

we obtain an increase of 200% in productivity for a z=9 head or and increase of 300% in the production output level of a z=12 head.

Swarf removal

Several options are available for swarf removal! Centrifugal force naturally contributes to swarf removal, but sharpening action determined by the specific characteristics of the profile and by the cutting angle will greatly facilitate ejection and sliding action of swarf. High-pressure lubrication is needed to remove swarf right away from the machining area.

To reduce as far as possible the risk of "nests" of swarf forming, it is also advisable to subject the thread-whirling head to a washing cycle, performed during a machine downtime period. At this point, the head will be rotating very slowly indeed and the high-pressure jet blasts away the swarf particles trapped in the cutting blade crown.

Service life of tool cutting edges

No-one would exhibit any great interest in increasing productivity without at the same time extending the service life of cutting tools. As mentioned previously, our choice of carbide is based on the need to obtain granulometry of the submicroscopic grain type. Nevertheless, we do make a slight distinction and this is of key significance.

This slight distinction relates to the cutting speeds commonly employed in thread-whirling operations, i.e. 100 to 180 [m/min], or even above this level. The latter is a nuance with distinctly tough characteristics and we should not forget that we are involved in a milling operation where machining also takes place under the unstable conditions generated by backlash between guide bush and the bar being machined. Any less tough "nuance" will be less forgiving of repetitious shock loads and will be penalised rapidly by premature deterioration in the cutting blades.

This deterioration in cutting blades contributes towards an increase in cutting efforts, to a worsening of surface quality and of profile geometry quality. This deterioration also gives rise to an increase in the number of machine shutdowns and non-productive periods. This is certainly not what we wish to achieve with this tooling technology.

To offset the choice of a "tough nuance" over a "hard nuance", we apply a coating of PVD to the cutting blades. A hard coating ~3000 [HV] on a tough substrate is a technical solution that combines toughness with resistance to wear on the cutting blades.

Sharpening and compliance with profile geometry

Another important element in the thread-whirling process! Achieving compliance between the geometries of what is depicted on the drawing and what is obtained from the machine, i.e. the component.

For the reasons cited earlier, we recommend grinding a sharp and positive cutting angle onto the insert, with mandatory profile correction which also takes due account of the hand of helix angle on the thread. The Multidec® Whirling thread-whirling head presents the unusual distinguishing characteristic of positioning the cutting insert in such a way that the operator can machine in either clockwise or anti-clockwise direction on this thread-whirling unit. It is important to know the direction of rotation in advance in order to define the correct way of sharpening the cutting insert. The "attack" side of the cutting insert will benefit from specific sharpening to the diameter machined before the thread-whirling process while the distinguishing characteristic of the "escape" side will be that it finishes the tip of the profile. The levels of stock removal from "attack" and "escape" sides of the profile are usually minimal to extend the service life of the cutting edge.

Validation of Multidec® Whirling at Tornos Technologies France

The Multidec® Whirling thread-whirling head delivered exceptional results during countless thread-whirling tests carried out at Tornos Technologies France or to be more precise, at their new Techno Centre. These most recent results were obtained using a Tornos DECO 13 machine and confirm the initial positive impressions derived from tests conducted since early 2007.

These validation tests, performed in Germany, the USA, Switzerland and now also in France, confirm the gains obtained in terms of productivity and surface quality.

We would also like to take this opportunity of thanking Tornos Technologies France as well as

Mr. Rodolphe Lacabe from Tornos France and Mr. Gérard Magli of Utilis France.

Mr. Rodolphe Lacabe for making themselves available for this purpose, and for the warm welcome they accorded us.

Compatibility and flexibility of the Multidec® Whirling system

Generally speaking, our system can be adapted to suit all types of thread-whirling units. Regardless of the brand or the origin of the unit, we are in a position to provide you with a system capable of meeting your precise needs.

The design of the Multidec® Whirling also makes it possible to alter the distance between the angular axis of rotation of the thread-whirling unit and the cutting area. Using the set of shims provided, you can reduce or increase the distance between the front of the guide bush and the cutting area. However, to gain the full benefits from this technical trump card, you need to have a Y axis on the machine to enable you to correct the centre of the tool relative to the component axis.

Conclusion

In the light of the results obtained, it goes without saying that the Multidec® Whirling thread-whirling head is a high-performance tool which will substantially reduce the machining time while at the same time deliver real gains in terms of surface quality and service life of the cutting edges.

For the operator, these gains will translate into optimum utilisation of machine performance capabilities and great flexibility in the use of the thread-whirling head.

Utilis SA
Denis Juillerat

A COMPANY TAKING THINGS ONE STEP FURTHER...

Our editorial team had the opportunity of accompanying Tornos sales staff on a visit to a company based in the Ticino region of Switzerland, a manufacturer of "incredible" precision and highly complex components. In this region, one with relatively little tradition of bar-turning work, Mr. Cifà and Mr. Pedretti, the co-owners of TS Décolletage, have successfully established a production facility that is the equal in all important respects to that of much larger companies in this field. Already working as sub-contractors for major names in the medical and dental sectors in Europe, this SME is now directing its attention at the USA and is also looking to diversify into the high end of the watchmaking sector.

A meeting with TS Décolletage[1]

An entirely new factory for TS Décolletage, proof of the dynamic success of this bar-turning company.

decomagazine: Your company is fairly typical in its set-up for this region. Could you map out your company history in broad brushstrokes?

TS Décolletage[2]: We have known each other for 30 years, going back to a time when we worked alongside one another on cam-type machines. In 1996, we decided to launch our bar-turning business and to create TS Décolletage. Since then we have experienced a sustained period of strong growth (NDLR: in double digits each year) and, last August, we moved into our new-build 1200m² factory!

dm: Summarised like that, your history sounds like a simple one. In your opinion, what is the company's strength and how have you gone about achieving this sustained growth?

TS Décolletage: There are certainly several factors to take into account. The main ones would have to be our client focus, our flexibility and our highly advanced manufacturing capabilities.

dm: You speak of advanced capabilities: does this mean that you offer more than just "simply bar-turning"?

TS Décolletage: Our main vocation is of course bar-turning work, but we do have additional skills, for example our ability to complete "super finish" polishing work entirely in-house.

dm: To speak more specifically of bar-turning, you are a "man of the cam", but nowadays you work exclusively with CNC machines. How did you make this transition?

TS Décolletage: When we set up our company, we chose to work right from Day One with NC units in order to manufacture more highly complex components in medium-length to short production runs. This was based on our genuine wish to take things further than we could possibly do with cam-type machines.

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[1] TS stands for 'Torniture Speciali' which can be translated as "special or specialist turning".

[2] The answers we received from the two owners of this business were absolutely in line with one another, and we assumed the role of stipulating that answers should solely be made on behalf of the business. This illustrates a first strong point for this SME: the presence of a "dream team" at the top.

Messrs. Pedretti and Cifà, The "dream team" at the head of TS décolletage.

We considered purchasing automatic lathes, and we finally signed on the dotted line with Tornos for an ENC 167 at the Siams trade fair back in 1996. At that time, we were working primarily with brass and our components were a great deal less complex than they are today.

dm: You now have around ten Tornos machines including several DECO 10, 13 and 26 units as well as several ENC machines. You cover a wide range of diameters…

TS Décolletage: We started with components with diameters of 16 to 20 mm and as I mentioned earlier, we worked primarily in brass. We now machine the full range of diameters from 2 to 32 mm and work mostly in stainless steel, titanium and PTFE.

dm: This is a radical change!

TS Décolletage: We work in several business sectors: medical, dental, the connectivity business, micro motors and numerous others. As the years have gone by, we have gradually specialised in high added-value components either in terms of dimensional precision, complexity of operations or flexibility.

dm: TS Décolletage is mainly a company positioned to manufacture "extreme components"; I imagine that expertise is very important?

TS Décolletage: The most important aspects are a rigorous approach to business, precision and our ability to find machining solutions for our customers.

dm: How much time do you spend in the business and what do you do to find personnel capable of meeting your demanding requirements?

TS Décolletage: There are seven of us, and all the programming and development aspects of our work are performed by the two proprietors. With regard to our employees, they are all highly skilled people, both in terms of machining and of inspection work. With regard to recruitment, bar-turning does not have a great image and young people often prefer a career in banking ... but we aren't really confronted with a problem because we have a stable workforce.

dm: By that, I assume you mean that you don't have much by way of staff turnover?

TS Décolletage: Absolutely not! We work in a very small team, often 24 hours a day and 7 days a week. It is important that we form a cohesive unit, which I would describe as akin to a family. All of us know why we are here. With regard to young people, this is more difficult for us because we are so highly specialised that we could not train apprentices.

dm: If you permit, I would like to come back to the point about flexibility: this depends on personnel, but also on the organisation as a whole and on the machines. How many new machine set-ups do you perform each week?

TS Décolletage: On average, we perform 1 to 2 machine set-ups each day in our workshop[3]. Depending on the circumstances, these operations can take anything from a few minutes to one or even two days!

dm: This flexibility is our strength, but is that not at the same time a danger?

TS Décolletage: We are very flexible and can come to "accommodations" with our customers, although this never involves any compromise in terms of quality! We maintain very good relations with the people who place orders with us, and we usually obtain production orders for components which give us an acceptable margin for maneuver. Sometimes we have to sacrifice our evenings, weekends or even our vacations, but that's all part of the game. I think that our customers are aware of the fact that, regardless of how tight the deadline might be, quality is always perfectly obtained.

dm: You are active in a big way in the medical and dental sectors, certified in accordance with ISO 9001-2000 and recognised on the market. Is it important for you always to be able to diversify?

TS Décolletage: We have been operating in the medical market for the last 4 to 5 years, so this departure was effectively a diversification for us at the time. We have core skills in terms of flexibility,

and in the precision and complexity of the components we manufacture, as well as having a highly capable range of machines, so why should we not make this capacity available to other companies?

dm: Let's talk about your strong points, the first of which is flexibility. Could you give us an example?

TS Décolletage: We had one instance, a real emergency, where we set up a machine to produce just 30 components! Following this, a much larger order was then placed with us for this same component.

dm: And what about precision?

TS Décolletage: You're not going to believe this, but we can achieve precision to within 2 microns with our DECO 10 units! Not many people believe this! We machine to very high standards of precision and we have our "super finish" polishing capabilities

[3] On the day of our visit, 4 machine set-ups were being planned for!

Two generations of NC coexisting in perfect harmony.

that enable us to supply finished components in perfect condition. We also have highly capable inspection systems ... even though a single micron is often very difficult to measure. Our new factory is air-conditioned to a steady 23° C throughout the year and this is of great help to us in assuring consistent repetition levels at this high level of precision.

dm: You have shown us some very complex components, involving the use of milling as well as other operations4. These components would appear to be right out "at the limit", so how do you go about programming them?

TS Décolletage: We work with TB-DECO and this enables us to perform virtually impossible operations. Both of us do the programming work, and it is not unusual for us to challenge each other's ideas and to push out the frontiers even further!

dm: In conclusion, do you have a wish for the future?

TS Décolletage: Firstly, we are going to finish moving into our new premise and then continue developing. We are sub-contractors for the medical industries in Europe, but there is vast potential in the USA and we are convinced that our skills will work marvels in that market! Along the same lines of thought, the high end of the watchmaking sector also represents a market in which our major strengths would be really appreciated. Our aim is to continue remaining on top of our rate of growth.

Of course, we will also always be in need of machining solutions, and Tornos is our partner in this area…

Would you like more information about TS Décolletage?

Mr. Cifà and Mr. Pedretti will be pleased to hear from you at the following address:

TS Décolletage
Via ai Gelsi 13
CH-6930 Bedano
Tel +41 91 604 50 88
Fax +41 91 605 61 64
e-mail tsdecolletage@ticino.com

A suitable region for your next vacation?

The Ticino region is full of contrasts and while TS Décolletage finds a technological environment here conducive to its business development, chiefly thanks to the many industrial companies flourishing, it is also a region where you can find wonderful landscapes and warmth of human response for those seeking restful or discovery-based vacations. In two words: a great place for holidays.

The website for the Ticino region is a mine of information http://www.ticino.ch/

[4] Unfortunately, we are not able to publish images of these components because their market launch is scheduled for several months into the future.

PRECISION AND PERFORMANCE ON A REALLY MINUTE SCALE

For some years, Dihawag has enjoyed great success developing and selling high-performance thread-whirling tools. Originally, this machining technique was used primarily in the medical technology sector and for the machining of screw threads. More recently, the use of this cost-effective process has been extended to include the watchmaking sector and the automotive industry.

For Dihawag, the first step was taken about two years ago with the development of a proprietary 5-edged thread-whirling head for use with thread-whirling blades. This system has since proven its capabilities and is now used with great success for the production of small precision threads with very challenging requirements in terms of profile and radii.

The second challenge was to develop and manufacture a Dihawag thread-whirling head based on reversible tips. The advantages of a system of this kind are self-evident:

- No more regrinding required.
- Blades always coated, leading to longer service lives for steel, titanium and other high-tensile materials (CoCr etc.).
- Variable blade geometry adapted to suit the material being machined.
- Simpler handling and problem-free production planning.
- Simple profiles with two or even three pass capability.
- Variable tip width, up to a width of 8 mm.

With this system, threads can be produced from diameters as small as 2.0 mm and profile radii as small as 0.03 mm. The precision at reversal point is less than 0.01 mm. Furthermore, this version of thread-whirling head can also be used to offer and devise customer and machine-specific solutions.

The activities and successes of Dihawag have not gone unnoticed on the market. For example, Tornos SA invited Dihawag to design a thread-whirling head system for the MULTIDECO 20/6. In collaboration with Pibomulti SA, the company responsible for the Tornos thread-whirling unit, Dihawag fronted up to this challenge by meeting the following criteria:

Dihawag thread-whirling head with Pibomulti unit.

- Variable concentricity < 5 microns.
- Simple change on the machine without direct visual contact - head or tip?
- 6 reversible cutting tips.
- Cutting circle diameter of 12.0 mm.
- Fast-change system.

Tests conducted over the last few weeks have demonstrated that the requirements on finish (surface quality) and profile can be satisfied completely (100% compliance). It was therefore possible to finalise another new project, once again meeting with resounding success.

TORNOS MEETS TIGHT TOLERANCES AT DALAU

Specialist in machining PTFE plastic materials, Dalau has purchased yet another Tornos turning centre at its Clacton-based manufacturing facility. When the plastic component manufacturer had an intricate part to produce, Tornos was the only machine tool provider that could solve the problem with its new Micro 8.

When Dalau took on the new medical component that required machining to tight tolerances, its current machine tools were incapable of producing the part. However, as a manufacturer already at the forefront of technology, Dalau reviewed the market and found that other manufacturers of turning centres were limited at meeting these demands.

The new Micro 8 turning centre from Tornos is the first to be installed in the UK and it demonstrates the machines capability to machine extremely small parts to very tight tolerances. This tight tolerance capability has been perfected by Tornos over decades of manufacture for the watchmaking and medical industries.

Dalau typically produces components for the electronics, telecommunications, aerospace and medical industries, making over 100 million PTFE and plastic components a year. The company has been a long-term user of turning machines from Tornos but it was the Micro 8 that solved the problem in this instance.

The medical component that led to the purchase of the Micro 8 is a 4.5 mm diameter 2.5 mm long PTFE part that requires many holes all on a PCD at <0.3 mm diameter. All turning centres reviewed were incapable of meeting such demands; however the Micro 8 with its ability to machine to a 1 micron tolerance has little difficulty meeting the needs of Dalau.

Naturally to meet such tolerances the machine shop at Dalau is a temperature-controlled environment, as PTFE components are subject to expansion at ele-

vated temperatures making it difficult to hold tolerances in the realm of ±0.015 mm. "Many sub-contract machinists won't touch PTFE, but with the help of the Tornos machines we have gained the experience to make us a leader in our field. The reliability of the Tornos machines is first class, which is exactly what we require for rapid throughput parts," says Mr Philip Alston production and QA manager for machined components at Dalau.

Commenting upon the ability of the Micro 8 to meet the tight tolerances, Mr Alston continues: "The tooling on the Micro 8 is positioned very closely to the workpiece and it results in the tools traveling a shorter distance to the part. This reduced tool travel increases rigidity and most importantly takes away any potential deviation in cutting tool accuracy."

The enclosed positioning of the cutting tools and drills not only improves accuracy and rigidity but also enhances surface finish and tool life. Although Dalau sometimes undertakes batches up to 1 million, the typical batch size on the new Micro 8 is 10,000 parts. The improved rigidity enhances tool life and delivers confidence that cutting tools can perform for longer periods. This is vital for long batch runs and lights out manufacture as conducted at Dalau.

The Micro 8 is the latest in a long line of Tornos machines at Dalau. The company installed its first Tornos cam-driven automatic in the mid 1980s, the company now has 45. In recent years Dalau has acquired Tornos DECO CNC sliding head models and the company now owns four DECO 20 machines, seven DECO 10 machines and its new Micro 8.

"As a general rule of thumb, straightforward single operation components are loaded to the cam-driven autos, while anything more complex, perhaps involving PCD drilling, milling or second operations of any kind, will be put on the DECO CNCs to come off complete. However, the latest order is taking precision to a new level and this called for new technology," continues Mr Alston.

Quality is a key issue at Dalau and the company has developed its own SPC system as part of its TQM system that is linked to the CNC control of the Tornos machines. The innovative system allows operators at the ISO 9001:2000 accredited company to monitor every dimension and characteristic on every drawing in real time. If a problem occurs it can be rectified immediately and not after an entire batch has been produced. It also ensures full component traceability.

dalau™
Plastic **Components**

TWO SIGMA 32 MACHINES TESTED FOR A 6 MONTH PERIOD

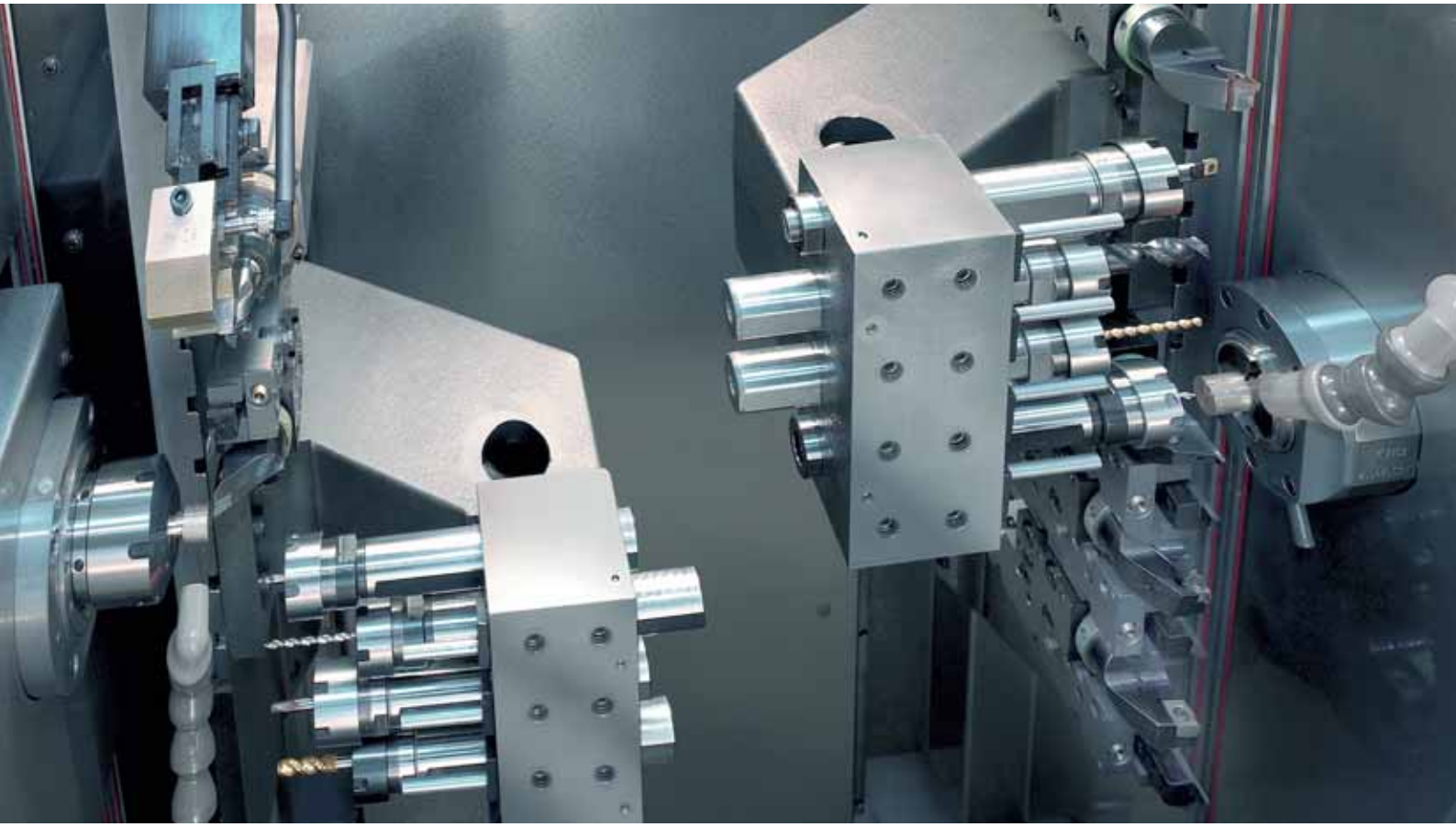
decomagazine wanted to learn more about the veritable marathon to which the two new Sigma 32 from Tornos had recently been subjected to. Mr. Vincent Rieder, Tornos Project Manager, agreed to share some of his valuable time with us.

decomagazine: Mr. Rieder, before we talk about these technology tests, could you tell us what this machine is to be used for?

Vincent Rieder: Sigma 32 is a machine intended for the machining of large-diameter workpieces of average complexity (for bar turning). We offer the option of machining bars of 32 mm diameter for workpieces up to 200 mm in length, or even more if we feed the unit through in several fixture settings. The machine was designed to offer great rigidity and stability during machining work. The principal target markets are the automotive and hydraulic sectors.

dm: This new machine closely resembles the Sigma 20, so allow me to ask whether your target client base is largely made up of people currently using Tornos products?

Vincent Rieder: Absolutely not. This machine genuinely is a "universal" machine: it is very simple to come to terms with and features ideal kinematics ... and it can be programmed in classic ISO as well as in TB-DECO. It therefore has something to offer everyone!



dm: You speak of simplicity in terms of kinematics and programming. Could you explain this a little more for our readers?

Vincent Rieder: Programming is symmetrical, by which I mean that you work on one channel for the spindle, on another channel for the counter-spindle and the only synchronisation required is the pick-up of workpieces ... and all the rest is automatic. It is a real pleasure to program this unit.

dm: Programming is not the whole story, what about operation?

Vincent Rieder: An equally great pleasure! The machining area is vast, access is simple, the tool systems and equipment can all be pre-configured and are all simple to install on the machine. Better yet, with rotating tools, you have a snap-on system which benefits from tangential drive: nothing could be simpler!

dm: This certainly enables you to change tools pretty rapidly – are they interchangeable?

Vincent Rieder: It is not just the tools and equipment that are interchangeable between spindle and counter spindle. It is also possible to fit Sigma 32 tools on the Sigma 20. This is a real plus for people who own both types of machine.

dm: Let's talk now about this marathon of tests that you have been carrying out on this machine – is this a normal procedure at Tornos nowadays?

Vincent Rieder: It is true that we have completely re-thought the way we fine-tune and conduct tests on our machines ... but above and beyond that, we have changed the entire concept. Nowadays, we have left behind the era of "machines for engineers". Our machines are designed in partnership with our customers in order to offer them products that meet their needs effectively.

At the "end of the chain", we do all we can to test every aspect of these machines. The aim is of course to assure our customers, once these machines are installed on their premises, that their machines will keep their promises.

dm: What did you test on the Sigma 32?

Vincent Rieder: We have an entire battery of tests that include temperature response characteristics, precision, rigidity/strength, swarf extraction, filtration, tool changes and general aspects of machining (stability, mechanical wear etc). Furthermore, a machine test is specifically dedicated to test the reliability of that machine.

dm: How are these tests performed? Are they integrated in the production flow on these machines?

Vincent Rieder: Oh no, it all takes place much further upstream than that! As part of our development process into new products, a special cell that we call "Mise au Point" [Fine-Tuning] is "in the loop". This special cell is under the responsibility of a bar-turning specialist with many years of experience with machine tools. We genuinely wish for our tests to be carried out under realistic conditions on the ground ... and only a "real" operator is in a position to guarantee that this is what happens.

dm: Were these tests used to validate the Sigma 32. Visually, this machine closely resembles the Sigma 20 – are they in fact different?

Vincent Rieder: Aesthetically, they do indeed resemble one another closely. On the other hand, we have developed technical solutions to guarantee that the new machine can be used on diameters of up to 32mm. We have also taken this opportunity to integrate innovations which reappear on the Sigma 20 II.

dm: Sigma 20 II?

Vincent Rieder: Yes indeed: the Sigma 20 machine benefited from so many of the latest developments in our manufacturing facilities and machine concepts that we decided to make a new machine!

dm: We will talk more about the Sigma 20 II at a future date. If you permit, I would like us to go back to the Sigma 32. I've heard it said that you sold the first of these machines at the EMO trade fair last year. Were these supplied to customers in the typical configurations of that time?

Vincent Rieder: The machine exhibited at EMO was the prototype and it was on this basis that we tested everything. The machines supplied obviously integrated all the improvements identified during these tests. The customers will be receiving finished products in due course.

dm: To sum up, what are the real strengths of this machine?

Vincent Rieder: The machine has got off to a good start in life. It benefits from an extraordinary concept with its spindle and counter-spindle sharing identical power ratings, and its mirror-image kinematics. In production, this machine is rigid, precise and stable. However, there are many other strong points in terms of ergonomics and operating comfort such as the choice between ISO or TB-DECO programming, interchangeability or the generously proportioned machining area.

dm: You stated at the start of this article that this machine "is a real delight". Would that be a good way to conclude?

Vincent Rieder: Yes indeed, but I would also say that being a delight in no way detracts from other aspects – the Sigma 32 is a superlative tool dedicated to delivering great levels of productivity to our customers.

Technical specifications

Bar capacity:	32 mm
Max. speed of spindle and counter-spindle (aka "back spindle"):	8000 rpm
Spindle and counter-spindle power:	3.7/5.5 kW
Max. number of tools:	22
Cross section of tools:	16 x 16
Number of linear axes:	6

MICRO 7 – MS 7 CONTEST AT THE SUMMIT DURING THE SIMODEC TRADE FAIR

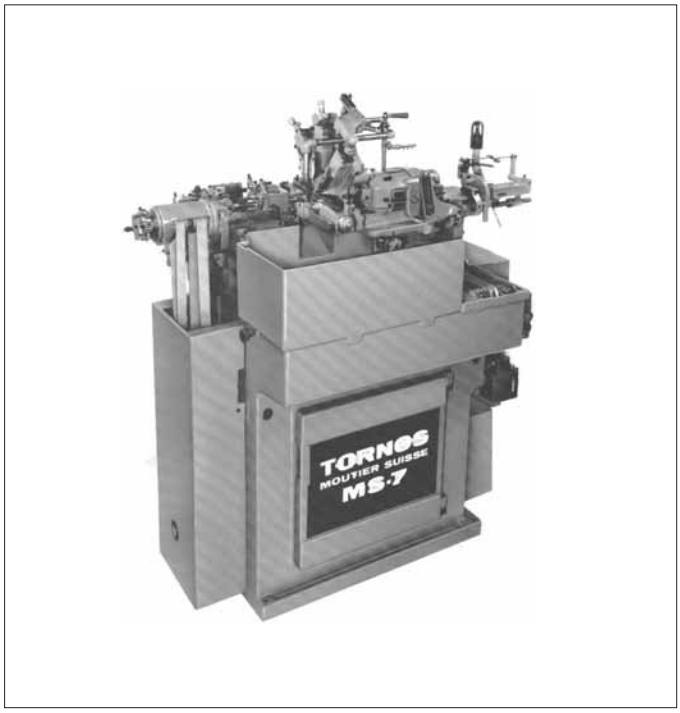
Replacing cam-type lathes with an NC lathe? Even though this challenge has been attempted many times by numerous manufacturers, Tornos announces its intention to pick up this gauntlet at the Simodec trade fair. To do this, the manufacturer has chosen to stage a contest between the Micro 7 and the MS-7, the benchmark unit!

The cam-type lathe has nothing left to prove, so measuring performance against it is a real challenge.

With more than 100 years of experience, over 100,000 cam-type lathes supplied worldwide with over 40,000 still in active service and our experience of the world of NC with sales of more than 6000 DECO machines, the Swiss manufacturer is able to take up this challenge with real panache. The basic idea behind this demonstration was a wish to stage a match right at the summit. To get a firm grounding in factual reality, Tornos teamed up with MGB, one of the great European bar-turning specialists. The latter brings all its experience and expertise in the operation of cam-type machines to bear on this comparative exercise, to the point where an "MGB-enhanced" MS-7 machine features on the Tornos stand, in direct confrontation with the Micro 7.

What are the factors that influence the choice of a machine tool? Naturally enough, price is one of them. On this point the Micro 7 is less competitive than an MS-7 machine disclosed on the balance sheet with a book value of just SFr 1.–. Nevertheless, the manufacturer notes that various elements come into play during the decision-making process culminating in the purchase of a product. The contest was therefore conceived with this global vision, leaving it to each party involved to ponder the different criteria in terms of their needs and prevailing situation.

With this demonstration staged in the form of a contest, Tornos is aligning itself with the comparison logic employed in "beauty contests" between products such as cameras, to take just one example.



Tornos sets out to analyse the following criteria:

- **the cycle time;** even if the time per workpiece is only one element, it is an essential one
- **productivity;** stability during production, tool wear, pre-setting
- **precision;** speed, repeatability, temperature setting
- **technology;** power, speed, modularity, elimination of fixture changes
- **ergonomics;** setting, lubrication, access, noise, evacuation
- **future;** difficulty of finding "cam-trained" operators, access to training and simplicity – a pretty tough list!

To find out a bit more, decomagazine met up with Mr. Serge Villard, Product Manager for the Micro 7.

decomagazine: Mr. Villard, is this not a pretty bold bet to compare your product in this way against the benchmark reference of a cam-type machine?

Serge Villard: The MS-7 lathe has nothing left to prove: it is fast, reliable and precise. Measuring yourself against it, especially when it comes to speed of operation, is a real challenge. We decided to showcase this operation because we are convinced by the performance capabilities of the Micro 7 and by its ability to outclass this legendary lathe, even in the familiar field of productivity.

dm: What do other manufacturers of single-spindle lathes make of this? Did you not pick the easy solution by comparing your product to an "old Tornos product" instead of to one of the more modern products out there?

Serge Villard: Quite the contrary is true. We know that the Micro 7 outclasses its competitors in many different respects. Seeking to measure up to a benchmark reference like the MS-7 lathe is a challenge of a quite different sort.

Several of our competitors' lathes have been heralded as the successors to the cam-type lathe. Is this really true? In reality, when I go visiting bar-turning workshops in Europe or in Asia, I can't help noticing that cam-type lathes are still well represented on the ground. You have to ask yourself why this is the case. Apart from the issue of cost, one key factor is the speed to completion of a bar-turning workpiece requiring only minor to average levels of machining. This is the challenge we set ourselves with the Micro 7, first of all to produce an electronics component, then to produce some components for the watchmaking sector, a field in which the MS-7 lathe is still used a great deal.

dm: The first of the parameters you mentioned earlier was "cycle time". On what basis have you been working to confirm that you can equal the MS-7 in terms of cycle time?

Serge Villard: We conducted this contest on the basis of very tangible elements. To achieve this, we

decided to work from a basis of electronic connection components. We collaborated with MGB (Marnaz – France), a benchmark reference company in this field. We therefore had precise and measurable data for cycle times and machining processes on the MS-7 lathe. Together we chose an 'ls' component representative of this segment of the market and we worked on the program, the setting of the workpiece and its optimisation with the aim of achieving the same production outcomes as the cam-type lathe. The result emerged as a dead heat between the units in this respect.

dm: Everything depends on the choice of component doesn't it? Subject to the operations to be performed, there surely must be some differences?

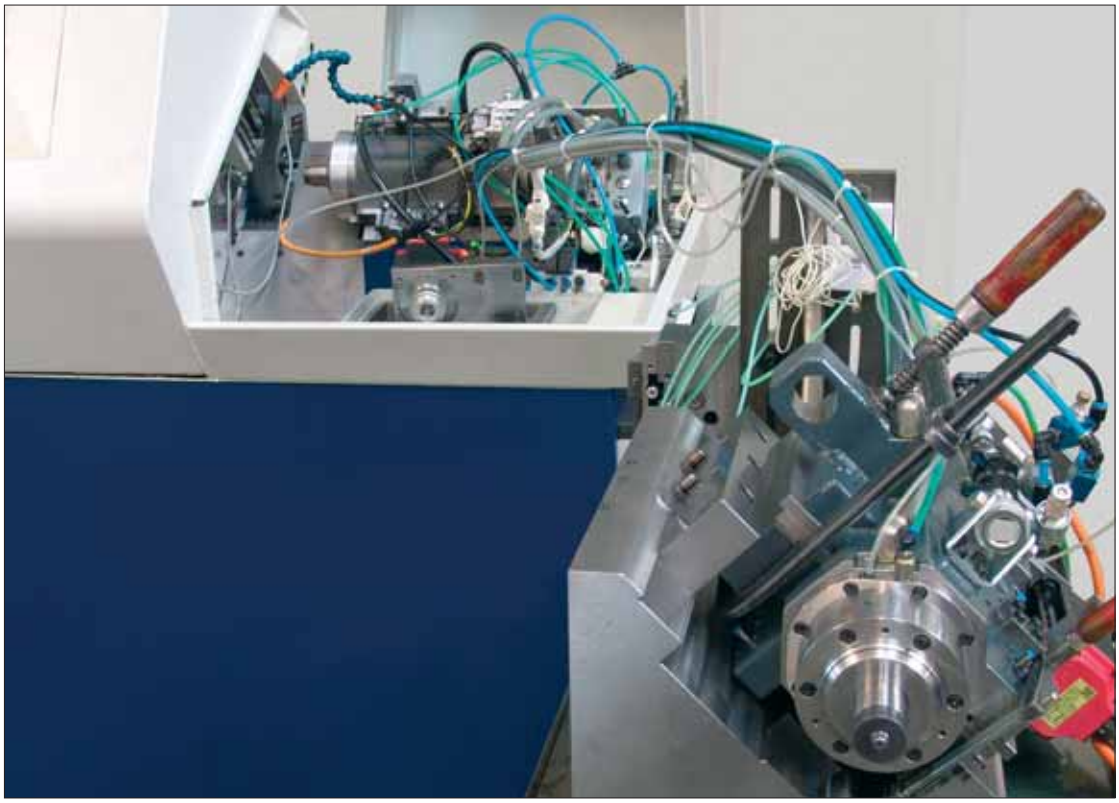
Serge Villard: You're absolutely right. It would not be correct to state that the new Micro 7 lathe would be capable of beating a cam-type lathe in all cases, and certainly not in terms of pure cycle times. Based on our first trials and on the basis of the experience gained by our customers in the use of the Micro 8 lathe, you find in some cases that we are going to be a little slower and sometimes a little faster, especially when seeking to achieve precision on difficult materials. In some cases honours are absolutely even.

dm: Let's talk now about another important parameter: precision. How well does this lathe deliver on this front? Do you believe that you'll be able to achieve results as spectacular as you did with your Micro 8?

Serge Villard: All the tests performed have shown us that precision and production stability are going to be the major arguments in favour of this machine, exactly as they already are with the Micro 8. With the Micro 7, nothing is left to chance from that point of view. This assembly is perfectly consistent and well structured, echoing the innovative concepts of the Micro 8, to such an extent that, in terms of precision, it is not only going to win this contest, but will go on to win every match over the next few years staged with different adversaries, and not just with Tornos veterans.

dm: Let's also talk about ergonomics: nowadays, operators are pretty demanding about the tools of their trade, aren't they?

Serge Villard: On this front, all I can say to our customers is quite simply to come and see this lathe, and bring your machine operators: they're going to fall in love with it! Here too, nothing whatsoever has been left to chance. We put it into the hands of our own operators right from the start of this project. All their comments have been taken into account. The



result is, in my opinion, quite remarkable, but I will leave it to our customers to deliver the final verdict. I am very confident though! That applies whether we're being compared against a cam-type machine or indeed against any similar machines already out there on the market.

dm: Are there any other determining factors that will enable Tornos to meet the challenges presented by these bar-turning customers?

Serge Villard: I believe that you really do need to come and see this lathe before you can fully appreciate its qualities. I can give you a few points which were raised by some of our customers in the course of a project, and these provide us with a reassuring level of comfort prior to this official launch.

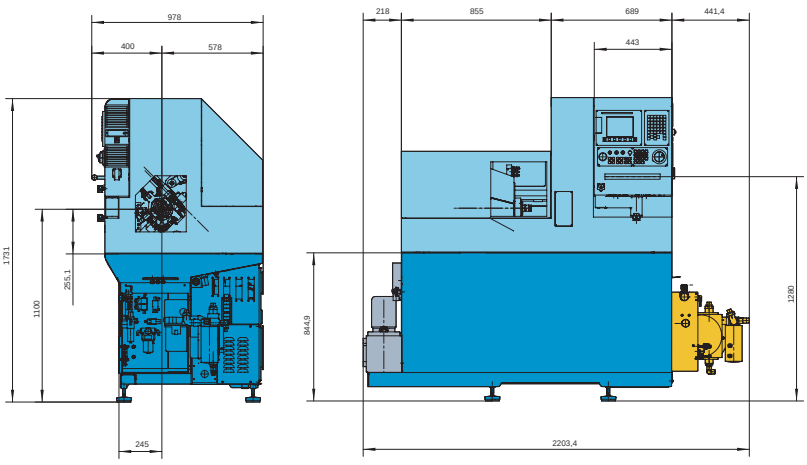
- The modularity of the tool system enables us to adapt it to suit any conceivable user need and component.
- The impressive number of fixed or rotating tools can be adapted for bar-turning work or for tailstock operations.
- Access to the tool area.
- The robust construction and dimensioniong of constituent elements.
- The speed of axis movement.
- The flexibility for programming and the scope for pre-setting tools.
- The speed and power of the spindles!

dm: We will revisit the results of this contest in greater detail in a future edition. To conclude this presentation, how are you positioning the Micro 7 against the Micro 8?

Serge Villard: These are clearly complementary products. For short, precise components, the Micro 8 lathe is the ideal solution. For longer components, Micro 7 is the machine of choice.

I invite all readers of **deco**magazine to come and make their own minds up. They should not hesitate to get in touch with Tornos. Either myself or other people in the team will take great pleasure in demonstrating the new Micro 7 lathe.

μicro 7



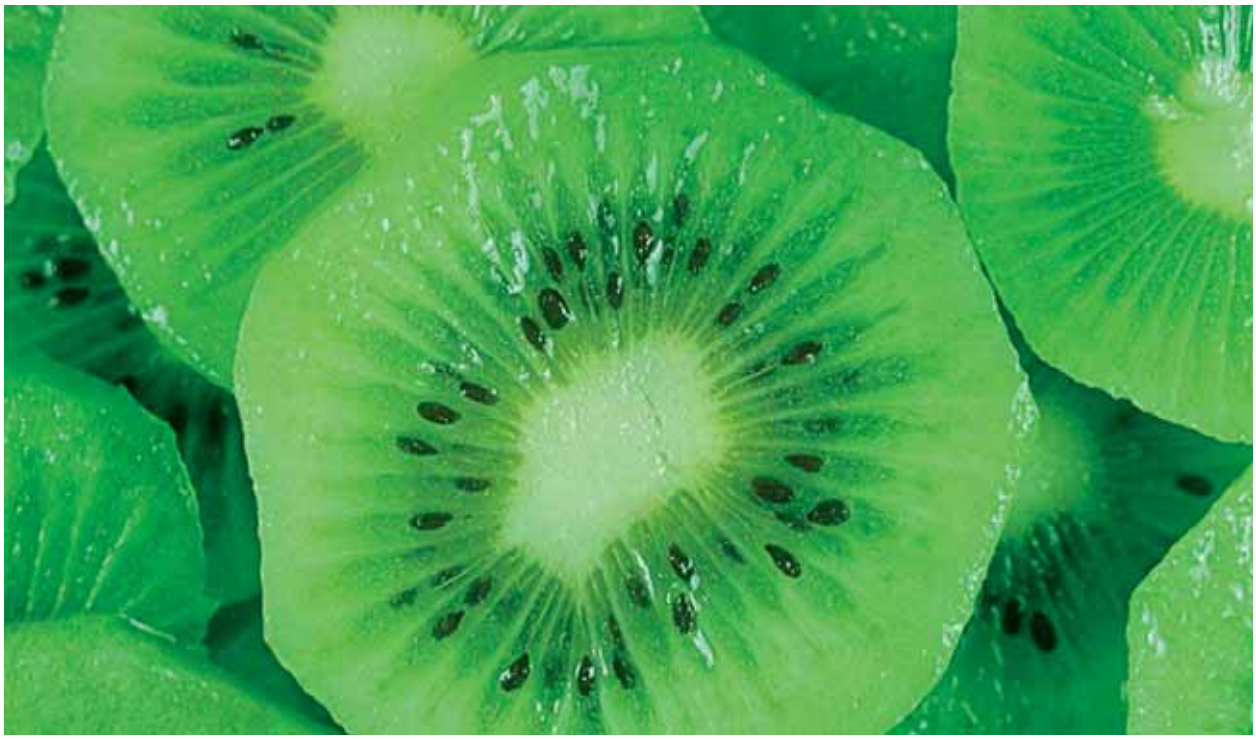
Technical specifications

Bar capacity:	7 mm
Max. speed of spindle and counter-spindle (aka 'back spindle'):	20,000 rpm
Spindle and counter-spindle power:	2.2/3.7 kW
Total number of tools:	21
Total number of tools for operations with fixed/rotating ends:	4 (3+1)
Total number of tools for fixed/rotating tailstock operations:	4 (3+1)
Total number of powered radial tools:	3
Number of working axes:	5 + 2 C axes
Parallel work on spindle and counter-spindle:	Yes

PURE VALUE ADDED

In a modern world where we take it so much for granted that we can be in Switzerland eating a kiwi grown in New Zealand, taking photographs using a camera made in Japan and enjoying a drink produced in South Africa. It is easy to forget that these seemingly everyday actions are rendered possible by a seamless system of logistics that is anything but banal.

People speak of production units on extended manufacturing runs in Germany being prevented from working because a sub-contractor in France has encountered a technical problem ... but nevertheless, very little consideration is usually given to transport, whether it be of a machine or manufactured or consumer products ... even though this is a source of added value.



To try to clarify this important stage through which a product needs to pass between its manufacturing process and the point where it is used or consumed, decomagazine met up with Mr. Rémy Saner, CEO of Bluesped Logistics Sàrl in Moutier, Switzerland.

decomagazine: Mr. Saner, when people talk of transport or freight forwarding they tend to think "trucks", is that not a little limiting?

Rémy Saner: Physical distribution is effectively depicted in most cases as the movement of merchandise from point A to point B. I very much like to compare our profession as freight forwarders to that of an architect. Whenever you go to visit a house in the throes of construction work, filled with different players associated with the building of that house, you may perhaps meet the mason and the joiner and you may perhaps admire the building. But rarely will your thoughts turn to the architect. By putting the different players together in a logistics operation, we are by definition the architects of the transport business.

dm: Do you mean to say that you handle the design of a transport operation, and that the other partners work for you?

Rémy Saner: Absolutely, we have the rolling stock (i.e. vehicles) travelling in a specific direction ... just as we don't have our own planes or ships to speak of.

A few of the Bluesped team, from left to right: Madline Salomon, in charge of Controlling & Planning for national transport operations, Emma Mitchell, Import-Export, Gessica Klötzli-Belgrado, Planning for air and sea transport, Rémy Saner, Director.

dm: What you are saying is that you do much more than transport. What services can a freight forwarder offer and what can you not do?

Rémy Saner: The freight forwarder can offer advice relating to the sale of a product. For example, a detailed knowledge of Incoterms[1] or at point of sale in certain countries where exports and imports may be subject to rules and specific constraints.

Another element in this is of course experience – in this case, this is our "core business", and the design of transport arrangements.

dm: You say that at the end of the day your company can deliver more to its customers with intelligent transport solutions ... but are you not perhaps wishing to deliver a notion of service that your are not necessarily being asked for?

Rémy Saner: I believe that it is illusory to wish to talk about a product without the value-added component of service. The fact of delivering that product just in time is in itself a service greatly appreciated. It is evident that, as it evolves, this service component must become as broad in scope as possible until its status is confirmed as a USP in its own right.

dm: Let us return to the terms, conditions and services delivered by a freight forwarder. If a manufacturer wishes to deliver a machine or CKD components, the sale price needs to include the cost of transport. What advantages are there in that for the customer?

Rémy Saner: In actual fact, this type of transport operation means that the supplier entrusts the task to a freight forwarder to ensure perfect delivery of goods to the satisfaction of both parties. The freight forwarder needs to offer the best possible level of service and advice, so needs to be creative and responsive.

dm: Could you give us an example of this creativity in action?

Rémy Saner: On behalf of a major regional manu-

[1] The Incoterms (International Commercial Term) are commercial terms, published primarily by the International Chamber of Commerce in Paris. Often abridged into 3-letter acronyms, these terms define the responsibilities and obligations of a seller and a buyer in the context of international trade contracts, especially with regard to loading, transport, type of transport, insurance cover and delivery. This therefore involves sharing out the costs of transport, the primary function of the Incoterms. The second rôle for Incoterms is to define the point of transfer of risk, i.e. the dividing line which determines whether the seller or buyer is responsible for meeting the costs of any mishap resulting from poor delivery of the transport function. This standard is updated regularly and it enables the buyer and the seller to reach rapid and unequivocal agreement on the terms and conditions applicable to a given transaction.

facturer, we often have to ship goods to Australia. Due to the considerable length of time these goods are in transit, the customer in Australia was complaining about missing out on market share. It was therefore imperative for our customer that we somehow make up time on the ship transit time ... without having to pay the very substantial surcharge of air freight…

dm: That surely must have been an insoluble demand…

Rémy Saner: Absolutely not! At the present time, air freight charges to Asia are very reasonable indeed ... We therefore organised air freight as far as the hub in Singapore and, from there, the rest of the journey was made by ship in just two weeks … in that way, we made up time, saved money and rescued the additional market share that the end customer was so concerned about losing…

dm: In other words, you need to have a detailed knowledge of transport tariffs at your fingertips. What other services can you offer to help your customers?

Rémy Saner: The tariff depends above all on the ratio of time to budget. A freight forwarder also needs to have a knowledge of legislative issues, customs clearance regulations and banking arrangements – for example whenever letters of credit are involved – and of insurance cover and organisational matters. This is effectively a complex profession, regrettably often put down to notions of cost.

dm: You say that the freight forwarder needs to have a wide range of knowledge, but who is going to tell me that mine is that good?

Rémy Saner: Ask him! We are service businesses, ready and willing to put forward creative solutions.

dm: What can you say about competition between freight forwarders?

Rémy Saner: Just like architects… We are of course in competition with one another, but we also collaborate and not infrequently act as sub-contractors to one another. Nowadays, an intelligent freight forwarder needs to work with companies of similar standing in the field. Often, by virtue of optimisation of shared strengths, we are in a position to create synergies. We effectively use our network as a service to our customers.

dm: You speak of collaboration and of partnerships, but isn't that true of everyone else as well?

Rémy Saner: Not always. Some players stubbornly work away single-handedly, seeking to create the impression that they can be everywhere at once. In actual fact though, as you know, everything is getting more and more complicated, and it is only logical to make the most we can of our core skills and expertise. For example, we have a hub in Anvers. Without our own fully-trained representative there on location, it would be impossible to ensure effective operation and furthermore, the same hub is available to use by other freight forwarding companies.

dm: It is not unusual for manufacturers of components to deliver "just in time" to their own customers. Sometimes, they even share the same IT network ... In such cases, is a freight forwarder not simply "one link too many" in the supply chain?

Rémy Saner: On the contrary. Thanks to his external viewpoint the freight forwarder has an integral part to play in the success of the supplier. Zero inventory has become a mantra for many companies. Without external support from a highly capable and above all reassuringly reliable logistics provider, production would suffer from interruptions in the delivery of parts and materials.

dm: To hear you talk about it, everything to do with logistics sounds fairly simple…

Rémy Saner: Oh no, it's never simple! However, your freight forwarder is a value-added supplier … just ask him!

Bluesped Logistics Sàrl – Rémy Saner

- Based on Moutier for 10 years
- 1st January 2008: new name: Bluesped Logistics
- Why Moutier? Closeness of customers, good relationships. Is that essential? No, one of our major customers is based in Reims
- The strengths: Finding creative logistics solutions, never says NO.
- False USP: quality of transport (identical across the board)
- True USP: responsiveness and availability

FRESH WIND FROM THE ERZ MOUNTAINS

A SMALL BUT SUPERLATIVE TURNING SHOP ON THE FAST TRACK TO SUCCESS

Only occupied since September 2007 and already bursting at the seams: the new building at Müller Präzisionsteile.

The Erzgebirge region is best known for its wooden toys and its filigree Christmas decorative wood carvings. Mind you, only a very few are aware that this region has a long tradition in metalworking. Not only that, but the inhabitants of this region are every bit as inventive and just as hardworking as those highly-renowned Swabians. One of them is Hagen Müller, who from a standing start ten years ago in Heidersdorf set up a small but superlative turning shop that now supplies customers from all over Europe. When equipping his machine shop, he decided to source exclusively from Tornos, purchasing long NC automatic lathes, and he knows exactly why he did so.

Hagen Müller is a person able to appraise those he meets quickly, and then to trust decisions he takes on the strength of those early impressions. Likeable, modest with a generous helping of good-natured humour and a solid technical background. He is a hardworking individual who really knows what he's talking about. A fact also demonstrated by his curriculum vitae. As a young man, he started his apprenticeship as a mechanical engineer at Metallwarenfabrik Heidersdorf, and then worked as an automatic lathe operator, working his way up to departmental manager via various rungs on the career ladder: tool setter, repairman/technician and formal study. «Back in the days when this was still East Germany [the GDR], we had to keep our wits about us in order to manufacture to any reasonable level and we were frequently compelled to improvise in order to get the job done», reminisces Müller. These skills still serve him well to this day and he can always come up with a solution. Take 1997 for example, the year he set himself up in business with a few Czech-built cam-controlled automatic lathes in an annex of his father's house. During his first three years in business, Müller mostly supplied precision components to customers from his local region and endeavoured to match prices with manufacturers from low-cost countries. However, as the downward pressure on prices for this component segment became even more intense, and after a few major customer placed their orders further East, Hagen Müller decided in 2000 to draw a line in the sand. Together with his wife Silke, who joined the business in the course of that year, he took the plunge and invested in CNC technology.

The turnaround came with Tornos

«All or nothing» was how Hagen Müller viewed things from the start of his venture into CNC technology, purchasing not just one machine but three right from Day One to make full use of the benefits of multiple machine operation and to achieve opti-

mum machine utilisation levels. In his accustomed meticulous fashion, he carefully scrutinised the quotations submitted by the various lathe manufacturers and decided in favour of Tornos. Müller wanted everything from a single source, i.e. machines, loading magazines and service support for both. Price/performance ratio, a comparatively small machine "footprint", design, connected load rating and other technical parameters were key factors in his decision-making process. And so it was that he decided in 2001 to purchase three DECO 26a units - the NC automatic, single-spindle sliding headstock lathe from Tornos – and these were supplied in quick succession. The first six months with these machines were accompanied by a few teething problems. A completely new technology for a completely new range of parts presented Hagen Müller with a great challenge.

This was where the comprehensive customer support for which Tornos is renowned came into its own, as did the benefits of the TB-DECO programming system. This enabled Hagen Müller to bring all his experience and technical knowledge to bear, and to do so to great effect. He specialised in the production of highly complex fittings for industrial applications and now supplies customers throughout Germany, as well as France and even the Czech Republic.

Specialist when it comes to reducing unit production times

One glance at the sample components in the showcase at Müller Päzisionsteile is enough to make the eyes of any engineer light up with pleasure. Highly complex fittings and fixtures with full-circumference gravure, axial recesses, angled grooves, internal and external threads, extremely deep-hole bores, filigree webs in bronze and high-tensile stainless steel with surface finishes that look every bit as good as ground and polished components. Hagen Müller smiled modestly and said: «We have specialised in non-standard machine components and believe our future lies in this direction». What modesty prevents him from saying is that he is not content simply to manufacture non-standard machine components, but also intends to achieve this within the shortest possible timescales.

This explains why his employees are frequently to be found sitting at their PCs trying out ingenious ideas for shaving the last few tenths of a second off production times. The DECO 26a offers a great deal of potential in this respect. Through its ability to superimpose operations involving multiple axes, this machine offers many different approaches for opti-

Textbook example of perfect customer/supplier relations: Hagen Müller (left) and Frank Mortag, Tornos Sales Manager.

The serried ranks of Tornos CNC single spindle turning machines DECO 26a and DECO Sigma 20 in the new building, fitted out in September.

Hagen Müller, always seeking that last tenth of a second.

A range of components to excite the pulse of any engineer.

mising unit production times. The same is true of its comprehensive range of options with the help of which machines can be fine-tuned even more precisely to operate right up to the limits of their performance capabilities. If all that is not sufficient, you can always follow the example of Hagen Müller and his team, developing in-house options such as a high-pressure unit for deep-hole boring. With all these instruments at their disposal, it is then possible to achieve truly impressive results. This process has enabled Müller Präzisionsteile to reduce the unit production time of a complex industrial fitting from 3 minutes to around 40 seconds.

The sails are set for further growth

With results of this kind, it is in no way surprising that the company is growing very rapidly indeed and is currently running at 110 to 120 percent capacity in two-shift operation. All this despite the fact that the company only moved into a new building on the industrial site of neighbouring Olbernhau in September and has just put three new DECO Sigma 20 automatic lathes into service. The decision taken to purchase these three new machines is a textbook example of good customer/supplier relations. In 2006, Hagen Müller wanted to purchase three new machines for a component range of just moderate complexity and after the positive experience he had enjoyed with the DECO 26a, his thoughts naturally turned again to this type of machine.

Frank Mortag, the Tornos sales manager involved recommended the recently developed and slightly less expensive DECO Sigma 20. Without even first putting a machine into operation or running tests, Hagen Müller purchased three of them at the AMB trade fair in Stuttgart and has not regretted his decision to this day. Obviously the Sigma 20 has fewer axes than the DECO 26a, but its spindle dynamics are unique and the performance of the gripper spindle is identical to the main spindle. For an old fox like Hagen Müller, this yields enormous scope for reducing unit the production times of medium-complexity components. When he switched to Tornos, he also achieved a personal turnaround and has been on a continuous fast track to success ever since. Collaboration with this Swiss manufacturer has proven for him to bring really good fortune. Nothing stands in the way of ongoing and successful collaboration, and his thoughts have already turned to an order for his next three machines. There is certainly plenty of space for a new building and he has no shortage of good ideas. Hagen Müller only regrets that he does not have sufficient time himself to devote to his customers. This is why he will in future be investing even more in the training of his employees and will be availing himself of the comprehensive training support provided by Tornos.

Müller Präzisionsteile
Litvinover Strasse 2
09526 Olbernhau
Tel.: +49 (0)37360/694494
Fax: +49 (0)37360/694496
E-mail:Mueller-Heidersdorf@t-online.de
www.mueller-heidersdorf.de

Tornos Technologies Deutschland GmbH
Karlsruher Strasse 38
75179 Pforzheim
Tel.: +49 (0)07231/91 07 - 0
Fax: +49 (0)7231/91 07 - 50
E-mail: mail@tornos.de
www. tornos.com

FROM ZERO TO HUNDRED

Connectors are essential components of modern technology. Telephone equipment, computers, hi-fi equipment, machines, cars and aeroplanes would not work without these basic components. It is for this reason that millions are produced and fitted day after day around the world. One company that is setting the pace is Conec GmbH in Lippstadt, Germany. For its mechanical production, Conec uses only Tornos CNC single spindle turning machines from the DECO range and the results speak for themselves.

Conec produces millions of turned parts per month... of various levels of complexity.

At first glance, a connector is fairly inconspicuous, although when Herbert Labus, Conec's technical director talks to you about them, you can feel the raw enthusiasm: Whether three, five, seven or multipolar, for fibre optics or copper wires, with twist or push attachment, made from brass, copper or stainless steel, the little guy is a high-tech product and the whole team is clearly very proud of it. Conec develops individual solutions in partnership with the customer and it has its own product catalogue and is a pioneer of technology in the sector. This strategy has seen the company enjoy a period of impressive growth and ambitious objectives for the future.

Millions of parts per month

Conec processes millions of turned parts per month and therefore requires a capacity of 50 turning machines. Up until two years ago, these parts arrived finished from the supplier. Conec employees are continuously analysing their own processes and looking for ways of improving. "The world around us is constantly changing and if we are not always looking to improve our processes, we will drop off the pace". With this in mind, the company decided a change was necessary five years ago and purchased two CNC sliding headstock turning machines.

Production now being done in-house meant an advance in technology not only for the customer. This entailed the existing organisation being subjected to a root and branch review and structures and staff were found not to be far off the right mark, something which is freely admitted today. Nevertheless, during this period, the company was able to build up technology and valuable expertise, which was the basis for taking the next step.

Conec GmbH in Lippstadt, one of the world's pioneers in connector technology.

Benchmark is the lowest-cost supplier in each instance

Although Herbert Labus has also set up production facilities in China, he is a firm believer in facilities remaining in Germany. "We mustn't rest on our laurels otherwise the bar will always be raised a little higher". With the promise of a "production of technologically sophisticated connectors", they approached a new machine tooling manufacturer two years ago and found an ingenious partner in Werner Klein, the regional sales engineer at Tornos. Tornos was the only supplier who understood our demands and reacted in an exemplary fashion. We wanted to optimize processes, not buy machines. Conec defined the corresponding parts list that would later need to be produced in house. This way, the aim was to become independent from suppliers and flexible as far as time is concerned, to improve quality levels as well as to promote product optimization in the process. In addition, parts should cost no more than the cheapest supplier worldwide. A genuinely ambitious remit for Tornos; who handled it with distinction. The project team, led by Achim Günther, broke the cycle times for the various parts in the different materials down to the very last second, which enabled him to convince the people at Conec that it would work. In one fell swoop, five DECO 10s were ordered, delivered and installed.

Round the clock project management

The Conec specification document stated an availability of 80 %. Although this doesn't sound particularly high at first, it's better than it seems when you understand the background. For one thing, machines had to operate around the clock and for another the five Conec employees were breaking totally new ground with the machines and the whole production process. Comprehensive training courses run at TORNOS Pforzheim in Germany and on the job training enabled employees to carry out their tasks. This was very stressful at the beginning but a real buzz was to be had from the first successes. In Herbert Labus' team, everyone has to be able to do everything. Employees are responsible for everything

from materials reception and inspection up to quality control and delivery into storage or assembly lines. This naturally also includes programming, setting up machines, swarf control, cleaning finished parts and much more. "If you have to clean the parts yourself, then it's in your interest to keep things as clean as possible right from the production phase". With such simple insights, employees are encouraged to reach ever greater heights of performance. On Saturday or Sunday, he often stands next to the machines himself and tries to ease out that extra tenth of a second or ounce of quality etc. "I do that less and less often because my employees are constantly improving". This is credit to the Tornos service teams and Thomas Heine, Wolfgang Licht and Thomas Luft, who are fully committed to the project and highly motivated.

The result speaks for itself

Well over a year later, Herbert Labus' analysis of the situation is a positive one. The target of 80% availability was reached right from the start and we are currently maintaining a level between 85% and 95%. These figures came as a surprise to the management board. In the meantime, four additional machines have been purchased and delivered and more are in the pipeline. However, the end of the line has not yet been reached for CONEC. "There is still a lot left to be done and we can improve even further". In light of this, CONEC has given a warm welcome to development of the DECO 10e, which is believed to hold a great deal of promise for the company's own range of components. For CONEC, this machine concept is a fine example of the Tornos philosophy of "Think parts, think Tornos". This machine has been specially developed for the electronics industry and offers a very attractive price/performance ratio. Conec is now equipped with the technologically more advanced DECO 10a machines and the DECO 10e machines from the finely-tuned production solutions and is therefore well-equipped for the future.

Herbert Labus, Conec's technical director, and Werner Klein, Tornos sales engineer are both constantly striving for process optimization.

Thousands of components are ready to be fitted on all types of connector.

Conec connectors are genuine high-tech products.

An overview of the DECO concept

The tried and tested DECO concept is a system developed by Tornos based on a combination of state of the art numerical control with an upgradeable and future-proof PC programming software (Windows). This enables user-friendly programming of sophisticated workpieces. Different simultaneous operations can be run at the same time as required. Programming and presetting of fixed and rotational tools run at the same time. The continuously updated TB-DECO software facilitates C-axis programming and/or machining using polar coordinates. Programmer support also uses macro client software, which is customized to customer-specific requirements for machining special and complex forms. Program transfer is through RS 232, PCMCIA memory cards or Ethernet.

Standing in line are the eight Tornos CNC single spindle turning machines in Conec's modern production area.

DECO 10e – TECHNICAL DATA

Sliding headstock (Z1 axis) (+C1 optional)	
Maximum bar passage	Ø 10 mm
Maximum workpiece length depending on guide bush type	60/90 mm
Programable spindle speed	100 - 16000 rpm
Spindle positioning	0.1 degree
Maximum spindle power	1.1 (3.7) kW

Guide bush (X1/Y1) (X2/Y2)	
Number of tools in the guide bush	2 x 4
Tool cross-section	8 x 8 mm
Number of transverse borers/millers	4
S2 motorised drive	100 - 12000 rpm

Counter spindle and counter operations (X4/Z4) (+C4 optional)	
Maximum clamping diameter	10 mm
Standard workpiece length	60 mm
Programable spindle speed	100 - 12000 rpm
spindle positioning	0.1 degree
Maximum number of counter operations	4
Number of fixed or driven spindles	4
S5 motorised drive	100 - 9000 rpm

Conec
Elektronische Bauelemente GmbH
Ostenfeldmark 16
59557 Lippstadt
Tel. 02941/765-0
Fax 02941/765-21
www.conec.com

Tornos Technologies Deutschland GmbH
Karlsruher Strasse 38
75179 Pforzheim
Tel. 07231/91 07-0
Fax 07231/91 07-50
mail@tornos.de
www. tornos.ch

DECO 13e – NEW ENTRANCE DOOR TO THE WORLD OF TORNOS

At the Simodec 2008 trade fair, this Swiss manufacturer unveiled a world première of a new version of its DECO 13a single-spindle turning machine. This new turning machine is called the DECO 13e. It is a new economical alternative in the product range of the Swiss manufacturer. This lathe is aimed at all users of automatic turning machines seeking high-performance solutions but not necessarily requiring to have 10 axes (plus two C axes).

The Tornos DECO 13a lathe is renowned as the high-performance turning machine par excellence. It can be found in a great many workshops operated by manufacturers of highly-machined, i.e. complex, turned components with a high added-value, serving sectors such as Medical, Dental or others.

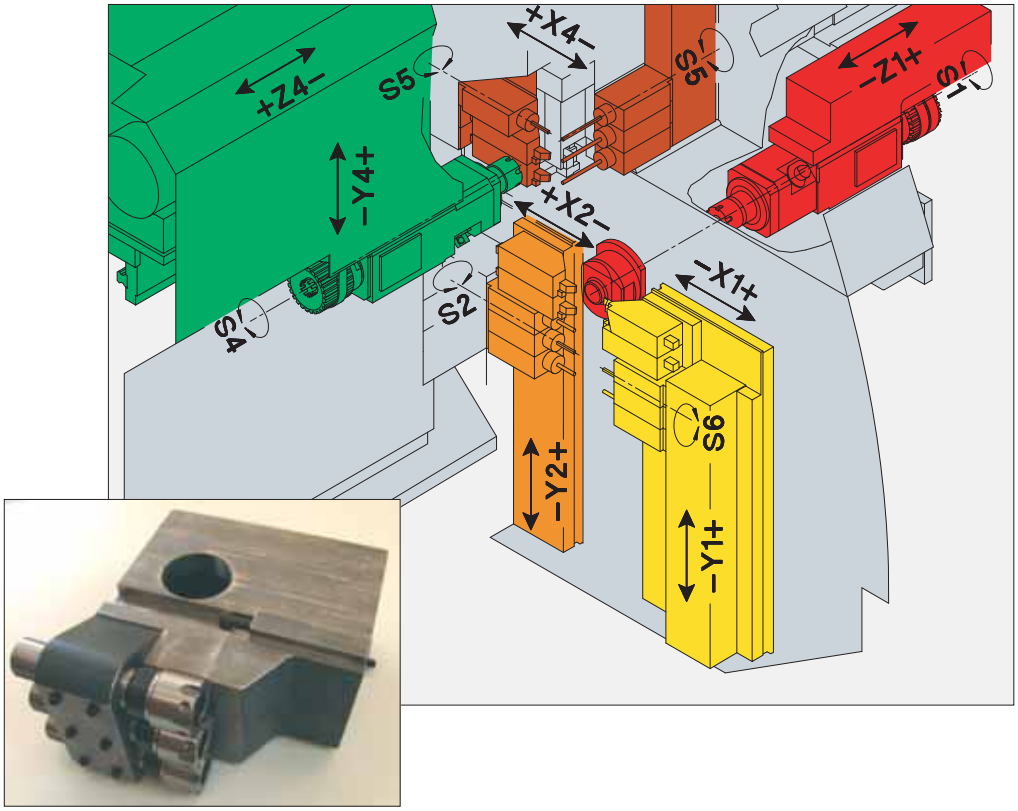
Fully aware of the fact that the acquisition of a machine like this is a substantial investment for any component manufacturer, Tornos now seeks to make this technology accessible to other component manufacturers who may not yet have achieved this quantum leap in technology.

DECO 13 e, designed on the same basic platform, offers the same advantages as DECO 13a except that the 4th independent tool system comprising 4 spindles for end operations and mounted on two NC axes is not included on this model. This functionality has been replaced by a fixed-position tool support which is mounted on one of the two intersecting carriages used for bar-turning work.

The 8 linear working axes distributed across 3 tool systems offer excellent scope for bar-turning work and for counter-operation and also permit the same level of simultaneous machining operation at the front and back of workpieces.

It goes without saying that Tornos has also thought of its loyal customers who already possess the DECO 13a and would now like to acquire this new lathe. It will be possible to transfer programs from the "advanced" version to the economy version and all equipment, tools and other accessories employed at present on the DECO 13a will be suitable for adaptation to this new version.

DECO 13e will be unveiled almost simultaneously at Simodec from 4 to 8 March (Hall A Stand C34) and at the Biemh trade fair from 3 to 8 March (Hall 2 Stand F20). It will then be ready for immediate delivery.

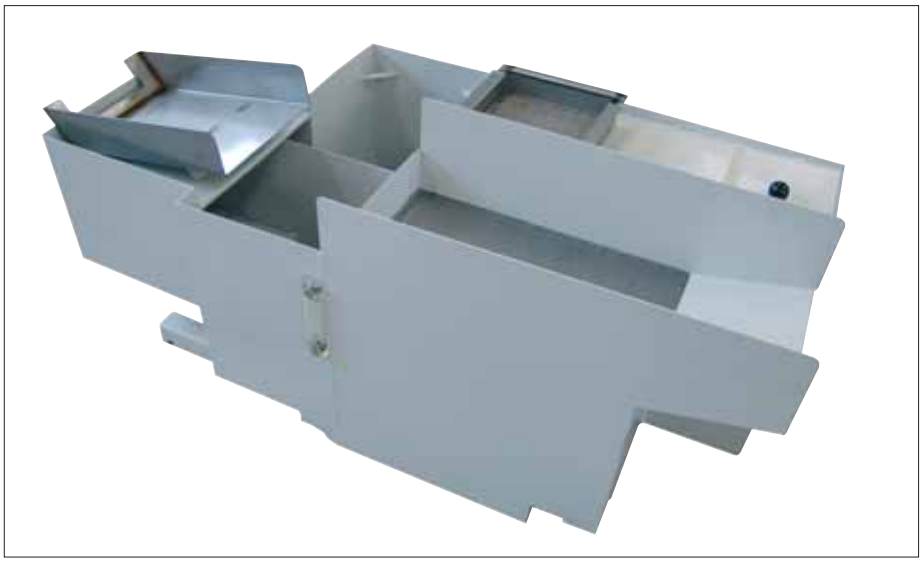


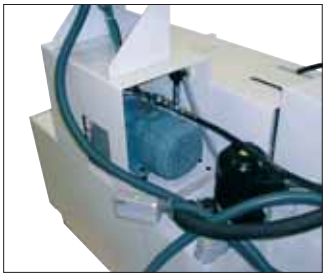
Technical specifications

Bar capacity:	13 mm (16)
Max. speed of spindle and counter-spindle (aka "back spindle"):	10 000 rpm
Spindle and counter-spindle power:	3.7/5.5 kW
Tool systems:	3
Number of linear axes:	8
Number of tool positions:	16
Cross section of tools:	16 x 16

INCREASED PRODUCTIVITY

It is well known that materials such as certain grades of stainless steel, titanium and other high-strength materials generate swarf during machining operations which is difficult to control.





This is caused by swarf wrapping itself around the workpiece or the tools or remaining jammed in the machining zone. As a consequence swarf becomes a menace to the surface quality of the workpiece being machined and can also give rise to premature tool breakage. Swarf is therefore highly detrimental to machine efficiency levels.

A widespread solution employed on modern lathes and turning machines is to use a high-pressure cutting fluid that is better able to direct the flow of swarf and prevents it from building up in places where it should not be.

Many users of DECO or MULTIDECO machines employ this principle on a daily basis and are completely satisfied with the solutions delivered by Tornos. From now on, Tornos will also be offering this function on its Micro 8 precision lathe.

Option

This unit does not have an option number at the time of publication, but if you are interested, please contact your usual Tornos reseller.

Principle

The oil pan has a larger capacity than the standard model and is mounted below a swarf tray, again larger than the one supplied as standard. An additional pump can also be fitted to this pan. Please note that the standard pump employed for basic spraying, temperature stabilisation and liquid cooling of spindles is retained in all cases.

Strengths

- Increasing the capacity available for swarf storage delivers greater autonomy without the need for adding a swarf conveyor.
- Increasing the volume of oil enables 2 pumps to be used, enhancing the run-off rate.
- There are a maximum of three additional high-pressure oil outlets for checking and removing swarf from different locations in the machining area.

Technical specifications

- Volume of oil pan: 160 L.
- Volume of swarf tray: approx. 20 L.
- Filtration: double grille-type filter, then passing through 4 run-off pans.
- Pump pressure: 15 bar.
- 3 independent outlets actuated by M functions in the workpiece program.

Compatibility

Micro 8

Availability

Ready for immediate delivery ex-factory.
Can also be supplied for machines already installed on location.

A WORLD FIRST AT TORNOS: A HIGH-VOLUME THREAD-WHIRLING PROCESS

Tornos engineers were not content with simply being at the cutting edge of the thread-whirling process on single-spindle turning machines. They have adapted a world first - the thread-whirling process on MultiAlpha 8x20 multi-spindle turning machines, an effective and economical success that looks set to revolutionise the market for surgical screws.

Robert Meier, independent specialist journalist, Rupperswil

A change has taken place in terms of medical technologies: standardisation is now also starting to make inroads into this sector. This marks the end of the line for the one-off surgical screws produced by a multiplicity of specialists: standardisation is now the order of the day. This of course delivers a number of advantages at one and the same time. Inventory and management of components is greatly facilitated and these parts can be produced on the basis of standards recognised right across the market. However, this also means that surgical screws can now be produced in much longer production runs than has been possible in the past.

The surgical screw: no easy job

Manufacturing surgical screws is no easy matter. On the one hand, the primary aim of requirements relating to quality is to eliminate machining burrs once and for all. On this basis, machining methods such as rolling of the screw pitch or machining with a single tool bit do not deliver the anticipated result and are therefore not acceptable. Another difficulty is associated with the materials employed, such as titanium and stainless steel – materials by no means easy to machine. The most reliable machining method is thread whirling, a process that Tornos has built up a global reputation for on its single-spindle turning machines.

Finding new solutions

However, thread-whirling remains a machining process that takes a certain length of time. It follows that in order to produce long production runs on a single-spindle turning machine, you either need to

allow a longer period of time or to run several turning machines simultaneously. However, the latter course of action often raises a number of manufacturing problems, e.g. having sufficient space to accommodate these additional machines. Another question is also raised, this time with regard to quality - manufacturing same series workpieces on several machines can cause differences to emerge in the components. This is something which our customers have difficulty in accepting. What can be done?

Tornos recently launched its MultiAlpha 8x20 multi-spindle turning machine to the market, a machine that with its eight powered spindles and its 5-tool counter spindle proves its capabilities as a highly productive and high-precision bar-turning unit for workpieces of average complexity. This turning machine really has delivered what the market requires!

Dividing the thread into several constituent parts

Engineers at Tornos have many years of experience in the thread-whirling of surgical screws. They quickly came to understand that transferring this type of machining to the MultiAlpha did not present much by way of problems in principle. Essentially the MultiAlpha dedicated as it is to complex workpieces is also capable of machining threads but also the most complex of heads, particularly by virtue of its eight powered spindles and its counter spindles, each equipped with five tools. There is also a need to resolve the question of the time required to thread-whirl the threads.

The idea of sectioning the thread-whirling process into two or even three parts, depending on the length of thread was appealing: after all, a process of this kind is an entirely feasible proposition on a turning machine with eight powered spindles. However, there is a need to resolve a problem of scale: how to move from one machining station to another without leaving marks on the threads?

A considerable time saving

Through their strong emphasis on development effort and numerous trials, Tornos have now managed to resolve this difficulty. Essentially, they succeeded in sub-dividing the thread-whirling operation into two or even three parts - depending on length - without any differences being discernible on the finished surgical screws: this successful outcome is currently genuinely unique in the world of multi-spindle turning machines.

The outcome is a consistent one, the machining time for a surgical screw made of titanium with a length of 80mm on a MultiAlpha 8x20 turning machine is five (5) times shorter than the machining time on a single-spindle turning machine. Of course, the workpiece emerges from the turning machine completely machined and therefore in finished condition.

Thanks to this procedure, the bar-turner finds his ability to respond swiftly is greatly enhanced because for a large production run, all he has to do is set up one multi-spindle turning machine instead of several different single-spindle turning machines. Moreover, on these machines the thread-whirling unit never leaves the machining area, a very confined zone indeed. Temperature levels therefore remain balanced throughout the entire production run, thereby assuring consistent precision, a feature supported by this machine concept. With MultiAlpha lathes, it is now possible to produce workpieces that would not have been possible to manufacture five years ago.

Automatic changes: now possible!

As surgical screws are in the process of being standardised this gives rise to much longer production runs, but these can in turn be broken down into smaller units by the customer while still obtaining a consistent series of screws of the same type and same diameter with different lengths. Engineers working at Tornos have recognised this situation and have devised a CNC-controlled limit stop. Thanks to this ingenious solution, the bar-turner is now able to program various batches comprising shorter runs of different lengths but the same diameter in one extended operation on a MultiAlpha machine. This approach also makes it possible to machine series of workpieces of different lengths from a single stock of bars without having to stop the machine, without resetting the machine and changing tools. It is apparent with this type of operation, production flexibility for the bar-turner is greatly extended yet again. Moreover, because production is now continuous, the quality of all these series will be identical.

Peripherals to the rescue!

In this area too, specific customer requirements may make it necessary to adapt the peripherals to suit. Tornos has provided the MultiAlpha model – as it has with all the automatic lathes in its range – with a comprehensive range of peripheral equipment adapted to suit each type of machine. In the case of surgical screws, a frequent requirement is for these components to be supplied in palletised form. Of course, in the vast Tornos product range, suitable equipment is available without any modifications to the MultiAlpha whatsoever. In the case of volume production runs of workpieces that vary from one another solely in terms of length, it is the task of the palletiser to change pallets when another batch is

One of the two thread-whirling units that performs "half of the work".

due to start, an essential feature of any automated continuous production operation. As a consequence, there is then no need to sort these screws one by one.

Nothing is wasted

The MultiAlpha is an automatic turning machine dedicated to the highly productive manufacturing of complex workpieces. On the other side of the coin, the single-spindle turning machine is ideally suited to short production runs, or unusually long surgical screws. It follows therefore that his turning machine is always going to find that its future raison d'être lies in the thread-whirling of surgical screws.

Another trump card resides in the fact thread-whirling is entirely identical on two different types of turning machine – with the obvious exception of the sub-division of screw thread pitches on the MultiAlpha. With regard to programming the MultiAlpha for the thread-whirling process the operator is always able to call on the support of programming macros that can be included ex-factory in the order. This will therefore make the job a great deal easier, while at the same time always providing several different ways of adapting operations to suit personal preferences and wishes.

Tooling available on the market

When an order is placed for a turning machine – the system functions just as well on a MultiAlpha with one counter spindle as with two – the customer can stipulate if he wishes to use this machine for thread-whirling operations. If so, the machine can be configured appropriately before leaving the factory. Engineers at Tornos are obviously interested in close collaboration with suppliers of cutting tools, to create specific tooling for the thread-whirling process. It follows from this that the thread-whirling system now being launched on the market with suitably adapted tools.

A complete system

The MultiAlpha turning machine prepared for the thread-whirling operation loses none of its machining capabilities for other workpieces. Furthermore, it is interesting to know that other kinds of medical workpieces are being machined on this same family of turning machines. An example is polyaxial heads for spine operations, complementary workpieces for surgical screws or even orthopaedic screws. The bar-turner then finds himself equipped with a turning machine adapted for work on an entire family of workpieces required in a fast-growth sector.

5000 M² DEDICATED TO CUSTOMERS

To enhance its ability to deliver high standards of service, Tornos has just completed the construction of its new 5000 m² building on the site of its company headquarters in Moutier.

decomagazine met Mr. Michel Studer, the man in charge of buildings at Tornos with the responsibility for construction site work and quality of the new building.

decomagazine: Mr. Studer, could you outline for our readers the objectives that prompted this new development?

Michel Studer: In the first instance, we set out to build a modular production facility dedicated to final checking and set up operations, testing of customer products and training courses for our customers. We have in the process created a superlative technology showcase while at the same time rationalising a wide range of operations.

dm: You speak of this being a showcase: are these premises also intended to exhibit your machines?

Michel Studer: Absolutely, the building incorporates a showroom measuring almost 300 m² as well as several reception rooms in which our company can introduce its customers to potential solutions to their needs.

dm: In terms of machines, have you grouped together the single spindle and multi-spindle units?

Michel Studer: Exactly. We have put our full range of machines here under one roof to cover all aspects of training, set up and testing work.

dm: Do you believe you can achieve synergies between these types of machine? What are the advantages of this for your customers?

Michel Studer: The advantages, very clearly, are rationalisation and centralisation. For example, all tooling is housed in a central inventory facility. This "de-segregation" of our single-spindle and multi-spindle units is entirely to our customers' benefit, since we are now better able to deliver technology transfer and expertise.

dm: So you clearly believe that putting everything under the same roof is an advantage then?

Michel Studer: Yes indeed. For example, we no longer need to transport DECO machines from one building to another. Nor do any of our customers attending a training course with us and wishing to gain a more in-depth knowledge of certain machine elements need to move halfway across town to see the multispindle machines in action.

dm: If I've understood you correctly, this involves re-locating your machines, then rearranging them to obtain optimum work flow between machines...

Michel Studer: Yes, that's part of the story. We have indeed considered all our work flows to save time, to rationalise operations and to avoid the risks resulting from excessively frequent machine movements. However, that is not the entire story either: we took advantage of this reorganisation to roll out the 5S[1] philosophy across all departments grouped together in this new building. This philosophy has already been applied successfully to our production operations and has been in place for several years. We are delighted to be put the same principle to work in this new building. It is evident that our customers view this as a significant source of "value-adding".

dm: Does the fact that you have simplified and rationalised these operational aspects improve the quality of your products, or of the solutions you offer to your customers?

Michel Studer: Normally, the quality of our machines and of the solutions we put forward is all logged by our inspection systems ... what has changed is the way we go about getting to that outcome: on the one hand, we have made radical changes to the working environment - everything is more transparent and cleaner, the temperature is

[1] The 5 'S' method, which derives its name from the first letters of the five operations it addresses, is a Japanese management technique. It is derived from the Toyota Total Production System (TPS). The method is based on five simple principles:
Seiso (Straighten) – Seiton (Sort) – Seiso (Sweep) – Seiketsu (Standardise) – Shitsuke (Self-discipline).

The present

controlled throughout the year ... so I would say that we now have optimum conditions under which to achieve that quality level and also that our handling and inspection facilities have been improved substantially. Furthermore, our production facilities actually inspired us to install an air-conditioned laboratory here.

dm: Do you now go about inspection work in a different way?

Michel Studer: Inspection checks are already being made, but I would have to say that the scope and precision of these checks has been greatly improved by our new system. On this same subject, we are now also able to offer a more carefully tailored service to our customers, for example with the inspection of pre-series components on our premises.

dm: You spoke of training, is programming work also carried out on your premises?

Michel Studer: Yes, indeed it is. The large building we have just been talking about covers a floor area of 3400 m^2, while the remaining 1600 m^2 are set aside for all the additional forms of services to customers, training, hotline support and the single-spindle business unit (BU). This means customers who attend training courses here will find all their points of contact under one roof.

dm: These new premises appear to be very well thought out indeed: could you say a few words about oil management? We know that departments of this kind are major consumers of oil...

Michel Studer: We have built a centralised storage facility at the basement level. Needless to say, this facility is a response to all the concerns and standards associated with safety and the environment.

dm: And what about the building itself?

Michel Studer: The building was also conceived with "integration and ecology" in mind. It is perfectly insulated, the heating system operates on the recuperation principle, using waste heat from the machines, all exhaust air ducts are on the "factory" side to avoid causing problems for our neighbours ... This really is a building with sound environmental credentials.

dm: You certainly talk about your building with considerable passion: when are your customers going to be able to come and visit it?

Michel Studer: Well of course, the building is already operational and a few customers have already been for a look around ... but I would like to offer you a scoop: an official inaugural event with organised visit and exhibition will be held at some point this coming May. I can't say any more about it at this time.

SHARED VALUE AS MOTTO!

Recently Paul Polman, Nestlé Executive Vice President, Americas, delivered a presentation to the Swiss Marketing Club about brands and value. As decomagazine interviewed M. Stauffer, CEO of Tornos on the same topic in issue 42, we explored the idea to also have Paul Polman's point of view on this topic that seems to be hype nowadays.

"We can reap the rewards because we share values with our customers", Paul Polman.

Nestlé in **deco**magazine? Seems crazy; we are not at all active in the same business. How could a Swiss company that is worldwide leader in food and health with more than 276'000 employees be similar to a Swiss machine tool builder? Ok, they are Swiss... and? That is the point of this article!

decomagazine: M. Polman, thank you for giving us some time for a magazine so far from your usual field. You said that shared value must be seen with a wide point of view – shareholders, customers and also long term resources on the planet. Isn't it easy for a company generating billions of profits to speak about long term and spending some spare money there?

Paul Polman: That's not the right question, the point has to be taken in the reverse. We can generate profits because we share value with our cus-

tomers. Our basic business proposition is to offer superior nutritional value, and in return achieve higher profitability. But it goes beyond that. People also buy because they feel good about the Nestlé brand – and a part of that is recognition that Nestlé is making a positive contribution more broadly.

dm: Do you mean that customers are ready to pay more for a value like «long term environment» or another non-immediate thing?

Paul Polman: You know, long term value doesn't mean empty communication. We are speaking about creating value through new products and services. The differentiation and the consistency are very important. That means we have to be aware of what could happen in the market and must be ready to invest to create products to answer all these opportunities better than others. Corporate responsibility is growing as an important dimension of the brand, even among people for whom it's not the most important thing. It's a brand dimension that's growing in importance among a broad spectrum of the public.

dm: Isn't it a basic marketing rule? Where is the shared value in that?

Paul Polman: This is partly marketing for sure, but it's also a question of «mission» and motivation. You really need to have the mindset that says «it's not philanthropy; we can do it! And if we do it correctly, the public and the sales will follow». As we have started new companies over the years, in countries like Brazil, India, and China, we start by helping the milk farmers with micro credit, free technical advice, and rural infrastructure. This creates a reputation throughout the country that has a halo effect. For instance, in Pakistan we are partnering with the UN Development Program to train 5'000 women agricultural advisers. The word gets around when you do things like that.

dm: And what is the influence on the product/brand?

Paul Polman: That's vital. The biggest reason given by the public for respecting Nestlé in CSR is quality and safety of our products. The consumer must be involved; he must know that the brand understands him and that he can be confident about the product.

dm: This leads us to quality and service – very important for us as Swiss company. Do you think it's mandatory?

Paul Polman: It's closely linked. A brand with good quality and services is a trusted brand. That is the basis for succesful business and growth.

dm: You told us a while ago that it's necessary to innovate too. Isn't it too hard to innovate, have the best products and the best service? Even if a lot of companies are saying so, few are really there.

Paul Polman: True innovation is indeed difficult. But first I like to say that we are in the business of the slightly better everyday. Customers are not paying more money for products that are not differentiated in a significant way. To do this, we need to innovate. In fact you must provide meaningful solutions for the customer.

The success of Nespresso is a further example of shared values.

dm: I imagine that with as many employees as you have at Nestlé, it's a difficult task to pass the message to the whole company about this «larger vision».

Paul Polman: Outsiders who have studied Nestlé are highly impressed by the level of loyalty and pride of feeling a part of the Nestlé family. I think, if your people feel concerned about their company, the rest will follow. Obviously this motivation and concern is also promoted.

dm: Yes... but how do you motivate people to be part of the solution?

Paul Polman: Our people generally feel that they are providing a service to society – of better nutrition, social development, and good jobs. It's an everyday task, we have to find and develop true stories and communicate these. They don't have to be miracles or incredible stories. Just create little stories and do it with passion!

dm: Thank you for this brief interview that shows us that finally there is no miracle but we have to be consistent and speak the truth. It's important but not every company is joining in and maybe some of your competition acts just badly and «falsely». Isn't it a danger?

Paul Polman: In a very short term point of view, it's possible, yes. But we are speaking about creating value and providing solutions to your customers day in day out– that's not a matter of advertising slogan or promotional action. In the long run, that is what is important and generates both satisfied customers and revenues! That's why Nestlé is build to last.

dm: Thank you M. Polman for this interview.

NESTLÉ IN A FEW FIGURES

276'000 employees

Gross sales 2007: 107.6 billion CHF

Number of brands generating more than 1 billion USD gross sales: 27

De you need more information about **Social corporate responsibilities** at Nestlé?
Feel free to download the brochure at
http://www.nestle.com/Resource.axd?Id=7F757F03-B601-49EA-8395-E24095231754

CLOSER TO THE OPERATORS THAN EVER BEFORE

With the launch of its MultiAlpha automatic multispindle turning machines, Tornos has provided bar-turning specialists with high-capacity lathes for complex, high-precision workpieces with particularly high standards of performance in tailstock or "back" operations. However, on occasion these specialists have need of a lathe with this capacity but for use on less complex workpieces. They therefore seek a slightly simpler multi-spindle turning machine. Tornos has rounded off its product range by offering precisely that.

Robert Meier, independent specialist journalist, Rupperswil

MultiSigma 8x24, a really interesting new addition to the range.

The MultiAlpha multispindle turning machines have everything it takes to satisfy demands for high-volume production runs of complex, high-quality components. To this end, in this family of turning machines, the eight-spindle model (each powered independently) and featuring one or two 5-tool counter spindles delivers particularly good performance. However, one of the trump cards played by this machine is the ability to perform back operations and this is not always required at the capacity level on offer. For this reason, Tornos has decided to round off its product offering with the MultiSigma automatic lathes.

When less is more

In the bar-turned components sector, workpieces often need to be machined on both sides, so a turning machine capable of machining with back operations is therefore appropriate. The MultiAlpha series is equipped with one or two counter spindles, each with five tools making the machine able to perform complex to highly complex back operations. Nevertheless, some workpieces require back operations with fewer tools, but in order to produce at attractive levels of efficiency and cost effectiveness, need to have quite different capabilities to MultiAlpha turning machines.

This new model has eight powered spindles and a choice of either one or two counter spindles. These eight highly dynamic powered spindles with cutting oil cooling equip this lathe with unrivalled machining capabilities and assure its status as a high-performance production tool. Since each spindle is driven independently, the bar-turner can set each spindle to

New control system with integral PC.

Wide and very accessible machining zone.

its own individual speed to best suit the current machining operation. The advantage of a powered spindle is its ability to perform extremely rapid and precise indexing operations. All positioning operations are numerically controlled, i.e. based on programming. This does not involve anything mechanical on the machine, something which assures a high level of guaranteed flexibility. This assured ability to maintain constant temperature levels with high-quality precision enables MultiSigma machines to produce workpieces of average complexity with high levels of productivity.

Back operations for enhanced flexibility

The MultiSigma automatic turning machine offers the user a choice of one or two counter spindles. Each counter spindle is capable of holding two independent tools. Of course, when compared to the MultiAlpha turning machine, this slightly restricts the options for machining on the counter spindle (i.e. back operations), but this option is only really required for a relatively small number of workpieces.

Easy programming

Since MultiSigma turning machines are members of the MultiAlpha family of turning machines, the programming process is exactly the same as for their big brother. The operator who works on both models can therefore switch from one to the other, able in both cases to bring his expertise to bear on either type of machine.

A wealth of possibilities

Eight-spindle turning machines have proven that it is possible to produce difficult workpieces. However, when it comes to simpler workpieces, an innovative bar-turner will use this turning machine to work with 2x4 powered spindles plus 2 x 2 tools on back operations. Operators therefore stand to benefit from this marked increase in productivity.

Of course, this turning machine also lends itself to the thread-whirling production of surgical screws but here the head remains relatively simple. Again in this same sector, Tornos has now introduced the thread-whirling operation to this eight-spindle turning machine, thereby rendering this operation more cost-effective and substantially boosting productivity levels.

Particularly challenging workpieces?

Occasionally it is not immediately apparent even for an experienced bar-turner to visualise the best way of producing a certain kind of workpiece. For cases of this kind, Tornos can give its customers access to its team of production engineers who will assist them with the design of a given workpiece and will help to adapt their production tools to suit this specific requirement with a view to achieving the highest-performance processes and productivity possible.

Peripherals to the rescue!

Independent of the type of turning machine peripheral equipment is sometimes necessary either to increase productivity or to make the machine more autonomous. Tornos has a vast range of peripheral equipment, e.g. bar feeders, manipulators or palletisers, and all these units are available for the MultiSigma.

COLLABORATION AND EXPANSION

During 2007, MGB, a company based in the Haute Savoie region of France, opened its doors to receive its 100th machine from Tornos. This machine celebrates the truly exemplary collaboration between Mr. Jean-Paul Burnier (recently retired from MGB) and Alain Tappaz (recently retired from Tornos).

For an exemplary partnership, from left to right: Mr. Alain Tappaz, Tornos France, Mr. Jean-Paul Burnier, MGB and Mr. Francis Koller, Tornos.

The past is very interesting indeed, but what does the future hold in store? Is it possible to use the strong points from the past as a foundation for building the future? To answer this question, Ms. Roda, CEO of MGB talks to us regarding the expansion!

Collaboration

decomagazine: 100 Tornos machines delivered – In your opinion what is the recipe underpinning this shared success?

Jean-Paul Burnier: Without any hesitation, I can respond by speaking of the 'partnership' approach. For more than 30 years, the quality of relations between Tornos and MGB has been built on our knowledge of one another and on mutual respect. Technical and commercial discussions have always been conducted in this spirit - we know and respect one another.

dm: People are important; but is that to say that the machines are less so?

Jean-Paul Burnier: Absolutely not! Maintaining excellent business relations is only essential if these are backed up robustly by technical elements, otherwise success is simply not there to be achieved. We are talking about a whole, which must be in perfect balance. Without this aspect, we certainly wouldn't have as many machines as we do, that is quite certain. Our plant now operates more than 100 Tornos machines and we work with different types for different applications.

dm: How did you come to acquire so many turning machines? Why do you work with so many different types?

Jean-Paul Burnier: By seeking out innovative technical solutions, Tornos has enabled us to enter markets hitherto unknown to MGB and through its knowledge of its own customers needs; MGB has been able to collaborate with Tornos to fine-tune these new processes. In other words, we have been putting a "win-win" strategy into place.

Alain Tappaz: MGB has set us numerous challenges over the years and Tornos has applied itself to the task of finding answers to these.

Jean-Paul Burnier: For us, the Techno-Center at Tornos France is another demonstration of this willingness to listen to us and to work closely with us.

dm: You are therefore a company that sources its equipment almost exclusively from one single supplier: isn't that a little dangerous?

Jean-Paul Burnier: MGB has always had a clear vision of its strategy and has sought, through having a homogeneous machine shop, to be able to address the needs of its own customers in a flexible and responsive manner. We have certainly always made a point of verifying our initial choices and, until evidence emerges to contradict this, these choices have proven to be correct and have been the most appropriate ones for our needs at the time.

dm: Can you summarize this success in terms of two factors: firstly your business relationship and secondly the technological expertise underlying it?

Jean-Paul Burnier: Yes. If we look more closely at these two distinctive aspects, we can say in technology terms that MGB has always evolved alongside Tornos. For the last 30 years, we have effectively advanced hand in hand, stage by stage. For example, the arrival of the controlled holding/stop function on the MS7 opened new doors for us, followed by CNC and of course by "the DECO saga".

Alain Tappaz: We have been able to develop this partnership because there is a real technology culture at MGB and the company has always sought to do as much in-house finishing work on components as it possibly can. Ever since the 1970's, whenever new features made their appearance, for example the two-spindle counter-drill or the 34DA conveyor, MGB has always spotted their inherent potential and has translated it into tangible results!

MGB premises in Marnaz, no shortage of carpet – the machines are so clean they look as though there are at an exhibition.

At MGB, all machines are equipped with facilities aimed at making the production environment safe, e.g. fire extinguishers.

dm: Without going into details of the time when Tornos and Bechler were still in competition with one another[1], I imagine that the arrival of the CNC machine must have transformed your production environment?

Jean-Paul Burnier: With our MS7, we specialized in establishing contacts for connectivity purposes and with TOP 100; we started to offer highly complex body production. Thereafter, with the ENC we went on to develop ways of creating very short production runs and prototypes, then the DECO 2000 arrived on the scene. Tornos equipped us with one of the 3 prototype machines and we rapidly spotted the potential for development that we could tap into with this new generation of machine. Today, we have no reason to do anything other than congratulate ourselves on the choice we made.

Expansion

Following this "historical" section, we met up with Ms. Véronique Roda, CEO, who talked to us "about the world".

dm: The history of MGB would appear to be linked to that of Tornos and vice versa: what can you say of the present and of the future?

Véronique Roda: Today, MGB, while continuing its development of co-engineering in France, is also active on the North American continent and in China where we have production facilities[2]. Our factory in Shanghai enables us to satisfy the needs of locally-based customers in the telecoms and aeronautics sectors. We took the decision to maintain the quality and specific features that define MGB, and this necessarily implies that a component manufactured in China must achieve identical quality standards to an equivalent component manufactured in France! To achieve this, the processes employed in China are the same as those used in France.

dm: Does this mean that you provide turnkey solutions? Don't you have to take account of specific local factors?

Véronique Roda: Yes indeed, and the exchange of information is very much a two-way process. We provide MGB expertise, but in some cases solutions are developed locally. Our technology culture is our strong suit, but having things looked at in a fresh and different way can enable us to consider different ways of accomplishing the same set of objectives. This process is enriching for both parties.

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[1] This was a period with which the author of this article was not familiar.
[2] See decomagazine 43!

dm: Are there advantages to manufacturing in China?

Véronique Roda: Of course! We are close to our customers and the local workforce is always involved in our local production operations. It is very important for us to be able to respond to the needs of our customers with this degree of proximity. Furthermore, the fact that we have a presence in China also opens doors to us in Europe because we are considered as "global suppliers".

dm: Are you satisfied with your presence in China?

Véronique Roda: We are in line with budgets. In terms of service, we are close to Tornos Shanghai and can advise that service standards there are delivered to the same quality standard as they are in France: i.e. very good indeed. For 2008, the local market will be pursuing its growth course and we will therefore be adding to our production capacity. It is worth noting that large corporations based in Asia require their own buyers there to supply their requirements on a local basis.

dm: You also mentioned the USA: how are things for MGB in that region?

Véronique Roda: Here too, we are in expansion mode. Until 2007, our presence on this market took the form of a joint-venture, but from 2008, we will be standing entirely on our own feet as MGB Inc.

dm: Are you applying the same strategy in the USA as you are in Asia?

Véronique Roda: Indeed we are! For us, it is most important that MGB quality standards are identical anywhere in the world and we apply the same "recipes" across all our manufacturing sites. The expertise and support of our French unit is absolutely essential to the success of our international operations. These factors enable us to assure consistency and globalization to our market offering.

dm: In conclusion, could you say that MGB continues its expansion with the same trump cards as those that enabled it to grow in France?

Véronique Roda: Absolutely so: wherever the customer is located, MGB is right there beside them with its technological expertise.

DIFFERENT MACHINES FOR DIFFERENT NEEDS

At MGB, the machine shop is enormous and is adapted to suit different types of component. As seen earlier in this article, the development of this business is achieved in tandem with machines from Tornos. A new machine enables us to enter a new market ... a new market drives you towards new technological solutions, a new machine ... etc! The figures demonstrate that DECO has been a tremendous lever for growth.

With Micro 7[3] scheduled for testing at MGB from the first half of 2008, Tornos and MGB clearly intend to continue this exemplary form of collaboration.

[3] On the subject of Micro 7, see the article on page 39.

MGB
105, rue du Bargy – B.P. 16 – MARNAZ
F 74314 CLUSES Cedex – France
mgb@mgb.fr
Tel.: +(33)(0) 450 98 35 70
Fax: +(33)(0) 450 96 09 60

MGB US, Inc
Steve DOODY
155, Northboro road. Building 100, suite 19
SOUTHBORO MA 01772 – USA
steved@compsources.com
Tel.: +(1) 508 485.5999
Fax: +(1) 508 485.8886

MGB CHINA
Titus TIAN
Section C, N°4 Building – 800 Shen Fu Road
Xinzhuang Industry Park – SHANGHAI 201108
CHINA
titus.tian@mgbchina.com
Tel.: +(86) 21.544.27.433
Fax: +(86) 21.544.27.147