



# decomagazine

THINK PARTS THINK TORNOS

55 04/10 ENGLISH



THINK 2011 THINK HAPPY NEW YEAR



**High-tech robotic**  
machining



**Help in**  
finishing parts...



**New thread**  
whirling tool for  
the medical sector



**Meeting the needs**  
of high precision  
turning industry

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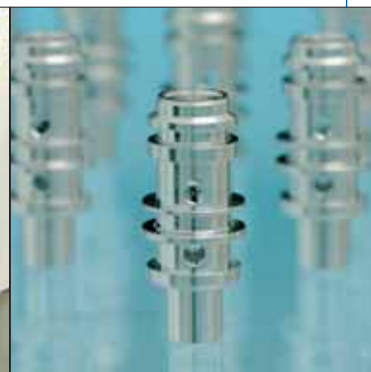
44



Powerful lathe



India

"High precision  
among the vines"Improving efficiency  
through innovative  
lubrication practices

## IMPRESSUM

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## OPTIMISTIC... AND PREPARED!

**Everybody which visited the recent AMB exhibition held in Stuttgart, Germany could have the impression that the crisis is over. From the very first day till the end of the show crowded corridors and fully occupied booth's could be observed. So let's have a closer look.**

On a very open and bright booth Tornos exhibited 6 machines of which none (except the Delta) existed 2 years ago. Indeed a performance which did not pass unremarked by existing and potential customers. Several hundred contacts had been registered on our booth and many customers came with concrete projects. Capacity utilisation has reached at many companies its maximum and investments are imminent. But also many brand new projects had been discussed.

Several other important shows have been held in different corners of the world namely the IMTS show in Chicago, USA held middle of September, the BIMU in Milano, Italy held in October and the Tatef in Istanbul, Turkey held also in October have attracted large crowds of interested visitors.

Some of them commented that the order intake increase for them is so drastic that a continuation is difficult to imagine. Some pointed out that the general economy is still fragile and unemployment is high which is limiting the general growth. Sure, some uncertainty remains but after the last difficult 18 month we are all extremely happy to notice a clear turn around and we have enough indication to look again optimistic into the future.

But now when the market is recovering fast are the machine tool suppliers ready?

During the last 24 month, despite the difficult economic situation Tornos had invested heavily into new developments and the fruits could be seen at these shows. But Tornos did not only develop new products but did focus to complete further its product

portfolio. From machines for simple application like the Delta, to machines for medium complex applications like the Gamma models. For heavy operations the Sigma 32 was added. The legendary Deco line

was extended by the brand new EvoDeco 16. But also MultiSpindle models were added like the 8 spindle MultiSigma and MultiAlpha with now up to 28 mm bar diameter. And probably most remarkable for many readers is the fact that Tornos is producing also machining centers thanks to the integration of the Almac company end of 2008.

Such a complete portfolio is unique in the machine tool area. But even better so is the availability to deliver. Top management took some risk when deciding to keep the whole

work force during the crisis and another risk was taken when beginning of 2010 production has started before orders came in. Today, Tornos has the advantage to offer quick delivery for almost all models which is another great benefit to our customers.

Tornos is not only talking about a recovery - we also live and act accordingly!

We wish you great pleasure in reading about all the Tornos news.



*Dr Willi Nef  
Vice-president  
Head of Sales & Marketing*



Cube



Extenso



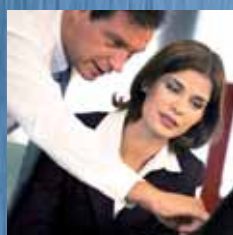
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## HIGH-TECH ROBOTIC MACHINING

Thanks to a well thought-out company strategy, subtle management and highly effective R&D department, Almac SA has never been more inventive than in times of crisis. A subsidiary of the Tornos group, the company from Neuchâtel has developed a modular machining centre that adapts and changes according to the different production needs. A kind of mechanical 'Lego set', this machine can be equipped with a precision handling robot, making the automated mill ideal for machining small complex and varied parts made from both tough and noble materials. It's a must...



Roland Gutknecht, CEO of Almac: "We can offer added value by prudently designing and technically adapting the machine to meet the requirements for producing a complex part".

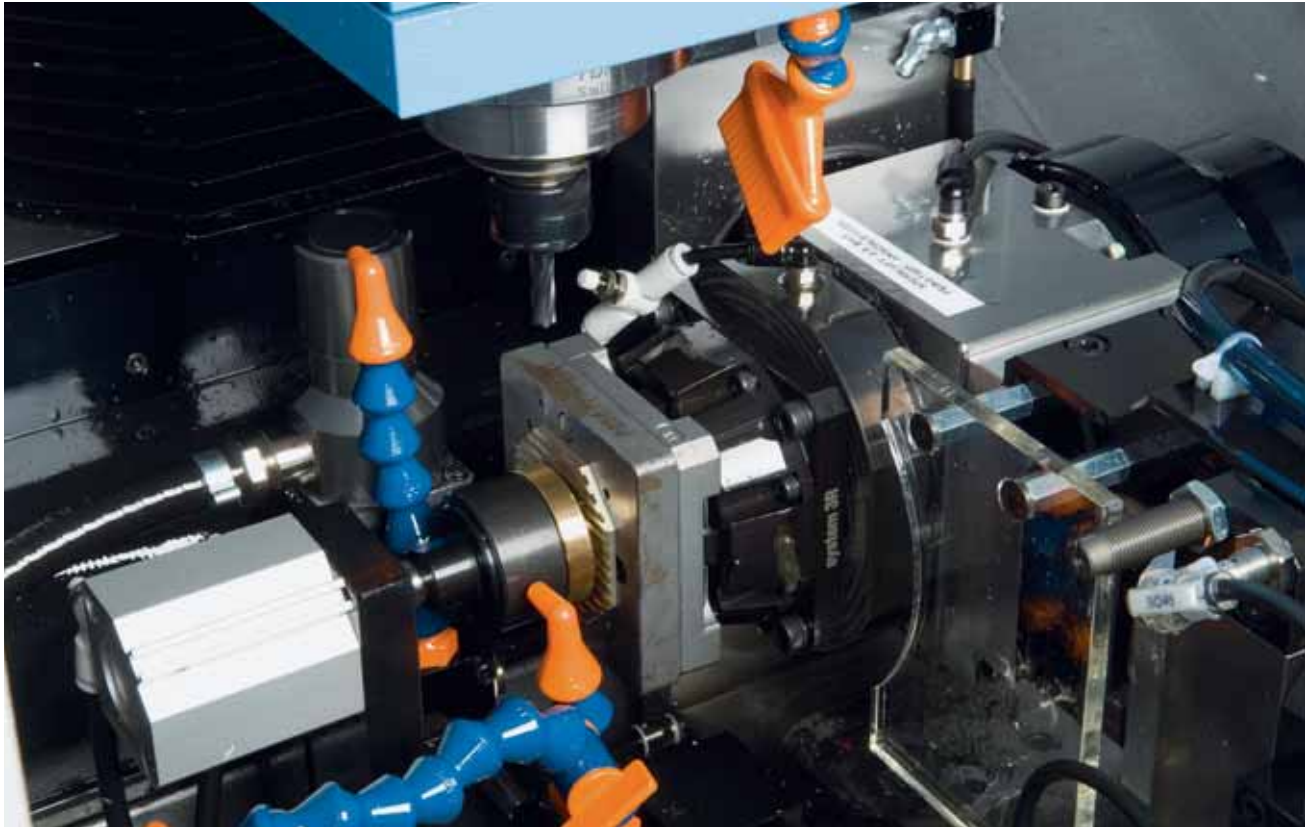
Bought out by the Tornos group in March 2008, Almac SA has reinforced its activities with traditional expertise: the design and manufacture of high precision "handmade" machining solutions. If this industrial strategy is far from being revolutionary, it nevertheless possesses a nature that is unique in its type. Created in 1987, the company from La Chaux-de-Fonds forged a solid reputation for itself by fully developing and assembling its machines. *"The base, the mechanical components, the drive chain and the controls; everything, absolutely everything is outsourced and this gives us our strength,"* notes Roland Gutknecht, director of the company for over thirteen years. Almac therefore uses proximity to its advantage

by offering work to over fifty partners in the Jura Arc region, ensuring better planning and a stronger position to meet the delivery deadlines of its products.

### 24/7 production

Added to this, is a business policy centred on flexibility and precise execution. Comprising mainly of highly qualified engineers and fitters, the company can act instantly to meet the customer's needs. These needs are mainly from watch component manufacturers (plates, bridges, bezels, casings, etc.) or for machining attachments and hinges (spectacles) or dental implants, rather than from manufacturers of

Photo: Roland Keller



4-axis divider with vertical/horizontal scale: another feature of Almac automation.

large parts. Customers require durable machines that offer high levels of precision. *"Our centres are more milling-turning machines designed to produce large quantities of parts 24/7. They must ensure extreme precision with highly varied materials such as alloys steels, titanium, zirconium or ceramics,"* continues Mr Gutknecht. There are numerous manufacturers in the market for this type of part manufacturing, offering machines that perform these operations adequately, but Almac can offer added value by prudently designing and technically adapting the machine to meet the customer's requirements for producing the complex part. This often ranges from adapting the tool magazine device, spindles or designing custom tightening systems or palletising or robotising devices and systems.

### Custom management

This 'custom' management impressed the Tornos Group, that being chiefly focused on the manufacturing of turning machines, found Almac as a complementary partner for manufacturing. *"With machines that are complementary rather than in competition, the two companies have the same target markets (automotive, medical, micro-engineering, watchmak-*

*ing and electronics-connections), which allows us to take advantage of synergies at sales and service levels,"* notes the Tornos management. Although the Moutier based group bought Almac in the middle of the economic downturn two years ago, the two companies have been able to preserve their independence, all the while achieving a business policy that is adapted to the market. *"With Tornos, we built on a long-term vision based on a five-year development plan, which allowed us to make cutbacks in working hours rather than jobs,"* notes Almac's manager. So much so, the company is even in these uncertain times able to retain a workforce of fifty workers.

## PRECISION WITH ROBOTIC SWITCHING

### Almac CU 1007 with robotic handling

Among its latest products, Almac has released a flexible machining centre with 3 to 5 axes that can provide precision tolerances of parts of less than 1/100 mm. Called the Almac CU 1007, this machine can be adapted with a handling robot. *"The selection was made using trials and the clear winner was the integrator TCI that best met our requirements with the*



*Stäubli robot,”* reveals Roland Gutknecht. Established in 1892 in Horgen near Zurich, the small Stäubli workshop is today an international group in Pfäffikon that has no less than 14 international industrial production sites. The integration of this TX60L 6-axis robot offers the CU 1007 unbeatable autonomy of movement notably: loading, unloading, palletising (from 300 to 400 mm with optional correction), deburring, buffing, turning over and reloading the machining unit with unparalleled precision. The device can even handle the intermediate storage and the repositioning of a part in its initial location. Almac has selected FANUC (Oi-MD up to 4 axes and 31i-A, 5 simultaneous axes) digital controls, the programming and control of the production unit is carried out by TCI-Engineering.

## FROM PLATES TO ENDOSCOPY INSTRUMENTS

Besides its strengths in designing modular components adapted for swarf removal, Almac also has a range of 5 standard machines that can provide the following operations:

- Manufacturing of movements, plates, bridges for graining (adornments), engraving, planing, scalping (mechanical bevelling);
- Machining of bezels, fabrication and diamond polishing of indices and appliques from solid bars or rough finished parts;
- 5-axis simultaneous machining of shaped cases. For preparation for setting, among others: 'mitrailleage' and milling for re-cutting;
- Machining of attachments and links with six-axis bar milling to achieve impeccable surfaces to reduce additional polishing operations considerably;
- Machining of temple arms and hinges from bars for spectacles with a multi-spindle machine in materials as tough as titanium, in precious metals or steels;
- Fabrication of dental implants from zirconium or endoscopy instruments for the medical industry.

## The mirror machine

Installed on the right-hand side of the machining centre, the TX60L robot is 'cutting edge' in terms of its great precision in positioning. The real performance is revealed in the machines' basic concept. *"The Almac CU 1007 is designed to be divided in two, thanks to what is known as a mirror effect. For the robot to be constantly made to work collecting parts 'from the right' of the machining centre",* explains Patrick Hirschi, Almac's sales manager. In fact, the company did not simply make a technical 'cut-and-paste' of its machine, its engineers rather designed a global and adaptable concept of a modular machining centre. This makes it possible for a customer to opt for a standard machine or an adapted machine with the possibility of upgrading it by adding machines and a robot for a more complete centre. This modular offering makes it possible to cater for increased diversity of machining specialties: watchmaking, jewellery, medical, electronics and many others. The basic configurations of this mechanical 'Lego set' are slides with 4 guide rails to deliver rigidity and stability of the self-supporting cast iron in the mechanically welded chassis. This ensures an excellent surface finish of the machined parts.



*Roland Keller  
Responsible editor  
SWISS ENGINEERING RTS  
[www.swissengineering-rtts.ch](http://www.swissengineering-rtts.ch)*

### ALMAC PRODUCT RANGE FROM TORNOS: PHASE TWO OF THE INTEGRATION HAS BEGUN

In 2008 we met with Mr. Gutknecht (CEO of Almac) and Mr. Stauffer (CEO of Tornos) to discuss integrating the Almac product line into the Tornos range. Mr. Stauffer informed us that this integration was to be done slowly and that in the first phase, the Almac brand was to remain, predictions that proved accurate.

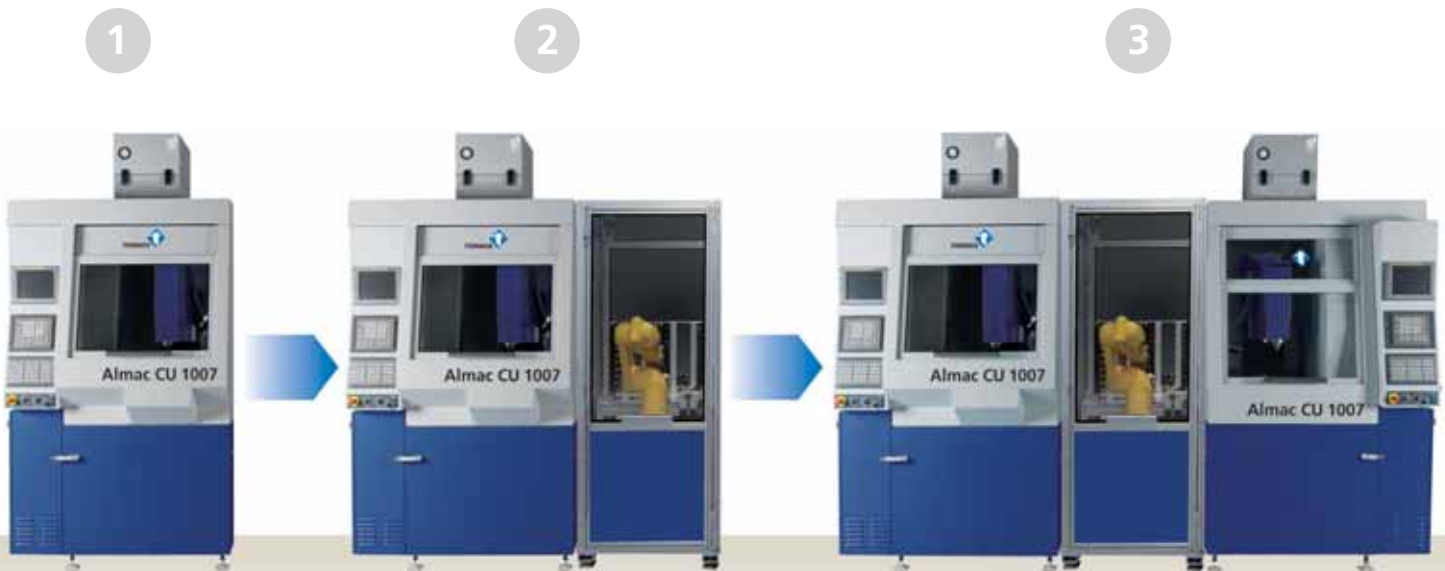
After two years, the integration into the Tornos range has intensified. With the exception of Switzerland, all machines now sold by the Tornos Group are branded as Tornos machines. Almac has now become the machining centre product line for the Tornos group. On a global level, products in the Almac range have already been clearly identified as being Tornos products. Therefore there is no longer any risk of confusion with the Almac brand.

#### The situation in Switzerland

As the primary Almac market for decades, the brand is well-established and recognised in Switzerland. This is why the products continue to be sold under the Almac brand in Switzerland.

#### Synergies

In 2008, Roland Gutknecht told us: *"Synergies are very important at all levels. To give you an example, ten days after the agreement was signed, three Tornos technicians in La Chaux-de-Fonds were already working on a way to help us reduce our delivery lead times"*. These synergies have of course strengthened the products in terms of production, management, sales and marketing. From now on Almac will be managed in the same way as the single-spindle and multi-spindle product lines at Tornos.



When production needs to be increased, the end user can easily add a pallet or robotic system (2) to improve productivity. At a later stage or even simultaneously, the end user can integrate an additional CU 1007 machining centre (3) that can "share" the robot system.



# HAROLD HABEGGER

## Canons de guidage Führungsbüchsen Guide bushes



### Type / Typ CNC

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

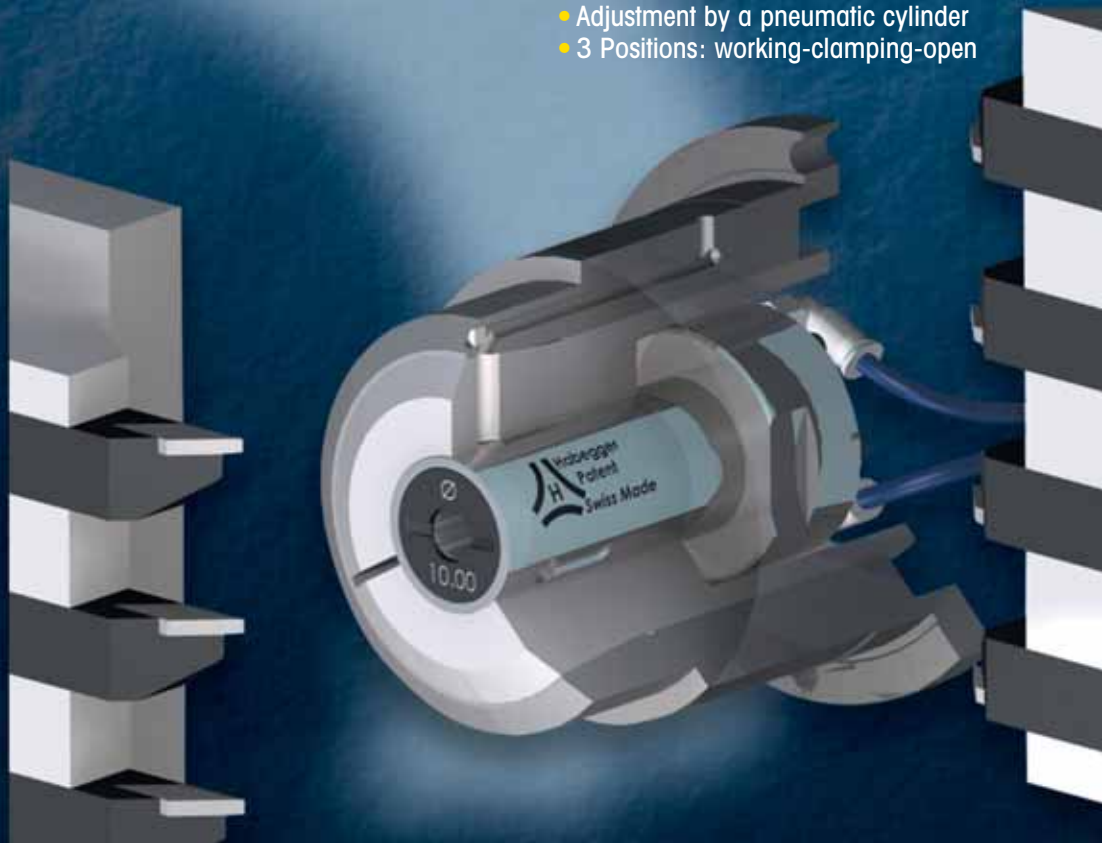


### Type / Typ C

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

### Type / Typ TP

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



▶▶▶ 1 Porte-canon: 3 types de canon Habegger!  
▶▶▶ 1 Büchsenhalter: 3 Habegger Büchsentypen!  
▶▶▶ 1 Bushholder: 3 Habegger guide bush types!



## POWERFUL LATHE

The Sigma 32 sliding headstock lathe from Tornos were developed based on the Deco series, of which there are currently 5800 in operation. Further development in accordance with user and process requirements primarily concerned equipping the main and counter spindles with the same output and rigidity, in order to create greater machining flexibility. The machines' strengths lie in its powerful processing, flexible use of tools and easy accessibility of the working area.



At Tornos, 90 percent of machine assemblies are designed and produced in-house. The overall layout of the machine is calculated using the Finite Element Method (FEM) and is therefore optimised in terms of axis assignment and assembly design.

### Machine design

The cast construction in the machine housing guarantees high static and dynamic rigidity. What is of interest here is that, in the area of the three instal-

lation points, vibration-reducing blocks are also cast into the cast bodies. This is an elegant solution to improve the installation situation. During commissioning of the machine, Tornos does not apply a laser measurement of the axes, as basic accuracy is always given. Instead, we trust in the statistical evaluation of measurement test series (cpk evaluation). To this end, after a 30 minute warm-up, fifty workpieces are driven in succession and then measured and statistically evaluated.

The statement 'where the machine stands' is thus substantiated and in step with actual practice. The working area, main drives and maintenance units are easily accessible. Only for access to the rear area of the machine and for replacement of ball bearing spindles with the corresponding drives are longer disassembly times to be expected due to the compact design. Tornos offers bar feeders in the feed system area. Here, you can use the Robobar series and also machines from other manufacturers. Chip extraction is available both as a removable swarf tray and in the automatic version as a scraper conveyor.



Tornos offers its machines as a complete production solution in combination with the internally developed bar feed magazines. The Sigma 32 can also be equipped with the Robobar SBF-532 magazine.

### Main spindle/counter spindle

Geometrically, the assembly of the main spindle and counter spindle on one plane (Z axis) is the basic requirement for rigidity and precision. There is also a massive vertical frame unit, in which the revolving guide bushes of the main spindle are seated.

During processing, the main spindle is supported in the bush and together with the compact slide unit of the counter spindle, a rigid and precise working plane is produced.

Equal performance on both spindles and unlimited processing possibilities are a major advantage of the Sigma 32. In comparison with competitors, this spindle design can often be credited as a plus point that enables shorter processing times. The respective spindle units are assigned tool slides (X, Y axis), which are equipped with quick change tool systems. With 22 tool positions, a wide range of processes can be



### MY OPINION

Tornos has selected a mechanically sound configuration for the Sigma 32 to achieve economic processing. The main advantage is the equal processing on the main and counter spindle sides. High performance and an extensive range of tools can be used fully on both sides. Part programming using the proprietary software, TB-Deco produces advantages. Unlimited use of the software, including editing programme corrections on the controller should be improved. In terms of service, Tornos offers extensive services and provides exemplary customer support, amongst other things by illustrating "its machine" on the Tornos Intranet. The SAP system used for service provides an extensive and informative data collection, which is not yet used to its full potential for evaluation.

*Edwin Neugebauer*

## THE BIG MACHINE CHECK: RESULTS

You can find the detailed tables at [www.fertigung.de](http://www.fertigung.de)

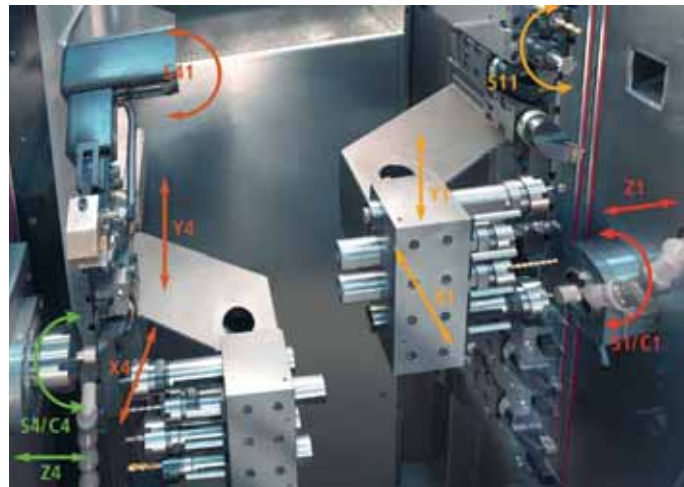
	MAXIMUM POINTS SCORE	POINTS SCORE FOR TORNOS SIGMA 32
<b>Machine commissioning</b>	<b>25.00</b>	<b>22.50</b>
Time taken until job 1	12.50	12.50
Proof of processing quality	2.50	2.00
Axis measurement	2.50	1.50
User training	7.50	4.50
<b>Maintenance-friendliness</b>	<b>100.00</b>	<b>72.00</b>
Accessibility during maintenance work	25.00	20.00
Accessibility during faults	35.00	28.00
Main spindle replacement time	15.00	6.00
Feed components replacement time	15.00	12.00
Automatic monitoring functions	10.00	8.00
<b>Automation</b>	<b>100.00</b>	<b>94.00</b>
Workpiece clamping/tool clamping	30.00	30.00
Operation – machine/parts handling	30.00	24.00
Machine start/reference runs	40.00	28.00
<b>Control</b>	<b>50.00</b>	<b>41.00</b>
Control/convenience functions	30.00	27.00
Collision considerations	20.00	14.00
<b>Ease of set-up</b>	<b>50.00</b>	<b>47.00</b>
Workpiece clamping/tool clamping	25.00	25.00
Set-up effort	15.00	12.00
Parts feed/removal	10.00	10.00
<b>Service</b>	<b>75.00</b>	<b>61.50</b>
Availability of service staff	30.00	18.00
Spare parts warehouse/preparation of spare parts	22.50	22.50
Parts drawings archive; Internet availability	15.00	15.00
Service agreements	7.50	6.00
<b>TCO</b>	<b>85.00</b>	<b>71.40</b>
Analysis of cost drivers available	34.00	27.20
Evaluation and figures: Downtimes/repair time	34.00	30.60
CIP machine supplier for downtime reports	17.00	13.60
<b>Form of contract</b>	<b>15.00</b>	<b>12.00</b>
Warranty period	5.00	5.00
Terms of payment	5.00	4.00
TCO process fixed	5.00	3.00
<b>Total</b>	<b>500.00</b>	<b>421.40</b>



executed, including polygon turning and tourbillon-age. The inter-changeability of the tools is another advantage which means more options in the process design. It is also possible to use driven tools in the slides.

### Control type

In the control area, the Fanuc 31i is installed in-house by Tornos to offer a wide range of options. Tornos own software, the TB-Deco was developed ten years ago and it is essential and beneficial for ensuring optimal programming of the processing workflow on Tornos machines. It helps the programmer to establish better combinations of the four tool systems on a Deco machine. It enables the user to synchronise and simulate parts in order to achieve further optimisations, such as shorter runtimes. This programming is performed on a separate PC, not on the controller. This has the disadvantage that corrections are not possible on-site at the machine. Tornos is planning to launch new software (DecoDrive) in 2011, which will allow for corrections to be made directly on the machine. However, it will initially only be implemented in the EVO series.



When fully equipped, 22 tools can be used. All tools can be fitted on either the main spindle or the counter spindle. The main and counter spindles also have the same drive lines, which enables optimal process design.

The machine housing of the Sigma 32 is designed as a cast construction. The frame for supporting the guide bushes/main spindle and the rigid slide unit form a stable working plane.

### Service/TCO

Service at Tornos is a separate business field. In Europe, the company has seven branches plus many regional agents. Tornos sees itself not only as a maintenance provider, but also as a partner for commissioning, process feasibility studies, process optimisations, coaching and training. Tornos has listed each individual customer machine on its Intranet with assemblies, components and bills of materials; an exemplary system that the author has never before encountered. Using an access code, the user can log into the Tornos Intranet via the Internet and view all the details of "its machine". And, if necessary, he can arrange a spare part delivery directly. The system even shows the availability of spare parts. In the case of special spare parts purchases (X-Change-Module), Tornos offers to take back the faulty assembly in return for a credit note worth 30 to 65 percent of the value as new.

Service deployments have been being recorded in a SAP system since 2004. Of the approximate 18,000 'active' machines in operation across the globe all series, around 10,000 registered deployments are recorded per year. The target requirement for service interventions is to be on-site within 1.5 days of receipt



## SIGMA 32 AND THE "FERTIGUNG" SURVEY

Quick interview with Mr. Brice Renggli, Head of Marketing at Tornos.



**decomagine:** Where did the idea for this analysis come from?

**Brice Renggli:** Since its launch, we have been convinced that the Sigma 32 is the best-performing turning machine in its category. We were so certain of this that when the German technical magazine Fertigung offered us a complete evaluation of the machine, we accepted without hesitation.

**dm:** How was the review carried out?

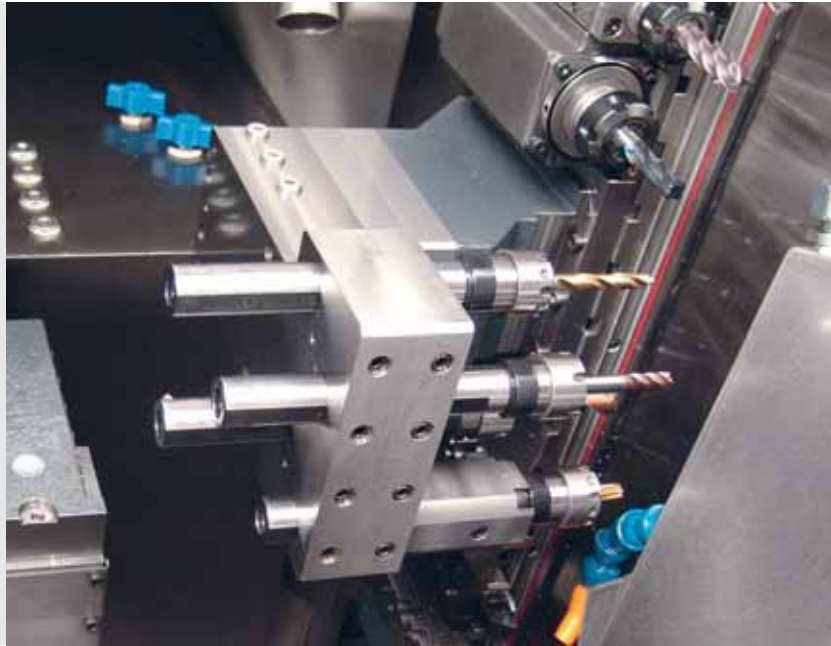
**BR:** Mr. Neugebauer is an independent specialist journalist that has had many years' experience at a famous German automobile manufacturer and he spent hours studying the Sigma 32 from all angles. As for personal experience, over many years, he continually improved his employer's machine park. Mr. Neugebauer is a very well recognised and respected expert on machine tools and their attributes.

**dm:** Are you satisfied with the result?

**BR:** The opinion of an independent expert is always interesting. We are pleased to be able to say that the qualities of the Sigma 32 that we value have also been identified by an independent specialist. The final result is worthy of the machine's qualities.

## FACTS + FIGURES: MACHINE DATA

<b>Sigma 32</b>	
Max. bar diameter	32 mm
<b>Main spindle</b>	
Speed	0 to 8000 rpm
Output	6.0/7.5 kW
<b>Counter spindle</b>	
Speed	0 to 8000 rpm
Leistung	6.0/7.5 kW
Guide bush	fixed/rotating
Fast feed	all axes 30 m/min
Tool system	22 tools (14 MS/8 CS) Shaft cross-section 16 x 16 mm
Driven tools	up to 10,000 rpm
Controller	Fanuc 31i
Area	3.3 m <sup>2</sup> (2400 x 1380 x 2050 mm)



The machine has a very generous working area. Simultaneous processing of workpieces on the main and counter spindles is also possible.

## AT A GLANCE

### SLIDING HEADSTOCK LATHE SIGMA 32 BY TORNOS

#### **Strengths:**

- Many years of expertise in lathe processing
- Powerful and rigid spindle assemblies
- Precision processing
- Wide range of tools
- Flexible process design
- In-house software for parts programming
- Service as service provider with varied offering
- User has "its machine" on the Tornos Intranet
- Spare parts orders can be placed easily and quickly
- Available tool (SAP) for service analysis

#### **Weaknesses:**

- Only one controller available
- No automatic TCO analyses with existing data

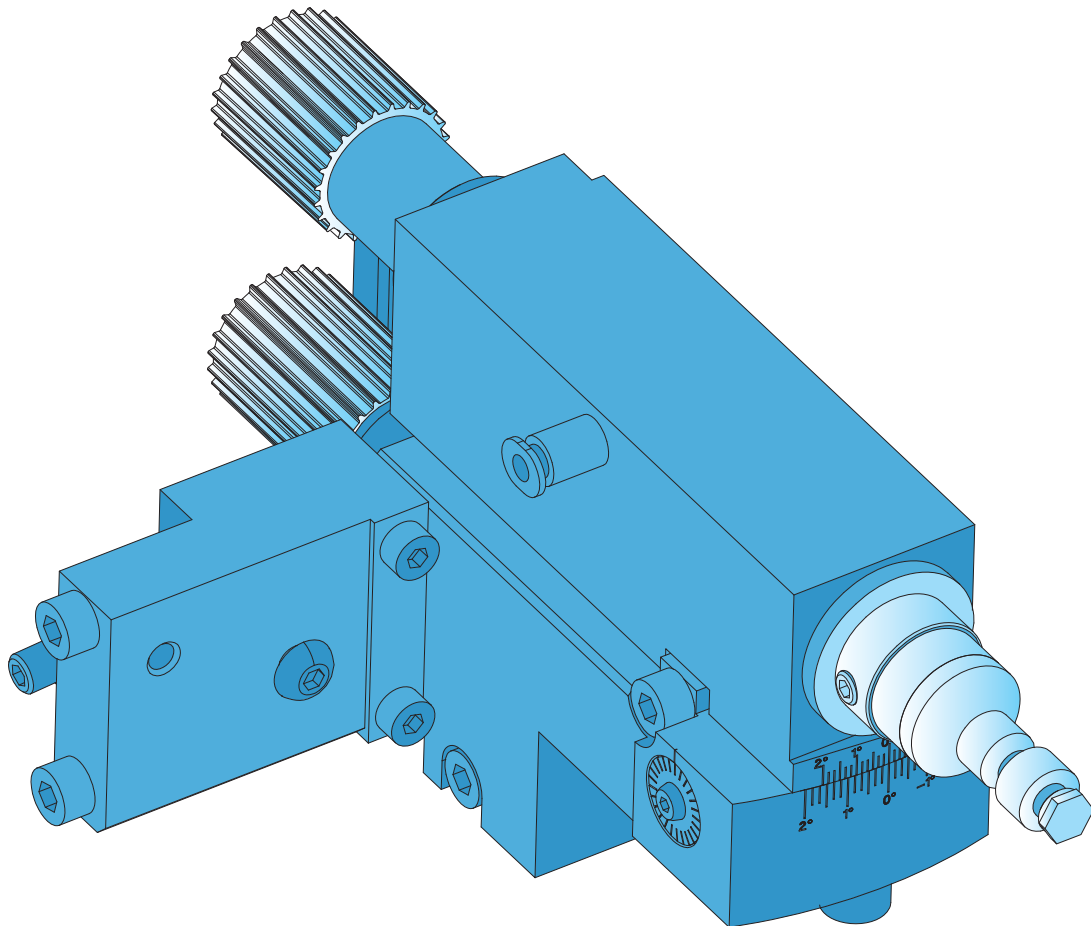
of a request. In 85 percent of cases, spare parts are available on site within two days. Standard evaluations according to service costs/downtime frequencies in relation to series and assemblies are compiled internally on a regular basis and taken into account product improvements and re-development of machines. For regular customers, special evaluations can be made as required. Machine improvements through CIP measures are initiated via the quality circle. They are processed in accordance with a matrix defined in-house. The SAP database could also be drawn upon for weakness analyses.

*Edwin Neugebauer*

**fertigung**



## CUTTING OPERATIONS WITH MICRO 7



### Option

Gear hobbing equipment for Micro 7.

### Principle

In micromechanics, many components must be cut with one tooth. These very small components are very often cut using specialist machines for secondary cutting. The part is therefore created in several steps, using various machines.

Secondary operations also mean more handling and more difficult production management, as well as difficulties in guaranteeing the required dimensional and geometric accuracy. The ability to create a complete part with just one fixture setting is a real advantage in terms of precision and productivity, allowing a large amount of flexibility for short production runs.

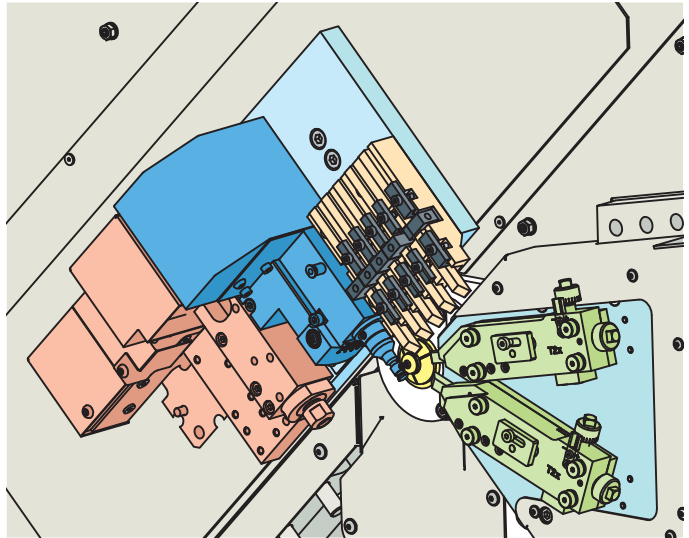
After its success with gear hobbing on the Deco 10 and Deco 13 lathes, Tornos chose to incorporate the gear hobbing function in its Micro 7 precision lathe. This is to meet very specific requirements in terms of quality and precision.

### SPECIFICATIONS

<b>Fitting:</b>	Use two positions (T8 + T9) on the tools system X1/Y1
<b>Mills:</b>	Ø 6 to 12 mm
<b>Adjustable screw angle:</b>	+/- 2°
<b>Module max:</b>	0,3

#### Benefits

- Eliminates the constraints related to secondary machining operations.
- Machining even more precise pieces.
- Increased flexibility for manufacturing short and medium production runs.



#### Compatibility

Micro 7

#### Availability

This equipment is already available.

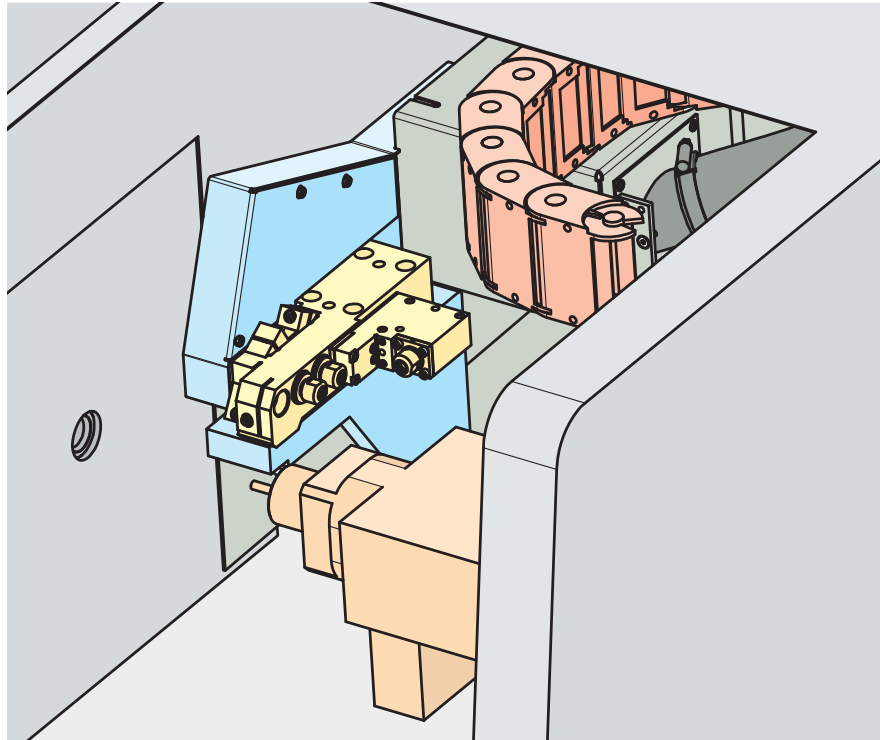


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## MOTORISED COUNTER-OPERATIONS ON DELTA



### Options

Motorisation for counter-operations tools and equipment.

### Principle

A new motorised tool-holder block allows different types of equipment to be assembled in counter-operation mode. The motorised equipment in counter-operation mode is an excellent complement to the HF spindles. These enable light operations that require the tools to rotate at very high speeds to be carried out (unveiled in Decomag 53). The block for motorised tools enables drilling, milling and slitting with higher torque.

The existing equipment includes:

- 25 mm diameter axial spindle for drilling, thread-cutting and milling operations at the back of the part on the axis or off-centre.
- Transverse milling/slitting unit for milling flat surfaces and slits.

### SPECIFICATIONS

#### Motorised block

**Maximum tool speed:** 7000 rpm  
2 speeds, programmable through M functions

**Max. Motor power:** 0.75 kW

**Restrictions:** Synchronisation with the counter-spindle is not possible

#### Axial spindle

**Fitting:** Three spindles can be fitted simultaneously in positions T52, T53 and T54

**Clamping:** Grippers ER11/ESX12  
Ø of the tail: 7 mm

#### Transverse milling/slitting unit

**Fitting:** T52 and/or T54 (max. 2 units)

**Mill max. Ø:** 30 mm

**Adjustment:** Height adjustment with spacers.



### Constraints

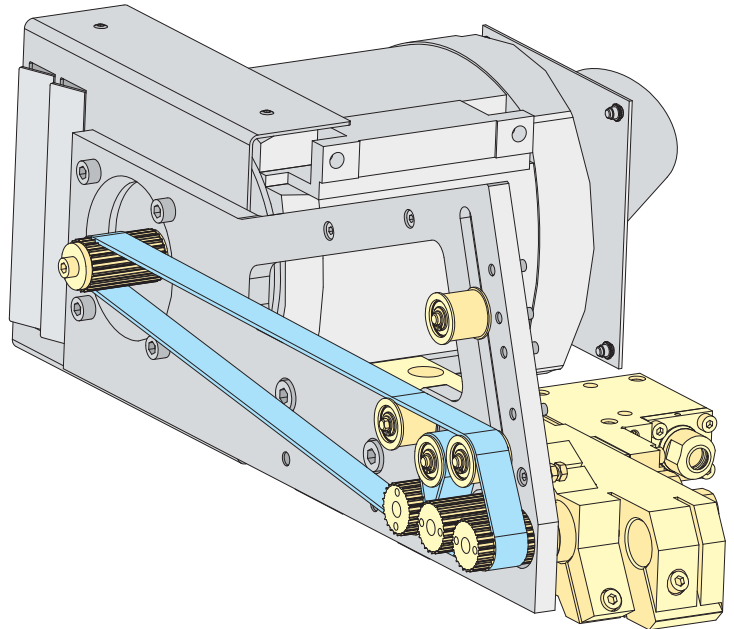
The support and the motor must be fitted "ex-works".  
The motorised tools may not be used at the same time as HF spindles.

### Compatibility

Delta 12 and 20 in 5-axis version type II and III

### Availability

This equipment is now available ex-works.



**« Tests have shown that a performance increase of up to 40% is possible with Blaser cutting oils. »**

Daniel Schär  
Product Manager, Mechanical Engineer Dipl. Ing. FH

**Tool wear**



Tool life [m]	Standard product [mm]	Blaser Swisslube [mm]
0	0.05	0.05
5	0.15	0.10
10	0.25	0.15
15	0.30	0.20
20	0.35	0.25

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## HF SPINDLES ON GAMMA 20

### Option

High-frequency spindles available in operation and counter-operation modes.

### Principle

During machining that requires very high rotation speeds (up to 60,000rpm), the HF spindles become indispensable. Their relatively easy integration also allows the number of turning tools on the lathe to be increased.

In the case of the Gamma 20, they can be used in different places on the lathe for bar-turning work or in counter-operation mode together with other mechanical tools. The spindles are delivered as a set with their frequency converter.

### HF SPINDLES IN OPERATIONS

#### Transverse fitting

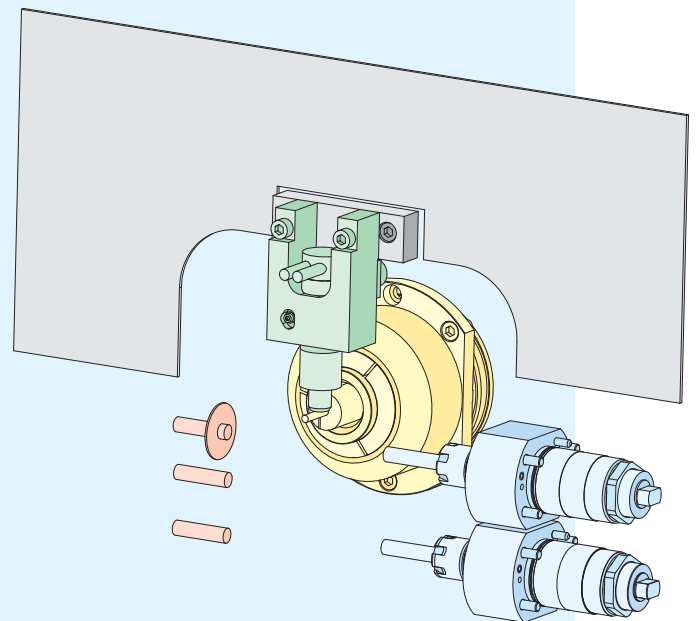
- On the X1/Y1 tool system in rear position T21 and T22 – spindle body Ø: 28 mm
- On a new tool position located above the guide bush (see image) – spindle body Ø: 22 mm

#### Axial fitting

On a support inserted in a support position (horn) for front and rear tools – spindle body Ø: 22 mm

#### Operations

Eccentric drilling, thread-whirled threads, Torx milling...



### HF SPINDLES IN COUNTER-OPERATIONS

#### Fitting:

- On the counter-operations support block in positions T 52, 53 and 54 – spindle body Ø: 28 mm
- When fitting one or two HF spindles, the other positions, T51 to 54, can be equipped freely with fixed or turning tools.

#### Compatibility

Gamma 20/5A, Gamma 20/5B and Gamma 20/6B

#### Availability

HF spindles for Gamma are now available. Fitting is ex-works.

## PRODUCTION OF A BONE SCREW ON GAMMA

Mr Villard, the Gamma Product Manager, explains: *"With the Gamma product, a large number of orthopedic screws can be produced even more cost-effectively with the same quality as achieved with the Deco lathes, which have an excellent reputation in the medical device field. However, it is important to remember that more complete machines offering greater flexibility and machining capacity, such as the Deco line, are required for certain components in this area. Our application engineers are perfectly placed to advise our customers regarding which product is best to meet their specific needs."*

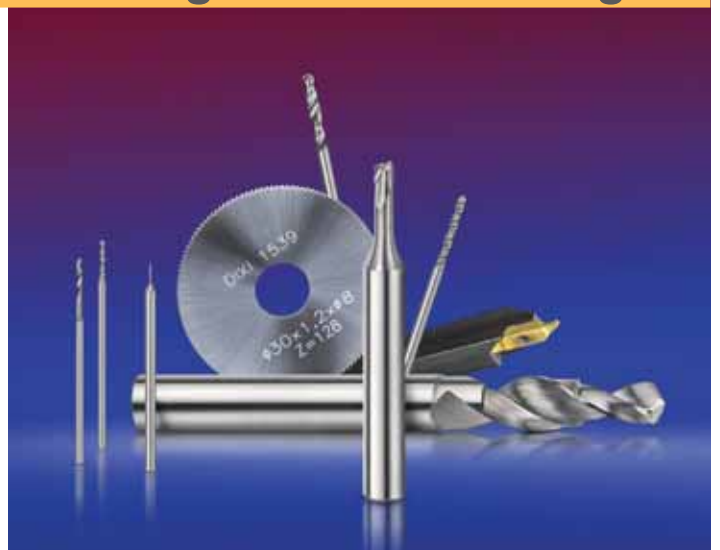
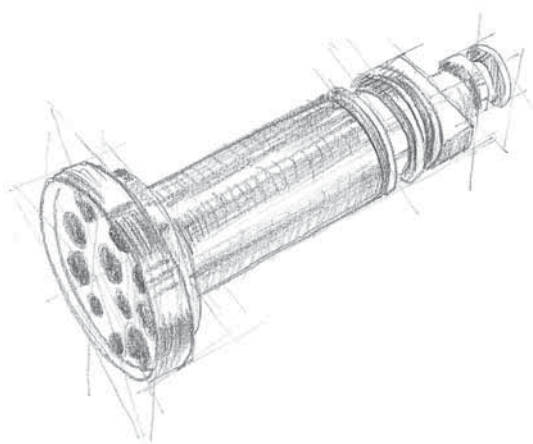
### Characteristics

Material:	Stainless steel 1.4404/316 L
HF spindle:	Meyrat, spindle body Ø: 28 mm
Thread-whirling unit:	Tornos, with a Sandvik head with 6 interchangeable inserts Fitting on the X1/Y1 in position T21.

## Tungsten carbide and diamond precision tools



## Turning-screw cutting



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# HELP IN FINISHING PARTS...

**Bandi SA, a company based in Courtételle, Switzerland, specialises in producing high-quality parts for the luxury watchmaking sector. One of its objectives is to finish all its parts on its own machines and to ensure 100% of parts delivered are correct. Requirements are very strict. Today, Bandi uses 153 turning machines, including 102 Deco machines programmed with TB-Deco. The Micro 7 workshops (20 machines) and Micro 8 workshops (28 machines) are programmed using GibbsCAM software. Deco Magazine interviewed Yves Bandi, the CEO of Bandi, and François Steulet, Director of Productec, a GibbsCAM reseller and developer, in Rossemaison.**



All materials are machined in the Courtételle workshops and although the parts are sometimes geometrically simple, the quality requirements governing them are always very strict. However, there is a general trend for increasingly complex parts, particularly in watch movements. In terms of programming Deco machines, the company is highly adept at using TB-Deco and now has a library of over 7000 programmes. Producing complex parts on Micro machines quickly becomes difficult, so to deal with this problem Bandi SA turned to GibbsCAM software, sold by the Productec Company.

### **One part to programme...**

Asked why Productec was chosen, Mr Bandi explained: *"We were already working with programming help software for Micro 7 and 8, but we couldn't manage to produce our parts in their entirety, which wasn't rational either in terms of time or working method.*

*We wanted to find a system that would allow us to create complete programming for complex parts".* Productec's proximity was perhaps an advantage in terms of arranging a meeting quickly, but it was their competency and the demonstration that really convinced Bandi.

### **... and software adapted to microtechnics**

Bandi therefore asked Productec to devise the programming of complex parts for the Micro 7. The specialists at Productec visited to give a demonstration, and the programming for one part was carried out quickly and efficiently. With the postprocessors on most machines available on the market already in existence, it was natural that the Micro 7 and Micro 8 machines would be included. With the part satisfying all our expectations, the commercial process got underway.



### Specialists in the field

Productec is able to offer this kind of programming service because the company can rely on staff that has a perfect understanding of microtechnics and bar turning. This means that when a solution is being implemented, customers' real technical issues are taken into account. Mr Steulet revealed: *"We install the system at the customer's premises and then we perform an acceptance procedure on the product, which is validated by the production of a part. This is so we can be sure that the proposed solution meets the requirements exactly".*

### Saving time at a glance

GibbsCam includes a "machining diagram" function that allows the user to see the operation times using different channels, making it easy to optimise machining operations by distributing them accordingly. Mr Steulet told us: *"Obviously the bar turner always*



*has a choice when producing the part, but ISO programming does not let the user see at a glance whether he could save time by distributing the operations better".*

### More parts within reach...

GibbsCAM allows parts to be produced more logically, but it was the ability to programme complex



### A NEW HALL WITH 120 MACHINES

It's usually in China that we see this kind of 'miracle'. It starts with an area that has absolutely zero infrastructure which, less than a year later, is housing an immense production hall full of machines. Bandi is currently building such a development, with a 2400 m<sup>2</sup> production area due to open next year. Installing 120 machines in a single workshop will allow the company to further rationalise its production processes, its monitoring and presetting resources and its management of tools and materials stock. The modern building will also be an energy saving construction.

microtechnical parts that clinched the deal for Bandi. Mr Bandi explained: *"Not only can we now produce parts that we couldn't before, we can also produce others more quickly and logically. The number of tool positions on a bar turning machine is inevitably limited, and software that allows us to maximise its use is a real plus"*. Mr Steulet told us: *"The bar turner's expertise will always be very important. GibbsCAM helps him make decisions by offering different machining strategies that allow him to make the most of this expertise"*.

#### Training...

Once the decision had been taken to 'switch to GibbsCAM', one issue facing the company was how to integrate this kind of software. To tackle this problem, Productec offers complete training including a demonstration of how to get the most out of the software, whether starting from a 3D body or designing the part in GibbsCam. At Bandi, four people attended four training evenings. Mr Bandi explained: *"Like anywhere else there is some resistance to change, but the bar turner's job has changed significantly in recent years and operators have also adapted. In the past, bar turning meant large production runs, but nowadays we use the process for runs of just a few parts, or even for single prototypes. We therefore need a programming system (and machines) that gives us this flexibility. Our well-trained specialists mean we can offer the responsiveness that the market requires"*.





### ... and support

If a company is unable to meet demand or its operators are unavailable, Productec will offer its customers a programming service. Its specialists can visit users and offer their services for as long as is required.<sup>1</sup> Mr Steulet concluded: *"In Switzerland we have trained more than 2500 people, and the GibbsCAM system has been installed on over 30,000 workstations. We have been working in partnership with Gibbs for 22 years, and together we have developed solutions for the microtechnics sector. For our customers this represents an important guarantee that not only will the system function perfectly during bar turning, but that also the solution they have purchased is durable".*

**Bandi**



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<sup>1</sup> Subject to availability. For more information, please contact Productec.

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# INDIA

**India, officially called The Republic of India, is the worlds' seventh largest country by geographical area (over 3.2 million km<sup>2</sup>, around 78 times Switzerland!) and the second highest populated country with over 1.18 billion people (estimate for April, 2010).**



The subcontinent of India lies in South Asia, between Pakistan, China, Bhutan and Nepal. To the north, it is bordered by the world's highest mountain chain, the Himalayan Mountains.

India is basically a peninsula, with the Arabian Sea on the west, the Bay of Bengal on the east, and the Indian Ocean to the south.

Northern India has seasonal temperatures with cool winters. Most of southern India, particularly inland, is hot and dry where temperatures can reach as high as 49°C. Monsoons during June through September produce severe storms with heavy rains. The western

and north-eastern coasts that are hit by monsoons get considerable rain, some areas getting over 250 cm per year.

The most densely populated cities in India are Mumbai (13,830,884), Delhi (12,565,901), Bangalore (5,438,065), Calcutta (5,138,208), Chennai (4,616,639) and Hyderabad (4,068,611).

Delhi is the capital of India and its political and cultural epicenter. Located on the banks of the River Yamuna, Delhi has been continuously inhabited since at least 600BC. After the rise of the Delhi Sultanate, Delhi emerged as a major political, cultural and commer-





cial city along the trade routes between northwest India and the Gangetic plain. It is the site of many ancient and medieval monuments, archaeological sites and remains. Delhi features an atypical version of the humid subtropical climate. Summers are long and extremely hot from early April to mid-October, with the monsoon season from October to March. Extreme temperatures range from  $-0.6^{\circ}\text{C}$  to  $46.7^{\circ}\text{C}$ .

Mumbai, on the other hand, is India's largest city and is the financial and commercial capital of the country; it generates 6.16% of the total GDP. It serves as the economic hub of India, contributing 10% of factory employment, 25% of industrial output, 33% of income tax collections, 60% of customs duty collections, 20% of central excise tax collections, 40% of India's foreign trade and Indian rupee 40 billion (US\$880 million) in corporate taxes. Mumbai has a tropical climate, specifically a tropical wet and dry climate with seven months of dry weather with rains in July. The cold season from December to February is followed by the summer season from March to June. The period from June to the end of September constitutes the south-west monsoon season and October and November form the post-monsoon season.

### History

India's history goes back to 3,200BC when Hinduism was first founded. Buddhism, Jainism, Sikhism, Judaism, Zoroastrianism, Christianity and Islam all exist within the country today. As a consequence of India's size, the history of the country has seldom been the same for two adjoining territories and its great natural wealth has lured a succession of traders and foreign influences to it, each having left their imprint in the country, however faint or localized.

Modern India is home alike to the tribes' person with his anachronistic lifestyle and the sophisticated urban jetsetter. It is a land where temple elephants exist amicably with the microchip. Its ancient monuments

are the backdrop for the world's largest democracy where atomic energy is generated and industrial development has brought the country within the world's top ten nations. Today, fishermen along the country's coastline fashion simple fishing boats in a centuries old tradition while, a few miles away motor vehicles glide off conveyor belts in state-of-the-art factories.

### Indian economy

India is a preferred destination for foreign direct investments (FDI); India has strengths in telecommunication, information technology and other significant areas such as auto components, chemicals, apparels, pharmaceuticals and jewellery. India has a large pool of skilled managerial and technical expertise. The size of the middle-class population stands at 300 million and represents a growing consumer market.

According to the estimates by the Ministry of Statistics and Programme Implementation, the Indian economy has registered a growth of 7.4% in 2009-10, with 8.6% year-on-year. The growth is driven by robust performance of the manufacturing sector on the back of government and consumer spending. The GDP growth rate of 7.4% in 2009-10 has exceeded the government forecast of 7.2% for the full year. According to government data, the manufacturing sector witnessed a growth of 16.3% in January-March 2010, from a year earlier.

Economic activities that showed significant growth rates in 2009-10 over the corresponding period last year were mining and quarrying (10.6%), manufacturing (10.8%), electricity, gas and water supply (6.5%), construction (6.5%), trade, hotels, transport and communications (9.3%), financing, insurance, real estate and business services (9.7%), community, social and personal services (5.6%). The Gross National Income is estimated to rise by 7.3% in 2009-10 as compared to 6.8% in 2008-09.

The per capita income is estimated to grow at 5.6% in 2009-10.

India's industrial output grew by 17.6% in April 2010. The manufacturing sector that accounts for 80% of the index of industrial production (IIP) grew 19.4% in April 2010, as against 0.4% a year-ago.

Capital goods production grew by 72.8% against a contraction of 5.9% a year ago. Consumer durables output continued to grow at a fast pace of 37%, mirroring higher purchase of goods such as televisions and refrigerators.

### **Tornos in India**

Tornos has been maintaining a presence in India for several years. The Tornos brand indeed is well known in that part of the world. A few thousand old cam machines from Tornos, Bechler and Peterman are still in use in this huge country. During the past 5-6 years Tornos sold over 60 machines, both single spindle and multi spindle to 21 different customers.

India is considered to be a future automotive component manufacturing hub. This will certainly be the main potential segment for Tornos machines in future. The industry is spread over West, North and South India. The medical industry has been developing recently and is showing promising signs.

In addition to its agents, Tornos has 4 dedicated employees in India to support Indian customers and agents. Two marketing and two application/service people are operating from Mumbai, Bangalore and Pune respectively. This constant presence has helped to build the Tornos reputation in developing close partnerships with its customers. Most of the customers have bought or are planning to buy repeat machines, thus showing their satisfaction with the product and support.

As the Indian economy continues to grow, multiplying the business opportunities, Tornos Asia is planning to open a subsidiary in India soon.

### **Tornos Customers**

most customers see Tornos as good technical support provider. There are three customers who have bought 7 Tornos machines each and one customer having 6 machines.

#### **Success of Tornos Delta for automotive parts:**

Tornos supplied one Delta machine in 2008 for a carburettor component. This customer also bought 4 competitor machines because their price was more attractive. After all these machines were commissioned, the customer started realising that the Tornos Delta machine has superior features and the cycle time has improved from the original 38 seconds to 25 seconds. On the competitor machines, the time could not be improved beyond 40 seconds. Once the customer was convinced about the productivity and ease of use benefits of the Tornos Delta machines, they ordered 5 more Tornos machines. Currently the cycle time is running at 20 seconds. Tornos' competitors' four machines are now being applied to an alternate component.

### **TORNOS STAND AT IMTEX 2011**



The Indian Metal Cutting Machine Tool Exhibition (IMTEX 2011) is the absolute leading trade fair for the sector in India. Exhibitors of the highest calibre from all over the world will once again put their efficiency and innovations on show for some of the world's most demanding and productive engineering companies.

As usual, Tornos will have a stall at IMTEX 2011. The show will be held in Bangalore from 22nd to 26th January 2011. One Delta and one Esco machine will be displayed on the Tornos stall. Tornos intends to reinforce its presence and focus on the Indian market through this exhibition.

## MACHINING TANTALUM - WITH CHLORINE-FREE CUTTING OIL

**In the medical devices industry, platinum is frequently used as the working material, particularly for producing cardiac implants. As platinum is very expensive material – 1kg costs a little over 35,000 Euros – alternatives that are more cost-effective are being sought. Tantalum has been identified as a suitable replacement for platinum in terms of functionality, its also convincing from a cost perspective (approximately 500 Euros per kilo).**

Tantalum is used in the medical device industry, but primarily in the electronics or chemical industries for measuring devices and fittings because of its excellent resistance to acids. Occasional applications have also been found for Tantalum in the jewellery and watchmaking industries.

Machining Tantalum is a real challenge. Platinum is already ten times more difficult to machine than Titanium and machining Tantalum is ten times more difficult again! Using chlorinated solvents as "cooling lubricant" has always been one way of ensuring this material can always be machined effectively. But for modern machines accounting for the increasingly stringent legislation, there is a need, in terms of machining to only have recourse to these types of solvents in exceptional cases.

What is recommended for large production runs? The first cutting oils specially formulated for machining Tantalum are still chlorinated oils, which aren't the preferred option for use in the medical devices industry due to the sanitary reasons we can easily guess.

In conjunction with specialists in machining Tantalum, Blaser Swisslube AG has developed chlorine-free cutting oil that is not harmful to health or the environment and it offers the required performance. This

cutting oil performs as well, if not better than the special chlorinated oils for Tantalum in a number of applications. The first customers are already being supplied with the chlorine-free cutting oil developed by Blaser, and are impressed with the results.

With this new development, Blaser Swisslube AG makes it easier for those involved in machining Tantalum to carry out controlled, process-secure series production. This ends the dependence on "cooling lubricants" containing substances that no-one wants to use anymore.

Are you looking for innovative cutting oils for machining Tantalum or for other processes in the medical device industry? If so, contact Blaser's specialists - they are here to increase your productivity.

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New development from Blaser – chlorine-free cutting oil for machining Tantalum.



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## Specific equipment and accessories for lathes

TTE 10X5 18'000 rpm  
Integrated ratio : 1 to 5



Minispindle Extensions  
Ø5.0 mm collets Ø2.0 mm



Twin opposite spindles head

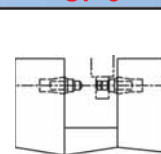
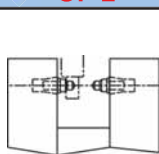
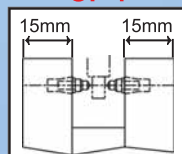


TIC TAC

OP 1

OP 2

OP 3



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



Synchronous  
multispindles Head



## Specific equipment and accessories for TORNOS machines



Hobbing unit  
for making gears



Right angle spindle speeder  
5 mm clamping capacity  
15'000 rpm



Polyvalent drilling and milling head  
for heavy machining with speed-reducer  
Usable with or without over-arm



Adjustable angle head  
with range of adjustability  
from 0 to 90°  
5 mm clamping capacity



## ASK FOR OUR FULL RANGE CATALOGUE !

Axial spindle speeder  
8 mm clamping capacity  
30'000 rpm



6 spindles multispindle head

BMRC

Modular spindles  
for presetting outside  
of machine



Whirling 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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## NEW THREAD WHIRLING TOOL FOR THE MEDICAL SECTOR

**The increasing need for special thread shapes for bone screws and other medical implants and small components used in surgery require technologies and tools that can produce high precision threads at high speeds with low costs.**



To meet this new demand, Sandvik Coromant a specialist in cutting tools and tooling systems has introduced its new thread whirling tool with CoroMill® 325 indexed inserts. Whirling is a quick and precise method for producing threads on long and narrow parts made from materials that are difficult to machine. By combining the speed of thread whirling and the rigidity of the sliding headstock machines, it is possible to machine threads with precision in one single pass without using special supports.

### **Quick and efficient**

The new thread whirling tool with the CoroMill® 325 indexed inserts by Sandvik Coromant can produce all types of medical screws and implants from bars at high speed. This technique offers several major advantages compared with the conventional thread milling method. Productivity is improved and assembly is quicker. There are no additional costs from the finishing treatments. Swarf control is excellent and the life span of the tool is longer than that of conventional tools.

### THREAD WHIRLING BENEFITS

- Ideal for long, slender components: Inserts in a whirling ring apply even cutting pressure, creating high-precision threads without bending the component.
- Increased productivity: Single-pass machining from stock diameter reduces cycle time by minutes.
- Chip control: Chip control is superior to single-point threading, enabling more continuous and productive machining.
- Increased tool life: Thread whirling inserts have stronger cutting edges than single-point threading tools.
- Cost saving: Finishing treatment is not required after thread whirling, unlike for single-point threading.
- Deeper threads: Deeper thread forms (such as Acme) are achieved more easily.
- Faster set-up times: Downtime is reduced by eliminating the need to match rough and finish insert forms and special support devices.

### To go further

To maximize performance in quality and long safe tool life it is important to provide the market a tool where all individual inserts are taking an equal part of the cutting process.

To guarantee this added value Sandvik Coromant is using a method of grinding that guarantee identically grinding which means if you are using insert from the same batch it generates a long safe tool life.

#### Typical components

- Bone screws
- Spinal screws
- Dental implants
- Other long, slender components

#### Typical materials

- Titanium
- Stainless steel



For more information:  
[www.sandvik.coromant.com](http://www.sandvik.coromant.com)  
[info.coromant@sandvik.com](mailto:info.coromant@sandvik.com)



## RALPH GERBER: A QUICK INTERVIEW

To find out more about this new whirling offering, Deco Magazine met with Mr Ralph Gerber, technical sales consultant with Sandvik.



**decomagazine:** Mr Gerber, you mention test results that show a significantly increased service life of the inserts compared with the market standards, how have you achieved this result?

**Ralph Gerber:** There are several parameters that come into play, but I would primarily cite two reasons. Firstly, we are carbide specialists, so we can ensure perfect command of the tool from A to Z and secondly, we have relied heavily on the precision of the sharpening and machining of the insert housing.

**dm:** Is your carbide different then?

**RG:** We have developed carbide for class S materials used in medical applications, for example stainless, cobalt chrome or titanium. These inserts are therefore made from tailored carbide... and to meet the changes in the materials to be machined, we can also change our carbide if necessary.

**dm:** You speak of sharpening and positioning, you have elected to use a 6 blade head, is this to simplify positioning?

**RG:** In the whirling process, there is of course a race for blade numbers, but the greater the number of inserts, the more difficult it becomes to eject swarf, and so users quite often have to invest in high pressure units. This does not have to be the case with the Sandvik head, there is sufficient space for perfect swarf evacuation. As regards to the machining, we have been achieving perfect results with a 6 blade head, so why add any more blades that could cause clogging issues?

The inserts are machined using a rectification process that ensures that inserts from the same series are identical, so that during assembly one can be sure all the teeth will behave in the same manner.



The insert housing is also machined in such a way to ensure high levels of repeatability. When changing the inserts, we therefore guarantee that the positioning is perfect.

**dm: What are the actual results of this machining quality and positioning?**

**RG:** We undertook many comparative tests. When making a titanium screw (Ti-6Al-4V ELI), with identical cutting parameters, as well as identical cycle time and quality, we were able to produce 1100 parts whereas the reference series was 215 parts. This represents not only large potential savings for users, but also significant working comfort that is guaranteed by this high level of autonomy.

**dm: I would like to try your whirling solution and make ISO approved medical screws, what are your lead times for delivery?**

**RG:** These inserts are part of Sandvik's standard program and are delivered from stock. Normally in Europe you would receive them the day after the order is placed. We are also able to make all insert requests with any type of thread profile as a special order. Working from the drawing of the part, we can provide inserts (and a head if necessary) within 3 to 4 weeks.

**dm: How does this custom order service work?**

**RG:** As a starting point, I would say that this 'special' service is in fact nothing out of the ordinary. Supplying tailor-made solutions to customers is what Sandvik does. If we take the example of a design you supply to us, this sets our well-oiled machinery into motion and our whirling partners and specialists work with the design, using the experience acquired from past projects of this type on a global scale. We therefore have extensive expertise at our disposal to meet the requirements of our customers.

**dm: This method of operating presumes that I already know that whirling is the right method, but I am not certain on how to go about it?**

**RG:** This is Sandvik's greatest strength! We also offer a process and fabrication cost analysis service. Our specialists visit the users and record the currently used production method for various



parts. Then based on these parameters, we make an analysis and offer a documented simulation to demonstrate the productivity gains that are possible. Sometimes we congratulate customers for their perfectly optimised process and sometimes we will be able to offer improvements that can yield as much as several hundred percent.

**dm: what would such an operation cost?**

**RG:** This provision is part of our service. If, with our advice and our tools, we are able to improve the production process for our customers, we are able to achieve a "win-win" situation, where both the customers and ourselves are better off.

## “HIGH PRECISION AMONG THE VINES”

**When one mentions the PENEDÉS region in Spain, its wine cellars and wines immediately come to mind. One cannot help but be surprised to find a bar turning company in the heart of this region. Decordal S.L. is located in this idyllic setting, among the vines.**



Decordal is in an idyllic location, surrounded by vineyards, in a region famous for its cava and wine.

Nearly forty years ago, a young machinist and his wife established a small bar turning workshop which, grew little by little into a company that has become a benchmark in its field.

The founders passed their enterprising spirit and strength onto their successors who have brought the innovation and dynamism that comes with youth.

Based on both youth, experience and constantly adapting to meet the current trends in the market, Decordal has reached an enviable position in the world of precision machining. In 1974, Tomàs Salvador and Maria Farràs created Industrial TS, a bar turning company machining parts from 6 to 45 mm in diameter. At the time, the factory was mainly supplying parts for the electrical sector and the motorcycle industry. Thanks to the experience gained, they established Decordal S.L. in 1998 with the aim of focusing on precision micro bar turning. They could thus meet the needs of their customers by widen-

ing the range of machined parts in diameters from 8 to 45 mm to supply the outsourcing and equipment production industries. Today, the range is extended to diameters from 0.6 to 65 mm and covers all types of raw materials (steel and stainless steel, aluminium, copper and brass, titanium, technical plastics, carbon fibre, silver, etc.).

The company's confidence has always relied on the use of Tornos and Bechler machines, although it has always felt more in harmony with the technological concepts applied by Tornos. In 1997, Decordal enlarged its installations and obtained ISO:9002 certification. The first numerical controlled (CNC) machine was then added to the inventory. Today the company has 16 CNC machines with fixed or sliding headstock, as well as 70 cam-type turning machines and many items of auxiliary equipment.

For its latest CNC machine acquisitions, the company got back in touch with Tornos due to its favourable



The company's installations, where they combine CNC technology and still very precise cam-type machines.



The company has a grey room and a 3D vision and palpation system.

warranty criteria, reliability and versatility in the construction of cam-type turning machines, thereby reiterating its confidence in the Swiss brand. The spirit of Decordal – professionalism, dynamism and flexibility is reflected in the perfection inherent in the operation of Tornos machines. The latest acquisition, a Tornos Sigma 32 turning machine, was acquired to respond to the need for a fully equipped machine capable

of machining large diameters and able to undertake complex operations.

The purchase of these machines, an indicator of technological improvements, made it possible to offer a more specialised product, especially for small or mid-scale runs, where technological value is greatest. The objective to design production processes able to offer solutions to suit the needs of the customers

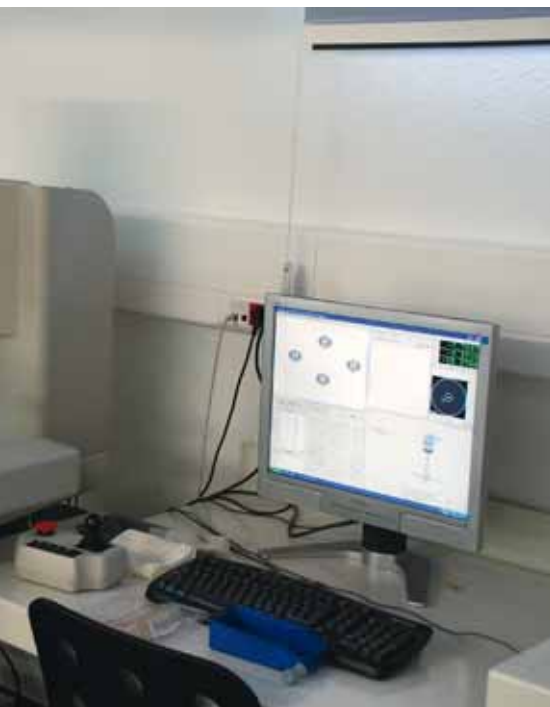
### A TORNOS MACHINE EVERY YEAR

After a fire in 2008 and despite the economic downturn, Decordal did not go under, quite the contrary. After the reconstruction of its installations, it struck back and ordered its first Tornos CNC machine, the Delta 20/5 III, at the Maquitech 2009 fair in Barcelona.

The idea was to replace the cam-type machines and eliminate secondary operations in order to gain flexibility and reduce preparation times. This decision led to great success: the machine delivered on all its promises and Tornos' service couldn't have been better. In a short period of time, the automatic turning personnel were trained in the handling of CNC machines and a year later, during the Bilbao 2010 biennial convention, quite naturally the company decided to continue the tradition of buying machines at fairs. The Sigma 32 turning machine was chosen. This machine has managed to surprise Decordal's technical managers with its robustness and swarf removal capabilities.

Decordal and Tornos are two companies with promising futures endowed with excellent technology. A real success story!





After one year, they were so satisfied with the Delta that they decided to buy a Sigma 32.

was achieved. This is often a difficult task given the different fields of activity: automotive, motorcycles, aeronautics, rail, medical, arms, electronics, electrical, renewable energy and jewellery.

In June 2008, Decordal suffered a reversal of fortune: a fire affected a large part of its plant. This incident, in addition to the economic downturn and the state of world markets, marked the tipping point in the company's strategy. From this point, the younger generation took over in order to reach a new level: Núria Salvador today manages the administrative department of the company, and Carles Salvador is the head of the technical branch. The fact that the company exports to all continents made it possible to successfully overcome this setback. Whereas many companies in the sector were forced to restrict and regulate their production; Decordal was able to continue investing. Over the last two financial years the company acquired a Tornos Delta 20/5 machine and a Tornos Sigma 32 turning machine.

The first acquisition of a Tornos Sigma turning machine is in response to the need to machine products such as the 17-4PH for H1070 conditioning; these products require a very rigid machine with a high swarf removal capacity. The Tornos Sigma offers these features. Furthermore, it is versatile when it comes to configuration with

quick and easy to change parts. It is these characteristics that Decordal will need in the future to be able to position itself successfully within the new markets.

Decordal is a company that prefers to work on a series of turning machines rather than a large number of machines. This is why its range of automatic turning machines was built around prestige makes like Tornos and Bechler. The acquisition of the Delta 20/5 turning machine was therefore the opportunity to start gradually replacing the cam-type turning machines.

From the outset, the Delta 20/5 machine appeared to be a very compact turning machine, easy to configure and able to open the way to new markets. All training was entrusted to Tornos Technologies Ibérica and the changeover from cam-type turning machines to CNC machines took place very quickly. The collaboration between the two companies made it possible to consolidate a new line of Tornos Delta turning machines within Decordal. The customer is completely satisfied with the functions offered by Delta. Gregor Moreno (zone sales manager) relates an anecdote involving Carles Salvador: *"He was teasing me and saying that one day the machine would stop. He told me, with a smile, that since buying it the machine had only been stopped for maintenance. It's true that at Decordal, the Delta turning machine is always in use. But one day, when I arrived the whole workshop was at a standstill and the staff was cleaning. I couldn't resist*



## Presentation



From left to right, Francesc Oller (Tornos), Tomás Salvador (Decoral) and Gregor Moreno (Tornos) during the last edition of the BIEMH (The Spanish Machine Tool Biennial), acquiring the new Sigma 32.

*and so jokingly, I told him that I could finally see the machine stopped. He then explained that every Friday, the whole workshop set to work for a few hours to clean and tidy".* While joking, the two men started discussing these two facts: the Delta turning machine is a very reliable and consistent machine and Decoral is an organised, meticulous and very clean company.

This is essential and compulsory for any company, but it has been noted that it is not always done among certain industries in the sector. With Decoral, these values are also applied to processes and are manifest

in the finishes of its parts, which makes it possible to obtain exceptional quality and precision. Despite the specific difficulties of parts to be machined, the company is well known for its expertise in the machining of highly complex parts.

The challenge was to establish itself in the sector of small and medium-scale runs of complex parts.

Meeting the requirements of sectors such as the aeronautic sector is a daily challenge and to achieve this, each Decoral delivery is accompanied by computer management. This has been specially designed for the company, an approach that allows optimised control of each process. It also manages data from the order right up to settlement of the invoice. This system encompasses management, production and commercialisation. It is the first phase of a project that will allow customers access to the system to consult and manage their orders. The creation of a new website that will incorporate the final phase of the project is currently being planned.

Decoral is a modern company, full of projects that have been or will be successfully completed to work with different public and private organisations.

### **Decoral S.L.**

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www.decoral.com

### DECORDAL IN BRIEF

Founded:	1974
Number of employees:	70
Exports:	to 14 countries in Europe, America, Asia and Africa
Range:	Ø 0.6 mm to Ø 65 mm
Run sizes:	from 100 to 100,000 units
Certification:	ISO 9001:2008 delivered by Bureau Veritas
Facility:	1,500 m <sup>2</sup>
Sectors:	aeronautic, windpower, automotive, electricity, electronics, rail industry, jewellery, household appliances, military sector, agricultural and wine producing machinery, motorcycles, nautical industry, optics and telecommunications



## Presenting this year's CoroMill® collection.

With the success of the CoroMill 490, we've expanded the CoroMill line with the CoroMill 316, an end mill with exchangeable heads for a wide range of applications, and the CoroMill 345, a high-performance face milling cutter featuring 8-edged inserts.

Now there's a CoroMill to suit everyone, all with a flair for lowering component costs while increasing your productivity and profit.

So what can the CoroMill line do for your production? You'd be surprised. Get in touch with us and we'll tell you more.

**Think smart | Work smart | Earn smart.**



Your success in focus

## IMPROVING EFFICIENCY THROUGH INNOVATIVE LUBRICATION PRACTICES

**With the introduction of the SMED method (single-minute exchange of die), Boillat Technologies appreciated instantly the importance of the role that processing fluids would play in optimising set-up times during production changeovers. In close cooperation with Motorex, the company's needs were analysed and the solutions were presented. The result was a reduction in product variety from 12 processing fluids to just two cutting oils!**



Jacques Boillat, the CEO and owner of Boillat Technologies in Loveresse, Switzerland, discusses the benefits of the SMED method and associated reduction in processing fluids.

Boillat Technologies in Loveresse, a tranquil town situated in the French-speaking area of the Swiss canton of Bern, has always moved with the times. Since its foundation in 1962, the plant has continually expanded and today has around 40 highly motivated employees from the region. The company's current machinery pool caters for an extremely wide range of dimensions, with diameters from 0.5 to 51 mm. The lathe operators have mastered a great variety of machinery and production techniques and work with a highly diverse selection of materials, such as stainless steel, free-cutting steel, titanium, aluminium, synthetics, brass, bronze and more.

### **From proven solutions...**

Experience shows that certain habits established in a business are never easily cast aside for the sake of

improvement. The same is generally true with the use of processing fluids (emulsions/cutting oils). Often, a specific material or routine will be processed using a product that was selected years ago on account of its appropriateness for the task at that time. This leads to the aforementioned variety of lubricants and at production changeover; to high downtime costs because each machine will need to be pumped dry, cleaned and replenished. With the introduction of the SMED method, it was necessary to find a more efficient and universal solution.

### **... to new ones**

The managers of Boillat Technologies turned to lubrication specialists Motorex and enquired about the potential for optimisation in the area of processing fluids. In dialogue with Technical After sales and the

## SINGLE MINUTE EXCHANGE OF DIE

(SMED)

This method is designed to reduce the changeover time of a production machine or line. This is the period between the production of the last good piece of the old production lot and the first good piece of the new production lot. The time is taken up by such tasks as preparing the new material or re-programming the machine, i.e. it is the time in which nothing can be produced. The objective of SMED is to reduce stock levels by converting the machine to a new production process without affecting flow.

The method was developed by Japanese engineer Shigeo Shingo, an external consultant who played a leading role in the development of the Toyota Production System (TPS). Implementation: Over several stages, the changeover time is improved by organisational measures first and, subsequently, by technical measures. For costs to be minimised, it is important that these stages proceed in the defined sequence.



field service employees involved, all production steps were identified, production capacities recorded and tool lives determined. Based on the evaluated data and after an appraisal of the customer's needs, production got off to a successful start from the very first batches following the introduction of the Motorex Swisscut Ortho TX high-performance cutting/deep-hole drilling and broaching oil. Two viscosities of Swisscut Ortho TX are in use (ISO VG 15 and 22) so that maximum performance can be achieved whatever the workpiece.

### Benefits of a multi-purpose cutting oil

Universal cutting oil was found to be the most suitable option. The broad specialist knowledge of Motorex proved vital to the successful streamlining of the variety of cutting oils used. The appropriate product was soon identified thanks to an eclectic product mix and an infrastructure essential to any modern laboratory.



The changeover to the Motorex Ortho TX processing fluid also resulted in further improvement to the working environment in the machine room.



At Boillat Technologies, high-tech parts for all leading industries are manufactured on various generations of machine tools.





Before the SMED method could be implemented, it was necessary to analyse and reorganise the area of processing fluids.



Fast tool changes and speedy set-up times are exactly what are needed if Boillat Technologies is to achieve maximum flexibility.

The cutting oil itself may be a universal grade, but any sacrifice in terms of performance would not have been entertained. Following Motorex's recommendation to change over to the revolutionary Swisscut Ortho TX high-performance cutting oil, the machine operator has been able to reap several benefits: It is now possible for each and every processing step to proceed with one and the same cutting oil. Swisscut Ortho TX meets the most demanding requirements in the form of extremely complex machining methods combined with the most difficult-to-cut materials. The significant reduction in the quantity of processing fluids has helped to simplify logistics and substantially increase process reliability. Thanks to the absence of unwelcome substances, such as chlorine and heavy metals, the quality of the working environment has similarly been improved.

### Disposal costs cut 50%

With the changeover to Motorex Ortho TX, the managers in Loveresse have selected a low-volatility and extremely skin-friendly cutting oil with minimal tendency to mist that guarantees maximum functionality with all popular ventilation systems and is integral to sustaining a healthy environment in the production room. Another pleasing aspect is the fact that the selected product is free of chlorine and heavy metals. As a result, not only is the product less harmful to mankind and the environment, it reduces disposal costs by 50%. Indeed, recycling costs can vary considerably, depending on chlorine content and other sometimes problematic constituents. In addition, the absence of chlorine and heavy metals makes the cutting oil easy to clean up and so reduces effort in the parts cleaning process.

### Objectives comprehensively achieved

*"Continuous optimisation is necessary in any production business. Together with motivated colleagues, competent suppliers and new workflow methods, the introduction of SMED into our company has resulted in great success,"* explains Jacques Boillat, with a hint of pride.

We would be delighted to inform you about the latest generation of processing fluids available from Motorex and the potential for optimisation in your organisation:

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# MEETING THE NEEDS OF HIGH PRECISION TURNING INDUSTRY

**For high precision turning machine operators, it is essential to have quality tooling to hand. For example, when starting a machine a special collet or, more generally, standard tools may be missing. With Wibemo, specialists know that they can rely on a company with passionate employees who will support them, thanks to its two specialist areas: resale of tools, accessories and standard equipment as well as the design and manufacture of special custom-made tools and accessories. How are these two complementary activities developed for customers? To find out more, we met with Director Thierry Bendit and Technical Sales Representative André Boillat from Wibemo SA in Rebeuvelier (Switzerland).**



In 2006, the company built the first extension to its production workshop (120 m<sup>2</sup>). In 2007, a new 250 m<sup>2</sup> extension was added when a new building was acquired.

The company was founded in 1967 by Willy Bendit with a clear vision: *to provide turning machine operators with a fast supply of quality tools and accessories*. It is this same vision that still drives his two sons, Thierry and Jean-Luc Bendit, who now manage the company. Over the years, and as a result of carefully chosen acquisitions, Wibemo has expanded from being a reseller to becoming a reseller and manufacturer.

## Specialist reseller

The company's reselling activities are the most widely known in the region (and date back the longest). Wibemo is the only reseller in Switzerland that offers a global solution with a complete range of tools and

accessories required for turning. Mr Bendit explained: *"Our customers find we can supply all the quality products they need. We have established partnerships with several Swiss companies manufacturing quality products, to offer our customers a valuable range"*. What are the advantages of this solution? For the customer, we offer simplified management and they are guaranteed contact with a skilled adviser. Even invoicing has been simplified as Wibemo offers the option to receive monthly invoices.

## Turnkey workshop?

The range of products available as standard is very extensive and Wibemo can even offer much more. Mr Bendit cited an example where a small company



In summer 2010, a new series of major investments has significantly increased Wibemo SA's production capacity.

chose Wibemo as sole supplier to fully equip their workshop. Mr Boillat explained: *"This is not a service we offer as standard and we are not looking to diversify in this area at this point. Our aim is to provide turning machine operators with top quality tools and accessories at competitive prices in the shortest possible lead-times"*. This mission also explains Wibemo's second line of business: Production.

### Production targeted to meet customer needs

Constantly in tune with developments in the turning industry, Wibemo knows every last detail. One of the most important details is the need for responsiveness in the supply of tools and accessories. In 1996, the company began manufacturing brazed turning tools (mainly for cam-type machines). This part of the business still represents a significant share of the turnover, but the gradual disappearance of the cam machine in favour of NC machines meant that the future of this part of the business was uncertain. Aware of this state of affairs, the Bendit brothers turned to other areas of design and production: The manufacture of innovative special collets.

### Quality, responsiveness, price-quality ratio

When looking for a counter-operation collet with a specific diameter, for example, it is often necessary to contact a specialist manufacturer. This is the type of request that Wibemo has organised its production facilities to meet. A large stock of billets enables the company to react rapidly and provide extended tip collets within the same lead times as ordinary collets. The structure of the organisation allows it to create collets on request. Mr Bendit explained: "We

## A LARGE RANGE DESIGNED FOR BAR TURNING

- Brazed hard metal chisels
- BIMU tool holders and inserts
- Guide bushes, collets and clamping sleeves
- Collets, end pieces and accessories for bar feeders
- Steel or hard metal collets
- Special collets
- Tool holders
- Cutting tools
- Standard and special dresser cutters
- Spare parts for cam-type turning machines
- Diamond-coated grinding wheels

## THE BRANDS WIBEMO REPRESENTS

**Bimu** – Cutting tools - **New! Exclusive** representative for **Switzerland**

**Schäublin** – Collets, tool holders and clamping systems

**Serge Meister** – Collets and hard metal guide bushes

**RegoFix** – Collets and tool holders

**PCM** – Tool holders and equipment

**Rollier** – Cutting tools made from hard metal

**Schurch & Cie** – Magnifiers, belts and tooling for watchmaking

**Tesa** – Measuring tools

**Harold Habegger** – Thread whirling and knurling tools, roller guide bushes

**Wibemo** – Collets, workpieces for bar feeders and brazed chisels

*simply receive the designs for the workpieces to be created and we develop a custom clamping system". Mr Boillat added: "Our customers are machining specialists, but sometimes clamping can be problematic, so we are there to help them create their workpieces in the best way possible. We really do work by combining our skills".*





A tempering installation allows small runs of collets to be produced with optimised use of resources.



Wibemo has a large stock of billets enabling the company to provide specially-designed collets very quickly.



With four grooves with well-defined profiles, Croco collets are a very interesting alternative clamping option, combining strength with a reduced risk of injury.



Extenso tungsten carbide long tip collets allow workpieces to be picked up on the counter spindle with the highest precision.

### The quality of the machining depends on the quality of the collet

*"All the products we manufacture are "ultra-high precision". For the collets, we work to tolerances of around 4 to 5 microns. This high standard of quality allows our customers to keep the promises they make to their end customers" Mr Bendit told us, before adding: "Wibemo's major strength is that we have the capacity to provide products of such high quality within very fast turnaround times. A rapid re-boring service has recently been set up and means we can deal with the most common urgent requests". As we have seen above, the company's production arm has been designed with this aim in mind.<sup>1</sup>*

As for the brands the company represents, Wibemo has a large stock and this means they can respond with the same speed. The company also conducts shuttle runs between the company and its suppliers on a daily basis so that the response is extremely rapid.

### "Plus" service

Within the market, Wibemo is well-known not just for its quality and responsiveness, but even more so for being a supplier that 'keeps its word'. Mr Bendit explained: *"Our company is designed to serve customers quickly and we do not make promises that we cannot keep. Our consistent*

<sup>1</sup> We will return to the different types of collet in a future edition. Wibemo offers a large number of references to meet all requirements. To receive the 'special collets' catalogue today, contact Wibemo on Tel. +41 32 436 10 50 or by e-mail at [info@wibemo.ch](mailto:info@wibemo.ch).



## Presentation



Even though brazed chisels are no longer 'in fashion', Wibemo offers a large range of this type of tool. Several grades of carbide are available depending on the materials to be machined.

*and reliable performance in terms of "quality–lead-time–price" has always proved us right". To conclude, Mr Bendit explained: "We certainly face challenges from the competition, but our position on these three points is quite unique and recognised as such".*

This is true to the extent that Wibemo's customers tempted away by the promise of low prices always come back to the company. Putting the quality of a production run at risk, and thereby risking the ability to profit from a very expensive piece of production equipment on the pretext of trying to save a few francs on a collet is not necessarily a very smart calculation.



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### WIBEMO IN BRIEF

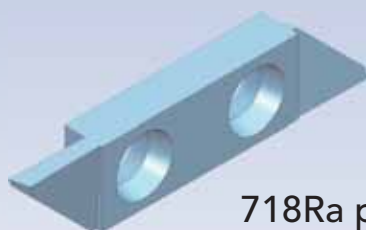
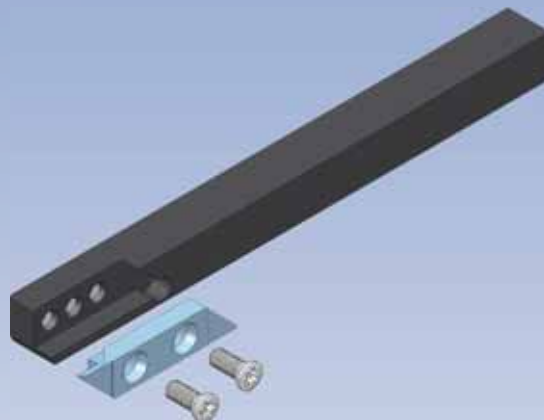
Founded:	1967
Employees:	25
Markets:	60% in Switzerland, 40% rest of the world (mainly France, Germany, Spain and Europe)
Specialist areas:	All areas where high precision and quality are required. As an illustration, all the major companies working in the Swiss medical and luxury watchmaking sectors place their trust in Wibemo.
Key benefits:	High quality combined with responsiveness and market prices.



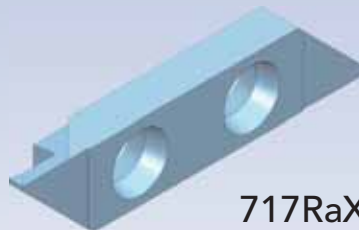
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