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Italy Vermas S.r.l., IT-20090 Cesano Boscone, Phone +39 2 458 640 59, vemasrl@tin.it, www.vemas.it
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■ **Utilis France SARL, Outils de précision**

597, avenue du Mont Blanc, FR-74460 Marnaz
Téléphone +33 4 50 96 36 30, Téléfax +33 4 50 96 37 93
contact@utilis.com, www.utilis.com

10



High-tech at Stryker Spine:
Production success with
the MultiAlpha 8x20.

14



Rational machining of
very complex traditional
watchmaking parts.

37



World class supplier close
to Istanbul.

47



At the forefront of
medical technology.

IMPRESSUM

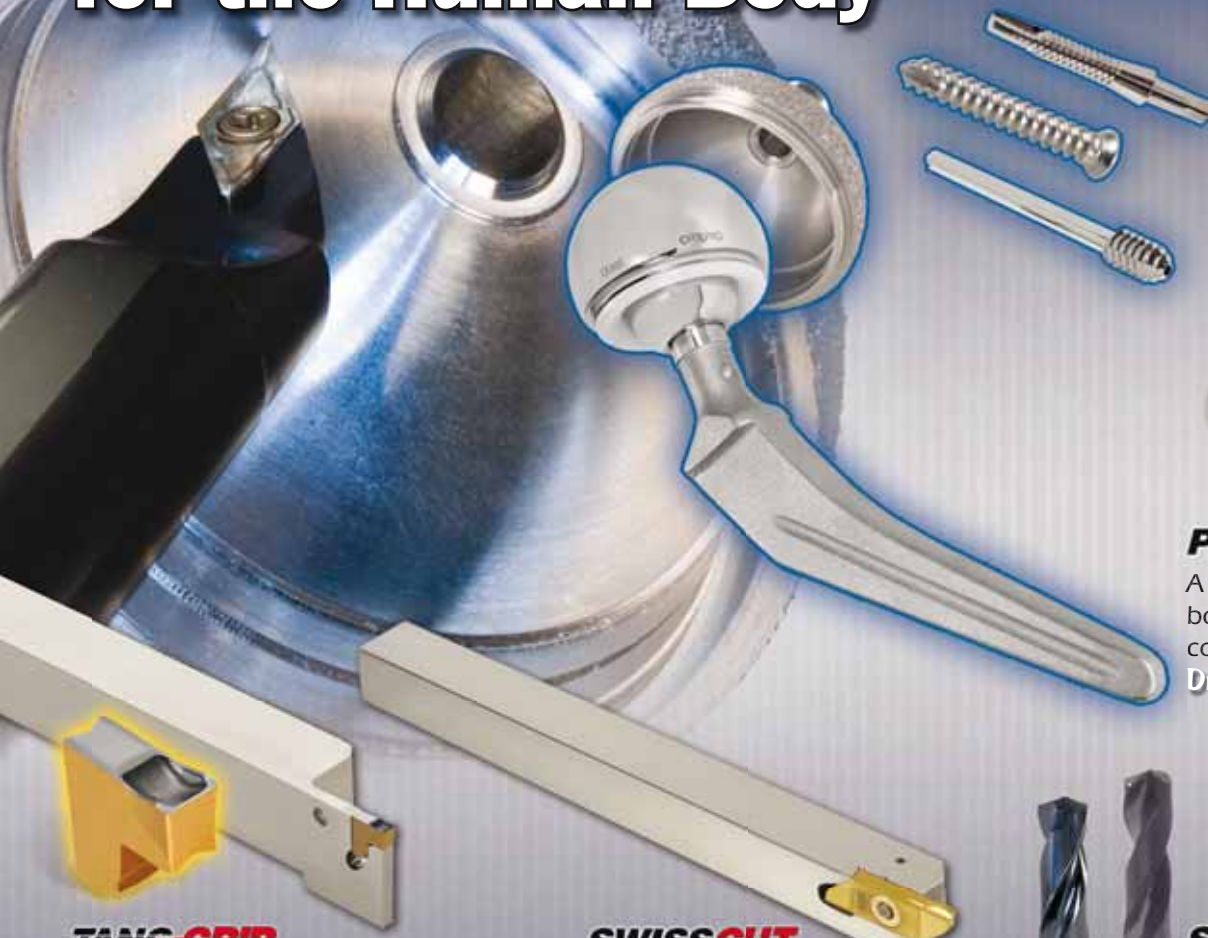
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TORNOS S.A.
Rue Industrielle 111
CH-2740 Moutier
www.tornos.com
Phone ++41 (0)32 494 44 44
Fax ++41 (0)32 494 49 07
Editing Manager:
Willi Nef
nef.w@tornos.com
Publishing advisor:
Pierre-Yves Kohler
pykohler@eurotec-bi.com
Editors:
Robert Meier **RM**
Phone ++41 (0)62 897 65 46
Graphic & Desktop Publishing:
Claude Mayerat
CH-2852 Courtételle
Phone ++41 (0)79 689 28 45
Printer: AVD GOLDACH
CH-9403 Goldach
Phone ++41 (0)71 844 94 44
Contact:
redaction@decomag.ch
www.decomag.ch

SUMMARY

Situation under control	5
25 years' experience in the medical sector	6
High-tech at Stryker Spine: Production success with the MultiAlpha 8x20	10
Rational machining of very complex traditional watchmaking parts	14
Device for clamping from the interior	19
MultiAlpha: the perfect solution for tough times?	22
From the "garage" to ultramodern industrial premises in 11 years!	26
To meet demand...	30
World class supplier close to Istanbul	37
When 3 % will make you over 20 !	43
At the forefront of medical technology	47
Pre-setting of tools & management of correctors for Micro/Sigma machines	51
Extraordinarily useful tool holders	54
Programming standardization	57
The VPGT insert	60
A stronger community	63



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SITUATION UNDER CONTROL

We met the Tornos Group CEO Raymond Stauffer to talk about the global economic situation and how the Swiss machine tool manufacturer plans to cope with it.

decomagazine: At the annual press conference given by Tornos, you demonstrated that the 2002-2007 business plan has been followed well. You are now working with a 2007-2012 plan produced when "everything was going well". How are you managing the situation?

Raymond Stauffer: Our 2002-2007 business plan was realistic and we proved the company's ability to comply with such a growth plan. In 2008, we were affected by the recession like most of those in the industry. For Tornos, the situation is different from that of the crises experienced in the past. We now have the tools to cope with it.

dm: You speak of a changing situation. Is this in terms of products or rather finance?

Raymond Stauffer: Both aspects are important. Regarding products, we now have a broad range of machines that enables our customers to choose those best matching their needs. From the financial viewpoint, the company's situation is sound and all its debt has been repaid. In 2007 and 2008, we generated EBIT of 32.7 and 13.1 million Swiss francs respectively with a net profit of 35.1 and 6.0 million Swiss francs. We adopted measures enabling us to cope better with cyclical fluctuations, such as flexible working hours and more recently the reduced workweek.

dm: Even though you have the situation under control, your 2007-2012 plan is not optimistic? The facts show that the whole global economy has slowed down...

Raymond Stauffer: We have of course been obliged to adapt the timing of our business plan and draw up recovery scenarios. But, once again, we have the necessary tools to manage this transition. And we are also following our global strategy unswervingly.

dm: You have a clear 4-point approach outlined in particular in your annual reports. These points are organic growth, balanced global geo-

graphic coverage, new product development and the fact that your machines contribute to the economic success of your customers. How have these points changed with the situation?

Raymond Stauffer: Organic growth is directly related to our products. Not counting Almac, our product offering has been enlarged by ten new products in two years, to achieve a more extensive product range that enables us to cover more specific demand

segments. Whereas in the past our machines were mainly dedicated to the production of high-tech parts; customers can now acquire a Tornos lathe perfectly adapted to their level of requirements, from the simplest parts upward. From a geographic coverage perspective, we are obviously continuing our market development work, especially in Asia. The United States has also posted fine growth in recent years.

Regarding the last point mentioned by you, i.e. TCO (Total Cost of Ownership),

our constant goal is to reduce the total cost of ownership of our machines by increasing their performance and reducing training and maintenance costs.

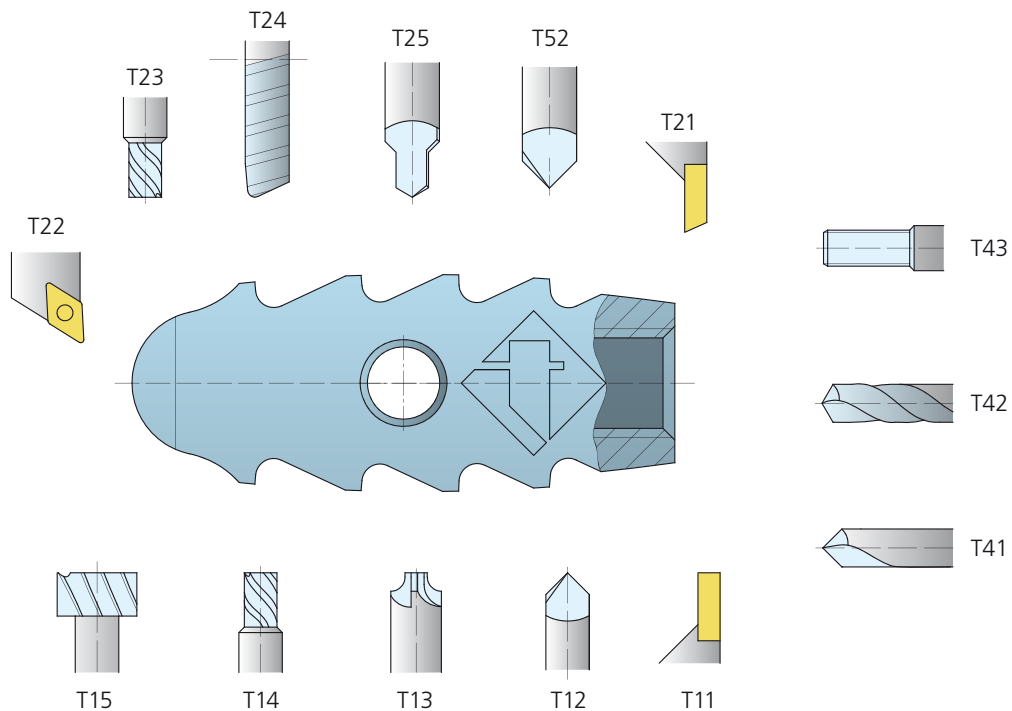
dm: You seem very calm at a time when "the world is collapsing", what is your secret?

Raymond Stauffer: Our clearly defined strategy and the tools we have acquired to cope with market fluctuations give us the necessary flexibility to adapt constantly to the situation. In particular, flexible working hours enable working time to be adapted to production volumes. Moreover, non-replacement of employees who have left spontaneously and natural attrition of the workforce due to retirement, as well as regular internal reorganization to check that the right people are in the right positions, has enabled us to reduce our workforce from 750 to 600 people in one year. There is also the reduced working week, which the current crisis has forced us to adopt, so that we have scaled down our capacity by two-thirds in the second quarter of this year. By retaining our personnel in so far as possible, we maintain our know-how and our potential to enable us to rebound from the first signs of recovery in the market.



25 YEARS' EXPERIENCE IN THE MEDICAL SECTOR

The medical and dental sectors undoubtedly require specialized solutions. Through discussions with the firms that have been designing and manufacturing products for these sectors for many years, Tornos proposes machines and equipment that precisely meet their exact demands. Philippe Charles, Medical Product Manager at Tornos describes to us some of the recent developments.



MACHINING OF PEEK PARTS

PolyEtherEtherKetone, known by the acronym PEEK, is a thermo-stable semi-crystalline polymer that has properties that enable it to replace metal. It is used in lumbar surgery for the production of "disc/cage implants" (spacers) designed to replace damaged or unstable spinal discs.

Different spacer sizes enable the surgeon to adapt the operation to the patient's anatomy. Since PEEK is a radiolucent material (invisible to X-rays), two tantalum markers are inserted in the implant to allow precise, fast locating by radiography.

Application

A special clamp allows part gripping in counter-operation. Clamping can be performed on a rounded or straight machined shape. For machining PEEK intended for implantology, coolant fluid is not tolerated and therefore machining is performed dry. Chips and machining heat are removed by means of

guided cool air flows. The lathe should therefore be adapted and prepared to machine only this material. All greases and other lubricant oils must be compatible with PEEK material.

Benefits

The counter-spindle clamp performs non-enveloping lateral clamping allowing various operations to be performed as counter-operations with rotating tools (drilling, milling, deburring or engraving for example) on either side of the workpiece. Air cooling is compatible with the material constraints regarding contamination by coolant fluids. The cold air prevents the material from overheating, thereby ensuring that its microstructure and chemical composition do not vary, while removing the chips.



Options

Machining of PEEK workpieces as described above requires the following options:

- Special counter-spindle clamp
- Air cooling system
- Suction device removing chips outside the machine
- Special preparation of the machine on leaving the factory (materials in contact and specific greases/lubricating oils compatible with PEEK)
- High-frequency milling/drilling spindles with rotation speeds up to 80,000 rpm

Compatibility

DECO 10-13-20-26 automatic lathe versions depending on the size and complexity of the components to be machined.

Availability

Ex works in accordance with customer specifications.

Comments

The device is adapted according to the parts or part families to be produced. Philippe Charles tells us: *"This machining solution is already in use by one of the big names in the medical sector. Through development in partnership with them, we were able to provide them with a response going beyond their expectations in terms of productivity and cost cutting."*

Technical specifications

Special clamps

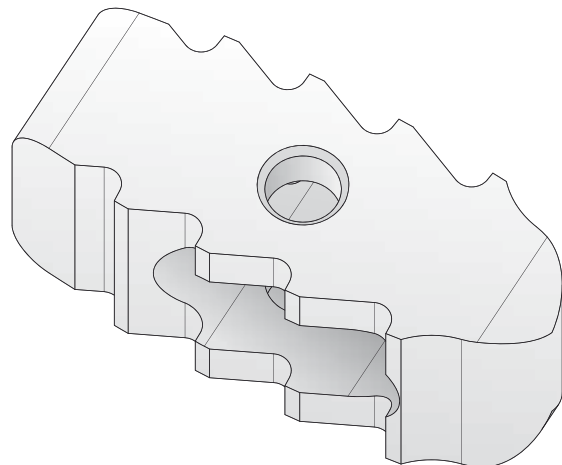
Max. workpiece size: up to a diameter/width of 32 mm without any machining restriction.

Air cooling

Cold air guns

Service pressure of 6 bar

Adaptation for guide bush and counter-operation



ORTHODONTIC APPLICATION ON ALMAC FB 1005

The milling centre working on the Almac FB 1005 bars demonstrates in practice the synergy between Tornos and Almac products. One of these machines was installed recently to produce parts intended for the dental sector.

Application

Production of attachments for orthodontic appliances is specially designed to correct teeth positions. They are made-to-measure primarily for children but also for adults.

Benefits

The FB 1005 centre has six CNC axes including a B-axis which allows "angular" machining to be performed. The production of fully completed part families is simplified by the availability in counter-operation of fully adaptable work holders. The FB 1005 is of completely open, modular design. This means that the standard configuration can be enhanced by a series of add-on equipment depending on the part types or complexity.

Characteristics

Rotation speed:	1,000 to 12,000 rpm.
Mechanical power:	1.4/3.4 kW (100 %/25 % ED)
Clamp/tool holder cone:	ESX 20/HSK 32
Clamping diameter	1 to 13 mm
X/Y/Z travel:	280/230/120 mm

Available spindles

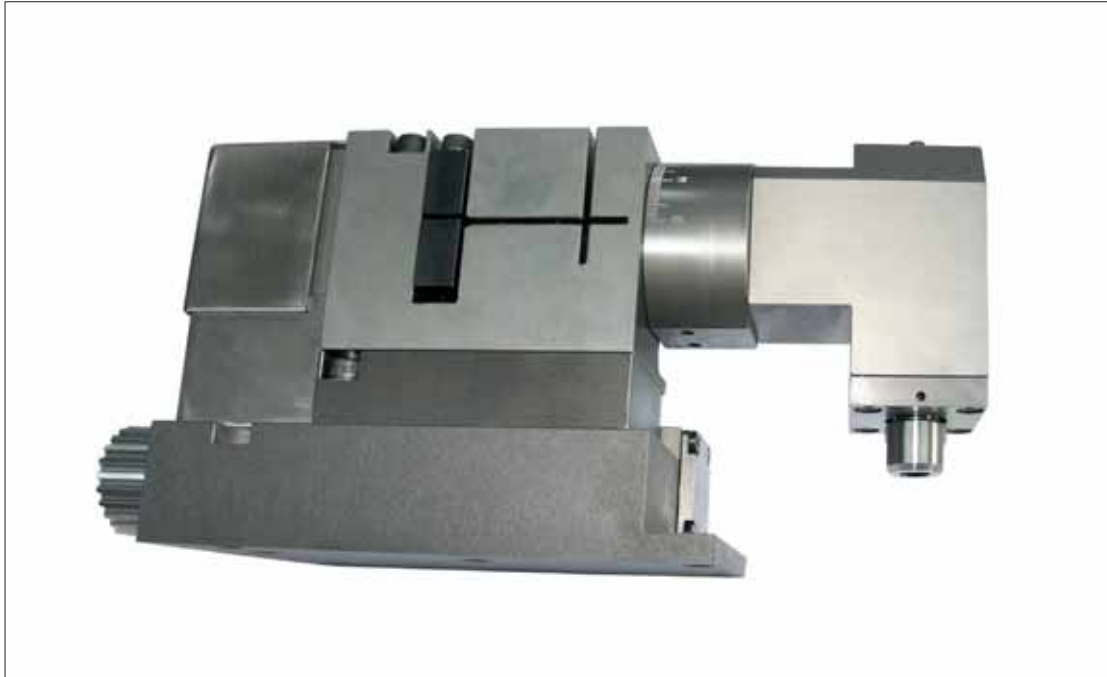
- Frontal: 4 or 8 spindles
- Lateral: 4 spindles
- Vertical: 4 spindles
- Reworking: 3 spindles

The typical cycle time for dental attachments is about 40 seconds and depends on the complexity.



ROTATING SPINDLE DEVICE WITH INCLINATION ADJUSTMENT BY GUIDE BUSH ON DECO 20/26

This device does not yet have an option number. If interested, please contact your local Tornos dealer.



Application

For specific applications, some components require drilling and milling operations with rotating tools tilt-able by guide bush. The device is installed on the rear platen and spindle drive is performed with the standard drive system for rotating tools (S2).

Benefits

This allows angular machining to be performed. The spindle can be inclined from 0 to 90 degrees in increments of 1 degree. Philippe Charles tells us: *"Practical tests were carried out with various tool inclinations to test the rigidity of the system. The results obtained in terms of both rigidity and surface conditions for the machining operations performed are of a high level (tests with a hard-metal milling cutter of diameter 5 mm)".*

Compatibility

DECO 20a/e and 26a/e

Availability

This device is already available.

Characteristics

Mounting positions:	T24 and T25
Number of devices simultaneously:	Maximum of 2
Rotation speed:	8,000 rpm
Clamps:	ESX 12/ER11
Max tool clamping diameter:	7 mm
Mechanically adjustable inclination:	From 0 to 90 degrees

HIGH-TECH AT STRYKER SPINE: PRODUCTION SUCCESS WITH THE MULTIALPHA 8x20

The Stryker Corporation is the world's leading provider on the orthopaedic and medical technology market. In the ultra-modern Stryker Spine SA plant in La Chaux-de-Fonds, Switzerland, high-tech products such as implants and the poly-axial screw shown are manufactured for spinal surgery purposes. For this work, Stryker is committed to the trailblazing Tornos MultiAlpha 8x20 range of multi-spindle automatic turning machines and to the high-performance MOTOREX ORTHO NF-X grade of machining fluid.



In a conversation with Mr. Guillaume Finck, the Plant Manager at the manufacturing facility, you get an immediate sense of a readiness to adopt innovation. Innovation is something that starts right at the project planning stage at Stryker Spine and is very much to the fore in the production process. At the other end of the line, innovation forms an integral part of the successful marketing of the company's products.

Market requirements are becoming more demanding on an almost daily basis. This is true of all sectors, from the quality level of the components being produced to the reduction in follow-up costs. The production of complex components is renowned for needing several separate machining steps. This often involves using different machines that require multiple fixture settings. Throughput time lengthens and the repeatability of precision levels starts to diminish. This makes

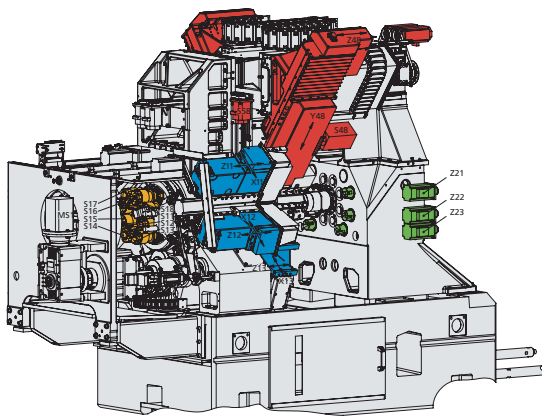
the manufacturing of components for the medical technology sector much more expensive, since these are anything other than mass market products.

A multi-spindle automatic turning machine 'à la Formula 1'

"The repeatability of precision outcomes at Stryker Spine is a matter of the highest priority", states Guillaume Finck as he takes us on a guided tour around the production building. Any production solution with a future needs to be fast and exceptionally accurate. Stryker Spine found such a solution in the form of the MultiAlpha 8x20 from Tornos. This machine has 8 motor-spindles capable of operating at different speeds, and this was customized to include a combined tailstock machining facility, two programmable manipulators and an integral work-piece extraction unit.



The two tailstock spindles, each mounted on separate axes, can be used to locate in the parts after the cutting-off operation and to machine their reverse sides (turning, boring, milling, etc.).



The benefits of the MultiAlpha 8x20 are self-evident:

- optimum cutting values in every machining situation
- Blocking and positioning fixture on every spindle
- Scope for using a tremendously diverse range of tools
- extremely high levels of flexibility
- uncompromisingly high productivity
- universal programming system

Machining fluid with a broad performance spectrum

Every year, Stryker Spine processes a few tons of titanium alloy (soft), stainless steel (tough) and chrome-cobalt (extremely tough). These materials could not be more different from one another. The same is true of the machining steps involved. Using the same cutting oil, all operations from turning to milling are always performed at an optimized cutting speed. This application profile imposes extreme demands on the cutting oil. In particular, the fast dissipation of heat and the cooling action of the cooling system integrated in the oil circuit are key factors in the process of maintaining dimensional integrity. At Stryker Spine, work is carried out to the nearest micron (1000th of a millimetre). Even a 1 °C change in the temperature of the cutting oil would have an impact on the dimensional integrity of the workpiece. This means that the front doors of the machine should only ever be opened in genuine emergency situations !



Technology is absolutely right

"With Motorex Ortho cutting oil, we have already built up a very satisfactory track record. In the MultiAlpha, the full performance potential of Ortho NF-X was able to be delivered. Motorex Ortho NF-X

- makes it possible to machine all materials using just one cutting oil
- guarantees maximum power across all processes, e.g. deep-hole boring, turning, milling, thread-whirling, etc.
- reaches operating temperature rapidly and cools down superbly
- extracts swarf without foaming action at pressures of up to 120 bar
- achieves optimum lubrication action
- achieves a substantial improvement in tool service life
- can be removed effortlessly from the workpieces
- is free of undesirable, critical substances.

This has enabled Ortho NF-X to contribute towards the successful commissioning and initial start-up of the new multi-spindle automatic turning machine."

*Guillaume Finck – Plant Manager
Stryker Spine SA, La Chaux-de-Fonds*



The powerful Tornos MultiAlpha 8x20 weighs in at an impressive 12 tons – it can be extended when so desired in a versatile range of ways, enabling it to tackle any conceivable machining operation. The flexible IT programming system is of great assistance in this.

Before Motorex Ortho NF-X was allowed to demonstrate its performance potential under practical conditions, Stryker Spine checked it out with painstaking accuracy using a specified evaluation template for universally applicable cutting oil. After full measurement of the test workpiece, the result was found to be extremely accurate, an outcome that all parties were delighted with. Another exceptionally good feature was the standard of surface finish achieved on the chrome-cobalt workpiece.

As though destined for the MultiAlpha

In particular, it is on the MultiAlpha 8x20 that the true benefits of Motorex Vmax technology in the Ortho NF-X formulation come clearly to the fore. The heat between workpiece and tool tip resulting from the high cutting pressure and the optimum cutting speed is utilized to enhance high-pressure stability. This is of particular benefit during chip-cutting, i.e. machining, operations. The absolutely homogeneous and stable film of lubricant between tool blade and workpiece acts in the manner of a protective cushion. Mind you, this film of lubricant is only a few thousandths of a millimetre in thickness.

A perfectly familiarized team

At the manufacturing facility in La Chaux-de-Fonds, it is well known that simply choosing the right infrastructure is by no means the end of the story. This means that the specialists in this plant, with its many certificates, not only work very efficiently, but are also fully aware of the significance of all the other services associated with the product. A continuous exchange of information with the machine manufacturer and with the Technical Aftersales team at Motorex ensures that continuous improvement takes place at all levels. *"We strive hard to achieve true zero defect status"*, states Mr Finck. This can mean, for example, helping Motorex with laboratory analysis work set up at very short notice, making it possible to gain an understanding of certain complex processes, or to find causes to problems of the kind not immediately apparent. With the acronym MSS (Motorex Service & Support), Motorex caters for all areas associated with lubricant technology and its application.

We take great pleasure in providing you with information about the new generation of Ortho cutting oils and the scope for optimizing their usage:



When seeking to achieve a zero defect rate, precise measurement operations are an indispensable component of routine work. The parts are issued automatically and with particular care at the end of the machining process. This excludes any possibility of damage.



Naturally enough, Stryker Spine stores all of its machining fluids centrally and issues these directly to the machining centre through a series of filler nozzles. On every machine, the status of the cutting oil is monitored on a regular basis.

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

RATIONAL MACHINING OF VERY COMPLEX TRADITIONAL WATCHMAKING PARTS

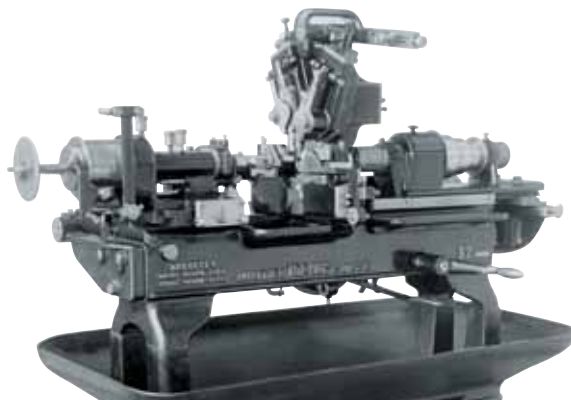
At the EPHJ-EPMT watchmaking and jewellery show in Lausanne (Switzerland), Tornos demonstrated the feasibility of producing traditional watch parts economically on efficient production facilities. For example, for the first time, sliding pinions were machined in a single clamping operation on an automatic lathe, a genuine exploit.



Tornos has equipped the watchmaking industry since 1880. It is therefore not surprising that the company has built up extensive know-how in this area. At the EPHJ-EPMT show, Tornos demonstrated solutions specially adapted to the needs of the watchmaking industry.

A thunderbolt in the watchmaking industry

The current economic situation is not the only cause of concern for watch manufacturers. Kurt Schnider, Sales Director for Switzerland at Tornos, can see other reasons: "For many years, a large number of watch manufacturers have procured specific parts



from specialist manufacturers. Not long ago, these specialists decided to no longer deliver such parts to third-party manufacturers and withdrew from this market segment. Since then, it is not just parts that are lacking in watchmaking plants, but also the skills and equipment for their production."

Moreover, under new regulations, Swiss watches must be really manufactured with parts made in Switzerland. Kurt Schnider: "Watches bearing the 'Made in Switzerland' label will have to contain at least 60 % to 80 % of parts produced in Swiss workshops."

The beauty of technology

One type of watch enjoying growing success with a demanding clientele is the so-called "skeleton" watch. The owners of such watches can not only read the time and other information, they can also cast an indiscreet glance on the watch's magic movement. What is fascinating for admirers of technology places new demands on watch manufacturers and hence parts' suppliers, bar turners in particular. A clear view of the movement takes precedence over functionality: the surfaces of visible parts – screws included – must be perfect. Absolute precision and finish of parts is no longer sufficient, their elegance is also a requirement.

Tornos takes into account all these aspects, and Kurt Schnider therefore views the watchmaking year 2008 with satisfaction.

Not "just" machines

Tornos, moreover, sees itself not just as a machinery manufacturer, but far more as a supplier of machining solutions. Kurt Schnider: "We not only offer our customers machines for traditional machining of watchmaking parts, but on request we also train their personnel on our machines and we support them continuously in looking for machining solutions for complex or exotic parts." For this purpose, the company has developed, for the watchmaking sector among others, machining methods that it presented at the Lausanne show. All the machines exhibited produced parts for this sector and thus demonstrated what is truly feasible in practice.





Micro – a name that says (almost) everything

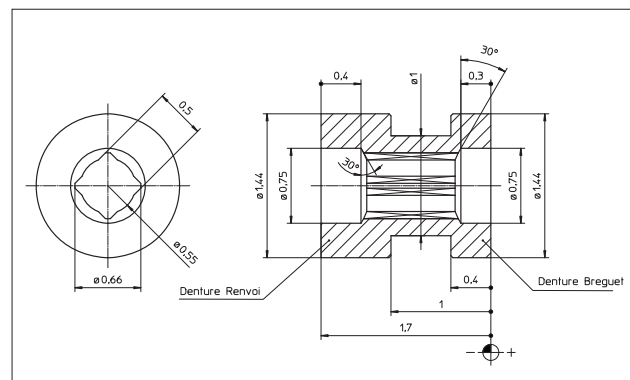
From its range of automatic lathes, Tornos presented two models, the Micro 7 and Micro 8. These two single-spindle automatic lathes excel through their ability to machine runs of small parts with a precision of the order of one micron. What is striking with these two machines is their very compact size, which is an advantage for workshops suffering from a chronic lack of space.

The two machines differ through their maximum bar capacity, namely a diameter of 7 mm for a maximum length of 60 mm for the Micro 7, and 8 or 10 mm respectively for a maximum part length of 17.5 mm for the Micro 8. The latter machine is designed above all for short parts. Another distinguishing feature of the Micro 8 is the lack of a guide bush, which allows small parts to be machined with a tolerance of ± 0.001 mm while making maximum use of the bar.

In one single operation

Another model presented is the Deco 10a. This single-spindle automatic lathe is designed for bar diameters of up to 10 mm. The part produced on this lathe undoubtedly left no manufacturer of watch-making parts indifferent: Tornos demonstrated on this lathe the feasibility of machining a sliding pinion and a winding pinion in a single operation. For the first time, an automatic lathe manufacturer has succeeded in developing a machining process by which these parts are machined completely in a single operation. For this purpose, the Deco 10a is fitted in factory with two motor-operated milling cutters which are perfectly synchronized with the main spindle.

The sliding pinion, an extremely complex part for time and date setting on mechanical watches, has different front cutting surfaces on both sides. To be able to produce such a part, machining was until now performed in several stages and required special equipment, which resulted in both a higher manufacturing cost and a loss of precision. The motor-operated milling cutters machine one of the cutting surfaces during the first clamping operation, before the part is gripped by the counter-spindle, cut out from the bar and fed into the milling cutters for machining the second cutting surface. Not only does this machining process ensure perfect coaxiality of the cutting sur-



faces, but machining quality is also enhanced by the cutting process selected and – what customers now expect of machine tools – the part comes out of the machine in finished state.

This extremely attractive solution is possible thanks to a “simple” additional device fitted in factory on a standard machine, which is also used for the production of a wide range of other parts.

The saving in machine time due to machining capabilities with a tried and tested technology is demonstrated once again by this example.



With Almac, a full partner for watchmaking

Despite the innovative strength of the Tornos specialists, all the parts of a watch cannot be produced on automatic lathes. The particularly difficult parts of a watch are the main plate and the bridge, which are currently still produced on machining centres by complex processes. The firm Almac SA in La Chaux-de-Fonds is one of the manufacturers of such highly specialized machines. Almac has formed part of the Tornos group since 2008. By incorporating this firm, the Tornos group is positioned as a comprehensive supplier of machine tools for the manufacture of watch parts.

Production of main plates – a complex task

The firm Almac SA presented its CU 1007 machining centre. This centre – an enlargement of the CU 1005 model – is specially designed for the production of watch main plates and bridges from discs or small plates. On this machine, only one side of these parts is machined at a time. Subsequently, Almac launched a twin centre comprising two machines

and an intermediate station, allowing both surfaces of main plates and bridges to be machined without any handling. Thanks to this technique, Almac is progressing toward a fully automated solution for the production of these complex parts.

Solutions backed up by vast experience

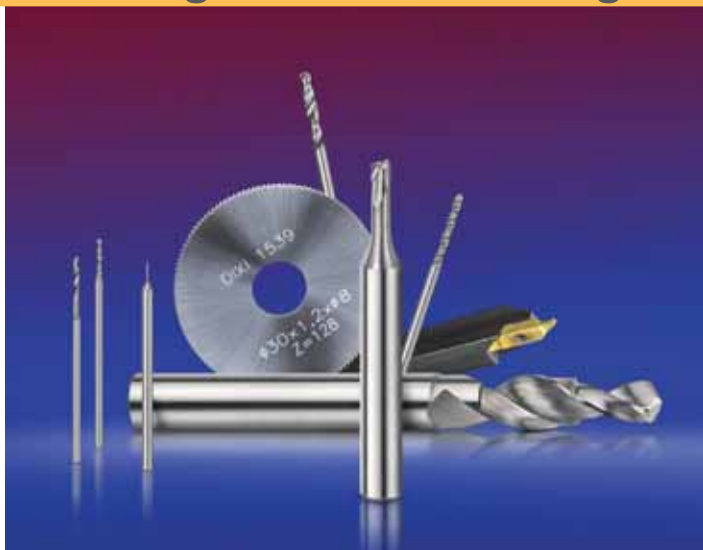
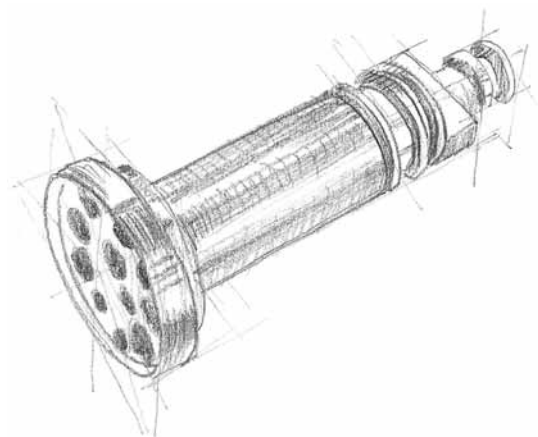
Tornos automatic lathes and solutions are used not only in the watchmaking industry, but in all branches of industry for the production of turned parts ranging from simple to extremely complex shapes. In this context, the know-how acquired in a field such as the watchmaking industry with its microtechnology applications is also useful in other industrial sectors such as, for example, medical technology, the automotive industry and connector systems. This expertise is made available to all Tornos automatic lathe users, in all sectors of industry.

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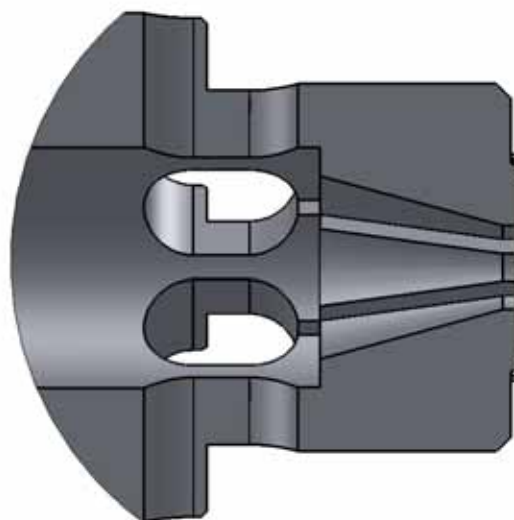
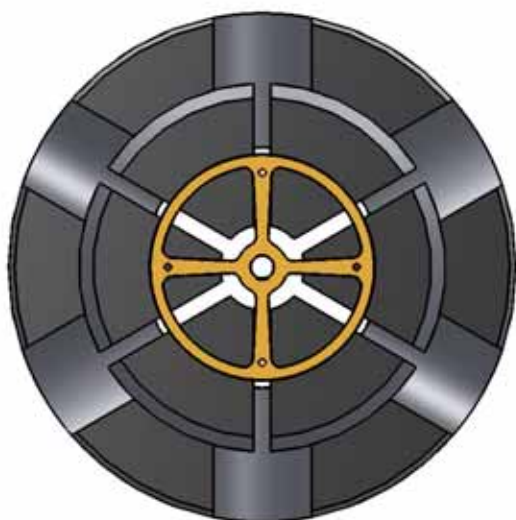


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DEVICE FOR CLAMPING FROM THE INTERIOR

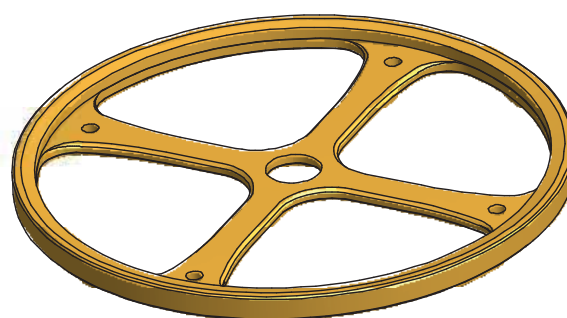


Option

This device does not yet have an option number. If interested, please contact your local Tornos dealer.

Application

When producing small milled parts it is practically impossible to hold the part during counter-operations. To avoid having to perform reworking operations, the smart solution is to clamp the workpiece from the inside during counter-operations.



Benefits

Reworking operations are eliminated and the precision of machining between operations and counter-operations is guaranteed. In the case of fragile workpieces, the possibility of clamping from the interior offers an alternative to avoid marking external surface conditions. The system of adjustment at the front with the two-part nut allows precision adjustment of clamp opening and prevents marking the bore.

Technical specifications

- Max. workpiece size: External dia. 10 mm for F13, maximum bore 8 mm/outer dia. 16 mm for F13, maximum bore 13 mm
- Clamps: equivalent to special F13 (Deco 10); equivalent to special F20 (Deco 13)
- Adjustment: Via the two-part nut at the front
- Other characteristics: Each type of workpiece requires a special clamp to be made-to-measure.

Principe

By comparison with traditional clamping, the tapered sleeve is transformed into a guide system and a tapered push piece is added inside the sleeve. During clamping, the tube pushes onto the guide sleeve and actuates the tapered push piece on the cone of the clamp.

Compatibility

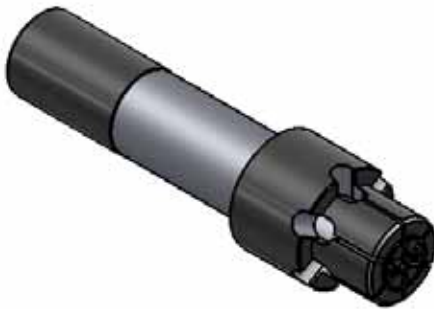
DECO 10a/10e, DECO 13a/13e

Availability

This device is available on demand.

Comments

Special clamps are made-to-measure according to the parts to be produced.

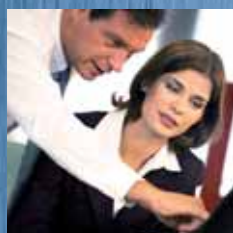




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MULTIALPHA: THE PERFECT SOLUTION FOR TOUGH TIMES?

In all, or nearly all, industries, pressure on prices is increasing, whilst there is obviously no decrease in the level of quality required. Furthermore, there is a general trend in design towards reducing the number of parts needed in a sub-assembly, therefore making these components even more complex to produce. In times of economic instability, these phenomena are further heightened and it is the most competitive companies who suffer the least.



An investment to overcome tough times? The reasons given by Mr von Rotz and Mr Martoccia both from Tornos, seem logical.

Main consequences

There are not many solutions on offer for reducing the costs per part. A means of production must be found which allows the desired volume of parts to be produced at the best possible price. This is where the equation starts to get complicated, as these parts not only need to be produced at the agreed price, they must also be perfect in terms of quality, even if their level of complexity has increased. Furthermore, relatively large volumes must often be produced within a very short turnaround time.

Unsuitable machines

At the moment, neither single-spindle turning machines nor cam controlled multispindle turning machines are suited to fulfilling this type of request. The single-spindle product because of its capacity. It

is a very versatile piece of equipment which is ideal in many ways, but it does not have the capacity to produce runs of 30,000 parts to be supplied within a few days. This kind of production means that several turning machines have to be in operation, generating high costs in terms of tools and requiring immediate availability of machines and operators. The cam controlled multispindle turning machine is just not versatile enough.

Happily, a solution can be found in digital multispindle turning machines, even for complex parts.

Optimised manufacturing process

Not only is it possible produce very demanding parts with a modern multispindle turning machine, but the MultiAlpha and MultiSigma now go even further in that they allow the entire industrial process

to be shortened, while offering the option of finishing complex parts on the machine. As the visual appearance of the parts is becoming more and more important, ejecting them in bulk is now sometimes not possible. It must be ensured that the parts will not be damaged when conveyed from the machining area. To ensure this, Tornos engineers are also offering a solution which actually integrates a part gripper inside the turning machine itself. This grips each part after it is finished and places it in a pallet, or in another system as chosen by the customer. The parts can then be conveyed directly to a washing machine, for example.

The gripper and palletisation system is 100 % integrated into the machine, it is not an "add-on" system which has "sprung up" around the edges, but a genuine built-in component inside the machine.

Two machines in one

These products with eight spindles offer yet another additional benefit compared to turning machines with six spindles as they offer the ability to work in 2X4 mode (dual cycle). With a single machine, it is possible to produce relatively straightforward parts in dual production (up to 40 parts/min) and very complex parts in standard mode. The customer gets two products in one, and can choose between four and eight spindles, depending on the day's requirements.



For the first time, it is possible to produce complex parts on a multitasking turning machine, in a rationalised way.

Main specifications of MultiAlpha turning machines	MultiAlpha 8x20	MultiAlpha 6x32
Bar capacity	22 (25) mm	32 (34) mm
Max. component length	100 mm	120 mm
Number of spindles	8	6
Max. speed of powered spindles	8,000 rpm.	6,000 rpm
Max. power of powered spindles	11.2 kW	13.6 kW
Powered spindle torque	17 (25) Nm	25 (32.5) Nm
Power of counter operation tool drive motor	5 Kw	5 kW
Max. speed of counter-spindle	10,000 rpm.	8,000 rpm.
Rotation speed of counter operation tools	5,000 rpm.	5,000 rpm.
Counter-spindle motor torque	7 (20) Nm	8.3 (24) Nm
Counter operation slide	1 (2)	1 (2)
Number of tools for counter operation	1 (2) x 5 tools	1 (2) x 5 tools
Number of linear axes	26	19
Number of rotational axes	10 (12)	7 (11)
Spindle cooling	yes	yes
Digital control	Fanuc 30i	Fanuc 30i
Programming system	TB-Deco	TB-Deco
Gripper with digital axis	yes	yes
Palletisation optional	yes	yes

Two counter spindles for completing complex parts

The MultiAlpha is equipped with eight powered spindles running at independent speeds which allows the machining conditions to be finely adapted to the operation in question. So as to guarantee parts which are fully completed, the counter spindles on the MultiAlpha allow the rear of the part to be machined with two sets of five tools, ensuring as many counter operations. Therefore, this system of dual counter operations halves the time required for working on the rear of the part.

The machining of a single part can be done on average between 4 and 6 times more quickly than on a single-spindle turning machine. And if you have an urgent requirement for a few tens of thousands of parts... which must be programmed and set up flexibly and produced in a flash, the MultiAlpha really gives you the edge !

Ease of programming

A multispindle automatic lathe with eight spindles and two counter operation posts may sound frightening, but, in fact, this turning machine is easy to programme using Tornos' TB-Deco programming system. The benefit for the bar turner who works on single-spindle or multispindle turning machines already running with this system is clear: there is no change in the programming family. In addition, when a part is machined on a single-spindle turning machine then on a multispindle turning machine (for example for much larger production runs), the bar turner can benefit from the process expertise gained from working on single-spindle machines to simplify programming on the MultiAlpha, which guarantees further flexibility.

Conclusion

To answer the question asked in the title of this article, I will cite this example of a Tornos customer who has a large bank of machines... and who in these tough times certainly has an excess capacity on his simple machines but cannot manage to produce as much as desired as his MultiAlpha are already 100 % full, working three shifts !

For more information on the possibilities of the MultiAlpha, please do not hesitate to contact Rocco Martoccia or Iwan von Rotz.



These peripherals are perfectly integrated into the machine and guarantee optimum ergonomics and use of floor space.



Tornos SA
Industrielle 111
2740 Moutier
Tel. ++41 32 494 44 44
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martoccia.r@tornos.com
www.tornos.com

THE PERFECT SOLUTION FOR TOUGH TIMES?

Quick interview with Iwan von Rotz

Director of the Multispindle Business Unit at Tornos.

Decomagazine: Mr. von Rotz, you are offering a multispindle machine, which is obviously very costly, as a solution in tough times. Is that not quite a radical strategy?

Iwan von Rotz: We are close to our customers and the facts speak for themselves. We have customers who really are constant innovators, looking for production means which correspond precisely to their needs and which represent the best solution. The cost of investment is certainly quite significant, but this isn't the whole story: cost must always be measured against the possibilities being offered.

dm: Nevertheless, it is not easy to invest while "the entire world seems to be on hold". Do you think this is the right time?

Iwan von Rotz: Of course, the decision to invest is never easy, but at the moment, if we do not invest in R&D, in training, or in production means, will we be ready when the situation returns to normal? During my extensive contact with customers, I have really felt this desire to be prepared for when the economic crisis ends. We are improving, preparing, training and investing... and when the market starts moving again, we will be ready.

dm: You are now offering three lines of digital multispindle machines, the MultiDeco, the MultiSigma and the MultiAlpha. How do they differ?

Iwan von Rotz: As we have seen, MultiAlpha machines are currently the most technologically

advanced machines on the market. They offer a wide range of possibilities for counter-operation machining and gripper systems which transform them into true multispindle machining centres. The MultiSigma is a slightly more straightforward option, based on the same specifications in terms of the spindles to allow machining on the front of complex parts. As the counter operation system is more straightforward, the machining operations possible on the rear of the part are also more straightforward. As always, the investment in machines depends on the complexity of the parts which need to be produced. MultiDeco turning machines are designed more for producing parts by simple turning, as the options for stopping and positioning the spindle are more restricted. There is still a need for machining equipment for this type of part.

dm: Would someone be able to make a start in the world of bar turning with a MultiAlpha turning machine?

Iwan von Rotz: Do you mean, could someone purchase a MultiAlpha as their first turning machine? Anything is possible, but I would certainly recommend learning to drive before hitting the formula 1 circuit! MultiAlpha machines can do a lot, but they are obviously tools which require a certain amount of familiarisation. For people who already understand bar turning, this is much easier.



This type of part is now within the capability of a multispindle automatic lathe. It can even perform thread whirling operations!

FROM THE "GARAGE" TO ULTRAMODERN INDUSTRIAL PREMISES IN 11 YEARS!

Speaking about the RSM company, based in La Chaux-de-Fonds in Switzerland, Almac's CEO Roland Gutknecht said, half-jokingly: *"Mr. Magistrini bought an Almac FB 1005 in 1998 and today he is in a brand new factory with a surface area of over 1,000 m² with more than 40 machines. It really is proof that Almac machines are the gateway to success"*. From this thought came my desire to meet a customer who had really "grown up with Almac", to write an article for decomagazine.



Several generations of FB 1005 stand side-by-side in the workshop and all these machines are equally ergonomic and simple to use.

Joined by Mr. Gutknecht, we were received by Mr. Magistrini, the director of RSM, in a brand new building with Almac and Bumotec machines side by side. Time to interview !

decomagazine: Why choose an Almac machine to start up your company ?

Mr. Magistrini: We had decided to set up a company to create high added-value parts for the watchmaking industry, mainly for bracelets. We knew the field, and I must admit that I didn't have a particularly high opinion of Almac machines. Nevertheless, we were looking for a machine which could fulfil our requirements in terms of creating links and attachments. This machine met this brief in technical terms, and during start-up, Almac supported us both technically and financially. I don't regret making this choice.

dm: What did you like about this machine ?

Mr. Magistrini: It is a machine which works from the bar and which has 4 or 5 axes, which therefore allows us to manufacture parts with high added-value and with great autonomy. It corresponded exactly to the type of parts we wished to produce.

We now have 14 machines of this type, 3 machining centres, also from Almac, and some Bumotec machines.

dm: What are your criteria for choosing machines ?

Mr. Magistrini: We started by manufacturing parts for watch bracelets, but we wanted to expand our part production portfolio, firstly within watchmaking with cases, clasps and components, then we wanted to also stretch our abilities to work in the medical industry, for example. We are always looking for the machine which corresponds best to the parts which we will be making. For example, Almac does not offer turning on its machining centres, which is why our workshop is mixed.

dm: You only use Swiss production equipment. Is this a deliberate policy ?

Mr. Magistrini: We produce Swiss quality mainly for the Swiss watchmaking industry... so it is logical that we also produce them using Swiss production equipment. The fact that we are close to our supplier, both in terms of language and of "philosophy" makes exchanges a lot simpler. This closeness is also

a bonus for the service. Overall, we are satisfied with the way in which this whole relationship is working.

R. Gutknecht: You must understand that Mr. Magistrini was one of the first to use our machines in this way. Running in 3x8, they were really pushed to the limit. Being very nearby, we were able to work out what improvements needed to be made for this product very quickly, ensuring perfect reliability.

dm: So, Almac “used” RSM to improve its products?

R. Gutknecht: In the first instance, these improvements were made to ensure our customer was fully satisfied, but some of these modifications later found their way into standard machines, it's true.

Mr. Magistrini: We don't have a problem with this way of working. We know that Almac has a lot of customers and that each machine sold is potentially a new competitor. However, we have extensive expertise in terms of our machines and we are continuously learning to ensure we stay ahead.

dm: What, in your opinion, are the strengths of the FB 1005 machine?

Mr. Magistrini: When I chose my first FB 1005, I was won over by its set-up. The machine is sound, accessible and pleasant to work with. At least, that was the impression I got, and I haven't changed my mind! In addition to this comfort, it is quick and easy to set up and, of course, reliable with good repeatability and quality. On some of these machines, with counters hitting almost 70,000 hours, we have manufactured more than a million parts within the tolerances. This machine is therefore perfectly qualified for machining our parts. We use the machines at their full capacity, with all axes and tools mobilised.

dm: At this level of use, are there a lot of breakdowns? And how does the repair service work?

Mr. Magistrini: The amount of operations required is low and the service is good. Of course, we always expect the best in terms of services, as we simply cannot have machines which aren't running. The personnel who come to us are very competent. If something is not working, we don't hesitate to mention it.

dm: You have just over 10 years of experience with Almac machines. How do you look back on these years?

Mr. Magistrini: We prefer to look towards the future. The company has been going for 10 years,

Future products

The 13 Almac FB 1005 machines correspond perfectly to RSM's current requirements, but will that still be the case in the next 10 years? During the interview, Mr. Magistrini and Mr. Gutknecht tackled different developments and possibilities for fulfilling the future needs of RSM. But every company is different and Mr. Gutknecht wished to let it be known that Almac currently has platforms of machines which enable it to offer made-to-measure solutions with a high level of industrial quality and reliability. With the CUB 110, the company has allowed a quick peek at the products to come.

Please do not hesitate to contact him to find your solution: roland.gutknecht@almac.ch.



Designed to guarantee precision milling in stiff steel as well as noble metals, the FB 1005 machine has a X slide guided on prestressed rails and moved by a ballscrew. The slide supports the vertical Y axis formed of a solid cast iron prism, on which a rectangular sleeve moves. Guided on 4 prestressed rails, this is also moved by a ballscrew and allows a unit equipped with frontal, lateral or vertical spindles to be fitted.

so the questions I mainly ask myself are about the means of production I will need in the 10 years to come! We always define our machines in terms of the parts to be made. As an added-value manufacturer in Switzerland, we always have to be thinking of new ways of producing parts... and the machines must allow us to do so.

dm: Where would you place RSM on the market?

Mr. Magistrini: Our vocation is, and always has been, to produce value-added parts, whilst increas-



With 13 FB 1005 machines, RSM is able to rapidly respond to any request.

Key facts about the Almac FB 1005

Strokes	X/Y/Z	280/230/120 mm
Divider	NC indices, axis C	360° (360,000 pulses)
Bar incline	manual movement NC movement, axis B	0 to 20° 0 to 20° or -5 + 45° (short bars)
Bar advance	pneumatic movement NC movement, axis W	25 mm 50 mm
Advances	feed, X/Y/Z/W rapid advance	0 to 5,000 mm/min 12 m/min
Standard spindle	speed mechanical power collet/tool holder cone clamping diameter	1,000 to 12,000 min ⁻¹ 1.4/3.4 kW (100 %/25 % ED) ESX 20/HSK 32 1 to 13 mm
Possible layouts :	frontal lateral vertical reworking	4 or 8 spindles 4 spindles 4 spindles 3 spindles
Lubrication	capacity flow filtration	100 l 40 l/min 35 µm
Connections	installed power voltage pneumatic pressure	10 kVA 3 x 400 V/50 Hz 6 bar
Weight	1800 kg	
Dimensions	L x D x H	1,755 x 2,000 x 1,930 mm

KEY FACTS ABOUT RSM :

Company created :	1998
Growth :	1998, 1 machine in a very small workshop 2000, 6 machines, move to 400 m ² premises 2006, move to the new factory, with a surface area of 1,000 m ² 2009, 40 machines, 20 employees
Financing :	More than 90 % self-financed
Type of parts :	High added-value, standard machining time from 3 to 10 min
Main markets :	Switzerland, Germany and Austria

ing our expertise. The competition is global and only staying ahead at this level will enable us to remain competitive. The parts we produce are increasingly technologically advanced, whether for the watch-making, medical or other industries. We therefore need to be one step ahead.

dm: For this kind of outlook, the machine alone is not enough; you need an efficient "man-machine" team. How do you guarantee quality at this level? Is it easy to recruit skilled, motivated and efficient staff?

Mr. Magistrini: Staff is a key parameter in RSM's success at the moment. The motivation of our people is very important, but it is not sufficient on its own: it must be supported with thorough and continuous training. The industrial world has changed dramatically, in terms of metrology, work preparation and programming and our partners must also be in possession of extensive expertise in these complementary areas.

dm: Is it easy to implement this kind of training?

Mr. Magistrini: It is obvious that added-value is dependent on the qualification of personnel. Expertise in the use of tools, feeds, machines and processes all combine to strengthen the competitiveness of our company. We have organised training with Almac and other suppliers (DTP for example) so that we can also put our ideas into practice.

We are making the most of the current drop in demand to set up a programme of metrology training. We are preparing a very advanced checking system which exceeds the expectations of our customers, so when these requests arise, we will be ready... and we will have a head start.



Mr. Magistrini (left) and Mr. Gutknecht in front of the latest FB 1005 to arrive.

dm: In your opinion, what makes a difference on the market today for RSM?

Mr. Magistrini: We are recognised as being highly competent. We are often asked to manufacture parts which are complex in terms either of their geometry or their surface finish. Our level of expertise is well above the average and our image on the market reflects this.

Reputation is therefore very important for leading markets. We are continuously striving to improve, in terms of quality, machining options, precision... everything. This reputation must be based on three essential criteria, namely quality, the turnaround time and the price (in that order).

Conclusion

To return to Mr. Gutknecht's statement that "... it really is proof that Almac machines are the gateway to success", Mr. Magistrini has shown us that machines alone can do nothing, and that the personnel, tools, implementation or even the processes are equally important parameters... nevertheless, this story has shown us that without this first FB 1005, no-one can be certain whether such success would have been achieved.



Example of the type of parts produced on the FB 1005 (in general and not at RSM).

RSM SA
Rte de l'Orée-du-Bois 3
CH-2300 La Chaux-de-Fonds
Tel: +41 (0) 32 932 40 00
Fax: +41 (0) 32 932 40 04
info@rsm.ch
www.rsm.ch

Almac
39 Bd des Eplatures
CH-2300 La Chaux-de-Fonds
Tel. + 41 (0) 32 925 35 50
Fax + 41 (0) 32 925 35 60
info@almac.ch
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TO MEET DEMAND...

Founded in 1946, Monnin SA has put in place a structure and a philosophy which look firmly towards the future. Emphasising training, cross-disciplinary organisation, respect for the environment and good working conditions, the company runs a bank of 33 Deco machines and 8 Micro machines, in parallel with 95 cam-type turning machines. To find out more, we met Mr. Maruccia, managing director, and Mr. Steffen, director of production.



A high tech company

Since moving into their current premises two years ago, Monnin SA has been at the cutting edge of environmental issues. The company processes and recycles all its waste, including wastewater. This eco-friendly approach also includes recovering all the heat produced by the machines and compressors, meaning that there has been no need for any heating to be installed. A proportion of the electricity they buy is from green sources. How can sustainable development be reconciled with industrial efficiency? Time to interview !

decomagazine: Your company can be cited as an example of an eco-friendly development. Is it easy to promote this aspect to your customer ?

Mr. Maruccia: It is not something that we look to promote. The thing which allows us to respond our customer's needs is our technical abilities, our skills and our flexibility. We don't capitalise on our environmental concerns.

dm: You mentioned technical abilities, skills and flexibility, how do you manage the coexistence of the banks of NC machines and cam-type machines ?

Mr. Maruccia: It is important to realise that we specialise in manufacturing very small parts for the watchmaking industry, but also for the medical and microtechnology industries. We create parts ranging from the very simple to the very complex, in production runs of 500 to several million parts. We are often asked to create complex parts.

Mr. Steffen: Our bank of Deco machines primarily consists of fully-equipped 10 mm, 9-axis machines, which allows us to respond to requests for complex parts in relatively short production runs. Recently, we have also installed 8 Micro 8 machines which allows us to produce very precise short parts to very attractive deadlines.

dm: You are therefore using two technologies (NC and cam); how do you see this developing ? And what about the personnel ?

Mr. Steffen: Currently, we use the two banks of machines in a very complementary way; we create

long production runs of relatively simple parts on the cam-type turning machines. These are continuously overhauled, at the rate of about one turning machine a month. For parts which require more frequent changes of set-up or which are more complex to produce, we use the NC turning machines. As concerns the development, complex parts are becoming ever more complex, as much in terms of geometrics and dimensions as in terms of finish. For these parts, the NC is indispensable. In some cases, we use GibbsCam software.

Mr. Maruccia: Our staff are continuously trained in the use of all types of machine. We use "NC" specialists and "cam" specialists, but some members of staff can switch easily from one technology to the other. At Monnin SA, the operators take care of all the operations throughout the creation of the parts, from programming to production, and including set-up and adjustments.

dm: Are you still able to find staff trained for your cam-type turning machines?

Mr. Maruccia: We do a lot of in-house training, and for basic training we have set up a training centre in conjunction with other bar turning companies. The logic behind machining and the foundations of cam work are undeniable benefits, even when working on digitally-controlled turning machines. The operator is "close to the part".

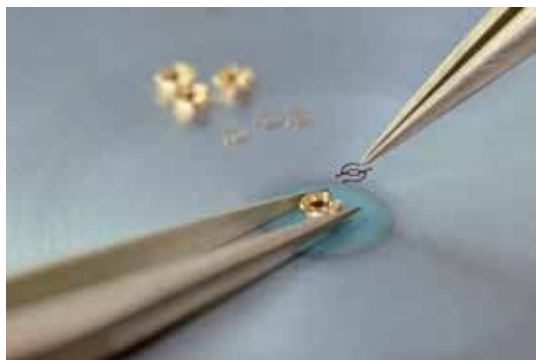
dm: In terms of NC machines, you create complex parts in short production runs, even prototypes; is it easy to combine this approach with the large volume cam-type machine approach?

Mr. Steffen: For prototypes, we have gone even further, in fact, as we also have a "prototype cell". This is a very flexible independent unit which allows us to carry out very specific requests with a quick turnaround.

Mr. Maruccia: Having the two banks of machines, and being able to offer very different solutions in terms of parts and size of production runs, places us in a strategic position which allows us to enjoy a certain security. If there is a drop in one of the types, the other can compensate. It is also for this reason that we are diversifying towards industries other than watchmaking, and towards assembly.

dm: You have a bank of fully-equipped, standardised Deco machines. Does this way of operating not limit your options?

Mr. Steffen: Absolutely not. We have a range of apparatus and devices, for example high-frequency spindles, and the operators can simply fit their



EFFICIENCY IS CREATED BY EACH PERSON'S CONTRIBUTION

As with all companies, Monnin SA has a management team, but shared authority is promoted. Everyone is expected to express their opinions. This method is the same at all levels of the company, as each employee is free to make suggestions and to act. All staff therefore feel a level of responsibility. This is accompanied by the creation of a dynamic working environment, conducive to personal development. This is demonstrated by the strong sense of commitment the staff have. This commitment is a major contributing factor to the success of the company.



ABOUT TORNOS

Reliable machines

Amongst the 33 Deco 10 machines installed at Monnin SA, some models have completed almost 50,000 operating hours, and M. Steffen revealed to us that these machines are still as efficient as the more recent models. *"And we're not ready to part with them"*, he added.

Mr. Maruccia continued: *"Being able to use identical machines, equipped with the same bar feeders, creates a uniform machine bank which is much simpler to manage. For our operators, it is also more comfortable and efficient"*. Mr. Steffen agreed: *"We machine 70% of our parts under 2 mm, we do not therefore work the machines up to their capacity, as much in terms of diameter as in removal of material. This guarantees the machines a long service life"*.



A true dialogue

Questioned as to the service offered by Tornos, Mr. Maruccia declared himself satisfied: *"In bar turning, we cannot allow machines to be stopped. Service is therefore a priority as we must have breakdowns fixed rapidly. We are satisfied with the service offered by Tornos in this respect. The service is quick and the technical knowledge of their engineers is good. Tornos is an efficient company"*.

"We work in conjunction with Tornos. For example, we encountered a specific problem during cutting and we put our requirements to Tornos, who developed a piece of apparatus to our brief. It is important to be able to rely on our partners" said Mr. Steffen.

machines with additional equipment if required. As far as possible, we keep certain types of part to certain machines to avoid, for example, removing a piece of apparatus from one machine just to refit it directly on another. This planning aspect is therefore equally important.

dm: If each operator is responsible from A to Z, how are experiences shared ?

Mr. Steffen: There are two approaches; firstly, we promote dialogue within the company, and it is quite common for the bar turners to exchange ideas amongst themselves. Secondly, everything is documented and centralised. We therefore have a knowledge base which allows us to fall back on the experience of all our operators. Also, we are certified, so the traceability of all our operations is ensured. Therefore, there is nothing simpler than monitoring a part or finding a handy set-up tip for a particular part.

dm: You carry out the assembly; is that still the same skill? Is it possible for this to be easily integrated ?

Mr. Maruccia: It is still a case of manufacturing small, precise parts. As for machining operations in the strictest sense, we offer our customers a com-

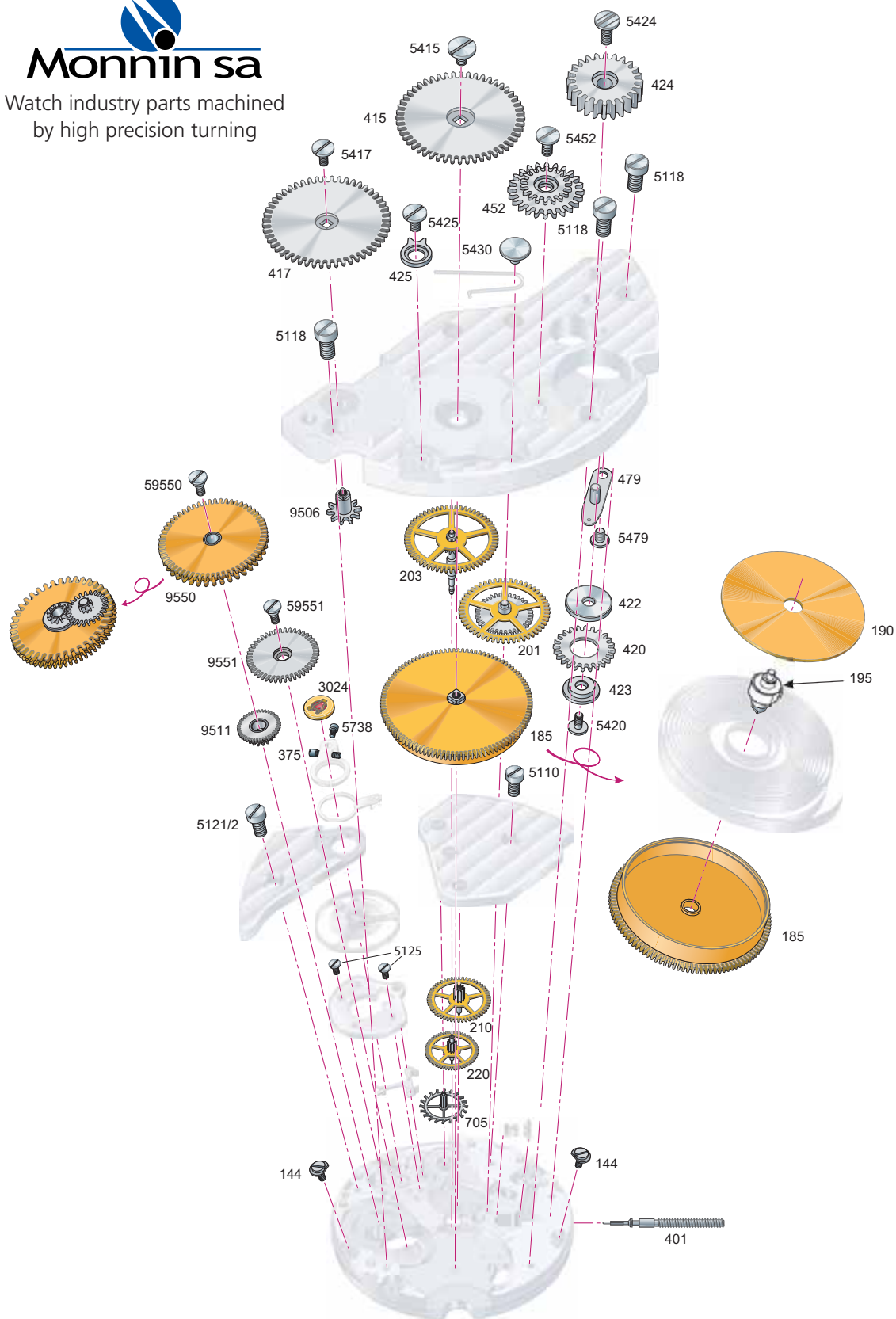
plete service. This diversification was within our field of competence, so we started to offer it. We are increasingly being asked for finished, assembled products. For our customers, it represents a significant simplification in the flow of procurements and therefore, a reduction in the lead times. We are not spreading ourselves too thin, we are simply offering an additional service which adds value to the product.

Mr. Steffen: This way of working also allows us to simplify the stages via a continuous dialogue between production and assembly. If an additional thickness is required in an area for special technical reasons, the machining department is immediately informed and our efficiency is bolstered.

dm: Returning to the prototype cell, how does it work ?

Mr. Steffen: The manager is autonomous and is positioned outside of the company's normal workflow. He has a 9-axis DECO 10 machine which can be fitted with all kinds of apparatus. He is constantly inventing new machining methods. If there is no prototype to create, he works to develop new machining solutions to bolster our productivity. Thanks to this R&D role, we have been able, for example, to offer innovative part engraving solutions to our customers.





With the kind authorization of JAQUET S.A. – 2300 La Chaux-de-Fonds



dm: I have a good understanding of what types of work take place with Deco and cam turning machines. What is your position on Micro 8 machines?

Mr. Maruccia: Micro 8 machines offer a flexibility that cam-type machines can never provide. They allow us to make straightforward to moderately complex parts, in small and medium-sized runs, to very attractive deadlines. This product is ideally positioned between the NC machine and the cam-type machine.

Mr. Steffen: This machine works using a collet, so it is designed for creating short parts. The screws used

in watchmaking, for example. Even in this traditional industry, the lead times have been reduced and the flexibility of the machine is a benefit.

dm: You said previously that the level of difficulty and quality of parts was increasing. How do you check the conformity of your production?

Mr. Steffen: Quality is key at Monnin SA. We have set up a test laboratory which exceeds even very stringent AQLs. We can offer very complex parts with a full guarantee, and to such an extent that

KEY FACTS ABOUT MONNIN SA

Year company founded:	1946
Various skills:	NC and cam bar turning, bulk polishing, flat polishing, rolling, conventional and NC cutting, tempering and heat treatments, assembly.
New building:	Occupied in 2007. The surface area increased from 1,800 m ² to 4,000 m ² .
Employees:	66 in 2006 98 in 2009
Number of machines:	Increased from 90 to 150 in 4 years
Work distribution:	Approximately 50 % for cam machines and 50 % for NC machines
Clientele:	90 % in Switzerland

Interview

some customers have classed us as a "trusted supplier", whose parts need no further checking.

Mr. Maruccia: Creating very difficult parts also opens up a market. We have personnel and production methods which offer high performance; it is up to us to put them to good use.

dm: One last question. What are your strengths?

Mr. Maruccia: We work with tolerances on a scale of a few microns and this requires a high level of skill and concentration. We specialise in the very small, the very precise and the very high quality, and we do so for both simple and complex parts. Being able to use banks of complementary machines allows us to apply this specialist knowledge, regardless of the size of the production run or the industry.



Monnin SA
Precision bar turning -
Microtechnology
Rte de Pierre-Pertuis 18
CH-2605 Sonceboz
Tel. 032 488 33 11
Fax 032 488 33 10
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monnin@monnin.ch

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Product Manager, Mechanical Engineer Dipl. Ing. FH

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Tool life [m]	Standard product Wear vb [mm]	Blaser Swisslube Wear vb [mm]
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10	0.25	0.15
15	0.30	0.20
20	0.35	0.25

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When you type "Turkey" on Internet you arrive quickly to websites that emphasize the beauty of the country and all the holiday possibilities. With its slogan *Turkey welcomes you*, the Turkish tourism office do a great job. But Turkey is also an industrial country that has nothing to be jealous of other countries. We went to Gebze/Kocaeli, at about 80 km from Istanbul International Airport to meet a Tornos customer, Cengiz Makina.



Bridge between Europe and Asia

Turkey is a fast developing country with its young population and it offers big opportunities for foreign investors who want to be more competitive. Turkey has the 17th largest economy in the world and creates a bridge between Europe and Asia. This gives more advantages to Cengiz Makina. The demographic structure of the country shows that 68 % of the population is at the age of 15 to 64 years. Cengiz Makina is well known in Turkey as a precision turned parts manufacturer. Being active for 28 years in this sector Cengiz Makina is also known in Europe.

First with Multideco machines

Cengiz Makina is the first company who has introduced Tornos Multideco machines to Turkey. Before that, many Tornos SAS and Deco machines were already installed in various sectors and regions of Turkey. Ms Calvez, Plant Manager says *"With its Multispindle machines, Tornos has always been a good solution for high volume, precision turned parts. It is a precision machine manufacturer. We are*

satisfied with the stability and efficiency of the Tornos machines we are working with. The communication and service are good for troubleshooting. Even if service and spare parts could be improved; with our eight years of experience with Tornos machines, we feel confident and happy."

Impressive growth

Cengiz Makina is a global supplier for turned parts with a focus on the automotive industry. Founded in 1981 the company manufactures parts for diesel systems, brake systems, thermo-heating systems and the white goods sector. F. Cengiz Basokutan started the company in a 90 sq/m area in Istanbul. In 1995 it moved to Gebze into a 3'000 sq/m factory. In these years, the company passed the ISO 9002, QS 9000 and ISO : TS 16949 Quality Management Systems certification. In January 2006 Cengiz moved into a brand new 12'000 sq/m facility and passed further certifications, i.e. ISO 14001 Environmental Management System and OHSAS 18001 Occupational Health and Safety Management System certifications.

Linked to its customers

The company now ranks 88th out of the best export companies in Turkey also benefits from a high end ERP system that allows customers to pass orders through EDI¹. It is common to have *just in time* delivery as customers do not want any stocks. EDI allows immediate answers. If the customer is located in Turkey, Cengiz set up 'delivery tour' where trucks link companies for the physical distribution. If the customer is situated in Europe Cengiz counts on consignment stock application where they can rent a stock area and keep their customer's safety stock with a daily followed delivery.

If we talk about deliveries to South America, India or China, air freight is the most common and preferred way.

Clear strategy

"The strategy of Cengiz Makina is to be a major players in precision turned parts for any country. To achieve this target we need strong partners for machine and tooling technologies" says Ms Calvez. Cengiz Makina manufactures parts from Ø 5 mm to Ø 45 mm (bigger diameters can be machined with chuck systems) carbon steels, alloyed steels, stainless steel, brass and aluminum materials are machined using precision turning. The company produces with all sorts of single-spindle and multispindle CNC machines. In addition, they also use transfer machines and grinding processes. Depending on the customer request, some parts are delivered with surface treatment such as heat treatment and coatings, and some other are assembled.

Tornos machines

"We introduced the first Multideco machine in 2001 to Cengiz Makina. And being satisfied with their efficiency, quality and stability we introduced the first Deco machine in 2004. Today we run six



Mr. Cengiz Basokutan, founder of the company and president of the board and Ms Cigdem Calvez, Plant Manager.

CENGIZ IN A FEW FACTS

Sales 2008:	20 mil €
Employees:	280
Production:	70% export
A few references:	Bosch Diesel Systems including China, India and Brazil, Daimler and Delphi
Quality certificates:	ISO9002, QS9000, ISO TS 16949, ISO14001, OHSAS 18001, Bosch Certificate

¹ Electronic Data Interchange: Refers to the structured transmission of data between organizations by electronic means. It is more than mere e-mail communication.



Ms Cigdem Calvez, Plant Manager and Mr Murat Isik, Maintenance Manager.

Multideco machines and four deco machines from the Swiss manufacturer Tornos. In 2000 when we were looking for a six spindle machine for a new high volume project, Tornos was the most competitive supplier. Providing the right technology for a competitive price, the machine also ensures high stability and precision with its special concrete base" - Ms Calvez. After being satisfied with Multideco machines, Cengiz Makina invested in Tornos Swiss type machines for parts up to 100mm long and over. Knowing TB Deco programming, it was easy to run other models of Tornos machines.

Highly skilled people...

"We had our trainings in Moutier with the Turkish distributor's engineers. There were no other Multideco machines installed in Turkey at that time," remembers Ms Calvez. Cengiz Makina has been a very good reference for Tornos in Turkey and many other Bosch suppliers invested in Multideco machines. The company improved its maintenance team with additional troubleshooting training which enabled them to change even the spindle bearings in house.

Tornos benefits from an experienced training team and the opportunity to start customer training on the machine assembly line at Tornos was helpful to make Cengiz's team understand details of the technology for quick solutions in case of any unexpected trouble on machines. Cengiz Makina has got a dynamic and well trained team both for operating and maintenance. After eight years of experience with Tornos machines, they have internal training for new operators, both for mechanical and programming aspects. User friendliness of TB-Deco is recognized.

"We employ new graduates and train them in house with our production techniques and quality criteria to ensure that the Cengiz Makina standards stay high," says Ms Calvez.

...for high quality production

Depending on the customer requirements Cengiz produces up to four sets of parts per month on each machine. The machines are equipped with spare tooling which enables quick set up. Pre-setting saves time. After every set up the quality laboratory confirms that the parts meet specification before starting the machine for the production batch.

"The TB-Deco programming software is very useful and powerful, nevertheless change processes can be improved as you can't apply changes on the machine itself but on the computer. We believe Tornos proposes improvements on its new models with an integrated computer," says M. Isik, Maintenance manager with Cengiz Makina.

What makes the difference today

Cengiz Makina invests in high-tech machines offering precision and machine capabilities with the right price and payment terms. Flexibility to change set up is also important for future alternative parts with minimum additional investment.

The competition is getting harder and harder and the rules of the game make it harder to be the winner. Cengiz Makina invest in the same technology as other European suppliers. According to the company, what gives them advantages is manpower.



Cengiz Makina has a young and dynamic team with flexible working time.

Most of the customers prefer to receive finished parts in terms of surface treatments (i.e. heat treatment, coating, brazing, etc.) and assembly. Cengiz Makina's know-how in this global aspect is very important. It is a complete package of machines, people and processes that creates the success.

"Every customer searches for competitive price, good quality and delivery time so there has to be something that makes you the preferred supplier. We believe in this case, Turkey is the right place to be. We offer a perfect balance between production cost and quality. So called low cost countries rarely produce precision and quality at the level requested nowadays. The geographic position of the company related to its customers is also important in terms of transport costs," concludes Ms Calvez.

If you go on holidays to Turkey and enjoy the marvelous landscapes and historical discovering, don't forget that you're actually in another high precision country.

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Fax +90 (0262) 658 12 28
info@cengizmakina.com.tr
www.cengizmakina.com.tr



BOZTAŞ: TORNOS AGENT IN TURKEY

Boztaş was founded in 1983 by Mr. Bülent Bozkurt. Mr. Bozkurt was born in Hereke/Turkey in 1953. He was educated as machine engineer in Germany. Then he followed with training in some of the world's most famous machine tool producers between 1977 and 1979, he returned to Turkey and worked for Turkey's first machine tool representative, Mr. Richard Ehrngruber. After this experience, he established his own company 26 years ago. Boztaş is a medium-sized, family-owned company that has always been keen to preserve a sense of tradition. Moreover, the company has an institutional organisation.

Boztaş's mission is to represent European machine-tool producers. Because of the fact that Boztaş has a huge experience of customers habits and machine-tools producers expectations, the company's vision has always been a bridge between customers and manufacturers. Boztaş's main Office is in Esentepe/Istanbul and the company has representations in Ankara, Bursa, Konya and İzmir.

Boztaş serve more than 750 customers in Turkey and represents seven Swiss and German machine-tool manufacturers.

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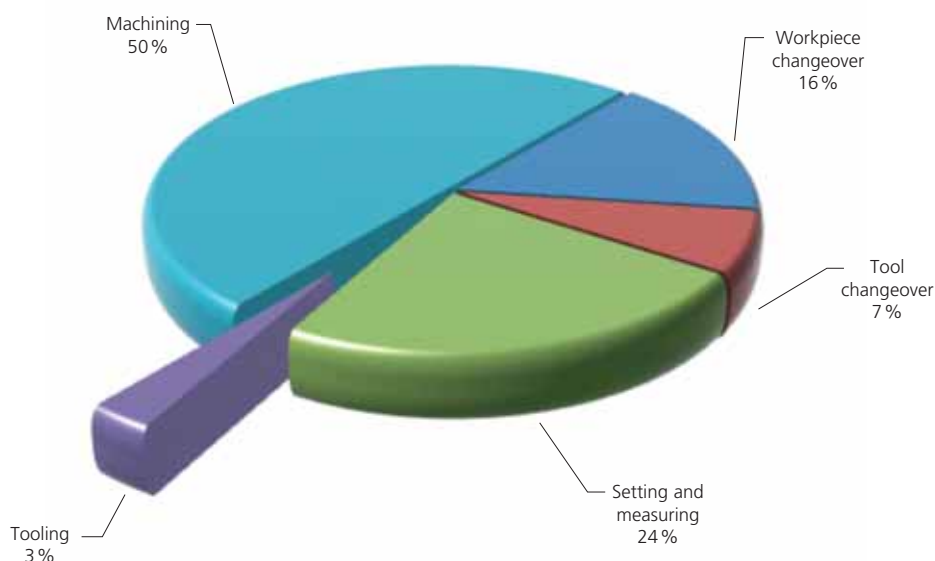
According to a widespread profitability analysis for CNC machining, the value of tooling represents up to 3 % of the total value (see chart). Yet, a simple change at this level may have consequences worth several dozen percentage points in profitability. For a better grasp of this phenomenon, we spoke to Didier Auderset, CEO of PX-Tools, located in La Chaux-de-Fonds, home of microtechnology (Switzerland).

Calculable consequences

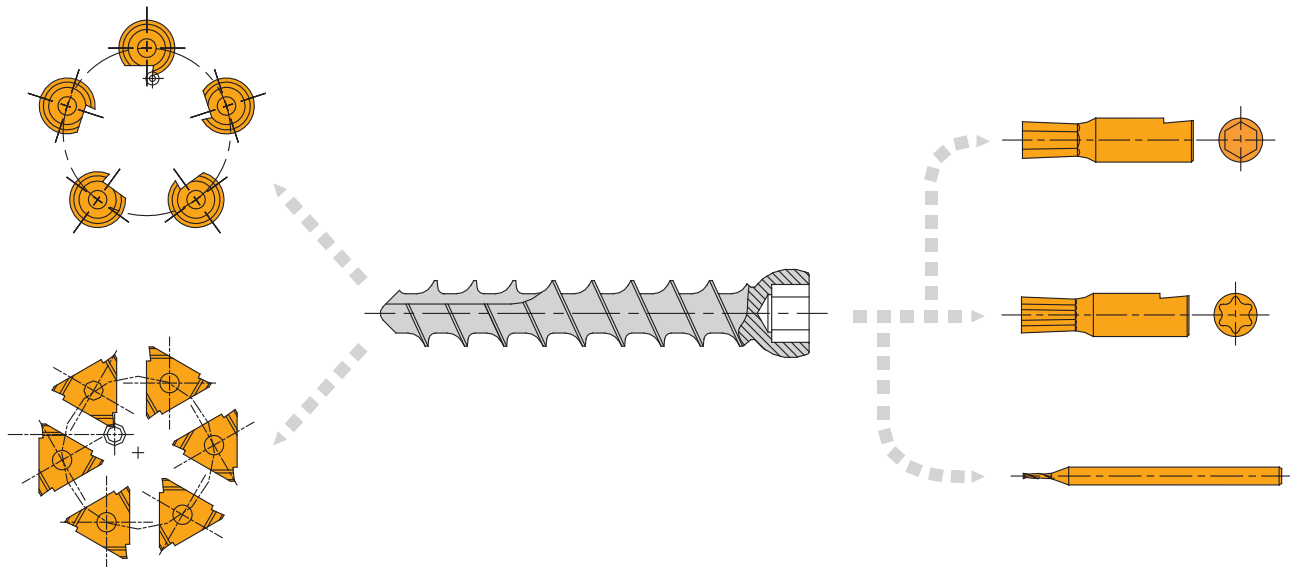
To illustrate the example which is the title of this article, Mr Auderset uses the production of this micro-reamer in carbide which not only enabled his customer to gain several percentage points in profitability because they were able to use higher cutting speeds, but in particular virtually abolished the 24 % of setting and adjustment. With their former tools, the customer always had a problem with the reaming depth and was forever making adjustments. The geometry of the new reamer proposed by PX-Tools has the advantage of offering a limit stop... now there is no longer any need to adjust the depth. Simple! The new reamer is maybe more expensive than the old one but it brings with it a very clear improvement in profitability.

The recipe for success unveiled

How was such a result possible? Basically, by listening to the customer's requirements then developing a special tool corresponding precisely to their set of problems. *"In our role as tool-makers, we have to respect the customer's way of operating. They benefit from considerable machining expertise"* says M. Auderset, and he adds, *"there are two fundamental rules that we respect at PX-Tools, first the tool has to do exactly what it's supposed to and to the satisfaction of our customer and second, our lead times have to be acceptable for the customer."*



According to the profitability analysis of CNC machining, tooling costs have a very minor influence on profitability. However, to conclude that tooling is unimportant would be a serious mistake because it acts directly and radically on the other parameters.



The production of complex parts requires machining solutions which control several parameters. PX-Tools associates its expertise with that of its customers to reach optimization.

A wide range of tools machined in-house

To meet these market requirements, PX-Tools rely on a large production programme which also benefits from the skills within the PX-group. *"Not all tool manufacturers have a metallography workshop, belonging to a group which is also specialized in the manufacture and sales of sections in precious metals and in steel; we benefit directly from the research carried out on the structure of metals."* - Didier Auderset.

Mainly specialized in the production of special tools for small diameter-machining, PX-Tools stocks a large amount of references and drafts it can adapt quickly to suit the particular requirements of its customers. For any new development, it can count on approximately fifty employees to manage the projects successfully. Another example: to produce a TORX head, a customer wanted to use a micro-reamer which wears less rapidly than the solution used at the time. Requirement increased from 200 to 500

parts. Following a period of close cooperation and development, PX-Tools now supplies reamers with a guaranteed minimum number of machinings of 500 !

Micro reamer up to 0.10 mm in diameter

It has become fairly easy to source micro reamers up to 0.5 mm in diameter, but finding smaller, to a tenth of a millimetre, is another problem. The more precise the tooling, the more important it becomes to enter into discussions. PX-Tools works closely with machine manufacturers, material suppliers and of course its customers. *"There is more than just one way of doing things. From all the different options, we provide the one which best suits the requirements"* says Mr Auderset. The technical staff at PX-Tools are specialists in different sectors of activity. For example, as far as the medical sector is concerned, the company benefits from considerable proven expertise, in particular in thread whirling.

Thread whirling cutters or inserts?

PX-Tools offers both solutions, but why one rather than the other? Inserts are easier to change and take up less space: in the same area, more can be used with a resulting larger volume of swarf; cutters offer extremely high precision and are easy to regrind many times. As for producing very small screws at maximum requirements, for example maxillofacial screws, the tool maker would recommend regrindable cutter technology. *"Some customers prefer inserts and others swear by cutters, it's up to us to provide them with the optimum solution in the technology of their choice"*, - D. Auderset.

More service

To provide a real service for the customer, in addition to listening to their demands and providing a solution which meets their needs in a timely manner, we also need to accompany them throughout the production process to avoid any tool stock-outs. PX-Tools provides a full service in this area with call-off ordering which involves the tools stocked by PX-Tools and its agents and delivered on request. The regrinding service is also available. 10 years ago, the service (in the most general sense of the word including listening and advising) only contributed to between 10 and 15 % of the success of PX-Tools. Now it represents a lot more. A perfect illustration of this change is given by Mr Auderset when he addresses his employees: *"your sole concern has to be the customer, if we provide him with the right service, the rest will fall into place."*

PX Tools SA
Passage Bonne-Fontaine 30
CH-2304 La Chaux-de-Fonds
Tel. +41 32 924 09 00
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pxtools@pxgroup.com
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*"There is more
than just one way
of doing things.
From all
the different options,
we provide
the one which
best suits
the requirements."*

PX-TOOLS IN FIGURES:

Founded in 1958

Became PX-Tools, part of the PX-group
in 1991

50 employees in production and sales

Products

- Small standard and specialized precision tools
- Circular reamers
- Shape reamers
- Drills and micro-reamers
- Thread whirling cutters and inserts
- Spindle-type tools

Types of tools

- Carbide
- Ceramic
- PCD

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AT THE FOREFRONT OF MEDICAL TECHNOLOGY

The Delphax Group of Companies is at the forefront of medical technology in Malaysia and has achieved steady growth at levels exceeding market expansion.



Delphax premises in Kuala Lumpur, Malaysia.

As one of the region's fastest-growing medical technology Groups, Delphax specializes in the research, design, manufacture and sale of a range of medical products and services with the aim of providing comprehensive solutions to enhance the quality of life of orthopedic patients, and be a valuable partners to their healthcare providers. Equipped with one of the most advanced scientific infrastructures for medical research and development and a state-of-the-art manufacturing facility, Delphax Group is committed to giving the best in medical technology, treatments and solutions for delivering high quality, innovative and cost-effective orthopedic care. Delphax Engineering began using Tornos CNC lathes in 2004. And now owns one DECO 20a, one Sigma 20 and one DECO 13.

Interview with Mr. Azman Jufri, Managing Director Delphax Sdn Bhd and Mohamed Baharum, Director Delphax Engineering Sdn Bhd by Gerald Musy, Tornos Asia.

decomagazine: When was Delphax founded?

Mr. Azman: Delphax was incorporated in 1996; we design, develop and market the Delphax brand of orthopedic devices.

dm: How many employees are working at Delphax?

Mr. Azman: We have about 60 employees. Delphax Sdn Bhd is a holding company and we have four subsidiaries:

- Delphax Engineering Sdn Bhd – manufacturing
- Delphax Innovation Sdn Bhd – research & development
- Delphax Spine Tech Sdn Bhd - marketing of spinal fixation devices & other related appliances
- Delphax Technology Sdn Bhd – marketing of other medical devices



Mr Azman (2nd from left) explains the situation.

*“innovate
or die”*

dm: When did you start working with Tornos Solutions?

Mr. Azman: We purchased our first machine in 2004.

dm: Why Tornos?

Mr. Azman: I think the critical factor why we have selected Tornos was primarily for the technology know-how & reputation in the orthopedic devices industry. Its patented “thread-whirling” technology platform is critical to our machining needs. We also evaluated their pricing and taking into account its technology platform and machining flexibility (with its 10 axis), it was competitive. Of course like any other buyer, efficient and prompt after sales service was also an important factor. And Tornos has met all of these criteria.

dm: Who are your customers?

Mr. Azman: Delphax designs, develops and markets its own brand of orthopedic devices. We serve the orthopedic surgeons directly.

dm: What are their demands in term of technology?

Mr. Azman: Surgeons as customers have very high expectations in view of the nature of these devices (implants); products have to attain the highest quality (which means tight tolerances and parameters in terms of machining capabilities). We have to be responsive to the surgeons who needs customization (which means use of the flexibility of machining capabilities offered by the 10 axes).

dm: What about the component price?

Mr. Azman: As the economic landscape changes, healthcare providers are becoming cost conscious to ensure sustainability and maintain their competitiveness. Procurement criteria will now shift to ① cost and ② “value added” products

dm: Talking about flexibility, how often do you have to change the setup of your machines?

Mr. Baharum: We initially started with one machine, the Deco 20a. It was purely used for Research and Development activities; it provided us with a good platform for training. We kept on changing component as we went along; changing the settings quite frequently, two to three days depending on the quantity of components required. However, when we went into manufacturing mode and bought our second and third machine, we had fewer changes in the setup. We are now in the midst of collating more data such as “tool life” so that we can improve our processes.

dm: How important is the cycle time in your process?

Mr. Baharum: Cycle time is an important factor as it has a direct impact on costs. During initial programming with the TBDeco, we had longer cycle times as we had to “write long programs”. However, after using the updated version (TBDeco ADV) we were able to minimize this “downtime”.

dm: What are today's critical success factors for your company?

Mr. Azman: Innovation - we have to challenge current processes and our product technology platform. Fear of innovating in today's challenging eco-

conomic landscape is a formula for death... as they say "Innovate or die". Innovation does not solely imply on research and development activities but it encompasses the entire business processes...

dm: What about manpower, how important is it to your operations?

Mr. Azman: Human resource is the most important asset in any organization. We value each individual employee no matter of their position – whether they are operators, programmers or managers; they are all vital to our operations.

dm: Is it difficult to find good staff in Malaysia right now?

Mr. Azman: We do have a good pool of talented resources in Malaysia; the current economic climate has provided us with a bigger pool of these talented resources. It is therefore not difficult to find good staff and I think there will be more good people than we can employ in the coming months.

dm: What do you think adds value with the Tornos solution?

Mr. Baharum: We are pleased with Tornos after sales service and its maintenance. We are grateful that Tornos has upgraded our machine with the latest software tools as part of their ongoing support. However, an area of improvement would perhaps be the stocking of some of the "special" spare parts. We understand that these parts are uncommon but we suffered some delays as a result.

Mr. Azman: Another value added program that we are proposing is the setting up of a Users' Meeting, where we can discuss challenging issues, share ideas and learn from mistakes. We can deliberate on a wide range of topics, from technical processes to business networking... ultimately our goal is to improve the standards

dm: Back to the subject of operator training. How do you rate the training level of your operators?

Mr. Azman: Training is a life time learning process and it would be unfair to quantify. I can proudly say that our operators are technically competent and proficient.



Mr. Baharum (2nd from left), his team and the Tornos representatives.

dm: Do you see any trend in your industry regarding the evolution of the product?

Mr. Azman: In my humble opinion, there has not been an evolution in the orthopedic technology platform; however, we are witnessing an increasing interest in least invasive technology platform (a procedure that requires small, precise tools or components). In the near future, we will also witness a wider range of biomaterial that is better suited for human application.

dm: How do you see the future for Delphax?

Mr. Azman: We will remain focus in the medical technology platform and delivering on our promise to provide cost-effective quality products to our surgeon customers. The current economic climate thus provides us with an opportunity to expand our market.

Delphax Engineering Sdn Bhd
(694560-P)
14, Jalan Pengacara U1/48
Temasya Industrial Park, Glenmarie.
40150 Shah Alam
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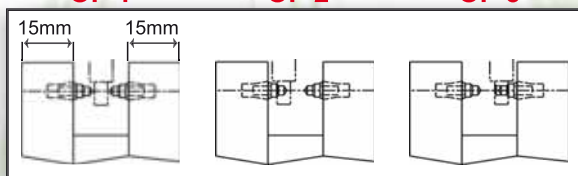
Multispindle head
small spindle axis distance : 4 mm
revolution 15'000 rpm

Synchronous multispindles Head

OP 1

OP 2

OP 3



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Axial spindle speeder,
8 mm clamping capacity.



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of machine.



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

Mini-Pendelhalter MPH

Zange	ER 8
Spannbereich	0.5-5 mm
Pendelweg	0.25 mm

Petit Mandrins Flottant MPH

Pince	ER 8
Capacité de serrage	0.5-5 mm
Oscillation	0.25 mm

Small Floating Chuck MPH

Collet	ER 8
Clamping range	0.5-5 mm
Floating range	0.25 mm



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PRE-SETTING OF TOOLS & MANAGEMENT OF CORRECTORS FOR MICRO/SIGMA MACHINES

Some new functions have been available on machines in the Micro and Sigma ranges since 2009 which can assist with the pre-setting of tools, and make it easier to change their geometries and adjust them for mechanical wear.

There is in fact a menu and some new pages providing access to management functions for the tool correctors.

This gives us access, at a single keystroke, to the "GEOME." tool geometry function, to the "MACH" machine geometry function and, very importantly, to the tool wear levels function "WEARS".

All the axes (X, Y, Z), radius (R) and working gage (T) are displayed and accessible on these geometry and tool wear pages for modification purposes.

OFFSETS/WEARS			TIGE+A N000000		
NB	X	Z	Y	R	T
W01	0.0000	0.0000	0.0000	0.0000	0.0000
W02	-0.0900	0.0000	0.0000	0.0000	0.0000
W03	0.0000	0.0000	0.0000	0.0000	0.0000
W04	0.0000	0.0000	0.0000	0.0000	0.0000
W05	0.0000	0.0000	0.0000	0.0000	0.0000
W06	0.0000	0.0000	0.0000	0.0000	0.0000
W07	0.0000	0.0000	0.0000	0.0000	0.0000
W08	0.0000	0.0000	0.0000	0.0000	0.0000
W09	0.0000	0.0000	0.0000	0.0000	0.0000
RELATIVE					
X1	39.3666				
Z1	-20.0008		C1	0.000	
Y1	30.4663				
EDIT **** *** *** 17:23:31 PATH1					
[INPUT+] [INPUT] [GEOM.] [WEARS] [MACH]					

This new function allows for tool pre-setting to be made directly on the machine. For this, an assistant guides the user through the process, the tool positioning cycle and the measurement of tool geometry. This functionality makes it easy to adjust tool geometry settings on the X and Y axes, especially for the turning tools.

This is a very simple system to use. The pre-setting function is enabled by pressing the "PRES." keyX for the pre-setting cycle on the X axis, and "PRES. Y" for the pre-setting cycle on the Y axis.

OFFSETS/GEOMETRIES			TIGE+A N000000		
NB	X	Z	Y	R	T
G01	0.0000	-18.0000	0.1000	0.0000	0.0000
G02	0.0000	-16.5000	0.0000	0.0000	0.0000
G03	0.0000	-16.5800	0.1090	0.0000	0.0000
G04	0.0000	-18.0400	0.0040	0.0000	0.0000
G05	-0.0400	-16.8400	0.1400	0.2000	0.0000
G06	0.0000	0.0000	0.0000	0.0000	0.0000
G07	0.0000	0.0000	0.0000	0.0000	0.0000
G08	0.0000	-17.0000	0.0000	0.0000	0.0000
G09	0.0000	-22.5000	0.0000	0.0000	0.0000
RELATIVE					
X1	39.3666				
Z1	-20.0008		C1	0.000	
Y1	30.4663				
EDIT **** *** *** 17:25:56 PATH1					
[PRES.X] [PRES.Y] [GEOM.] [WEARS] [MACH]					

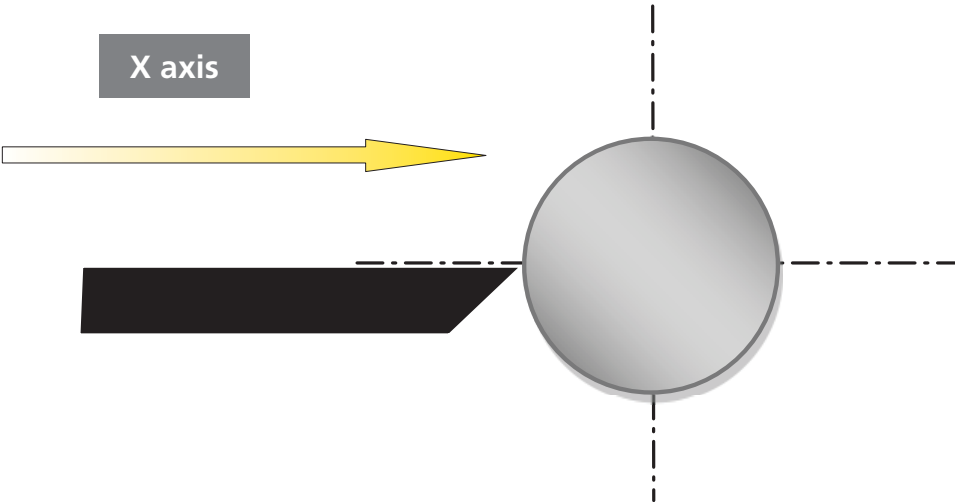
The tool pre-setting function is offered on the tool geometry page

Tricks and tips

The assistant guides you through the operations to be performed.

To pre-set tool geometry on the X axis, the machine positions the tip of the tool on the bar diameter, in accordance with the geometry already programmed into the system. Before moving the

tool, a confirmation option and an option for modifying movement parameters are offered. Once the approach movement has been finalized. It is then simply to push the tool by hand up against the bar, and to tighten it down.



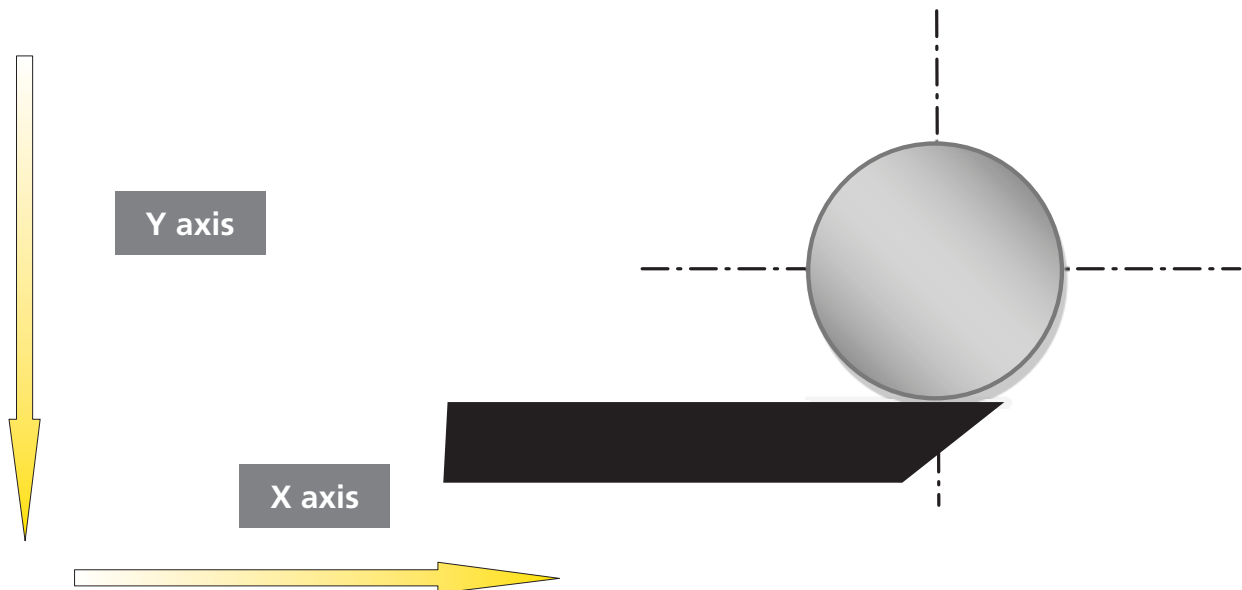
OFFSETS/GEOMETRIES			TIGE+A N00000		
NB	X	Z	Y	R	T
G01	0. 0000	-18. 0000	0. 1000	0. 00000	
G02	0. 0000	-16. 5000	0. 0000	0. 00000	
G03	0. 0000	-16. 5800	0. 1090	0. 00000	
G04	0. 0000	-18. 0400	0. 0040	0. 00003	
G05	-0. 0400	-16. 8400	0. 1400	0. 20003	
G06	0. 0000	0. 0000	0. 0000	0. 00000	
G07	0. 0000	0. 0000	0. 0000	0. 00000	
G08	0. 0000	-17. 0000	0. 0000	0. 00000	
G09	0. 0000	-22. 5000	0. 0000	0. 00000	
RELATIVE			[D=7. 0000]		
--			[X=-0. 5000]		
--			[Y=-4. 0000]		
--			[T=0101]		
MODIFY ARGUMENTS AND/OR PRESS [VALID.]					
) _					
HND	****	***	***	17:28:20	PATH1
[]	X=	Y=	T=XXXX	CANCEL	VALID.

For pre-setting the geometry of a tool on its Y axis, the machine positions the tip of the tool below the bar with a small offset (0.5 mm) on the X and Y axes. after which precision adjustment can be made manually (using a dial gauge).

Before moving the tool, a confirmation option and an option for modifying movement parameters are offered.

Once the movement settings on Y and X axes have been finalized, the tool located under the bar is ready to be positioned manually by the operator, employing a dial gauge for precision adjustment.

Once the desired position on the Y axis has been reached, simply press the "MEASUR" button on the software to pick up the selected geometry value for the tool on its Y axis.



OFFSETS/GEOMETRIES					CALLG980+A N00000
NB	X	Z	Y	R	T
G01	0.0000	18.0000	0.1000	0.0000	0.0000
G02	0.0000	-16.5000	0.0000	0.0000	0.0000
G03	0.0000	-16.5800	0.1090	0.0000	0.0000
G04	0.0000	-18.0400	0.0040	0.0000	0.0000
G05	-0.0400	-16.8400	0.1400	0.2000	0.0000
G06	0.0000	0.0000	0.0000	0.0000	0.0000
G07	0.0000	0.0000	0.0000	0.0000	0.0000
G08	0.0000	-17.0000	0.0000	0.0000	0.0000
G09	0.0000	-22.5000	0.0000	0.0000	0.0000
RELATIVE					[D=6.0000]
X1	-0.5000		[X=-0.5000]		
Z1	-1.4208		[Y=-3.5000]		
Y1	-3.5000		[T=0101]		
APPROACH TOOL (Y) AND PRESS [MEASUR]					
) _					
HND HOLD *** ** 17:04:40 PATH1					
[MEASUR] [CANCEL]					

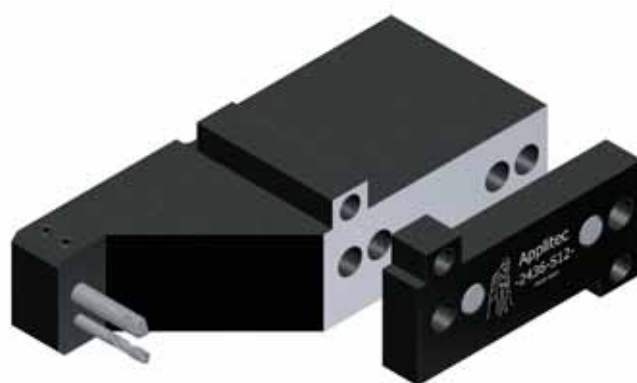
Availability

This will be offered as a basic function on all new machines. Of course, this functionality is also available for use on installed products, simply requiring a CNC software upgrade. For a price quote, please contact a specialist retail outlet or a Tornos dealer.

EXTRAORDINARILY USEFUL TOOL HOLDERS

decomagazine presents you more existing solutions to common problems. Depending on the machine's equipment, tool positions may be lacking for performing end operations. This can be the case for both the spindle and the counter-spindle.

In its product range, the Swiss manufacturer Applitec proposes tool holders that provide an answer to this problem. François Champion, Sales Manager, tells us: *"These tool holders are very simple and meet a very specific demand. But they go even further, providing other benefits"*. Let's see this in detail.



MONOBLOC TOOL HOLDER FOR DECO 7/10

Use

Used mainly on simple machines (e.g. 5 axes without a combined unit or counter-spindle), this tool can be used for end machining. Another possible case: depending on the parts to be produced on a well equipped lathe, tool positions will be lacking for this type of operation; these tool holders increase the potential for this type of machining. Moreover, they are available in a double version. It is therefore possible to mount two tools on a single position, for example a centring device and a small drill.

Technical specifications

Fitting :	directly on the front and rear platens
Cross section :	35 mm/approx. 22 mm
Tool clearance :	10 mm
Tool diameter :	3, 4, 5 and 6 mm
Type of tool holder :	Applitec Nos. 2435 and 2435 T (double)

MONOBLOC TOOL HOLDER FOR DECO 13

Use

The principle of operation is the same as for the Deco 7/10, but the tool holders allow more substantial machining operations. Another difference is that the tool holder is available in two work heights for drilling or reaming. If necessary, the work height can be further increased by an additional base plate.

Technical specifications

Fitting :	directly on the front and rear platens
Cross section :	52 mm/approx. 30 mm with a tool clearance of 12 mm
Tool clearances :	12 mm/18 mm
Additional base plate :	12 mm (can be combined with both tool holders)
Tool clearances :	24 mm/30 mm
Tool diameter :	3, 4, 5 and 6 (8 for the single tool holder)
Type of tool holder :	Applitec Nos. 2436 and 2436 T (double)
Type of base plate :	Applitec No. 2436-S12

Common benefits of monobloc tool holders

The far larger cross section than standard tool holders of cross section 8/8 provides great rigidity, hence a big improvement in machining quality. Moreover, by comparison with the hook system which remains an alternative for guide-bush end machining, the monobloc system assures you of a very user-friendly solution.

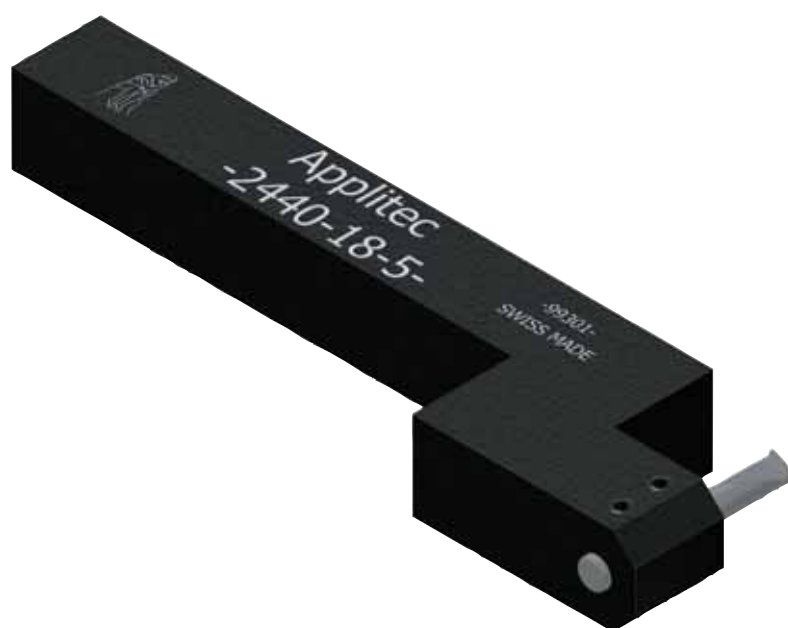
TOOL HOLDER FOR DECO 20

Use

Operation is the same as above, although this tool holder is not monobloc. Its 16/16 cross section is sufficiently rigid to allow conventional mounting of the device. This system also allows pre-setting.

Technical specifications

Fitting:	on conventional tool supports on platens 1 and 2
Cross section:	16/16
Tool clearance:	8 mm, 12 mm, 18 mm, 26 mm
Tool diameter:	4, 5, 6 and 8 mm for all clearances 3 mm only for the 8 mm clearance
Type of tool holder:	Applitec No. 2440



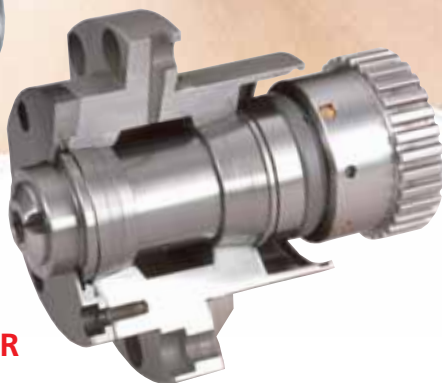
Applitec Moutier S.A.
Ch. Nicolas-Junker 2
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PROGRAMMING STANDARDIZATION

Several programming systems are available for manufacturing. For a company with several types of machine from different manufacturers, a 'universal' solution sounds perfect. But does such a solution work?

We asked François Steulet from Productec SA, distributor of the GibbsCAM software to tell us what one of his customers think. He recently interviewed Mr. Claude Chèvre, head of Decovi SA. in Vicques (Switzerland).



Typical part machined at Decovi. Without the GibbsCAM software, it would be very hard or even impossible, to program this part.

François Steulet: Can you give us a little information about your company?

Claude Chèvre: Décovi is a bar turning company founded in 1947. It employs 40 people including 5 apprentices. Its main market is Switzerland, which accounts for 90 % of production. The majority of exports go to Europe with a little market share in Asia and the USA.

It's worth mentioning we went down the path of modernization and haven't worked with any cam-type machines since 1997. Our first CNC machine (Tornos, ENC range) arrived in 1988. As early as 1992, we purchased ENC Tornos machines that we were entirely satisfied with but we replaced gradually with new Tornos DECO models to keep our machine park at the cutting edge.

FS: How would you describe your business activity?

CC: We manufacture complex components with high added value. All our machines are numerically controlled and utilize single spindle machining. We make many small series runs of 100 to 2000 parts.

The workpieces are ever-more complex and there are more and more programs and set-ups required on machines.

FS: How long have you been working with the GibbsCAM software?

CC: We've been working with GibbsCAM for bar turning for 2 years. We chose this software because it was already well-established at Tornos with the functions required for working with TB-DECO. Its real benefit lies in the fact that it enables you to calculate tool-courses from a straightforward 2D profile. We can draw directly in GibbsCAM to a simultaneous 5-axis course with tapered tools. It's this kind of operation-ability with blocking of the 4th axis that allows us to achieve minor exploits in programming on Tornos TB-DECO.

The fact that Productec is physically close to our company and its reputation for quality support were also decisive factors in our selection. During the evaluation, the staff at Productec proved that they understand the issues facing the bar turner.



GibbsCAM work station at Decovi. Equipped with two stations "to ensure flexibility", the programming department can react rapidly and efficiently.

FS: Who is in charge of programming on GibbsCAM at Decovi? Is it IT people or machine technical staff?

CC: Here, GibbsCAM users are the ones who carry out the programming and the setting up of the machine to production. To ensure higher quality and to make our staff work with more motivation, we believe in the benefits to be had from personnel seeing a job through from start to finish. Because we often receive customer requests to change the workpieces during production, program changes need to be done swiftly. For this reason and in order

to achieve best reactivity at all times, we would like our employees to be trained in GibbsCAM and for everyone to be able to modify a program without having to explain everything to another person. We also have 2 GibbsCAM workstations from which the programs can be sent to the machines via our DNC.

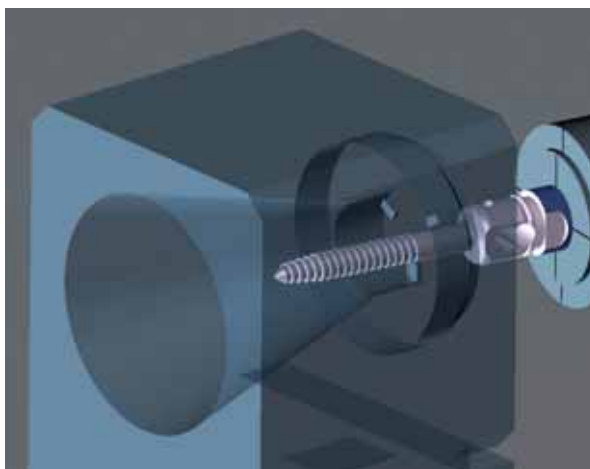
FS: What are the benefits of programming with GibbsCAM for Décovi?

CC: For us, it's of course the standardization of the programming: we've got 2 machine parks, one with fixed headstock machines and the other with sliding headstock machines, like our Tornos DECO. Without CAM, in the event of over-charging the machines, everything needs to be reprogrammed to move production from one machine to another. There is a genuine and considerable benefit to be had from the interchange-ability of production on the different machines. GibbsCAM provides us with more flexible use of our machine parks.

FS: How was GibbsCAM integrated within your company?

CC: We had an agreement with Productec for a training programme for all our staff.

The first phase involved training all our staff in the basics needed to work with GibbsCAM then to let them progress at their own speed. The second phase involved building on their skills, training them in more advanced operations, encouraging them to employ a systematic utilization of GibbsCAM. In certain departments, adopting GibbsCAM happened very quickly, from the first month. In others, however, we soon realized that staff were choosing the easy option and



Simulation of a thread whirling operation for the production of a bone screw.

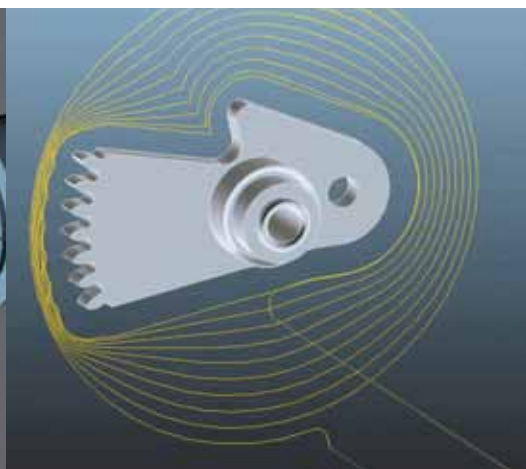


Illustration of a tool path using the UGV technology for roughing and finishing of milling on a screw-machined part. (ProXYZ HSMP module for GibbsCAM). The benefits of this process are time savings and especially much less milling-tool wear, hence major savings on tooling costs.

continuing to programme the machine manually. When we saw the results achieved in the departments that swiftly implemented GibbsCAM, we continued to organize further training in GibbsCAM skills for all staff.

FS: Are your staff specialized in a single type of machine?

CC: Yes they are, actually. We have 10 tool setters, 5 on DECO's and the rest on our other machines. Don't forget that each turning machine uses a different CNC programming method. Our bar turners are specialists on their model of machine but are now able to use the GibbsCAM program from a different type of machine and to rapidly adapt it to their machine. Programming with GibbsCAM is becoming the standard for all machines. This side of things provides us with additional very significant flexibility and reactivity for our ability to deliver quickly to our customers.

FS: Do you notice that you make savings in time and productivity? What about more complex cycles?

CC: On certain types of highly-complex workpieces, before working with GibbsCAM, programming took 2 days. Now, with GibbsCAM it barely takes us 2 hours.

We also work more efficiently and with greater precision when making our proposals using GibbsCAM. When we receive a drawing, we can programme in GibbsCAM to calculate our costs and machining times. This allows us to achieve a simulation of the production and a validation of the machine-ability of the workpieces in GibbsCAM.

FS: Do your customers send you workpieces with their volume or are you required to define the geometry yourselves?

CC: We usually receive workpieces with their volume. Otherwise we ask the customer to supply them, which they do for the most part.

FS: In conclusion, how would you rate your experience with GibbsCAM?

CC: Using the GibbsCAM software is a very profitable investment. Its integration does however require strict internal guidance and a competent supplier. It's vital to build in a pre-defined training programme to the project and well defined introduction phases in the departments. You must not forget the scheduling of machine time required to test and validate the operation of the post-processors. Every

member of staff has to be motivated and ready to change their way of doing things in order to get the most out of this software and its productivity gains on the machines. But we have been able to rely on the Productec team for all that, who are always available and reactive. This represents genuine investment security. In conclusion, with GibbsCAM, we programme more quickly, with greater flexibility throughout our machine park and above all we manufacture components we couldn't do without GibbsCAM.



Partial view of the DECO workshop at Decovi. All the machines are connected to the centrally controlled oil vapour removal system.



Décovi SA
La Romaine 2
CH-2824 Vicques
Claude Chèvre
Tél. 032 436 10 60
info@decovi.ch
www.decovi.ch



Productec SA
Les Grands-Champs 5
CH-2842 Rossemaison
François Steulet
Tél. 032 421 44 33
proaxyz@productec.ch
www.productec.ch

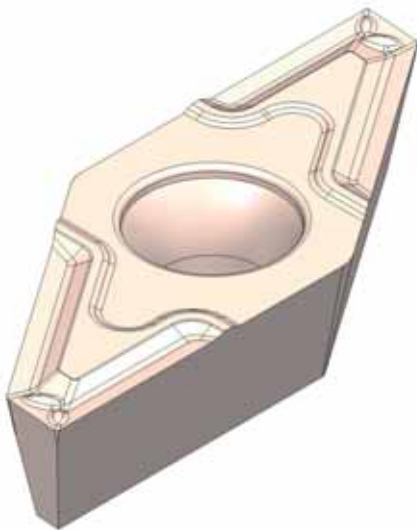
THE VPGT INSERT

The VPGT insert issued by the ISO range and the different tool holders offered by Bimu deliver superlative machining characteristics as well as a diverse range of possible applications, one example being the ability to machine as a back (tailstock) operation. This entire package comes with a very attractive price tag.

1. Description of the insert

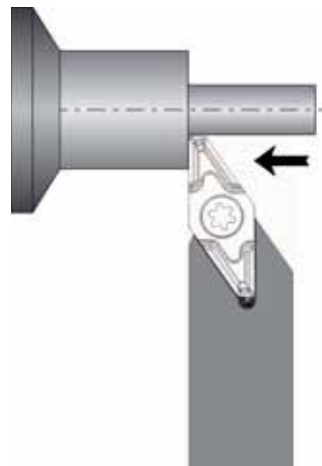
The specially designed cutting angles (11° stock removal) and the special swarf breaking feature on both working edges make the VPGT Bimu insert an ideal tool for bar-turning work. As a standard, the user can obtain various different versions of this VPGT insert:

- without radius (for finishing operations)
- with a radius of 0.08 mm (to extend tool life)
- with a radius of 0.2 mm (eminently suited to roughing operations)

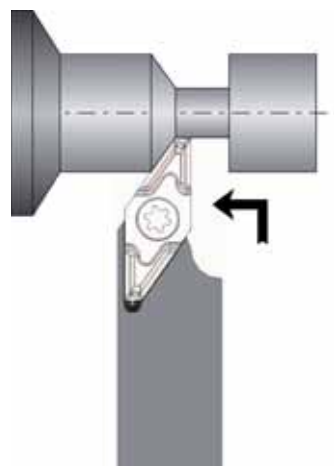


2. A multi-purpose insert

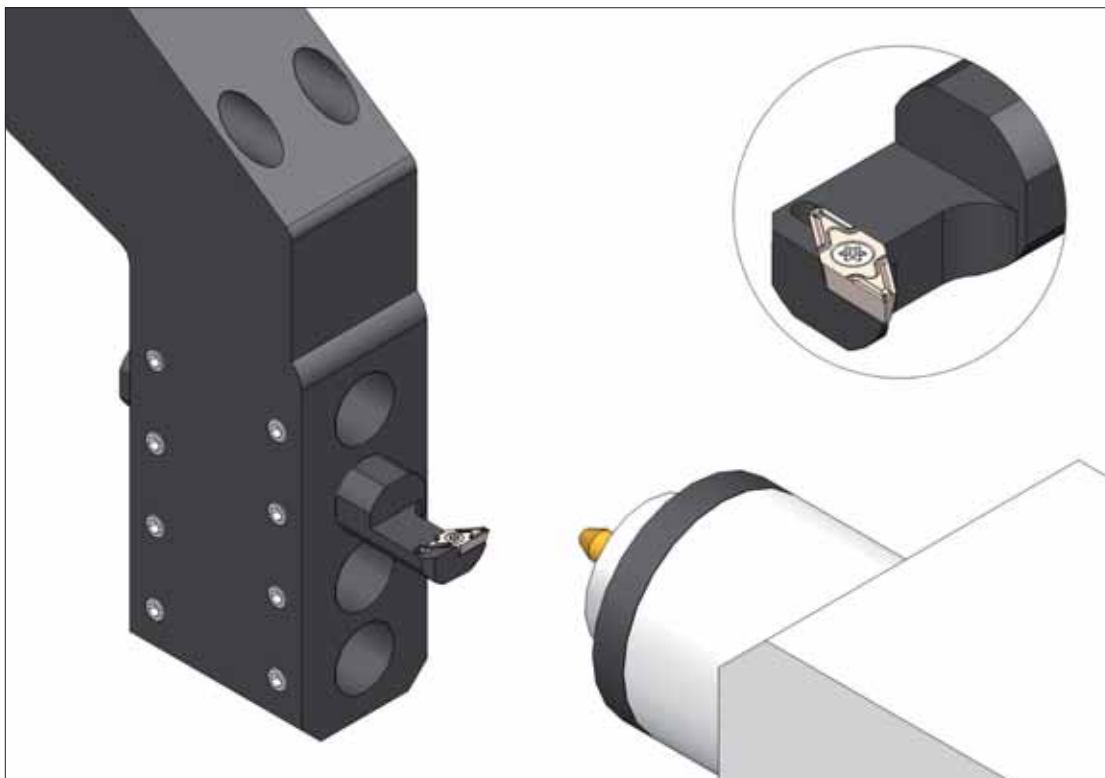
Part of the ISO range, the VPGT insert is ideally suited to all sliding head machines and can be mounted on tool holders with sections ranging from 7x7 to 20x20 mm. Since the insert is able to remove stock in such a versatile manner, it can be used in 3 directions, meaning that 2 distinct applications are then possible:



1) Front turning.



2) A plunging turn during a back-turning operation.



3. Bimu specialist application: Use of VPMT in secondary (i.e. ,back') operation

In most cases, sliding headstock machines do not offer much by way of secondary operation turning. To redress this shortcoming, alongside its traditional range of square-section tool holders, Bimu offers a wide range of ,bars' which enable the VPMT insert to be used for secondary operation turning. These ,bars' come in diameters of 16 mm, 22 mm, 3/4" and 5/8", and constitute a feasible solution for this kind of machining work.

4. Surface treatment is a highly important process

Although the use of uncoated VPMT inserts is advisable when machining titanium components such as medical screws or other implants, when working with harder materials, it does become necessary to use inserts with a surface treatment.

For this reason, Bimu is offering its new 'BI40U' coating. This single-layer AlTiN coating has unusually high surface hardness, very low thermal transfer levels and great resistance to oxidation. It therefore constitutes a very valuable alloy for use in turning operations.

5. Quality at a price

Quality always comes at a price, and this VPMT product is no exception to that rule. However, in this case, the price really benefits the user! In other words, Bimu has invested the necessary effort to come up with a high-quality insert which can rival that of any competitor, but does so at a price that no other provider can compete with.

If you are tempted to run a trial with the VPMT insert, do not hesitate to contact us. You will also find a catalogue which provides more information on our website at www.bimu.ch.

Technical Managers: Y. Meyer

Réalisation graphics: A. Jeandupeux



Rue du Quai 10
CH-2710 Tavannes
t. +41 32 482 60 50
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A STRONGER COMMUNITY

Political and economical sectors invest in Osterzgebirge district in exemplary vocational training.

The Osterzgebirge administrative district is certainly not one of Germany's largest industrial centres, rather it is an area of impressive natural beauty. However, this region does have a tradition of being an industrial location with a remarkably diverse range of business activity. Major sectors include machine and plant engineering, metal processing, vehicle sub-contracting, chemical industry/plastics processing, timber and paper industry, tourism and services. The Glashütte watch manufacturer is world-famous and the area is also home to many efficient and inno-

vative bar turners. This is also the reason why this region has developed into a genuine Tornos stronghold, because Tornos automatic turning machines are unmatched in terms of precision engineering productivity and efficiency. Tornos is therefore supporting an initiative of the head of the district authority, the Pirna vocational training centre and the IMPRO e.V. association and has offered the centre attractive conditions for acquiring a cutting edge DECO 10 e CNC automatic turning machine.



Dr. Nef praises the investment by the Landkreis (federal district) of Sächsische Schweiz (Swiss Saxony) as a milestone in vocational training. From left to right: Hubert Sperlich – CEO of Telegärtner Gerätebau GmbH Höckendorf, Chairman of the IMPRO trade association, Egon Herbrig – CEO of Herbrig & Co. GmbH Bärenstein, Jan Lippert – Production Director at Herbrig & Co. GmbH Bärenstein, Dr. Willi Nef, Vice President and Head of Sales and Marketing Tornos Moutier Frank Mortag, Sales Director for Tornos Germany/East.

The present



Egon Herbrig (on the right) has been supporting the vocational education centre (BSZ) in Pirna for many years, here in conversation with the Metalworking Department Head of BSZ, Mr. Renner (second from left) and Dr. Willi Nef.



The District Administrator of Swiss Saxony (Sächsische Schweiz – Osterzgebirge) Michael Geisler thanks Dr. Willi Nef – Vice President and Head of Sales and Marketing Tornos for his generous support.



Tornos Team Dr. Willi Nef and Frank Mortag.

This is proof of considerable political foresight, in a time when public authorities are obliged to make savings wherever possible, to invest in the training of young people and the acquisition of an ultra-modern CNC machine for a vocational training centre. But District Administrator Michael Geisler recognized at an early stage that it is extremely important for a region to be able to tap into a large reserve of well-trained and committed people. They are the basis of sound economical development and a functional community. For this reason, in 1995 the district administration decided to invest in vocational training and lay the foundation for Germany's most state-of-the-art vocational training centre. Over 1000 young people are currently being trained in a wide range of technical and industrial trades. Manfred Weiß, a head teacher for over five years in Pirna, has been promoting the development of the centre since then. «Job descriptions and requirements are undergoing constant change and it's only by providing young people with the right teaching aids that we can give them the tools they need for their future careers». Manfred Weiß supports this credo and, in association with politicians and regional industry, he is constantly on the look out for new teaching material and training equipment. So the centre is equipped with the latest computer and presentations technology, which can be used wirelessly throughout the entire complex. In order to achieve this goal, Manfred Weiß searched for a lasting partnership with industry, so that the centre can offer its students the best, real world conditions. He found a solid partner in the metal working sector in IMPRO e.V., who identified completely with his aims and was fully committed.

Growth and employment through cooperation

The IMPRO e.V. metal working and precision engineering association, was created in 2000 by four firms each with the aim of pooling common interests and activities. Egon Herbrig, owner and director of Herbrig & Co. Präzisionsmechanik GmbH and one of the region's largest Tornos customers was one of the founders. The association now incorporates 18 firms from the precision engineering and fine mechanics



Vocational education students explain how the new DECO 10e training machine operates to District Administrator Michael Geisler.

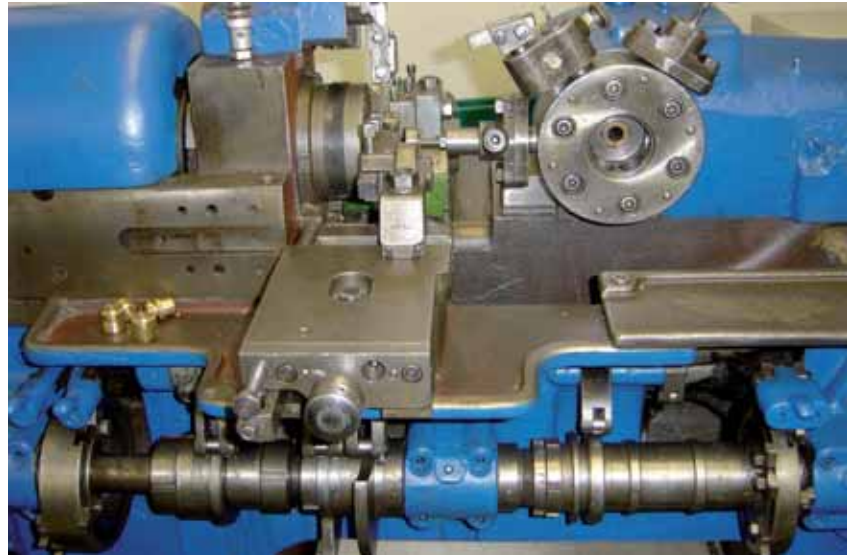
sectors in and around the richly traditional industrial location of Glashütte/Osterzgebirge and the Dresden region. For its members, the IMPRO e.V. association is now the key regional body representing their interests in its role as contact, communication and action platform for the mainly owner-run small and medium-sized businesses. Together, the companies want to attract new customers to the region, tap into innovation potential for products and technologies, cooperate in the production and development of product ranges, support local administration and promote the development of skilled and management personnel from the region. The IMPRO e.V. has been running the 'Precision engineering specialists network' since 2005 and is actively committed in its role as partner for schools, vocational training facilities and administration. The IMPRO firms currently employs around 1000 employees and over 100 apprentices – and the numbers are going up. Several years ago, members of the IMPRO association campaigned on behalf of school director Manfred Weiß for the purchasing of TB-DECO programmer workplaces because, according to the persons responsible, this would bring with it considerable benefit.

Always at the cutting edge

Through the commitment of Manfred Weiß and his technical teaching colleagues as well as the modern

technical equipment, the Pirna vocational training centre has developed into a regional specialized training location and attracts young people from all over the region. They are all able to make the most of optimum conditions for well-grounded vocational training. However, time does not stand still and demands on the metal working sector are constantly increasing. New materials, innovative tools, ever more complex shapes, the increasing trend towards miniaturization are all realities the approximately 170 trainee cutting machine operators are faced with in Pirna. There is also a state-led reorientation of trades requiring training, calling for even higher levels of practical experience. For Manfred Weiß, the machines available would have jeopardized the implementation of the syllabus. Together with the cooperations partners, they looked into which machine would best assure the objectives and secure the future of the vocational training centre. Options studied included low cost standard machines, brands from the Far East and used machines. However, they were all very quickly rejected because none of the participants could see a sustainable solution. Practitioners and training administrators were unanimous: a Tornos DECO 10e CNC automatic turning machine was the best and most judicious solution in the long term. The only remaining obstacle was the amount of investment. This is why district administrator Michael Geisler and Frank Mortag, the Tornos

The present



Training machine – short automatic turning machine with turret.

regional sales director, were brought on board. This cooperation is a perfect example of how something seemingly impossible is perfectly feasible when all participants want to and take action in a courageous result-oriented way. Industry and the IMPRO association participated with a financial contribution, Tornos, in its role as partner of the association, guaranteed a generous

discount and District Administrator Michael Geissler approved the investment, which was not planned in the budget – all for the benefit of the region's young people.

Celebratory handover

After ordering the machine in the summer of last year, it was ready to be officially handed over to the new owners on Thursday 15th January 2009 during a ceremony attended by the District Administrator, the staff, the executive committee members of the IMPRO association, various representatives from the press and trainees of Dr. Willy Nef, Vice-

President of TORNOS. As Dr. Nef mentioned in his speech, it is exceptional that a region invests in such a high-tech machine for a vocational training centre. He praised the foresight of District Administrator Michael Geissler, recognized the commitment of

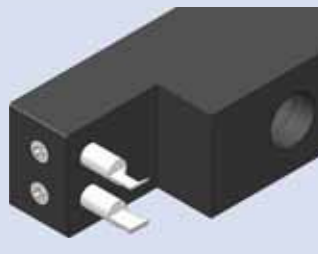
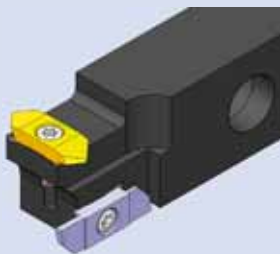
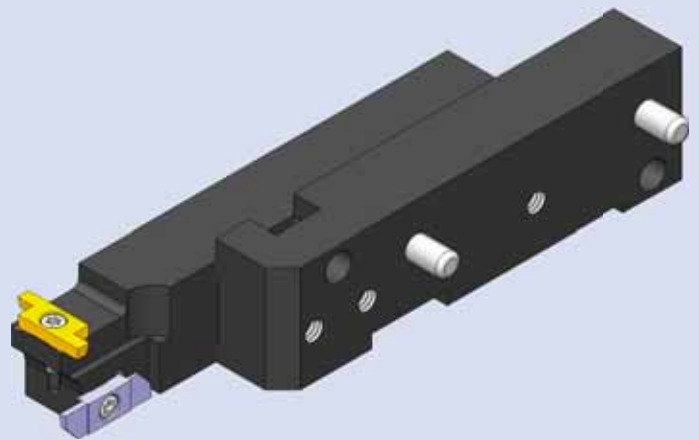
Manfred Weiß and the members of the IMPRO association. He called on the trainees to seize the opportunity and benefit from the machine's technological edge to prepare themselves for their future careers. Both Michael Geissler and Dr. Nef said they were confident that the bar turning industry has a bright future ahead of it with potential for growth and endorsed their proposal to reinforce the partnership between region and company still further.

Tornos Technologies Deutschland GmbH
Karlsruher Strasse 38
75179 Pforzheim
Tel. (07231) 91 07 0
Fax (07231) 91 07 50
contact@tornos.de
www.tornos.de

IMPRO e.V.
Untere Hauptstraße 45
01768 Glashütte-Dittersdorf
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Complicated profiled inserts

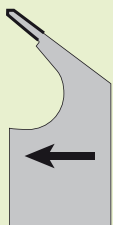
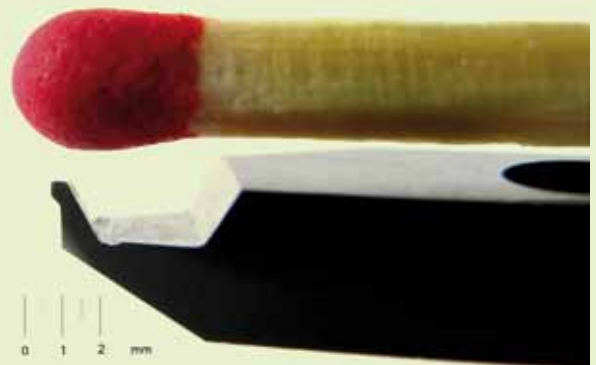
- ⇒ Offer available from 5 inserts !

Komplexe Profilwendeplatten

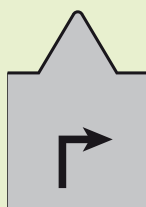
- ⇒ Angebot ab 5 Wendeplatten !

Plaquettes à profils complexes

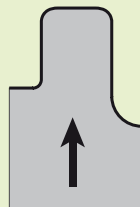
- ⇒ Offre à partir de 5 plaquettes !



Trepan tools
Trepan Werkzeuge
Outils trepan



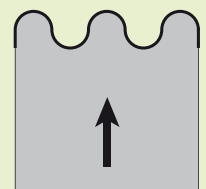
Threading inserts
Gewindeplatten
Plaquettes de filetage



Grooving inserts
Einstechplatten
Plaquettes à gorge



Special cutting inserts
Spezielle Abstechplatten
Tronçonneurs spéciaux



Form turning inserts
Profilherstellung Wendeplatten
Plaquettes de profilage

APPLITEC SWISS TOOLING



Applitec Moutier SA
ch. Nicolas-Junker 2
CH-2740 Moutier - Switzerland
Tel.+41 32 494 60 20 Fax +41 32 493 42 60
info@applitec-tools.com www.applitec-tools.com