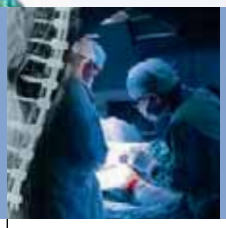
decomagazine

THINK PARTS **THINK TORNOS**

56 01/11 ENGLISH

Tornos Research
Center



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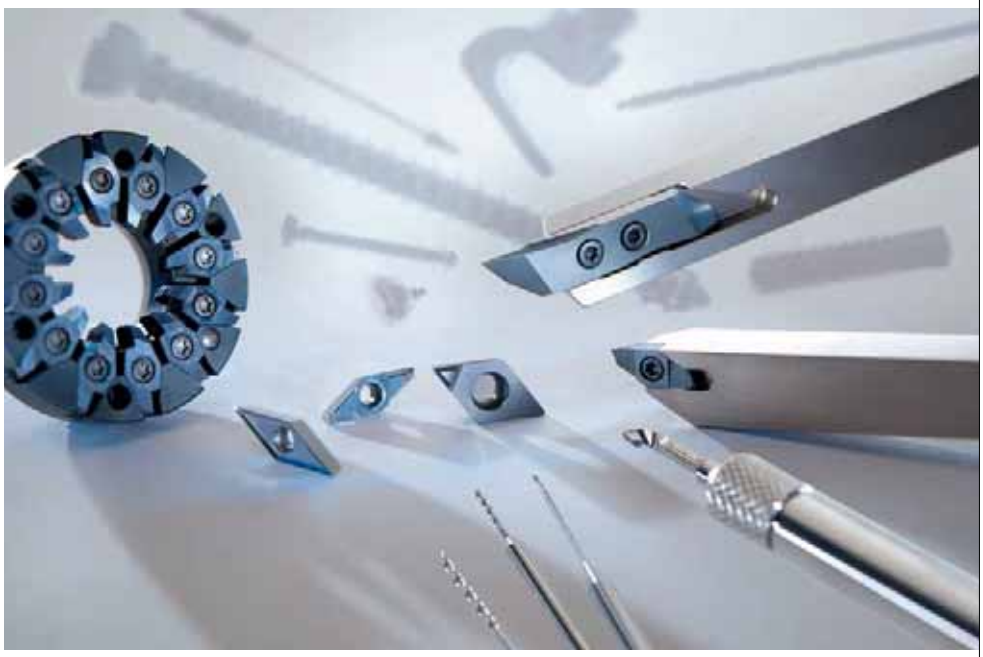

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3rd annual Watchmaking Days at Tornos

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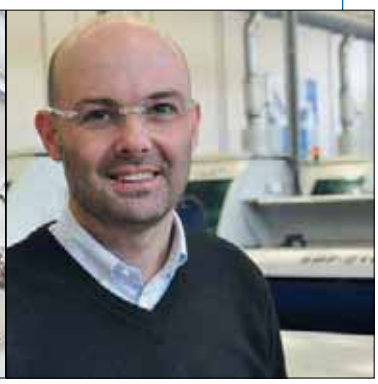

100% al dente: market leader Sweden & Martina Spa prefers Motorex Ortho NF-X

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SUMMARY

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INDICATORS AND PEOPLE

In November, Tornos successfully renewed the 2008 version of its ISO:9001 certification. For many years, Tornos has used a quality management system, the primary aim being to improve the performance of its processes and increase the satisfaction of our customers.

We strive to satisfy our customers as fully as possible using reliable, well-managed processes. This applies not only to the quality of our machines but also to the company as a whole, as well as to our suppliers. Among the key principles of a quality management system are prevention and constant improvement. This means that quality is an ongoing project whose aim is to identify and deal with faults as early as possible or, even better, to anticipate their occurrence. Thus, quality management can be represented by a cycle of corrective and preventive actions known as the "Deming wheel".

We have implemented various indicator systems allowing us to monitor our progress and identify any problems.

For example, the sending of each spare part is monitored; the response and intervention speeds of our After-Sales service are analysed each month. We know that our customers are under immense pressure: They are constantly being forced to work faster and more cost effectively; so each interruption to work is in itself catastrophic. As a machine manufacturer it is our duty to provide an impeccable service because, just like us, our customers want to be the very best.

Our quality department is highly proactive, monitoring the consumption of spare parts via reports drawn up by our technicians. It is now possible to identify overconsumption and, if necessary, analyse the reasons behind it.

All this allows us to ensure that the quality of our products is improving, and that our After-Sales service is responsive. However, internal analyses and indicators are only part of the response we're expecting.

Indicators allow us to measure internal quality. They enable us to verify the validity of our processes, which determines our internal performance. However, it is much more difficult to measure the other element - external quality, i.e. your perception of the quality of Tornos products and services. This New Year, we too decided to make some firm resolutions: one of them was to update our customer satisfaction survey.

This is why this issue of Decomagazine comes with a satisfaction questionnaire we would like you to return to us: we need your help to improve! You can also take part in our survey by visiting www.tornos.com.

Brice Renggli
Marketing Manager

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3rd ANNUAL WATCHMAKING DAYS AT TORNOS

According to the Swiss watchmaking industry employer's convention, this sector employed more than 49,000 members of staff at the end of 2009. Less than in 2008, this figure is still at its second highest value for 30 years. While the exact figures for 2010 are not yet known, this year has seen these figures rise to such an extent that some people are talking about a shortfall in personnel. While at the start of the 2000s Tornos did not offer an NC automatic turning machine perfectly adapted to the watchmaking world, this has certainly changed since a third of the turnover in Switzerland came from this domain in 2010.

For three years the company has been organising a special event for watchmakers. To tell us about it, we discuss with Kurt Schnider and Carlos Almeida, Tornos sales managers for Switzerland.

While watch manufacturers and subcontractors have their fixed meetings during the year, the luxury watchmaking trade fairs in Geneva (SIHH) and Baselworld are above all events that require workpieces to be supplied under very tight deadlines. There are two other events that are more focussed on manufacturers concerned about their competitiveness; EPHJ in Lausanne and the "journées horlogères" watchmaking days at Tornos in Moutier. Mr Carlos Almeida tell us: *"Today the Tornos group can create all the mechanical workpieces that form part of the movement, even the most complex components and all the parts used on the exterior, the casing or the bracelets. This broad and well-skilled range of competencies suits the trends of the watchmaking world perfectly".*

Strong trends

Between 2009 and 2010 a certain number of companies disappeared, the main reason was not the economic crisis, but the fact that actually small businesses were integrated into larger manufactures. This desire for autonomy manifested itself either by the buying out of small specialist companies, or by the acquisition of skills and production equipment. The fact that they have their own premises allows manufactures to better manage their deadlines and to keep confidential developments under control.

Advanced technology and Swiss quality

The fact that they also control the processes within the production chain allows manufactures to use

high-tech banks of machines that are fully in line with the image of quality and innovation that Swiss watchmaking wants and needs to convey. It also allows them to create workpieces that it is simply no longer possible to make with the older means of production.

Two areas of change

As we have seen above, one of the trends is towards complexity and innovation. Technical workpieces that combine functions or are made from difficult materials require cutting-edge machining solutions. The industrial aspect takes on ever increasing importance, and the repeatability of the processes can only be of benefit to Swiss watchmaking.

The other strong trend is towards the replacement of cam-type machines. The machine banks are getting old and the operators too, and we know that this technology is going to disappear within a relatively short time period. Mr. Manfred Laubscher, technical director of the company with the same name that undertook the replacement of its bank of cam-type machines told us: *"We still train bar turners on cam-type machines, but it's true to say that this speciality is dying out, there are very few young people interested in learning this and replacement parts will not be available forever[1]"*.

The specialists at Tornos carried out a survey of the 10 largest companies using these machines. These companies work with more than 2000 cam-type machines (in 2010!). By extrapolating from this, taking into account the fact that there are some 460 bar turning companies operating in Switzerland, we can see that this replacement market is very significant in size.

Two solutions for the two areas

As concerns the replacement of cam-type machines, Tornos can offer, with the Delta line, a family of machines at prices that make them a real alternative for replacing cam-type turning machines. The quality, repeatability and precision are better for similar workpiece costs.

In terms of innovation, Tornos is well-known in the market for offering advanced technology with gear hobbing. Whether this is frontal, front, rear, tangential or helicoidal, the company's equipment is able to create them. This is proved by the fact that more

ON DISPLAY AT
THE JOURNÉES HORLOGÈRES

EvoDeco 16 – cut barrel drum
Delta 12 – barrel cover
Almac CU 1007 – plate
Deco 10a – barrel-arbor

[1] *See the article "Replacing cam-type machines with Tornos' Delta machines" in decomagazine 54. Download here: http://www.decomag.ch/pdf/2010/tornos-dmag-201003054-cch-replace-cam-mc-fr.pdf*

the 15% of the bank of installed Deco machines in the watchmaking sector are equipped with this. Numerous options such as workpiece pick-up for finishing, the recovery systems for delicate workpieces and many others allow users in this sector to go further.

The two-pronged problem for watchmakers

When it comes to screws, two recurrent problems are well-known to watchmakers. Firstly, the creation of the thread right up to the underside of the screw head, secondly the machining of the threads required for profiles controlled along the entire depth of the tapping; and finally the marriage of these two elements to ensure perfect self-locking. While this problem has always found a more traditional solution in the nimble fingers of the watchmakers that file and adjust each workpiece, repeatability and interchange ability is far from guaranteed.

The two-pronged solution

Kurt Schnider tells us: *"The fashion for ultra-thin watches or complications on several levels within a limited space has necessitated the creation of screws that can be used up to the underside of the head. The old technologies either use die heads or thread chasing tools and did not allow suitable threads to be created efficiently. We used polygon operation technology as a basis and developed a new device that allows a hob cutter to be fitted on a polygon cutter. As the synchronisation is active, a simple drop into the material creates a perfect thread, right up to the head".*

Assembly machining capabilities

With its lines of single-spindle automatic turning machines with sliding headstock, multi-spindle turning machines and Almac machining centres, Tornos offers watchmakers turnkey solutions that can be used for creating a regulating assembly. Mr. Almeida sums it up: *"Even though historically Tornos was born of the watchmaking industry, we gradually forgot these roots. For decade or so, we have been working extensively in close collaboration with watchmakers and their subcontractors in this sector to be able to offer them solutions of the standard that the reputation of the Swiss watch industry demands".*

And while these developments come under the watchmaking 'label', the technology is also of benefit to other fields, such as the medical or microtechnology industries.

USEFUL INFO

- 8th - 11th March
- Tornos showroom, rue Industrielle 111, 2740 Moutier
- Open from 9:00 to 17:00, registration required
- Four large watchmaking groups have already been announced.

If you would like more information?

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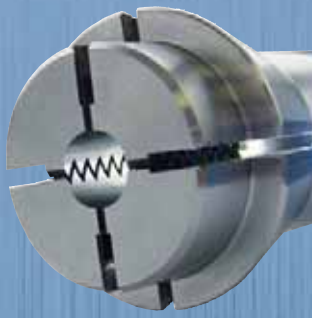

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A COMPLETE LINE OF SUCTION DEVICES

The full range of Tornos single-spindle and multi-spindle machines benefit from a new approach to the treatment of oil mists. There are three options available for each machine: a mechanical adaptation for centralised suction, a suction device with mechanical post-filter and a suction device with electrostatic post-filter. The mechanical post-filter (HEPA) is designed for 'light' use and the electrostatic post-filter for use during machining operations that generate lots of smoke and oil mists.

Option

Oil mist extractor for all Tornos machines (different models, see table at end of article).

Principle

The new suction devices are centrifugal type devices; a fan draws any smoke towards the post-filtration system that can be mechanical (HEPA) or electrostatic.

Benefits

- Ability to choose the type of filtration best suited to the application.
- Integrated system with automatic operation.
- Secure system, for fire prevention device (motor/brake unit).
- Simplified, reduced maintenance.
- Machining area free from smoke and vapours.
- Clean air reintroduced to the workshop.
- Complete line of similar systems with very attractive price/performance ratios.

TYPES OF FILTER AND MACHINE

Machine	Filter	Option number
DELTA 12	HEPA 400	466-6560
DELTA 20	HEPA 400	466-6560
GAMMA 20/5	HEPA 500 ELECTRO 500 Centralised suction	462-5560 462-5562 462-5564
MICRO 7	HEPA 400 ELECTRO 400 Centralised suction	232-6512 232-6514 232-6516
MICRO 8	HEPA 400 ELECTRO 400 Centralised suction	233-6512 233-6514 233-6516
SIGMA 20/32	HEPA 1500 ELECTRO 1500 Centralised suction	234/236-6522 234/236-6524 234/236-6526
DECO 7/10	HEPA 500 ELECTRO 500 Centralised suction	222/224-6512 222/224-6514 222/224-6516
DECO 13	HEPA 1000 ELECTRO 1000 Centralised suction	226-5435 226-5433 226-5436
EVODECO 16	HEPA 1000 ELECTRO 1000 Centralised suction	243-5436 243-5438 243-5440
DECO 20/26	HEPA 1500 ELECTRO 1500 Centralised suction	223/225-5436 223/225-5438 223/225-5440

Comment

For machining operations on tempered materials, with large numbers of blanks or using several high-pressure pumps, the electrostatic filter is recommended.

Both types of post-filter use the same suction box. It is possible to switch from a HEPA post-filter to an electrostatic post-filter and vice-versa. The electrostatic post-filter is the only option available for multi-spindle products. This is linked to the machining and spraying constraints.

Technical specifications

Depending on the machine, the suction power ranges from 400 to 2,500 m^3/h.

Noise: from 61 to 68 DB depending on the model.

Tri-phase multi-voltage 0.37 kW to 1.5 kW motor/brake unit compatible 400V/50 Hz - 460V/60 Hz.

Compatibility

All Tornos machines.

Availability

Extraction devices are available ex-works and can be fitted to machines that have already been installed.

PROVIDING SOLUTIONS

Tornos offers its customers comprehensive machining solutions, and to this end, considers its machines as the heart of a system. And with this heart must come the other organs, i.e. the peripherals. Many companies specialise in the production of complementary parts for machining equipment. The challenge for Tornos is to work in close collaboration with these specialist companies, so as to offer solutions that best meet the needs of our customers, ensuring perfect integration with their machines to form a single high performance unit.

Samuel Ventron, Product Manager for peripherals says: *"Tornos machines are very powerful and to achieve the best possible results from them, the machine and all the peripherals must work together in perfect harmony. The management team have put together our team to guarantee this"*. He added: *"The aim is to approach benchmark suppliers in the market and to develop privileged partnerships for the complete Tornos product line. Our role is to include these partners in the development of complete solutions. Our customers will benefit directly from the synergies developed"*.

The two new families of peripherals presented in this issue of Decomagazine are the result of these collaborations.

NEW TEMPERATURE STABILISER

Maintaining the temperature of the cutting fluid is extremely important. Tornos is offering a new line of oil coolers and water/oil heat exchanger coolers.

Option

Temperature stabilising device for Tornos machines (see table at end of article).

Principle

Cooling takes place through an exchange either between a water circuit and the cutting oil or between a gas circuit and the cutting oil (direct expansion)

Benefits

- Contact-free cooling guarantees clean oil every time.
- Precise temperature adjustment controlled by microprocessor.
- Powerful cooling from a compact system.
- Great price/performance ratio.
- Removable exchanger, easy-to-clean (single-spindle turning machines).
- Machines benefit from improved thermal stability.

Comments

Water/oil heat exchangers are also available (production on request) for an installation connecting the machines to a centralised water circulation system.

Technical specifications

Several power outputs are available depending on the machines: 3.6 and 7.4 kW for single-spindle machines or 21 and 37 kW for multi-spindle machines.

Compatibility

Sigma and Deco machines and all Tornos CNC multi-spindle machines.

Availability

The new temperature stabilisers are available ex-works and can be fitted to machines that have already been installed.

TYPES OF TEMPERATURE STABILISER AND MACHINE

Machine	Output	Option number
GAMMA 20/5	3.6	462-6570
GAMMA 20/6	3.6	462-6570
SIGMA 20	7.4	234-6032
SIGMA 32	7.4	236-6032
DECO 7	3.6	222-5462
DECO 10	3.6	224-5462
DECO 13	3.6	226-5462
EVODECO 16	3.6	243-5462
DECO 20	7.4	223-5462
DECO 26	7.4	225-5462
MULTIDECO MULTIALPHA MULTISIGMA	Output of HP pumps installed < 8,5 kW, 21 kW cooler, > 8,5 kW, 37 kW cooler	
MULTIDECO 20/8b	21 37	265-2576 265-2577
MULTIDECO 20/6b	21 37	266-2576 266-2577
MULTIDECO 32/6i	21 37	264-2576 264-2577
MULTISIGMA 8x24	21 37	272-2576 272-2577
MULTIALPHA 8x20	21 37	269-2576 269-2577
MULTIALPHA 6x32	21 37	270-2576 270-2577

Exchanger only for installation on a centralised system available on request.

WATCHMAKING EQUIPMENT FOR DELTA

Delta machines are increasingly being used to replace cam-type machines. To ensure a smooth transition for the watchmaking industry, Tornos is offering a number of options that will adapt the machine to the watchmaking sector.

Options

- Fixed guide bush.
- Clamping sleeve for secondary operations, adjustable from the front available for collet F10 or F13.
- Adaptation for 8x8 tool holder.

These options do not have a reference number at the time of going to press. Interested parties are asked to contact their usual Tornos dealer.

FIXED GUIDE BUSH

The fixed guide bush used has proven its worth, a million times over on the Deco 10. This type of guide bush with a 16 mm body (B16/1353/J6R/…) is the "watchmaking standard" and was not previously available on the Delta.

Benefits

- Working with a fixed guide bush enables more accurate and efficient machining.
- The integrated spray provides perfect lubrication of the bar.

Limitations

The maximum diameter is limited to 10 mm (not an issue for watchmaking).

CLAMPING SLEEVE FOR SECONDARY OPERATIONS, ADJUSTABLE FROM THE FRONT

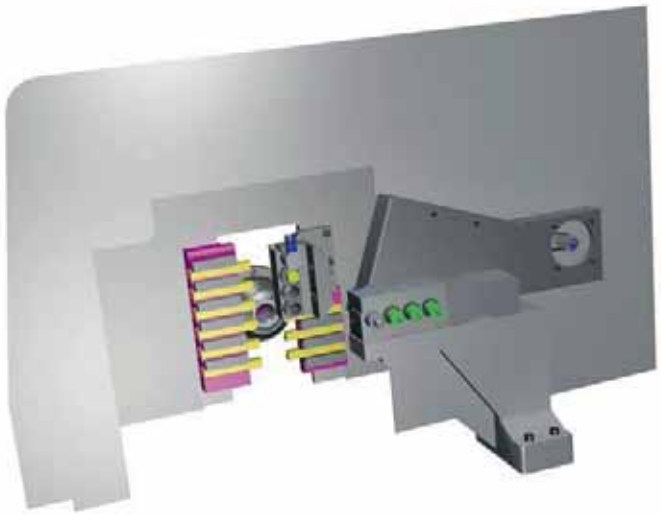
When machining delicate parts during secondary operations, grip is sometimes an issue. For example, when clamping on a thread or on a tube with slim walls, it is necessary to adjust the clamping force to ensure the workpiece is not deformed.

Benefits

- Clamping force mechanically reduced.
- Easy adjustment to suit each workpiece.
- Adjustment from the front of the counter spindle.
- Simple mechanical system.

ADAPTATION FOR 8X8 TOOL HOLDER

Watchmakers usually work with tool holders with an 8x8 cross section. Tornos has developed an interface to allow this type of tool to be fitted on Delta machines without changing the original base plates.



Benefits

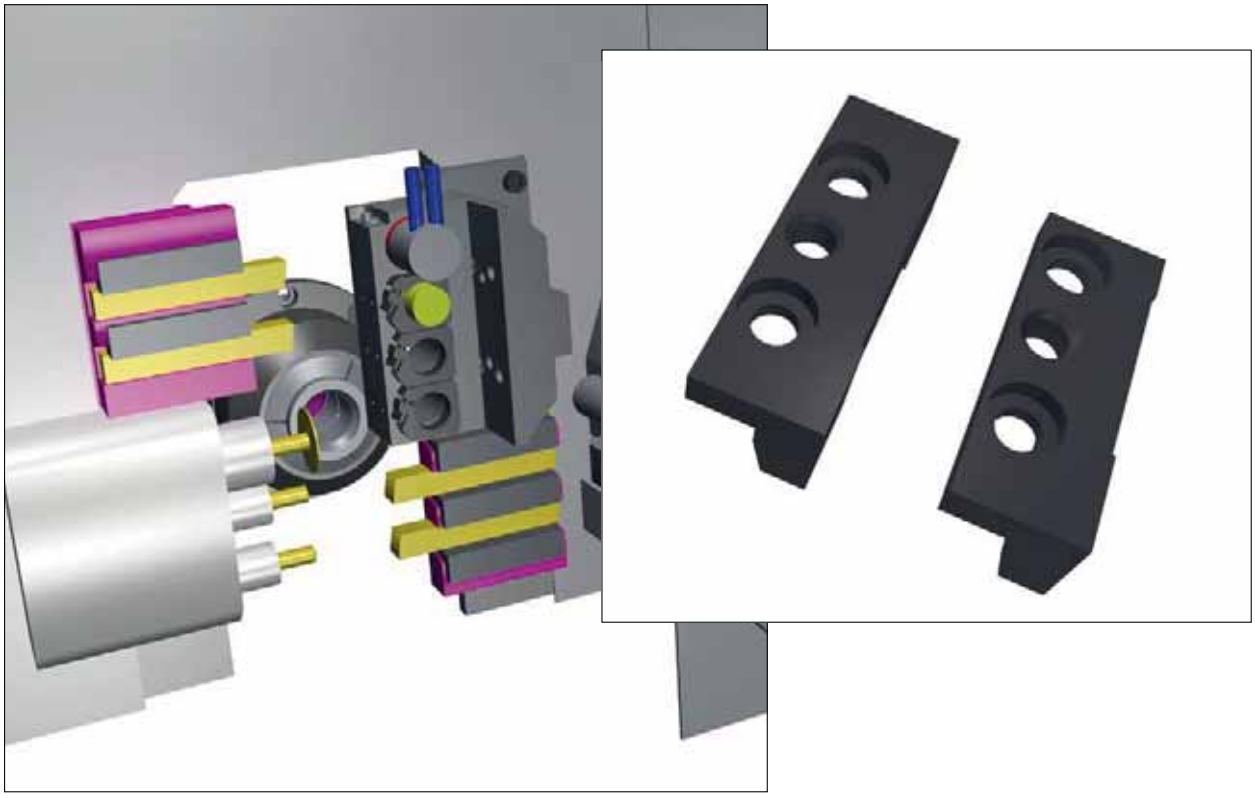
- Meets the "watchmaking standards".
- Universality of tools across the watchmaking machine banks.
- Quick and easy system to put in place.

Compatibility

The three options set out above are compatible with Delta 12 machines.

Availability

Watchmaking equipment for Delta 12 is already available ex works. Installation on machines already in use is possible.



TORNOS RESEARCH CENTER

After many years of sporadic collaboration, Tornos and the Haute Ecole Suisse Arc Ingénierie [Engineering High School] in St-Imier, Switzerland, have decided to strengthen their already close collaboration by creating the Tornos Research Center (TRC) through TT-Novatech. This strategic collaboration between HE-Arc and Tornos will take shape in the Technological Park premises in St-Imier, some thirty kilometres away from the Tornos Headquarters in Moutier.

In order to find out more, Decomag interviewed Mr Philippe Jacot, the new CEO of Tornos.

decomagazine: In the past, Tornos regularly worked with HE-Arc for various research projects; how will the Tornos Research Center change the collaboration between the institute and your company?

Philippe Jacot: It is true that for many years we have worked closely with HE-Arc on various sporadic projects and with success. With the Tornos Research Center, which is a first in our field, we are trying to create intellectual competition between our partner HE-Arc, and the engineers in our company. This new entity will strengthen the collaboration, not only through carrying out R&D projects, but also by stimulating ideas on strategic roadmaps in terms of technology.

dm: In what way does Tornos expect to benefit from this new collaboration?

Philippe Jacot: We are faced with very aggressive and strong competition; Tornos is, and has always been, a technological leader. To maintain our position, we need the experience of our engineers but also the academic wealth that HE-Arc can offer us; HE-Arc will allow us to access new technologies. HE-Arc assumes an interesting position in this collaboration, as the collaboration enables the school to be brought into alignment with the realities of industry. The closeness between the Research Center and the research laboratories is an important factor in terms of understanding and recognising the industrial problems encountered by Tornos, in the activities of the

School. We are also hoping to boost certain vocations to attract young talent into our teams of R&D engineers.

The philosophy of the Tornos Research Center is to be somewhat the same, but on a smaller scale, as the Nokia Research Center and the Technical Research Centre of Finland (VTT) or even the Logitech Innovation Incubator and EPFL [Ecole Polytechnique Fédérale de Lausanne]. We are trying to implement a certain systematic method into innovation.

dm: In this case, why choose HE-Arc in St-Imier and not another institute?

Philippe Jacot: HE-Arc and Tornos are in the same region; they share the same history, the same interests and the same dynamism drives them. The sliding headstock machine was developed over a century ago in this setting. So, it is essential for our activities to continue to develop this breeding ground that promotes innovation and forms the basis of the culture of precision.

The engineering school is in this region due to its sector of activity, which is heavily aimed at micromechanics. Tornos plays an integral part in this industrial sector. We are not closing the door on collaborations with other institutes, and similarly, HE-Arc can still collaborate with other companies.

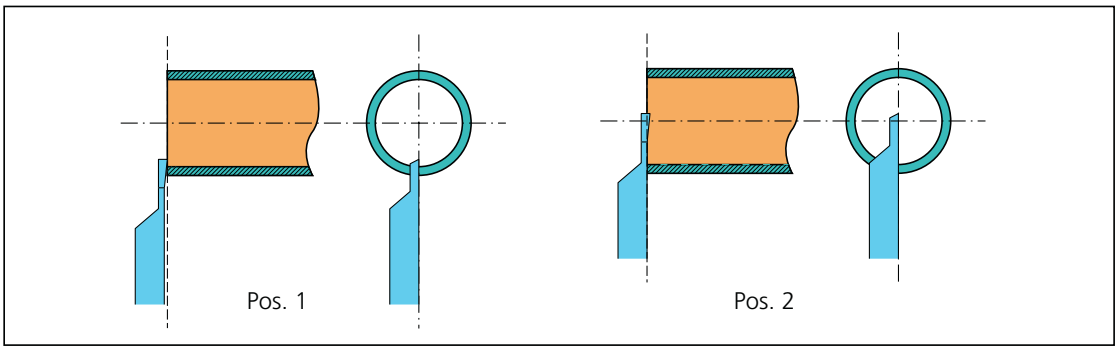
dm: What advantages will the Tornos customers reap from this collaboration?

Philippe Jacot: We have clear objectives: we want our machines to be accessed and used more easily, and we want to make them more powerful by using technologies that have been adapted and, in particular, can be adapted to our field of activity. In the long term, we are going to work on mechanical design, machining processes, advanced control and mechatronics as well as modelling and simulation. Through TRC, we want to prepare for the future as our field of activity still has numerous challenges to overcome. We are certain that, by combining our experience and the young and creative spirits in HE-Arc, we will be able to remain competitive for our customers by means of solutions that incorporate the latest technologies.

dm: When will the first research work begin?

Philippe Jacot: The official inauguration will have taken place on the day decomagazine is printed; after a first implementation phase, we are hoping to be able to start work on the first projects from March onwards.

TUBE MACHINING



Description:

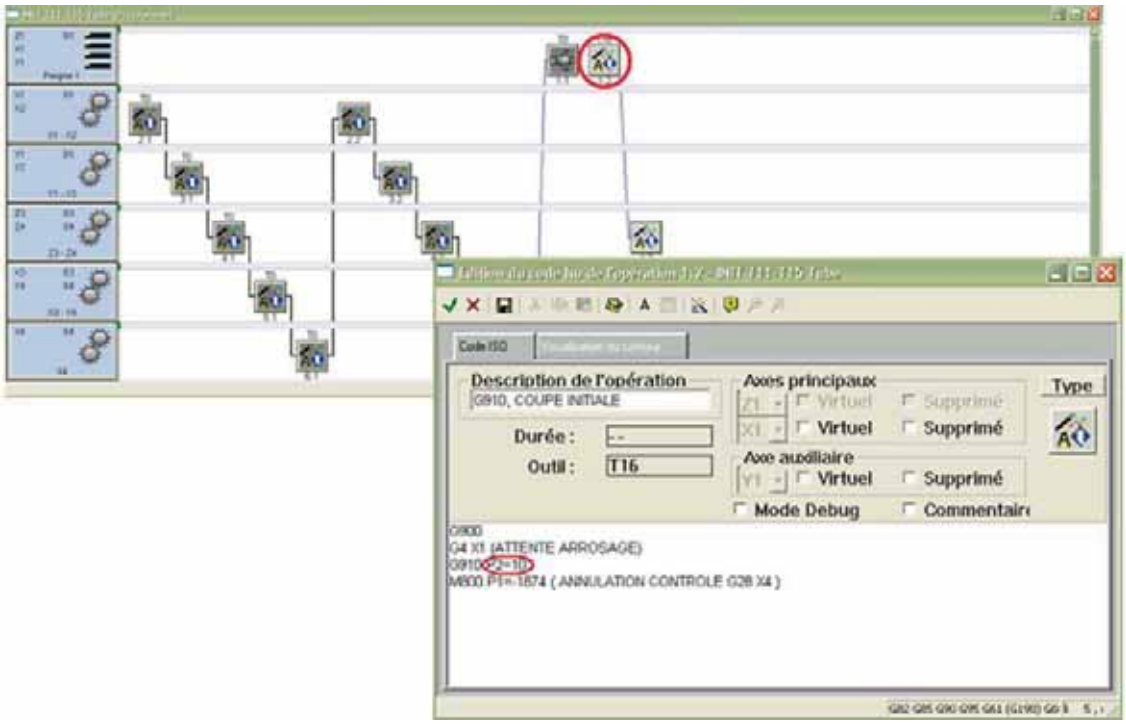
The standard TB-DECO macros used during the initial cut and when feeding a new bar, always direct the cutting tool underneath the centre of the bar at the end of the cut. This is the negative X position according to the value of Lx in the tool geometry.

When machining material in tube form, if a cutting tool with an insert is used, it must be possible to finish the end of the cut once the internal ø of the tube is reached (pos. 1). During sectioning, the X axis does not attain a negative value but instead goes up to the tube's internal diameter, which means considerable time savings compared to the standard model.

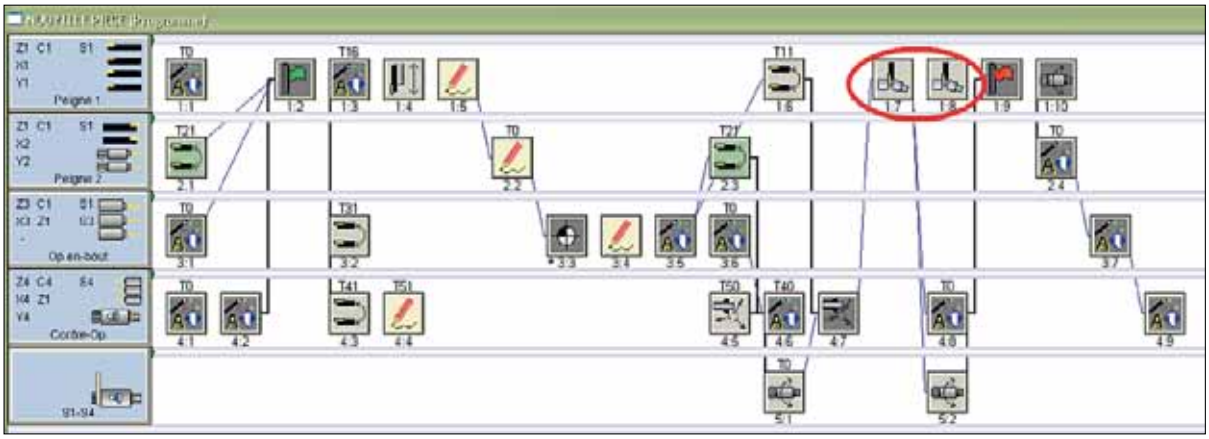
Otherwise, if the bit finishes its course underneath the theoretical centre of the bar (pos. 2), the insert will no longer come into contact with the wall of the tube. This can cause potential length issues when feeding the next workpiece.

It is possible to section only up to the internal diameter of the tube when operating the Deco10, Deco13, Deco20, Deco26, EVODeco10 and EVODeco16 machines. An example is available when opening a new workpiece, under cut on platten1, under example (TB-01) for all Deco + EVODeco "a".

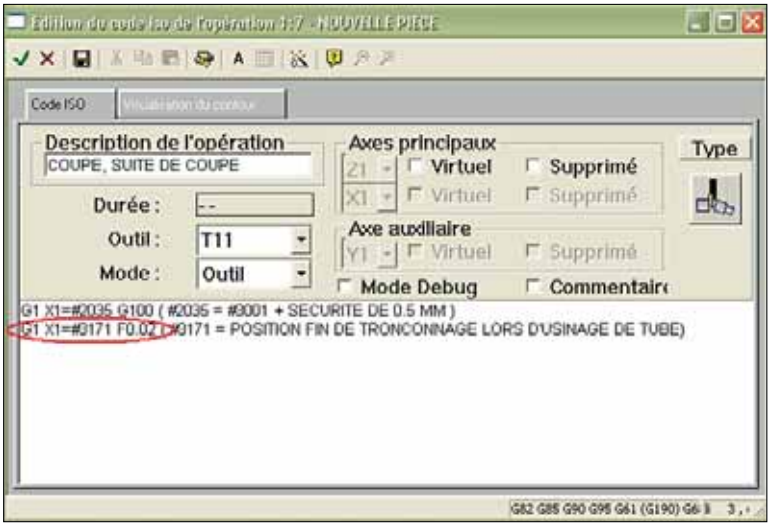
To work in this way, a parameter P2 must be added, after the G910 in the INIT program. This P2 parameter corresponds to the minimum diameter that the cutting tool must reach during sectioning. (Example: G910 P2=10)



And in the main program, operations 1:7 and 1:8 must be modified.



The variable #3171 must be used. This corresponds to the value programmed in parameter P2 of G910.

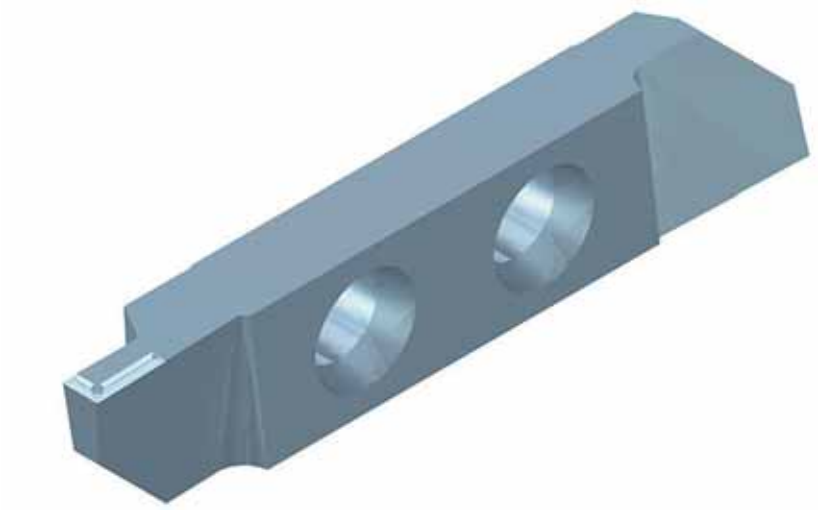


G91 must be added in operation 1:8 so that it finishes the cut by moving to the value Lx of the cutting tool. *(If G91 is not added, the cut will be made up to below the centre)*

Comment: This option is available from version 8.02.040 of TB-Deco.

THE PROBLEM-SOLVING INSERT

In the bar turning industry, countersinking and turning operations with a single tool are routine. Unfortunately, depending on the material, traditional X-geometry inserts (Parisian cut) are not always ideal for dealing with long and bulky swarf fragments. Applitec now presents a new family of inserts combining the machinability benefits of X inserts with the 'chip rolling' capability of ISO inserts: The Top-Line range of ZX geometry inserts. Interview with Pascal Kohler, technical manager at the Swiss company.



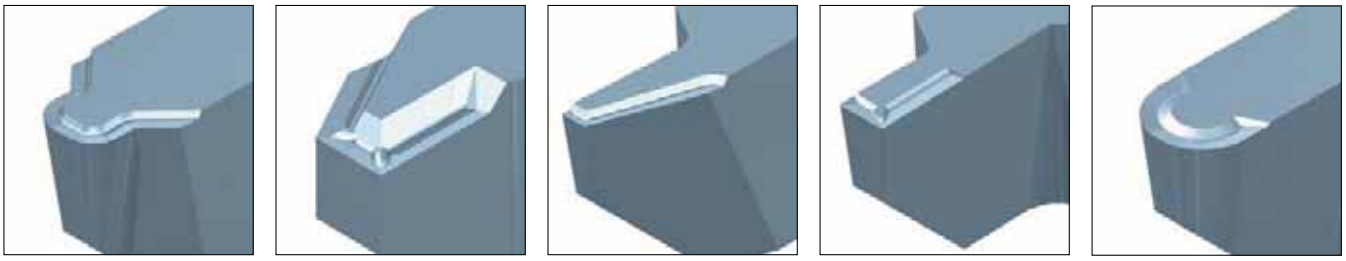
Applitec is a company that listens to its customers and during Pascal Kohler's many visits to customers' premises he was regularly being asked about the possibility of a countersinking/turning insert that could effectively deal with swarf. Although it is fairly easy to produce inserts with a Parisian cut by grinding, the limitations of the process itself mean that they cannot be equipped with chip rollers. Therefore, there was no real solution without a compromise.

New technology

To be able to offer its new range of ZX inserts, the company implemented a state-of-the-art production process allowing it to create chip rollers on cutting edges of any shape. Thus began the production of a new generation of countersinking/turning bits. This technology also enables Applitec to offer custom cutting inserts for these operations.

Are they suitable for lead-free copper alloys?

"We are learning every day" explained Pascal Kohler. He added: *"During one of my recent visits, a customer showed me the results of using the new inserts on lead-free brass. Rather than ordinary brass, this was one of these new alloys with specific properties and it was causing problems in production, in particular long pieces of swarf. The users were very positive".*



ADVANTAGES OF THE NEW ZX RANGE

- Particularly well suited to difficult materials
- Longer tool service life
- Better swarf management
- Reduced machine downtime
- Reinforced cutting edge
- Custom production of chip breakers

Asked about the price, Pascal Kohler explained: *"We offer standard ZX inserts at a similar price to the "basic" inserts available on the market. Our aim is to enable our customers to adopt this new technology without increasing their costs".*

An already comprehensive range

The new ZX range is available in all the usual sizes: 740-760 for clockwise rotation machines and 730-750 for anticlockwise rotation machines, and the insert holders are available in cross sections from 7x7 to 20x20. The 760 family also offers a rear turner equipped with this technology. A brochure presenting the range is available from the address given at the end of this article.

Custom shapes to order

Applitec can produce ZX inserts to order, with specific shapes including cutting angles and chip rollers adapted to suit particular machining and material constraints. Pascal Kohler: *"We have a lot of experience in cutting and our customers often rely on us to offer them the solution that best suits their needs. The technology we use for ZX inserts even allows us to offer our customers different variants, enabling them to carry out tests and choose the most efficient solution possible".*

If you would like more information, please contact Pascal Kohler at the address below:

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SWISS TOOLING

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www.applitec-tools.com
p.kohler@applitec-tools.com

HAROLD HABEGGER

Canons de guidage
Führungsbüchsen
Guide bushes

Type / Typ CNC

- Canon non tournant, à galets en métal dur
- Evite le grippage axial
- *Nicht drehende Führungsbüchse, mit Hartmetallrollen*
- *Vermeidet das axiale Festsitzen*
- Non revolving bush, with carbide rollers
- Avoids any axial seizing-up

Type / Typ C

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

Type / Typ TP

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

1 Porte-canon: 3 types de canon Habegger!
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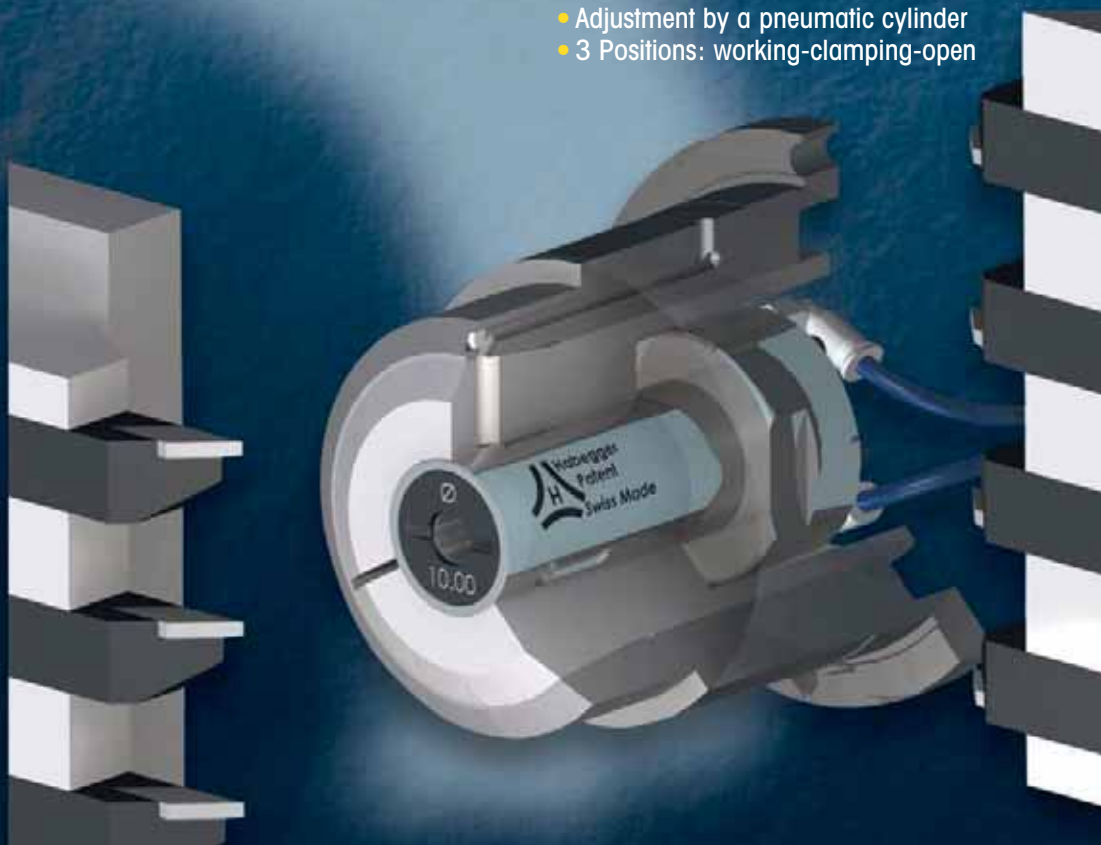

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A UNIQUE POSITION

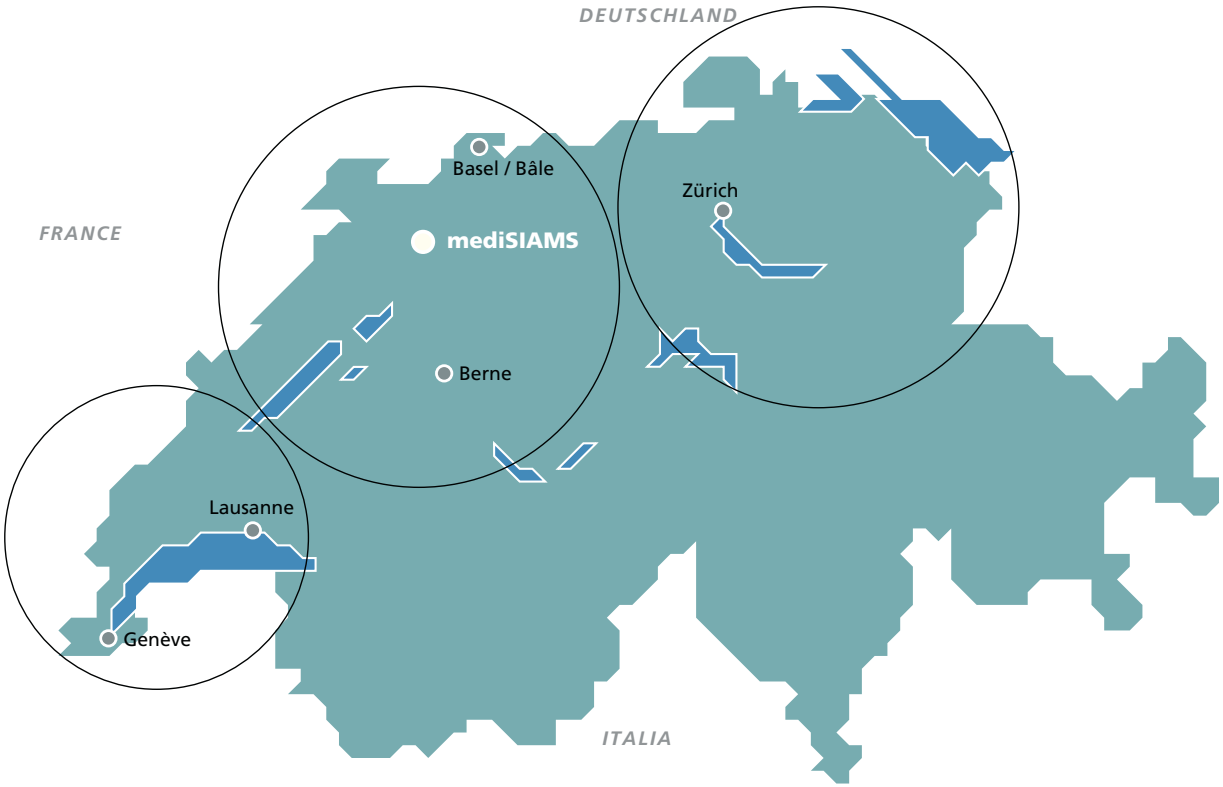
Switzerland is the country with the highest density of companies working for the medical industry in the world. This translates as approximately 1,400 companies, generating over 48,000 jobs. More than 60% of these companies are involved in production work. All of these manufacturers are found within an 150-kilometre radius of one of Switzerland, and Europe's - historical centres of micro-technology – Moutier, Switzerland. It is the natural home of the mediSIAMS, a trade fair that brings together the expertise of the micro-technology and medical industry.

mediSIAMS' strength is its precise focus on production for the medical industry. Francis Koller, president of Siams, tells us: *"For this year's fair, we have decided to concentrate even more closely on micro-technology for the medical sector".* The result of this focus is that finished products destined for the medical sector will disappear from the lists and therefore from the exhibition halls.

A logical concentration…
and a response to a trend

With the positive experience of organising Siams and therefore a complete understanding of the world of micro-technology, the organisers of mediSIAMS had a large base of expertise to fall back on. After two years during which the fair did not have a clear focus, the decision was taken to voluntarily reduce the number of exhibitors and concentrate on a specific domain. mediSIAMS is the trade fair for micro-technology in the medical sector. At a time when managers of companies are incredibly busy and when a visit to an exhibition must be as efficient as possible, a specialist fair that is focused and of a manageable size is an important thing to offer. For those working in production for the medical sector, looking for production equipment, skills or subcontractors in this field, a visit to mediSIAMS guarantees the best return on investment in terms of time.

The present



Source: Swiss Medical Technology Industry Report (2010)

At the heart of the market

mediSIAMS is perfectly placed in the centre of this very important market. Situated on the border between the French and German speaking parts of the country, it brings together all Switzerland's players in the medical micro-technology industry. With 40% of participation coming from the German-speaking side, this location ensures that all Swiss companies in this field are represented. Mr. Schmid, director of the Siams and mediSIAMS fairs says: *"At mediSIAMS, the barrier between the two linguistic regions does not exist. Professionals from both German- and French-speaking Switzerland know that this move to Moutier is a profitable one that will provide them with a quality experience"*. Asked about the geographic location of the event, he replied: *"We are a united event located at the heart of the micro-technology region. In Switzerland, there are three medical areas, the Berne-Bienne-Moutier region, the Geneva region and the Zurich region. So, in these terms, we could not be better placed"*.

Keeping it focused

At mediSIAMS, there will be no plasma bags or syringes. The target visitors are clearly not the end users of the products. Mr. Schmid adds: *"For the previous events, our focus was quite vague and this*

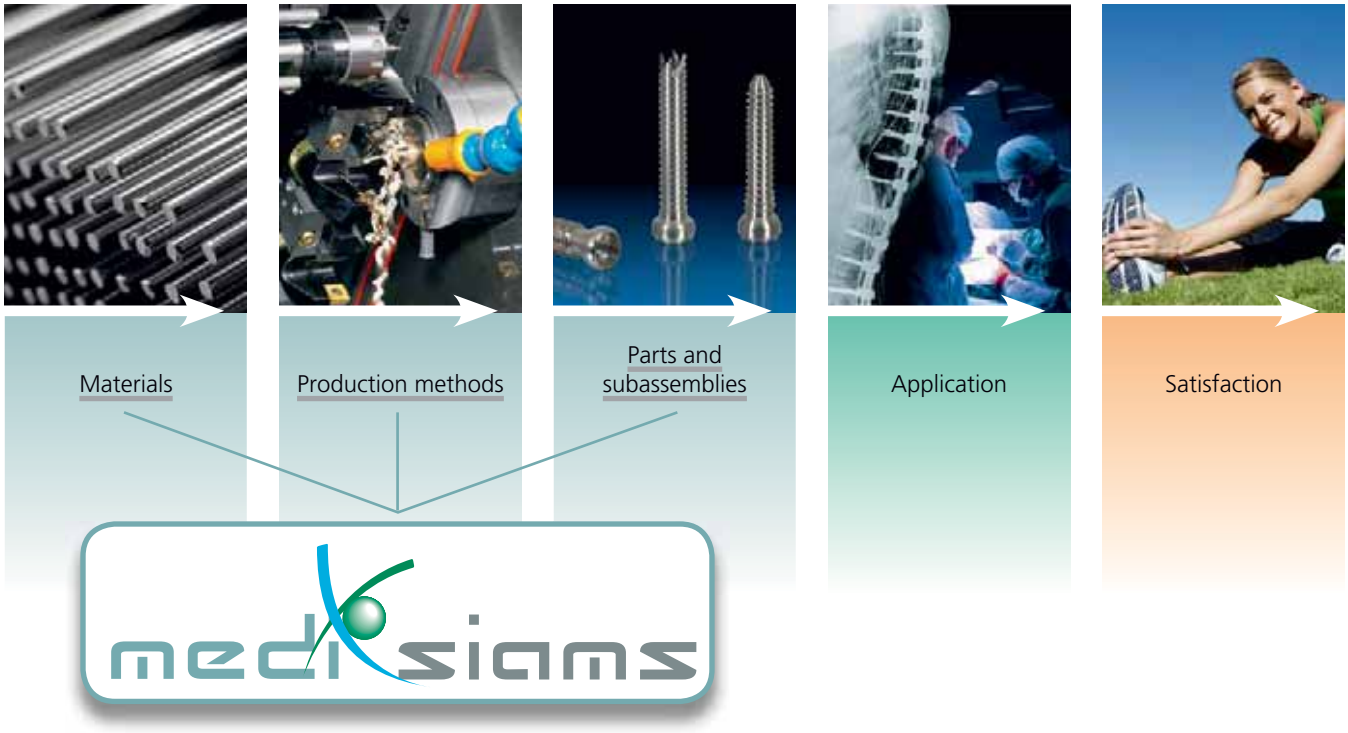
MEDISIAMS AT A GLANCE

4 days to discover (or rediscover) expertise in medical micro-technology

Dates:	3 -6 May 2011
Opening hours:	Every day from 09:00 to 17:30
Location:	Moutier, Forum de l'Arc
Exhibitors:	Approximately 180
Focus:	Micro-technology and production in the medical sector

Reasons to visit this fair, which is ideally located in the heart of the micro-technology and medical region:

- Meet companies working in this field
- Find machining or assembly solutions
- Discover services that offer something different
- Observe experts in action
- Make contacts
- Do business



was also felt by our visitors. Clearly, a doctor or dentist who visited us was not interested in 90% of what was on show… which suddenly gave it too small a draw for them. For those working in micro-technology, the section with finished products was of no interest and only wasted their time. In 2011, mediSIAMS is focusing on efficiency".

The Aims?

This new mediSIAMS event bears the hallmark of concentration and efficiency. When questioned on the number of visitors expected, Mr Schmid told us: *"We are providing a platform for exchange and communication for the medical micro-technology sector, we are best placed to do so and our aim is to welcome 5,000 professional visitors from our well-defined target audience".* But our main aim is something else entirely; it is to promote and strengthen the position of those working in the production market for the medical industry. There are a vast number of areas of Europe working in this field and while Switzerland occupies one of the best positions amongst them, it did not have a tool as precise as mediSIAMS.

Mr. Schmid sums it up: *"Two years ago, three quarters of exhibitors were satisfied with the quality of visitors and the contacts made. We are going to do better this year and we will take all steps to ensure we meet our goal".*

Do you work in the medical industry? Do the reasons given above for visiting the fair appeal to you? Put these dates in your diary and request your free entry pass from info@siams.ch today.

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www.medisiams.ch

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TORNOS BECOMES IMPORTANT FIXTURE IN THE BACKBONE OF HIGHLY SUCCESSFUL MEDICAL COMPONENTS MANUFACTURER

Structure Medical, headquartered in Naples, Florida in the US, with a second plant in Mooresville NC, manufacturers pedicle screw assemblies and other spinal and extremity implants under contract for ten of the biggest names in medical. They have developed patented production protocols that have made them a top one percent supplier to many global industry leaders. Structure Medical has experienced remarkable growth in the last two years. They attribute their success to a philosophy of continuous improvement and an unbending commitment to buy the latest and greatest equipment available.

Structure Medical Headquarter in Naples, Florida, USA.

The turning point for Structure Medical

Turning centers weren't always important to Structure Medical. In the beginning, they were just necessary equipment to help them manufacture turned components for 5-axis milled medical parts and assemblies. But that all changed when the medical device manufacturer purchased its first Tornos 2-1/2 years ago and began to see just how the top of the line sliding headstock lathe could contribute to their success. LeNoir Zaiser III (who goes by Len), Structure Medical CEO and co-founder, describes the turning point. *"I used to say that we were the best anywhere in 5-axis milling. Now all of a sudden we find that we're winning a lot of contracts away from competitors who have been in the turning industry a long time. And where I used to believe that our turning work was just a supplement to our 5-axis work… now I find that it's unique and puts us in the very top tier."* Zaiser adds a frame of reference: *"Products for the medical industry are becoming more complicated. No question about it. As the products have become more complicated, we've started to incorporate Tornos machinery. And suddenly we're in a premier space of turning as well as 5-axis milling. The Tornos equipment put us in a league of our own."* Zaiser's son, LeNoir Zaiser IV, co-founder and Senior Vice President/General Manager of Structure Medical (who also goes by Len) adds,

Pictured left to right: LeNoir Zaiser III, Lenoir Zaiser IV, Victor Georgier.

Victor Georgier at the Sigma 20

"It allowed us to do work beyond what we could ever do on the machines we had before."

Work like the percutaneous polyaxial housing part that Structure Medical's lead Tornos programmer/operator, Victor Georgiev, shared with decomagazine. It's a complex part, about 140 mm long. The challenge was that it needed a very long hole. The ratio between the diameter and the length of the hole is very large. And there are very deep, long threads at the bottom of the hole. Explains Georgiev, *"We did that in a unique way. But the challenge was not to make that part – the challenge was to make a few hundred of them exactly alike. We all sat down together and decided to use a specially ground Titanium material. And when we designed the protocol we kept in mind that it had to be a stable process. This customer is very demanding; they scrutinize the part to the smallest detail."*

Structure Medical's production protocol is definitely unique – so much so that they require non-disclosure agreements from anyone who spends time out in the shop. The Zaisers could not divulge any particulars about their protocol (and decomagazine was asked not to photograph certain setups for the article), but it's clear that their protocol is based on several factors: utilizing multi-axis milling techniques over simpler cutting processes; grouping multiple parts together in single program operations (vs. making one part at a time); and buying the best equipment, cutting tools, oil, and raw material available. Add to this their quality management and inventory services, and Structure Medical has an edge on their competition that is not likely to be superseded any time soon.

Len, Senior has started and sold several, very successful aerospace defense and medical contract manufacturing companies in his career. In all cases when starting a new company, Zaiser investigated the current technology being used by his competitors and was amazed to learn how far behind they were. Two of his previous companies were started to manufacture critical parts for the wings and warheads for the Sidewinder air-to-air missiles on US fighter jets. In fact, one of his companies won ALL the business making Sidewinder wings for the United States and NATO forces. Zaiser describes how Structure Medical began and why they were able to excel as a top supplier to the major medical companies in such short order.

"I got started in medical to 'get my karma squared around' after doing military stuff all my life. A very good friend of mine was world-renown hand surgeon James Strickland; and he and another gentleman by the name of Bob Ward, retired from Stryker Howmedica took me and Len (Jr.) to some major manufacturers of orthopedic implants and some smaller companies; and we immediately noticed that the industry [like the aerospace facilities he had witnessed years ago that spurred him into action there] was somewhere between 10-15 years behind in technology. So we decided to buy the latest, greatest, finest machine tools we could buy, mostly made in Switzerland and started out mainly in 5 axis high speed milling."

Applying a milling mindset to turning

The unique work they are doing on the Tornos is related to their milling roots. Structure Medical often utilizes surface milling processes with a ball mill tool on the Tornos over traditional form tool turning processes. This allows them to achieve perfect blends on the corners of their parts. Georgiev provides a detailed picture of this scenario, *"We use a ball mill and take one cut across and follow the surface based on the CAD model of the part. And then we make a step over… and the step over will be determined by the diameter of the tooling and parameters of the part – but let's say we move 3-4 thousandths of an inch… and then we take another cut. And we repeat that motion. So the tool is driven on the surface of the part. Basically it's like sculpturing."*

Up to now, turning centers weren't meant to do this type of work. But Structure Medical has found that their Tornos Deco Sigma 20's and 32 can do it very accurately without sacrificing cycle time. *"Wherever there are irregular surfaces,"* explains Georgiev, *"I cannot use a form tool — it won't blend really nice when I go around the corner because our parts have a different curvature on both sides. So, that's where the accuracy of Tornos comes into place. Because the machine has minimal thermal expansion, all the blends will be perfect."*

Zaiser Sr. adds: *"Turning is just a small part of what these machines do. One of the key things about Tornos is they seem to run the hardest the longest. The quality of workmanship on the machine, we think, is superior in the industry. They are in a space of their own. And the interface of the barfeeder to the machine is superior to anything we've found so far… very reliable. They also have an extremely good temperature compensation system."*

Georgiev continues Zaiser's thought, *"Tornos has been a very good choice for us. I've always liked Tornos because they're built really well. They are sophisticated machines; yet they are easy to use, program and set up. And they are extremely reliable. We're running 24/7. And we can do very complex parts and pretty unusual applications as well. Our most complex parts are going on the Tornos."*

Says Zaiser Sr., *"The sophistication of the machine is at such a level that we can respond to our customer's most demanding requirements for complex*

VITAL STATISTICS

- 90+ employees.
- A 30,000 sq. ft. facility in Naples, Florida and a 25,000 sq.ft. Mooresville, North Carolina
- Even during recession, grew revenues by 110% in 2009. Projected growth of 60% in 2010
- Cutting medical parts primarily for repair of spinal column and extremity bones. The components include items such as polyaxial and monoaxial pedicle screw assemblies, cervical/lumbar plates and extremity plates.
- Part diameters range from 1 mm up to 32 mm
- Serves ten major customers
- Lot size: 10 pieces to 100's of pieces. Usually families of parts
- Ships about 15,000 components per month for a total of around 400 orders/month
- Cutting 90% titanium, plus Cobalt Chrome, stainless steel, and PEEK
- Average cycle times between 25 seconds and 20 minutes depending on part complexity
- Patented manufacturing protocols to produce complex parts
- ISO 13485 medical devices certification, FDA CGMP compliant
- 60 state of the art machine tools including: (4) Deco Sigma 20s, (1) Deco Sigma 32, (1) Deco 13a, (4) EvoDECO 16s on order

parts. They're really almost overbuilt as far as rigidity. If you do a size-for-size comparison… the Tornos probably weighs twice as much as other machines on the market. The Tornos has twice as much mass. This gives it reliability and precision.

"It's interesting that the highest priced machine in its class in the industry gives us the lowest cost per unit. That has to do with uptime, speeds, precision, and stability."

The program for success

All of the surface milling operations that Structure Medical performs on their Tornos machines result in very long programs. On other turning centers, long programs present a problem when the machine runs out of memory. But the Tornos Deco Sigmas with 31i control allow the use of external memory expansion and can handle these complex programs without a hiccup. This is a vital differentiation and one which Structure Medical comes back to again and again during this interview. It is absolutely critical that their machine tools be able to handle the long programs (with thousands of lines of code) inherent in their complex surface milling processes and on "ganged" parts being cut out of a single piece of raw material. Georgiev finds one other feature key to the control.

"The machine has a look-ahead function that allows us to see what's coming up next. The Sigmas, with the 31i control, let us do what our customers are demanding of us. Most machine shops would like medical parts to be less sophisticated. We're quite the opposite. We're looking for difficult parts."

Beyond the benefits of the control itself, it's also important to Structure Medical that all their Tornos machines share the same control so they can easily swap parts from one machine to another. Due to the small lot sizes in the medical industry, Structure Medical finds they have to do a lot of setups. And short runs mean they need to be very nimble.

Explains Georgiev: *"We have to be flexible. We have four different Sigma models, — four Sigma 20's and one Sigma 32 — but since the machines are nearly identical, we have the flexibility to move parts to whichever machine is available at the time."*

The changing nature of the medical parts industry

Structure Medical has seen major price pressures in recent years in the medical components industry. The industry has become much more demanding.

Zaiser Jr. paints the picture: *"The medical components industry is getting pressure from the FDA to not only control their own shops and to lock down their own processes… but the FDA is also saying… you have got to look at your suppliers too. Driving costs down is expected now. It is expected that the suppliers (like us) will participate in the pressures from the healthcare initiatives or reforms."*

But the price pressure being experienced by Structure Medical is not simply due to US healthcare reform, it's also because their customers want to expand into European markets. And the European marketplace won't support US pricing. *"You can't get as much for a product in Europe as you do in America,"* explains Zaiser Sr. *"In general, there is more price pressure in Europe than in the U.S. And since our customers are looking at expanding their international business, we've received requests for and have acquiesced to major price concessions."*

How will Structure Medical continue to make money with such cost reductions? They are going to, as they put it: do it better and faster without cutting any corners. *"We're going to replace some work done on our other turning machines with Tornos,"* says Zaiser Sr.

In the last year, Zaiser Sr. estimates that Georgiev probably cut 40-50% of the time cycle out of several jobs by moving from other turning machines to the Tornos. Zaiser explains, *"Part of it is Victor's protocol and part of it is the machine itself. We're excited about price pressure deals. Because it's going to drive some competitors out of business.*

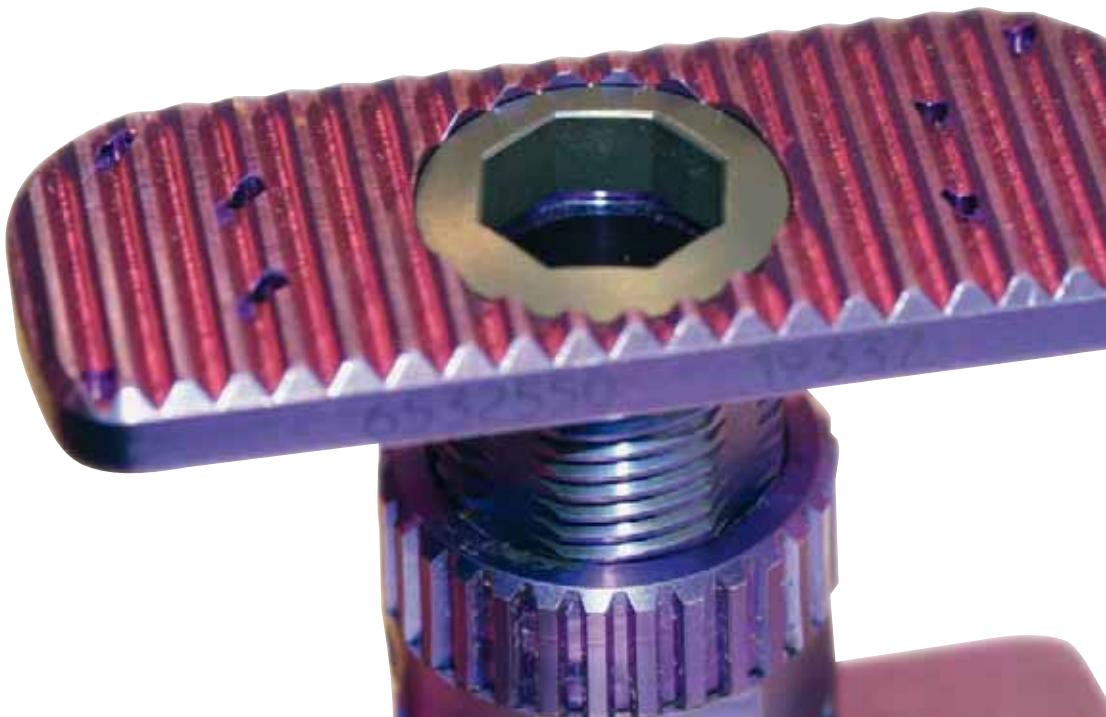
"Victor's goal is not squeezing the last second out of a cycle time. It's squeezing the most runtime without intervention. If you can get a one minute time cycle where you change tools every hour and a half, vs. a 2-minute time cycle where you change the tool once a day, we'll go with the 2-minute time cycles. We are mainly concerned with how many parts we have in the bucket at the end of the week."

Georgiev agrees. *"That's true. Cycle time alone for us is not an indication of whether we're doing a good job or not. The process needs to be stable. And we start from there. We're not a big fan of making the part in one setup. Sometimes, we find that if we break that part into different operations it's more efficient for us."*

Zaiser explains further: *"We'll come up with some better methods to do primary operations on products to save time. I lay awake all night figuring ways to do it faster. I don't count sheep and I don't play golf. We start with the raw materials and go down to the process. I can say to Victor… take the part out there that you're running now – the one for which you think you've got the best time cycle that you'll ever have – go take 10% out of it and let's sit down and talk about it."* Zaiser quips, *"Would we do it? ALWAYS!"*

"ALWAYS," Georgiev mirrors Zaiser; and then clarifies. *"It's usually more than 10%. But that's why the company is so successful – because we can communicate very well and we can make decisions on how to improve the processes. It's a constant thing."*

Zaiser Jr. adds: *"Our corporate culture is this: there's always room for improvement. There's always room to come up with a better process. Just because it's working doesn't mean that it's good enough. It's very difficult for many people to understand, especially if they've been making money on a project for a while… they think… why do we need to change it? Why are we going to start from the beginning? Let's just let it run. By the time we fix it from the start;*



it's not going to matter. But that's not my Dad's philosophy. His philosophy is always: rethink."

Georgiev adds: *"But never sacrifice the work and the quality."*

Zaiser agrees and adds, *"That's where this industry is going."*

Measuring cost reduction pressure from every angle

Bringing the cost of parts down is not the only pressure being faced by those in the medical industry. There is also the pressure of implementing and adhering to a quality management system. And we're not talking about the quality of the parts – part quality is a given when you have a Tornos. We're talking about validation protocols, training, auditing and monitoring of quality processes.

In the quality management arena, Structure Medical was proactive early on. And their commitment to quality is evident in the fact that two of their six management offices in their Naples headquarters are occupied by quality managers. *"Our quality engineer sits in the corner office,"* notes Zaiser Sr. *"And next to him is our ISO Director of Quality. So, of the four offices, two of them are quality related."*

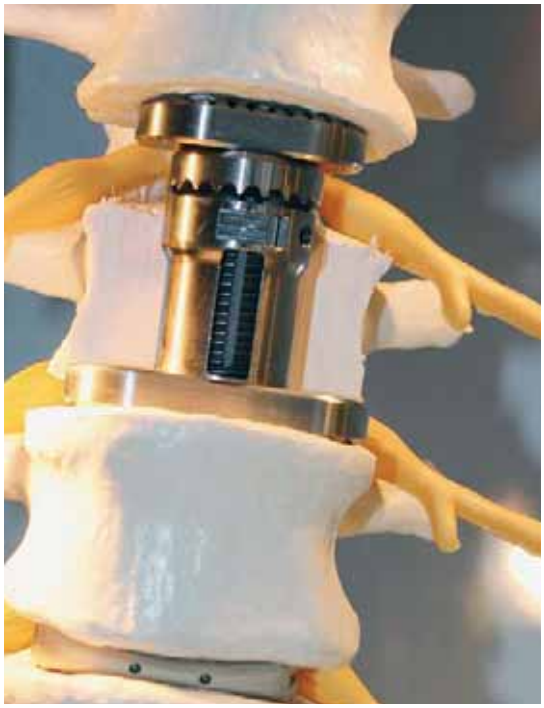
Says Zaiser Jr., *"We started a couple years ago on this initiative – on our quality management system – because we saw it coming down the pike. We put a team in place and we got out ahead of everybody on the validation of the machinery. We got ahead of everybody on controlling the process flow of how these parts are manufactured. We got ahead of everybody on auditing our suppliers. We got ahead of everybody on training our employees. We spend a lot of money and a lot of time and effort training our employees on the quality management system. And we have been rewarded for all those efforts. As painful as it's been – and we can all tell you it's been painful – we have been rewarded for those efforts because we have been recognized as preferred vendors or top tier suppliers for major customers. And it's not only because of the quality of our products… it's because they're comfortable that we have this quality management system under control."*

Beyond cost cutting pressures and the responsibility of quality management, there is one more expensive aspect to running a medical parts business: inventory management. Structure Medical is contractually obligated to have a three-months supply of finished parts ready to ship within 24 hours for some customers. Explains Zaiser Jr. *"Although this is an industry where you do a lot of small runs, we do have programs where we'll run maybe 3-4 times more parts than ordered and then stick them on our shelves and hold them as inventory for our customers. We manage the inventory."*

Zaiser Sr. adds, *"It creates an inventory cost. That's all our money on those shelves."* Smaller, less successful medical device contract manufacturers may have a difficult time fulfilling this contractual obligation, but for Structure Medical, it's no problem.

The best way to control costs is to buy the latest (and most expensive) equipment?

"When our machines are 5 to 10 years old," says Zaiser Sr, *"we start to look for a home for them and replace them with new. We'll probably run Tornos longer than that. But when we replace a machine at the end of 5 years, it's not because of wear or precision. It's because of capability. We buy the finest machines out there and are still finding that every 5 years we can swap them for new and gain 20-25% productivity. Our 5-year old machines are exactly as the day we bought them. There's no difference."* So, it's not



that Structure Medical's machines are wearing out and losing productivity. This "buy new" philosophy stems from Zaiser's understanding that machine tool manufacturers are continuously improving technology just like he is and he wants to take advantage of those new capabilities. After all, it was the new Tornos machines he purchased a couple years ago that propelled Structure Medical into the top tier of turning work.

Zaiser Sr. points out that they take very good care of their machine tools and don't skimp on anything related to equipment. *"Our machines are just like new no matter how old they are. We do all the calibrations and maintenance and everything. And we use the highest quality oil (Motorex) even in our toolroom for two reasons: one, the finish at the end of the day is superior; and two, machine tool life is exponentially increased."*

Georgiev interjects, *"It's important to make a point that we always buy the best machine tools. But we are also using the best cutting tools. When we select a tool, we're not looking at cost. Our goal is to buy the best possible tool to do the job. We've found that a lot of companies will spend money on the best machines but then they won't spend the money on the tooling."*

"And," Zaiser Jr. adds, *"instead of getting standard stock (Structure Medical makes parts from titanium, cobalt chrome, and stainless on their turning centers), we might pay more for super precision ground stock."*

Zaiser Sr. articulates, *"We made the corporate decision to go to considerably more costly, very high precision ground stock for our sliding headstock machines because it improves productivity at the end of the week and it improves precision and tool life. If the stock is rattling around in the guide bushing… if it's moving around one thousandths of an inch, it's going to cause loss of precision and tool wear. That's all part of the formula."*

The prototype for winning medical parts contracts

Zaiser Jr. brings up a new topic of interest, *"I think another thing that makes us unique is we don't have a prototype shop. Yet we do a lot of prototype work. Our philosophy is, do the prototype job on production machines so we can fully understand what the final result is going to be. It's more costly. But in the long run, we have much better control over what the true cost is going to be in the future."*

Zaiser Sr. adds, *"And our customers have a better idea of what the product is going to look like coming out of the machine. Then, if we like it and want more… we press the button."*

"We actually are completely vertically integrated," states Zaiser Jr. *"The only thing we outsource is anodizing and passivation. All our secondary processing; even complex secondary processes are done in-house. So are our assemblies. We like to control all the processes."*

Cost containment as a business model has made Structure Medical financially strong

Structure Medical grew 110% in 2009 and another 60% in 2010. But Zaiser Sr. points out, as they were growing exponentially, the financial industry was going the other direction. In the US, the banks stopped supporting small businesses during the economic recession. Structure Medical had no financial problems: they were paying their bills on time and even bought 6 million dollars in capital equipment in '09. But when small business loans dried up in the US, the Zaisers became concerned that they couldn't continue to buy the high-end equipment they needed. The estimated they would need about $3 million to boost supply to their biggest customers. *"Our customers were growing with us so fast. If we had to go*

back and tell them, 'gee, we really can't take more of that,' they would find someone else to do it. We were very fortunate and proud to say that we never went out looking for an acquirer," Zaiser Sr. pauses to set up the next very impressive fact. *"We had numerous unsolicited offers to buy the company. Ultimately we decided to sell the company to an organization called Squadron Capital founded by the Pritzker family out of Chicago. And what it has done is it has made us a very strong company financially. We're one of the few in our space with no debt."*

"We're buying unequivocally the finest machine tools available in their field," Zaiser Sr. points out… clearly happy that he can continue his successful path thanks to the private investors. Then he indicates one more key to Structure Medical's success: *"I'd say 80% of our capital equipment is made in Switzerland."*

"We have ten major customers," says Zaiser Jr. *"And we're close partners with all ten of them. We make exclusively some of the products for each customer. So there's a big commitment to them. They want to be sure that we're strong and can continue because we're the only source for some of their products."*

Zaiser Sr. sums up, *"The new ownership arrangement has given us the strength to continue to buy capital equipment when a new project comes along."*

"It creates next year's growth," Zaiser Jr. states.

And next year, Structure Medical will be proud to take delivery of four new Swiss turning machines – Tornos' newest top to the line EvoDECO machines. We'll be sure to check back in with them and let you know how they like them.

Decomagazine would like to thank the Zaisers, Len Sr. and Len Jr., and Victor Georgiev for their participation in this article. We wish them continued extraordinary success.

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THE SUCCESS STORY OF A DRESDEN-BASED MEDIUM-SIZED TURNED PARTS MANUFACTURER

TRADEMARK PRECISION

With the rebuilding of the Frauenkirche in Dresden, Germany, a vision became a reality. The passion and commitment of many people combined with the precise and painstaking work of specialists has resulted in the creation of a masterpiece unmatched anywhere in the world. This Dresden spirit is also a defining characteristic of Ursula and Siegbert Sauer. In just under 20 years they have turned their vision into a successful medium-sized company producing top-quality precision turned parts and demonstrating an impressive rate of growth. Closely involved in this success story is the Swiss lathe manufacturer Tornos, which currently produces most of the company's ultra-modern machine park.

Ursula and Siegbert Sauer are two likeable entrepreneurs who, in spite of their success, have kept their feet firmly on the ground. Buoyed by the spirit of optimism that followed German reunification, they founded SUSA in Dresden in 1991, incorporating the turned part production facility at Dresden's Lockwitz site in 1992. Since then, the company has experienced non-stop growth. In 1998 a second site was established at Heidenau, and since that time has undergone continuous development. With these two sites the company now has a production area of more than 6,000 m² and employs 150 staff. Despite these impressive figures, SUSA S. Sauer GmbH & Co. GK has remained a family business with short decision-making paths. Continuity and the company's succession have been assured by the appointment of Simone and Volkmar Sauer to managerial positions: the younger generation also displays an inherent passion for precision, quality, reliability and service. Whether complex workpieces or simple designs, the pursuit of perfection is apparent in every job. This is also demonstrated by Silvio Franz, Team Leader for CNC sliding headstock and multi-spindle automatic lathes at the Heidenau plant. He has been at the company since 1995, and its growth has been mirrored in his personal career, from machining apprentice to a master craftsman with a large area of responsibility.

Always state-of-the-art technology

Quality does not happen by accident - it must be reproduced every day. This is why SUSA is continually investing in new machinery and technology. The machine park currently comprises Tornos cam-controlled multi-spindle automatic lathes, CNC automatic turret lathes, CNC sliding headstock automatic lathes, CNC multi-spindle automatic lathes, rotary indexing machines, one CNC machining centre, CNC grinding machines, deep-hole drilling machines, thread rolling machines, honing machines and broaching machines. It also includes sandblasting. The high degree of automation ensures efficient manufacturing and short production times even on highly complex parts, for both bars and forged billets, allowing cold formed parts to be processed. Existing production engineering solutions allow complete fine machining right up to the ready-to-install part. Ultramodern CNC grinding machines put the finishing touches to each turned part. Interior or exterior cylindrical grinding, plunge-finishing, through-feed or centreless grinding… there is virtually no process that SUSA cannot perform in-house. Barrel finishing and sandblasting equipment, in addition to broaching and honing machines, are also used to achieve a perfect surface finish as well as optimum dimensional and shape accuracy. Finally, modern part washing equipment ensures that all parts are delivered completely grease-free. For special orders and workpieces, a dedicated tool and fixture unit is available for producing step drills, reamers, form cutters or cutting inserts in short turnaround times. Siegbert Sauer and his team place great importance on this level of customer focus. For them, personal contact is the basis for trustworthy cooperation with the customer all over the world. This cooperation begins with the choice of suitable materials and the development of a cost-effective design for the turned parts, in addition to competent advice regarding all aspects of the production process. This is where Swiss turned part specialist Tornos comes in. In addition to Tornos products, SUSA also has a large number of machines from German and Asian manufacturers, but whenever a tricky issue arises, they always turn to Tornos technology. What Silvio Franz values about them is their cooperative teamwork and outstanding competence. Problems are thoroughly explored until a suitable solution is found. This cooperation and

Tornos' desire to provide excellent support even to smaller customers has characterised the relationship between the two companies. In addition, the Tornos product offering includes a broad range of machines with an unrivalled number of axes as well as the highly user-friendly TB-Deco programming software.

The right machine for every job

SUSA's customers include leading automotive manufacturers as well as companies in the engineering, mining, hydraulic, military technology, high voltage construction, fittings, microelectronics and telecommunications sectors. The huge range of custom parts includes special safety components such as turned parts for airbags, which are subject to special quality requirements. That is why at SUSA, quality is tested at every stage of production. This testing is carried out during the process by experienced, qualified technicians. State-of-the-art measuring technology is used to verify all customer requirements, from 3D measuring machines to opto-electronic sorting machines. It is worth the expense, with the company regularly receiving praise from its customers for its quality and delivery reliability. The Dresden-based company is particularly proud of the Supplier Award it received from its Japanese customer, Takata-Petri. Meeting these high quality standards economically and competitively is the company's number one challenge. The product range covers simple through to highly complex parts from 5 to 200 millimetres, in lot sizes from 500 to high volume production runs of several million units. *"Only around 25 percent of our order portfolio is continuous duty production, which we process on the cam-controlled automatic lathes",* explains Silvio Franz.

That means 75 percent of the orders must be processed quickly and flexibly. This poses some challenges for the production planner and setter. Machine allocation plans, programming, setting, setup and modification - this is where the wheat is separated from the chaff. Silvio Franz can make a direct comparison as his department uses machines from numerous different manufacturers. He appreciates Tornos' simple programming and setting, flexible machine configuration and the consistency of the control systems on the different types of machine. Other benefits are the number of axes and the wide range of specific options. The new Tornos philosophy - to build machines specifically adapted to the parts range - has convinced him. The youngest member of the Tornos family in his machine room, the Sigma 32, is specially designed for heavy chip removal on workpieces up to 32 mm diameter.

At the forefront of the single and multi-spindle domain

The machine inherits the successful kinematics of the Sigma 20 and extends their benefits to cover larger diameter ranges. The kinematics are based on two identical tool systems working entirely independently of each other for the production of workpieces of a similar complexity in main and secondary operation with speeds of up to 8,000 min^{-1} for both the spindle and counter spindle. Numerous tool holders and accessories are available for machining and these are interchangeable for both main and secondary operation. The Sigma 32 offers a total of 29 work positions, comprising 14 rotating tools and 6 linear axes. Nevertheless, the machine is very easy to set up and operate, since the pre-configurable tool systems all have quick-change capability and the spacious machining area makes this a very comfortable operation to perform.

In terms of programming, Tornos as always offers the customer complete freedom. Both ISO code and the tried and tested TB-DECO software can be used for programming.

The Sigma 32 was conceived with strength in mind. The moulded housing is generously designed and forms a rigid base for the machine on which the similarly well-dimensioned spindles are mounted. The Sigma 32 was clearly designed with the aim of performing demanding operations, in particular using hard and tough materials.

In terms of CNC multi-spindle automatic lathes, Silvio Franz is a fan of the Tornos Multi Alpha. For him, this machine is one of the most productive in existence, and capable of meeting the automotive industry's need to increase quality while simultaneously reducing costs. Parts have up to now generally been manufactured in different stages. Starting with pre-machining on a multi-spindle lathe, workpieces then progress to a second machine for finishing. This requires two separate machining operations, which in turn increases the risk of damage to workpieces while at the same time adversely affecting precision, as several fixture settings are required to perform these operations.

Tornos' development objective is to offer integrated solutions occupying minimal floor space. The MultiAlpha series can produce and finish a maximum number of complex parts efficiently on a single machine with no need for secondary operations using other production equipment. In addition, the machine with 3 secondary operation axe is equipped with up to five tool positions, motor spindles with up to 16 (20) Nm torque and an integrated parts handling system.

Their many options mean they are particularly well-suited to the needs of SUSA's customers. Silvio Franz is also very interested in the motor-spindles with synchronous motors. These ensure maximum torque at high speeds and guarantee optimal cutting tool operation. This extends tool service life and improves the quality of components produced. The high rate of material removal means that simultaneous machining operations can be performed together. This reduces production times.

Setting the course for the future

This intelligent investment policy and the responsible approach of SUSA's management are also apparent in the company's employee and supplier relationships. The employees have excellent qualifications and a vast wealth of cross-industry knowledge and experience. By providing regular training and education, the company furthers this know-how and ensures that it is always up to speed on the latest scientific and technical expertise. The satisfaction of the employees at SUSA can be seen not only in their exceptional performance and customer focus, but also in the above-average length of employee service, of which the family business is very proud. The course has been set for continued success, with Simone and Volkmar Sauer further developing the company in line with their parents' philosophy. In doing so they will continue the partnership with Tornos and, together with this machine manufacturer, write several more chapters to this success story.

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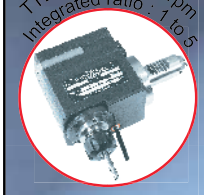
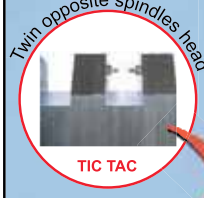


Minispindle Extensions
Ø5.0 mm collets Ø2.0 mm

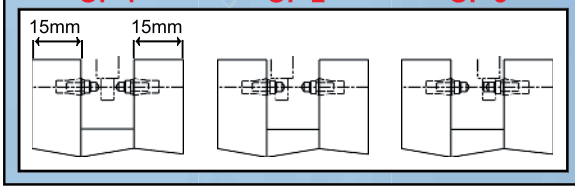
Twin opposite spindles head



Multispindle head
small spindle axis distance
4 mm
revolution
15'000 rpm

Synchronous multispindles Head

OP 1 OP 2 OP 3



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30'000 rpm

Whirling machine

6 spindles multispindle head

BMRC

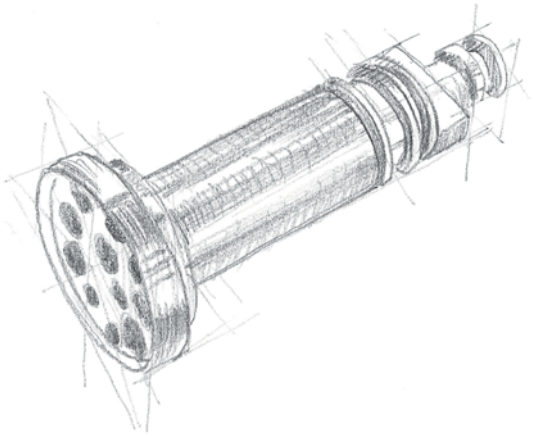
Modular spindles
for presetting outside
of machine

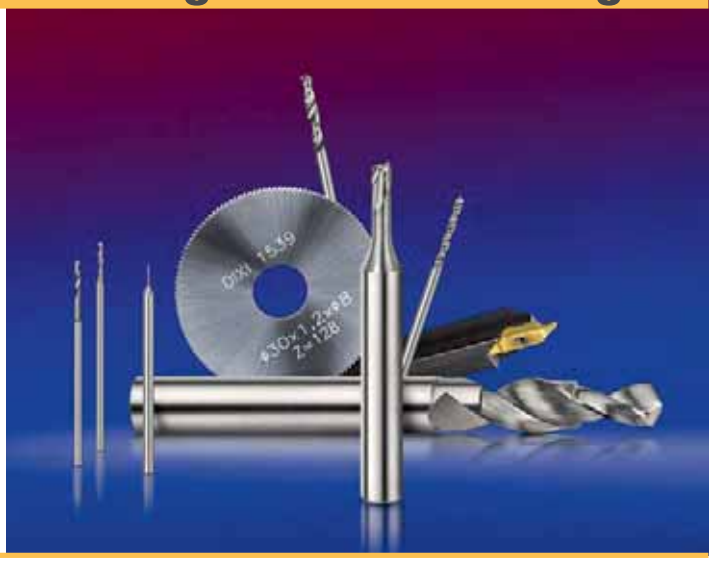
Milling head - Spindle speeder - Angular head - Whirling machine - Drilling heads ....

Tungsten carbide and diamond precision tools

DIXI 4

Turning-screw cutting





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PRECISION CARBIDE TOOLS

TAKING A PRODUCT TO ITS USERS

In industry, the share of turnover assigned to marketing and communication is very low compared to other sectors; nevertheless, companies still make sure they have the means to exhibit and sell their products. But what about after-sales? After-sales technical communication tools are certainly not as spectacular as those used, for example to launch a new machine to market. However, professional solutions do exist.

At Tornos, the After-Sales Service has chosen three effective communication tools aimed at its customers. The first is the 'service brochure', a 16-page document that presents customers with the different types of service package developed for them by Tornos. The second is the online spare parts identification and ordering tool. This system guides customers through the large amount of information enabling them to identify and order spare parts correctly at good prices, 24/7. The third is the technical documentation, which includes user, maintenance and repair manuals as well as various other documents, relating in particular to safety.

The content and presentation of these documents are very important resources for communication between the After-Sales Service and customers. Tornos has its own team dedicated to the creation and management of technical documentation. However, for several years the company has been working together with RédaTech to increase the quality and impact of its technical documentation. Interview with Mr. Yvon Cosandier, Director of RédaTech in La Chaux-de-Fonds.

Subcontracting the production of technical documents remains a rare strategy; something many companies would never consider. Why is this? Mr. Cosandier explained: *"There is a lot of presumption in this industry, and often companies do not appreciate the added value that an agency like RédaTech can bring."*

Defining the project

RédaTech deals primarily with two types of request. Firstly, the agency provides support to an internal service instruction department in order to deal with sudden increases in work volume, and secondly, it acts as a complete service provider producing technical documentation for companies that have no such in-house resources (or do not wish to use their development engineers for these jobs, which are undoubtedly important but secondary in terms of the innovation process). In both cases, the first step in the collaborative process is to define the project. What is the desired level of information, what is the essential standardised element and what is the role of each player.

No superfluous staff

Mr. Cosandier explained: *"A customer who contacts RédaTech must be able to rely on us completely. This is why our authors are engineers trained in technical writing. They are responsible for gathering information and clarifying and formatting messages. Documents are managed as projects. For the customer, this means their own engineers are relieved of as much work as possible".* Our engineers/writers don't simply format the text from the development engineers; they generate real added value while freeing up the company's own resources.

FOR ALL DOMAINS

RédaTech operates wherever technical documentation is required. Its customers are active in the following sectors:

Machine tools, watchmaking, equipment manufacturing, electronics, automation, medical, measurement, new energies and aeronautics.

Proximity: a major benefit

Geographic proximity is important, but cultural closeness is what really matters. The customer's engineers must be able to communicate with the RédaTech engineer/authors using their "own language". Operating mainly in French-speaking Switzerland and neighbouring France, the authors are flexible and can visit their customers easily to ask questions, clarify points or even try out operations on machines. Mr. Cosandier added: *"Sometimes it's only when we're actually producing the technical documents that we realise something could be improved in the design or ergonomics. We not only offer experience but also a fresh and objective perspective on the products. We can therefore contribute directly to product improvement".*

Combining expertise

If the company is best placed to speak about its product, RédaTech is highly skilled at preparing the message specifically for the user and in line with standards, as well as adapting it to suit the technical knowledge of the target group. The technical base comes, naturally, from the company (often in the form of a technical file), but the complete ergonomics of the information is then formatted by technical writing specialists. Our experience of "what must be in the document, and how" is placed at the service of the customer. For Tornos, who has been creating instruction manuals for decades, having an external service provider represents a useful backup.

Defining standards

The structural standards governing documents impose a certain methodology which means that the customer can be sure his document will contain the essential components, however, like all standards, their interpretation and application require specialist knowledge. RédaTech frees the customer from the responsibility of this stage and provides him with standardised documents.

Technical communication can also be exported

Technical documentation corresponds to the products to which it refers. It must therefore be adapted to the media and languages necessary for the numerous different situations that it will be used. Whether in paper, PDF or online help format, RédaTech guarantees that data is processed in the most appropriate way.

In terms of translation, RédaTech can also offer users its long experience in the technical domain to provide efficient communication using professional tools designed to get the most out of texts translated

THE DIFFERENT TYPES OF DOCUMENT

RédaTech leaves the processing of commercial documents to advertising agencies, specialising instead in producing all types of 'After-Sales' documents, e.g. manuals and instructions for the following applications:

- installation,
- training,
- commissioning,
- operating,
- programming,
- maintenance,
- After-Sales troubleshooting.

RédaTech produces its documents using four departments:

- technical writing (engineers),
- 3D and educational illustration (drafters, illustrators),
- technical electronic publishing and formatting (typographers)
- translation (communication engineers and a worldwide network of specialist translators)

At Tornos, RédaTech prepares information modules that correspond with the various components that make up a machine. The documents are actually created individually by the 'technical documentation' department in response to each customer order. The documentation is created according to the customer options and selections.

QUICK INTERVIEW

One of the main customers requiring technical documentation is the company's After-Sales Service. Interview with Mr. Sandor Sipos, After-Sales Service Manager at Tornos.

decomagazine: How important is the quality of technical documentation for the After-Sales Service?

Sandor Sipos: Good technical documentation is the signature piece of the After-Sales Service and indeed the company as a whole, but it also serves as reference for our trainers, After-Sales Service technicians, agents and customers. It is therefore hugely important.

dm: In terms of the content, is it not tempting to want to include everything, thus confusing customers with too much information and hampering their search?

Sandor Sipos: Absolutely, too much information actually kills information. The content must be sufficiently comprehensive but never get bogged down in useless details. When creating documentation, those responsible must always keep in mind the customer (or After-Sales Service's) viewpoint. Fortunately, as a company we enjoy excellent communication with our partner, RédaTech. Another important factor is the way the texts are written. They must be adapted to the readership, i.e. professionals, use their language and take into account their needs.

dm: We sometimes read that technical documentation is used infrequently because customers prefer to telephone. What's your view of this?

Sandor Sipos: It's not the case. Of course, the phone is an important method of communication between the After-Sales Service and the customer, but our statistics show that our customers are professionals who use the documentation we provide for them. The online spare parts identification and ordering system has in particular been a great success.

dm: In how many languages do you produce technical documents, and in what formats do you supply them?

Sandor Sipos: All the documents are available in French, German, English, Italian and Spanish. The safety documents are translated into 25 languages. The documents are printed on request when the machine is being prepared for shipping. We use a database that assembles the documents according to the exact configurations of the delivered machines. Our system contains more than 6,000 documentation elements. The customer always receives all of the documentation in paper form and on CD.

dm: So you don't have a stock of documentation?

Sandor Sipos: That's correct. All documentation is created as the need arises. That way we can be certain that the documents supplied always correspond to the machines with which they are delivered. Evolution is a normal part of a machine's life, and the documentation must keep up with it.

dm: Earlier you mentioned statistics. Do you check the quality of technical documents and how useful they are to your customers?

Sandor Sipos: We carry out satisfaction surveys with our customers, and technical documentation is one of the points covered. In the latest round of surveys, customers emphasised how important technical documentation was to them and expressed their satisfaction in this regard. It's important for us to be able to validate our tools in this way.

A new survey is due to be carried out soon, and I'd like to invite the readers of decomagazine to get involved.

for its customers. This means the agency can offer a complete service, from blank page to multilingual document.

So the document exists… Now what?

Producing a technical document, managing the formatting of information and creating attractive and effective media is just the first step for the company. It's then a question of bringing the document to life, managing the interactivity between the various manuals and monitoring the product's life cycle. Mr. Cosandier explained: *"We offer a full range of options depending on our customers' needs; sometimes they wish to manage the documents themselves and sometimes RédaTech takes care of all monitoring and management of modifications. In either case, customers always receive all the source documents, of which they retain ownership"*. He added: *"Depending on the product, the complete technical documentation can run to several hundred pages. A modification to one manual may affect others, and if there are several languages to consider this can become a real headache for a company that doesn't have a dedicated in-house department. This is another area in which customers can benefit from our expertise"*. In the 20 years since the agency was established, RédaTech has systematically saved all of its work. This has often saved customers a lot of hassle if they have failed to locate old documents or have been searching for information relating to modifications.

Poor document = poor machine?

This statement is, of course, wrong. However, if a user becomes annoyed each time he uses documentation or if the information is not clear, not only will the function not be performed correctly, but the operator will also be frustrated. If the basic notion that the second machine is sold not by the seller but by the After-Sales Service (and the user of the machine) is true, at least in part, then "poor document = poor machine" takes on its full significance.

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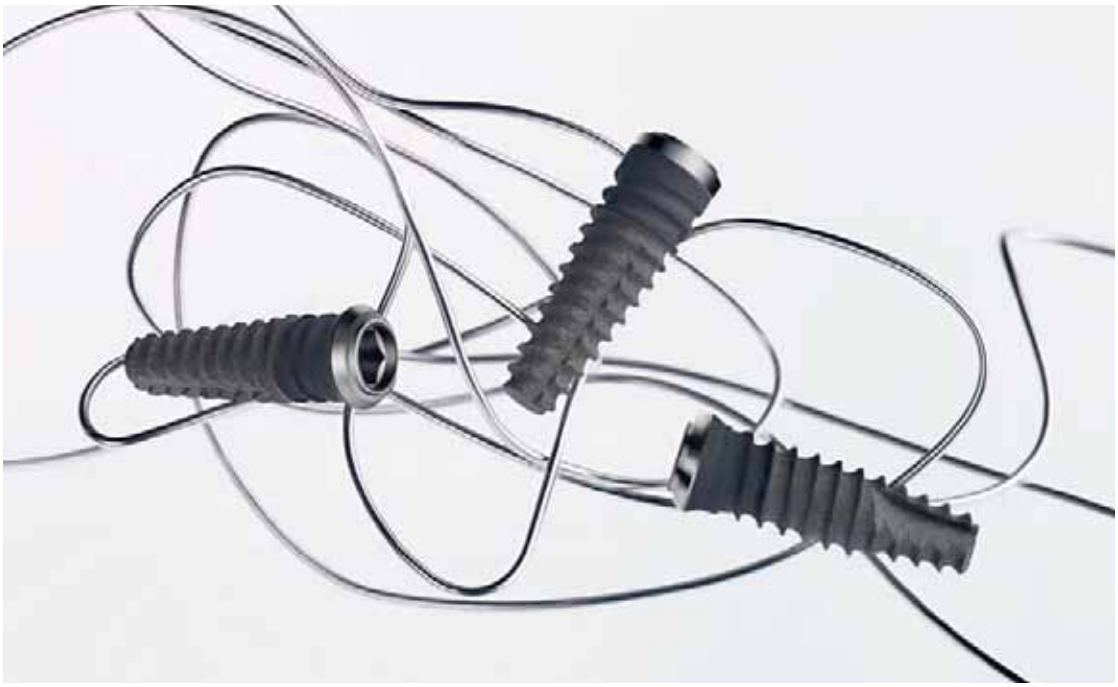
100% AL DENTE: MARKET LEADER SWEDEN & MARTINA SPA PREFERS MOTOREX ORTHO NF-X

Mention dental technology in Italy, and it is likely the Sweden & Martina SPA company will follow in the same breath. The company, founded over 30 years ago now has around 135 highly-trained employees that develop, manufacture and distribute a wide range of innovative dental technology components with impressive efficiency from its headquarters near Padua. The company is increasingly relying on 'Hightech made in Switzerland' and, as a result, the production decision-makers are using Tornos machine tools and Motorex machining fluids.



High-quality titanium dental technology components from Sweden & Martina.

For several decades, Sweden & Martina has specialised in the area of dental prosthesis solutions and restorative implants. The company has embraced a concept of integrated prototype creation through to series production, all in its own factory. This production model not only offers many advantages in terms of the high quality standards demanded, but also significantly reduces the time-to-market for new products. From the start, production managers therefore need to rely on suppliers in all areas who can guarantee the highest quality and prompt service delivery.

Performance you can get your teeth into

Gianni Tescaro is head of production and oversees several high-tech Tornos machine tools (models Deco 10 and 13). The machinery pool for the processing of bars with a diameter of 3 to 10 mm was developed in close collaboration with Tornos and Motorex, both represented by the company Vemas S.r.l. from Cesano Boscone, near Milan. Large volumes of titanium are processed at Sweden & Martina and this includes a wide and diverse range of the latest modern titanium alloys. Of course, parts made from stainless steel, nickel-chromium steel, and

non-ferrous metals are also manufactured, but the majority of components are made from titanium. Due to the well-structured machinery pool and sufficiently large production capacities, it is clear that rather than focusing on mass production, the consistently high quality of each individual workpiece is at the forefront of manufacturing at Sweden & Martina.

Sweden & Martina Spa has made its name as a premium supplier of dental prosthetics and has always based its production on the highest-quality materials.

High rinsing and cooling performance

In swarf removal, the high stability of titanium results in an increased resistance to temperature and wear of the cutting tool. With a focus on these extreme demands and to avoid affecting the performance due to reduced cutting speeds, Motorex developed the Swisscut Ortho NF-X cutting oil and the innovative Vmax technology. The unique additive technology uses the increased temperature to its advantage, while simultaneously enabling higher cutting speeds and flawless surface qualities. The high forces involved in titanium machining also require the machines and equipment to have a high level of stability.

If they overheat, then titanium-based materials have a tendency to stick and scuff during the machining process. The product characteristics of the selected cutting oil are of central importance in this process. Initially, Gianni Tescaro and his team worked with Ortho NF-X with viscosity ISO VG 22. When optimising the cutting data and inspecting the finish (R_a value), Motorex recommended a switch to the slightly lower viscosity ISO VG 15. This enabled an 8% increase in the flow rate of the cutting oil and perfect cooling of the workpiece.


From left: Andrea Favaro (Vemas Srl.) and Gianni Tescaro (production manager, Sweden & Martina Spa) discuss an application on a Tornos Deco 13 and a possible modification to the tools.


Gianni Tescaro shows a tool that has been used in a test with modified cutting values. The long tool life remained unchanged, thanks to the reserves of Ortho NF-X.

TITANIUM (TI)

is a chemical element with the symbol Ti and atomic number 22. It belongs to the group of transition metals. The metal has a white/grey metallic effect and is light, solid, flexible, and resistant to temperature and corrosion. It is therefore particularly suitable for applications in which high corrosion-resistance, strength and low weight are important factors. Due to the complicated manufacturing processes involved, titanium is approximately ten times as expensive as conventional steel and is ideally suited for use in dental prosthetics.

The company, which has several quality certifications, performs thorough quality control checks throughout the whole production process. A sophisticated monitoring system means the quality can be continually measured.

With the Ortho NF-X cutting oil, viscosity ISO VG 15, the heat can be efficiently transported away and even the finest titanium dust is easily filtered out without blocking the filter pores.

"UN OGLIO DI TAGLIO MOLTO VALIDO"

"Motorex was recommended to me for use on our Tornos machines. It is a part of the perfect solution. The product is indeed slightly more expensive than the oils more commonly used in Italy. However, when you consider all the factors, Ortho NF-X has a clear advantage. At the end of the day, quality counts and is less testing on the nerves!"

Gianni Tescaro
Production manager,
Sweden & Martina SPA,
Due Carrare/Padua

Titanium swarf and dust in the machining zone

The turning, milling, boring and sectioning processes all produce a high volume of titanium swarf and dust. In machining processes, wherever possible, these should be prevented from coming between the workpiece and the tool. In particular, the titanium dust produced in machining has highly abrasive properties, which can affect surface quality. With the viscosity ISO VG 15, the increased circulation volume of the machining fluid enabled perfect removal of swarf and titanium particles with the required pressure (both of which are incidentally, not harmless since they are highly flammable!).

Advantages of using Ortho NF-X

If the production process runs smoothly, this is due to the selection of the correct machining fluid. At Sweden & Martina, Swisscut Ortho NF-X demonstrated the following proven benefits:

- Universal oil for all materials
- Increased tool life
- Perfected finishes
- Greatly reduced evaporation loss
- Longer usage times for the cutting oil
- Improved skin and environmental tolerance
- Highly efficient

Of course, before it could be used at all, the cutting oil (which is free from chlorine and heavy metals) had to meet an impressive list of various safety criteria in accordance with the applicable EU directives and internal validation. Ortho NF-X is perfectly suited for implant manufacturing in particular, as it does not penetrate the structure of the titanium and it can be easily cleaned away. Following a strictly prescribed,

For over 30 years, Sweden & Martina has enjoyed an excellent reputation in Italy, and more recently also in various international markets. The image shows the company's headquarters in Due Carrare, near Padua in Italy.

multi-stage and laborious cleaning process, the components are subjected to a decontamination process, followed by sterilisation by radiation with beta electrons.

Filter-friendly in all areas

It is also important to mention the exemplary filter properties of the machining fluid. In the machine, the cutting oil smoothly transports even the finest titanium dust to the filter. If unsuitable or sticky (resin-forming) cutting oil is used, this dust can very quickly block the filter. The very latest innovative additives and the high-quality base oil of Ortho NF-X are stable against ageing and can be used over several years without the need for subsequent additives.

The oil has an extremely low evaporation loss and this is also an important advantage for Gianni Tescaro in day-to-day machining. The cutting oil should perform its task in the machine and remain there for as long as possible. The quality of the workplace is extremely high and the production hall is equipped with a modern closed ventilation system. Filter maintenance also demonstrates a positive effect upon the oil, which is confirmed by the low replacement levels of the turning centres.

Innovation secures competitive advantage

By using Motorex Ortho NF-X on all its CNC machine tools, Sweden & Martina has maximised the available innovation potential in the area of machining fluids, and thus secured a further competitive advantage. As a market leader in Italy with over 30 years' experience, Sweden & Martina is now stepping up its export activities to Europe and the Middle East. The company also fosters close collaborations with major universities and international specialists.

We would be delighted to provide you with information about the current generation of Motorex Ortho cutting oils and the scope for optimisation within your area of application.

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76 YEARS OF INNOVATION…

At Prodex, Walter Dünner presented a new ER collet equipped with a positioning device that comes in very useful when changing tools. This innovation, developed in collaboration with Rego-Fix, provides an efficient solution to the recurring problem of positioning when using an ER collet. This is an exceptional innovation from Dünner the company that will deliver significant benefits to the marketplace. The company is celebrating 76 years of innovation in the service of micro technology this year, and the new ER collet is an example of the company's continued innovation drive. We met Daniel Dünner, a third generation director and Pascale, his wife and administration manager.

Walter Dünner was founded in 1935 with a single objective: **to allow customers using automatic lathes to make the most of their production tool.** This seemingly very simple view led the company to be the first to develop carbide guide bushes in 1938 and to supply constantly innovative solutions to the market. This view has continued over the generations and the company maintains this ethos today.

Exceptional products

Over the years, the manufacturer has developed a wide range of original solutions to make the most of the evolution in production equipment. Here are a few examples of products that are currently in demand.

Ceramic guide bushes – unique knowledge

During machining operations on stainless steel, there is a high risk of seizing. A ceramic guide bush significantly reduces this potential problem. Other advantages include a higher clamping force with no damage to the machined material from the ceramic material of the guide bush. Depending on the customer's needs, the use of a ceramic guide bush is essential.

Mr Dünner explains, *"It took a while for the ceramic guide bush to find its place in the market, as it was radically new. However, it succeeded in overcoming certain inertia in the market. Today many companies realise that this is the only guide bush that can allow them to produce certain parts satisfactorily."* This kind of evolution didn't come about overnight, and if the ceramic material currently marketed is now perfected, this recipe required a great deal of research. This specific type of ceramic is still produced exclusively for Walter Dünner SA.

Large-opening collet – An efficient solution

The patented system of large-opening collets means a part can be clamped in counter-operation above a shoulder. This type of collet is also frequently used in the medical sector, particularly for clamping a part with a thread. The part can be inserted into the collet and clamped above the thread on the body clearance diameter. This type of clamping is very strong and allows stamping operations on screw heads.

Flexible guide bush – Rubber in the service of machining

When working with materials including irregularities of up to 0.5 mm, this type of guide bush compensates for any material errors. It also ensures that the bar is clamped over all its length (50 mm). Several types of rubber are available depending on the type of material and the machining operation to be carried out. This type of clamping favourably replaces previous spring guide bushes and meets a growing trend: the need for more flexibility. When we asked Mr Dünner

Collets during the cooling phase. There are a lot of different crafts at work in Walter Dünner SA's workshops.

Welding of tungsten carbide in the guide bush.

WALTER DÜNNER SA - A FEW KEY FACTS

Founded in:	1935
Workforce:	13
Company:	Independent family-run
Markets:	Worldwide Switzerland and Europe: 70%
Products:	Guide bushes, collets, sleeves, nuts and sleeve holders, collets for bar loaders, toggles, brazed tools and rotating guide bushes.
Speciality:	Development of innovative clamping solutions

Ceramic guide bushes in stock and ready to be packed for dispatch.

about the lifespan of the 'rubber part', he explains that it is of excellent quality and provides an example of a manufacturer whose factory operates 7 days a week and 24 hours a day, where the guide bushes made from 'metal and rubber' have been in operation for a year and a half without any sign of wear and tear.

Large opening on the Deco 20?

If a large-opening collet in counter-operation on the Deco 20 is required, the stroke of the counter spindle back sleeve is decisive. Originally this length was 0.8 mm, which wasn't sufficient in certain cases. In order to meet customer requirements, Walter Dünner SA developed a new rear piston that allows a stroke of 2.8 mm from the collet sleeve, which significantly alters the opening.

Deco, Micro, Delta, Gamma…

As a clamping specialist, the company is constantly being asked to propose new solutions. Mr Dünner tells us: *"Today our reputation means that we are contacted by customers from all over the world whenever they meet a clamping problem. This can be in the form of requests for new products, for example we are proposing guide bushes for motorised spindles in the Delta and Gamma. Alternately customers have requests linked to their processes. For example, the development of a universal clamping nut for the Micro 7, Deco 7 and other machine brands."*

Ceramic machining, vulcanisation and much more…

All the machining operations required to produce the Dünner range are carried out in Moutier, the company's headquarters. The company has acquired the necessary knowledge in ceramic turning and in vulcanisation. Mr Dünner explains: "*We have invented the necessary machines and specific tooling in order to be able to design and produce the parts we sell."* The fact that Dünner is an independent family-owned company has allowed it to constantly invent and innovate and to acquire the means to carry out its ideas. Pascale Dunnerit says: *"The products we sell well today have sometimes entailed a degree of risk on our part. For example, the development of ceramic and then the ordering of a minimum quantity represented a significant investment."*

Large quantities in stock… and on-line ordering

She continues: *"Stock is also a big investment. For example, we have all types of ceramic guide bush in stock."* This high level of stock means the company can always help out their customers very quickly when

Laser engraving of references.

Grinding operations on special collets.

they need a reference. Daniel Dünner confirms: *"The availability of our products is essential! We must be able to help our customers by reacting very quickly."*

In order to allow its users to order very quickly, the company has set up an on-line store that allows customers to request offers and place orders very easily. Providing its customers with the best possible opportunity to take things further is part of the company's undertaking and with this on-line store, Walter Dünner SA is going beyond the purely technical aspect of customer service.

Constantly innovating for the customer

"We produce all our guide bushes and collets in Switzerland with raw materials also purchased in Switzerland. With constantly increasing raw material prices and the euro exchange rate which is once again very low, we are facing challenges that have nothing to do with technology," says Mr Dünner. But this problem is dealt with in the same way as technical problems, with the interests of the customer at heart and with the objective of creating a "win-win relationship."

With its 76 years of experience in innovation, Walter Dünner SA is in a good position to help production companies take things a step further.

This undertaking is completely in phase with the vision of the company's founder, and its customers know it well… Its potential customers would be well advised to take a closer look.

The guide bushes produced by Walter Dünner SA are well-known worldwide.

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THE COST EFFECTIVE TURNING SOLUTION

When Restormel Machine Ltd was faced with the predicament of insufficient capacity and lack of financing options from the banks during the height of the recession, it appeared that the company had very few available avenues. However, a visit to the Tornos UK stand at MACH 2010 changed the situation for the Cornish company.

Restormel's Managing Director, Mr Jim Underwood visited MACH to review new technology; but with a desperate desire for additional capacity on a limited budget, it looked like the seven employee business was destined to scour the second hand marketplace to find its solution. As a company that has invested considerably in CNC machine tools for over ten years with a selection of turning & machining centres as well as a selection of sliding head turning centres, Mr Underwood attended the bi-annual event with a selection of components and a budget in mind. However, visiting Restormel's current machine tool vendors and a variety of additional machine tool companies, Mr Underwood couldn't find the machine tool to fit his price range.

A chance visit to the Tornos stand enabled Mr Underwood to find the solution for his business. As Mr Underwood states: *"We were familiar with the Tornos brand as we considered Tornos machines some time ago, but the capabilities were beyond our needs. At the MACH exhibition we spoke to the Swiss company and they offered us a machine less than half the price of their competitors, justified with a reduced specification that proved ideal for our component range."*

Despite the perceived lower specification and reduced price tag, the Tornos Delta 20/4 the company reviewed was the most suitable machine for its parts. As Mr Underwood states: *"The Delta turning centre is a perfect fit for our business. It has three driven tool positions, sub spindle operation, simultaneous front and back end machining and eleven fixed tool posts, all at a cost up to 50% less than anything Tornos' competitors offer. In times of austerity, there is no doubt that companies are acquiring machine tools that are over loaded with features beyond the needs of the components and subcontractors are paying*

for features they do not require. With the Tornos Delta 20/4, we have found a very capable and productive machine in the price band that suits our business."

The capacity issue that led to the Tornos acquisition was created by a new customer with a job that noted the company immediately being issued an order for 30,000 turned parts from 303 stainless steel. As soon as the Delta 20/4 arrived in July, it was running 15 hours a day for three weeks producing the parts – immediately releasing capacity from alternate machine tools. If the swarf was compact as opposed to stringy or if Restormel acquired an integrated swarf conveyor, Mr Underwood is confident the Delta would have been running 24/7 unattended for over a week.

The Lostwithiel based precision manufacturer supplies the automotive, medical, pharmaceutical, hydraulics, research and general manufacturing sectors, machining anything from 25 to 50,000 parts on its turning centres. As Mr Underwood continues: *"We manufacture simple to complex parts for a variety of sectors and our machine shop reflects this flexibility. We have 63 mm diameter capacity fixed head turning centres that offer rigidity and flexibility on large parts and we have two 32 mm diameter capacity sliding head lathes for anything from simple to complex parts in batches from 25 to 5,000. However, the introduction of the 20 mm capacity Tornos Delta offers us an additional dimension. We have a number of small and relatively simple parts in the 3 to 20 mm diameter range, and although our sliding head lathes can machine the parts, they are not ideal."*

This is highlighted by one of the first jobs that Restormel transferred from its sliding head centre to the Delta 20/4, as Mr Underwood recalls: *"We had an order for 30,000 spacers and we started machining them on one of our 32 mm sliding head machines. However, when an urgent job came in for the 32 mm machine, we transferred the parts to the Delta. The Delta cut the cycle time from 30 seconds to 21, showing it was clearly the ideal machine for the job. The reduced cycle time was a combination of faster sub spindle operation, faster rapid rates and the compact work envelope that keeps the cutting tools close to the component to minimize non- cutting time during the cycle. This combination improved productivity by 30% on this one job. At this point, it was evident we bought the ideal machine for our business."*

This instance highlighted that the 32 mm capacity machines were not the most efficient solution for the smaller components at Restormel. Mr Underwood states: *"The 32 and 63 mm machines are too big,*

rigid, robust and overloaded with features that are irrelevant for our small part production. Whereas the Tornos Delta is a highly productive solution that offers simplicity on every level. The Fanuc control and the Tornos integrated barfeed are among the simplest I have operated, meaning the machine really did hit the ground running."

"So far the Tornos machine has been dedicated to six component types that include spacers, copper electrodes and spool extensions, delivering exceptional cycle times and component quality. We are now looking at costing our jobs differently since the arrival of the Delta. As the Delta can run beyond 24 hours unmanned, we are now re-pricing work based on a 24 hour day as opposed to a 10 hour day. This high volume capacity and reduced cost per component is already generating interest from customers."

"Following on from this 'reduced cost' element, the Delta is a sliding head centre that can be used with or without a guide bush. This innovation from Tornos was a major factor in our purchasing decision as it drastically reduces the size of bar remnants that are commonplace with sliding head machines. With the increasing cost of material, the Delta machine has a clear advantage over competitors. One example is a recent job produced from expensive brass bar, the Delta saved 9 metres of bar that would have been binned as remnants if the job was machined on our alternate 32 mm sliding heads. We are delighted with the Tornos Delta and the innovative features on the machine. I am now confident that the next machine I buy is likely to be another Tornos. They have a winner with this machine!!" concludes Mr Underwood.

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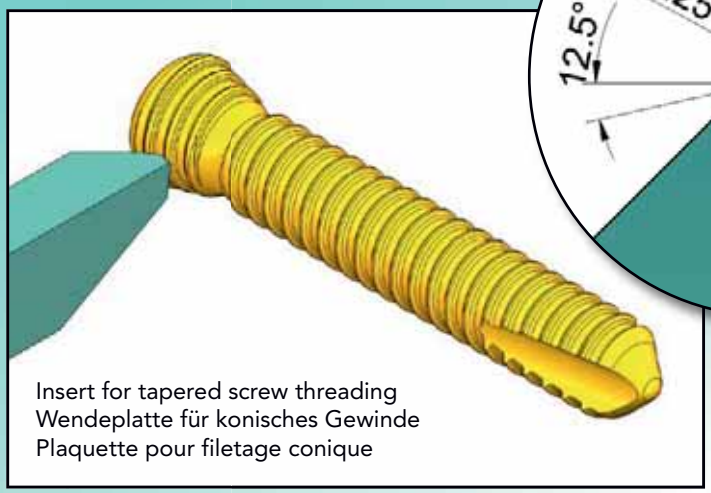
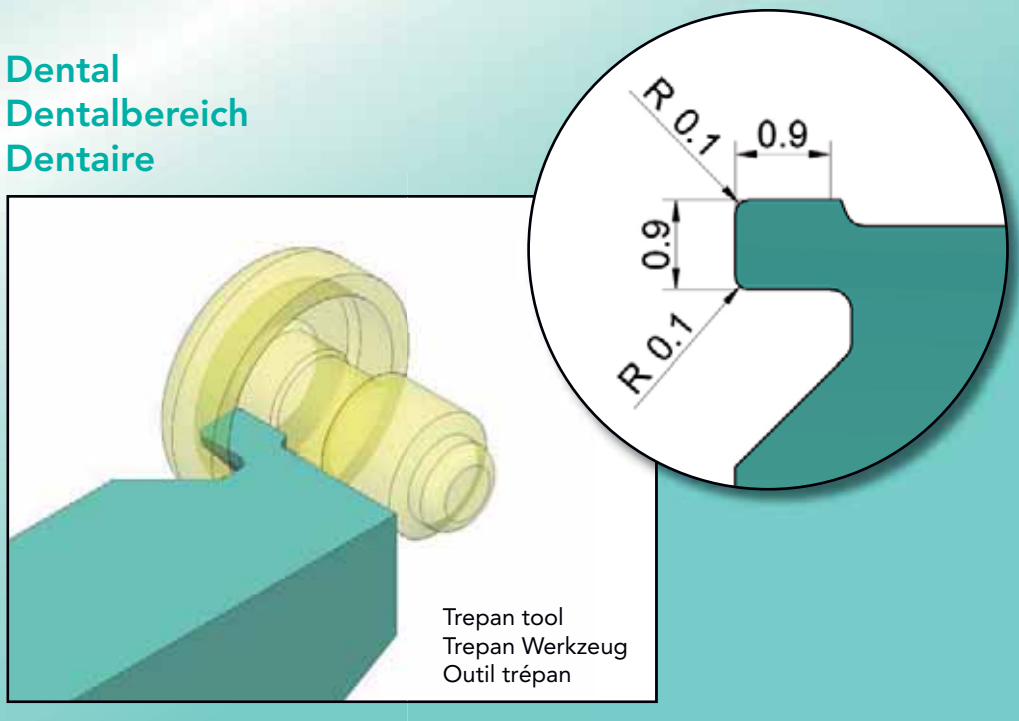


Insert for tapered screw threading
Wendeplatte für konisches Gewinde
Plaquette pour filetage conique

Dental
Dentalbereich
Dentaire



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