



decomagazine

THINK PARTS THINK TORNOS

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PRODEX⁰⁶
14 to 18 November 2006 | Exhibition Center Basel
THE INTERNATIONAL EXHIBITION FOR MACHINE TOOLS,
TOOLS AND PRODUCTION MEASUREMENT



By
single-mindedness
to world leader.



Orthopedic subcon-
tracting
opportunities.



It is no easy
task to find
high-quality
cutting oil.



Precision cleaning
of biocompatible
workpieces.

12



Markets worldwide are changing at an increasingly fast rate. Therefore, entrepreneurial instinct is more in demand than ever. And it is precisely these factors that have determined the success of the family-owned company of Alois Berger...

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Orthopedic Subcontracting Opportunities.

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The employee magazine of KRAL AG, the renowned Austrian manufacturer of screw spindle pumps and flow meters; recently published the results of a user test with MOTOREX ORTHO NF-X 15.

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Precision cleaning of biocompatible workpieces.

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AREA OF EXCELLENCE...

By Philippe Charles, Tornos product manager and Medical Key Account Manager



A growth market

Leader for the last 20 years in the medical and dental care market segments, Tornos is engaged in the continuous development of products, machining processes and equipment and peripherals carefully adapted to meet the needs of very demanding customers. The R&D departments operated by the main players in this market, worth more than US\$ 25 billion in annual sales in the orthopaedic sector and US\$ 1.5 billion in the dental sector, are constantly striving to research new developments and new solutions for patient care.

The primary areas for work with these OEM companies and other specialists are as follows:

- To improve existing products.
- To develop new implants and implementation procedures.
- To reduce the cost and time associated with surgical interventions.
- To find solutions with a view to creating increasingly less invasive operations to enhance patient comfort.

The volumes of manufactured components is rising all the time, and these markets are continually growing. Asia and China are currently the developing countries and demand is therefore sure to rise, given the size of populations coming into the market. Some of the leading companies have already established an operational presence in these new geographical markets. The others will not be slow to follow this trend.

Numerous challenges

The impact on Tornos is very substantial in terms of demand and we need to follow our customers wherever they may be located. In terms of products, workpieces manufactured on DECO single-spindle turning machines are becoming ever more complex. This calls for appropriately adapted kinematic properties as well as great feasibility. This in turn explains why new functions, equipment as well as programming and machining options are continually being developed by our engineers. Productivity is a key element in terms of machining, and depending on the

type of workpieces involved multi-spindle technology may deliver substantial benefits at this level, especially within the medical sector which has traditionally been the preserve of the single-spindle unit. The technologies which proved their capabilities on single-spindle units, e.g. thread whirling, high-pressure drilling or high-speed milling have progressively been adapted to suit multi-spindle units.

We need to create the best performing kinematics possible in order to offer the alternatives best suited to these sectors. What was previously not possible in terms of machining now needs to become so. Rework should be eliminated and tolerances need to become much tighter. The demands in terms of quality and surface conditions are also more exacting. To complicate matters yet further, new materials are starting to appear which are much tougher than ever before ... tools and production facilities need to evolve as a consequence. Tornos has the ambition of developing with these technologies in order to stay one step in front in the highly motivating vocational field of bar turning. Every day teaches us some new way of providing our customers with an even better service.

«They didn't know it was possible until we created it,» should be our guiding principle as we strive ceaselessly to improve.

A very major commitment

The Medical sector is a strategic one for Tornos and we are fully committed to maintain the leading position as specialists in this field, to ensure that the advice we give our customers is the very best available. You will find out more about our commitment to this sector when you read this edition of DECO Magazine, with the article on the orthopaedic market in the USA, the interview with F. Koller, organiser of the new MediSiams trade fair which will be held in Moutier, Switzerland in the spring of 2007. The presentation of washing solutions in the CM Group is an informative insight to the Dihawag thread whirling head.

Wishing you an enjoyable read and every success on the market.

Philippe Charles

DECO SIGMA 8: OPTIMISED DESIGN A TRUE TECHNICAL & ECONOMICAL SOLUTION



Ideal ergonomics, easy access, simplified visibility and handling, the trump cards recognised by the market.

Launched with a substantial promotional effort in 2005 and then exhibited at EMO later that same year, the DECO 8sp machine had received an extensive facelift in terms of ergonomics (see our DECO magazine edition 35 in December 2005). Mr. Serge Villard, product manager, informed us in December 2005 that this machine would be rapidly promoted and shown in Europe and Asia. What level of market acceptance does this machine command? What new features does it have?

After the change of name (reported in detail in our edition 38), DECO Magazine investigated.

DM: Hello again Mr. Villard, it's been almost a year since our last meeting at which you highlighted the many benefits of DECO Sigma 8 together with the planned and/or current developments on this machine. Could you bring us right up to date?

SV: We have continued to listen carefully to what the market has to say since we launched our turning machine and we can state that the machine you see

today has undergone some major changes. In terms of ergonomics, for example the accessibility of tools and visibility in the machining area received very careful attention. One detail that illustrates our wish to improve user comfort on this machine very effectively is this lighting switch, located outside the machine. Thanks to this simple innovation, the operator can now light up the machining area without having to interrupt an ongoing operation. It is also no longer necessary to permanently leave the lighting switched on.

DM: So we're really talking about improvements in convenience for the operator?

SV: In the first instance yes, but that is by no means the whole story. A great deal of attention has been directed to making tools easier to access and set. To start up the machine, the electronically operated crank handle, which enables the axes to be extended and retracted and the actual program sequence all constitute aspects of this machine's standard equipment.



March 2005 sneak preview in Moutier at the AGM, DECO 8sp gets people talking.



September 2005 $\pm 1\mu$ premièrè at EMO, where it attracted a lot of attention despite its diminutive dimensions.

DM: Could you tell us something about the programming side of things? I've seen a brochure which states that it is now possible to program in ISO with the help of TB-DECO. Could you tell us more about this?

SV: DECO Sigma 8 really can be adapted to suit customer requirements. People familiar with TB-DECO and the strict adherents to ISO will all find 'water

under their keel' because our customers can indeed program equally well in either TB-DECO or ISO. With regard to the second of these, various CN and soft functions are now available to help simplify the task of programming, which in turn boosts performance. Speaking about ergonomics, the control unit and its screen are placed lower than before to make them easier to use.

DM: Have you made any major technical changes?

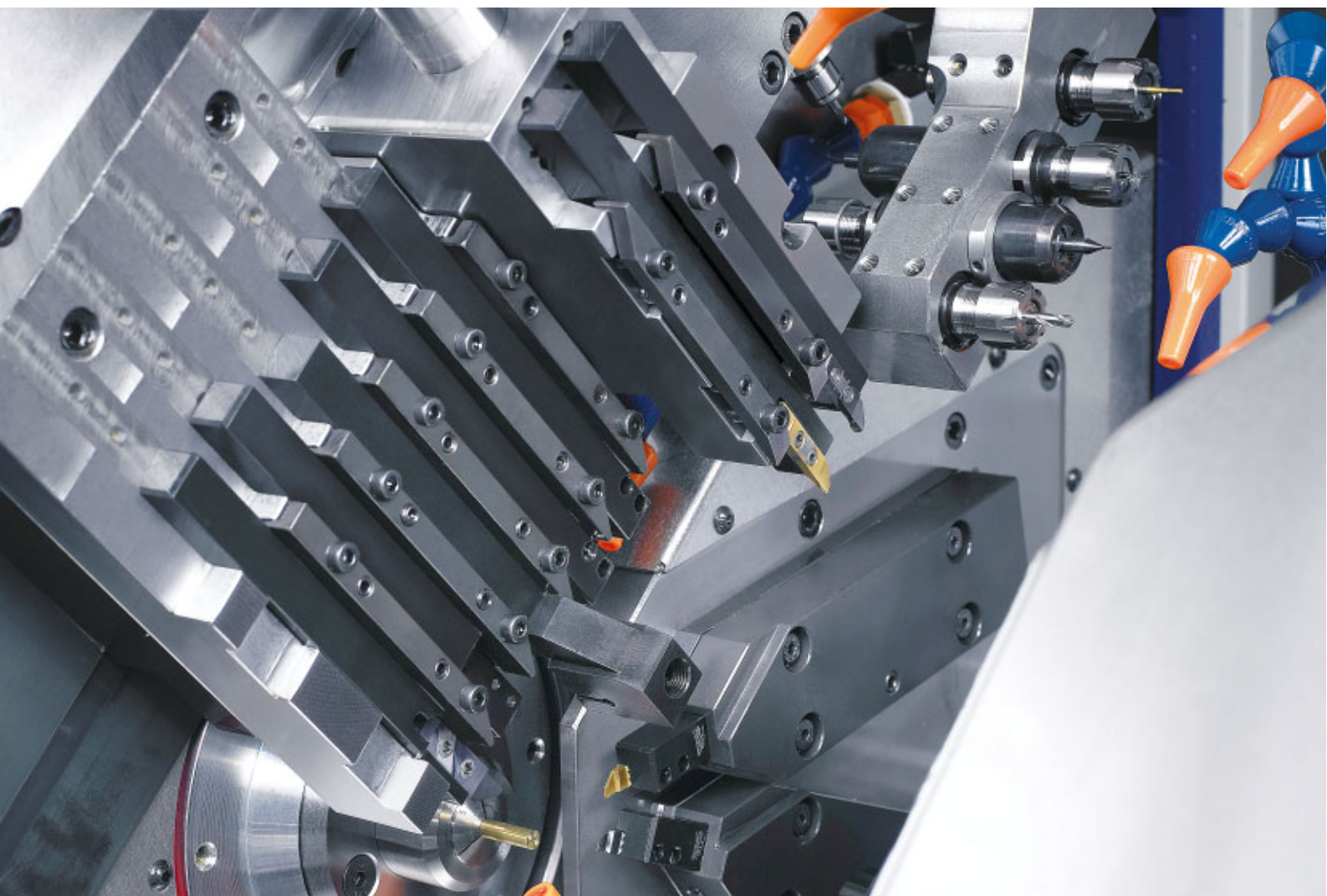
SV: The machine was a sound one from its earliest days and I would have to say that all the fundamental aspects that constitute a good machine – high precision, rigidity, thermal stability and productivity – reaffirm their credentials every day.

We have done some work on the maintenance front, notably the oil filtration system where we have focused on enhancing simplicity. This is an undeniable benefit for all operations indirectly associated with production.

Thanks to the multiplicity of setting options, the machine now allows precise adjustment of the alignment between spindle and counter-spindle, with the operator now able to verify/readjust these settings at any time. Once in production, this feature enables our customers to reassure themselves continuously about the precision of their machine.



A really simple innovation - but so very useful!



DM: We saw in the DECO Sigma 8 catalogue that quite a number of tool modules are adaptable on their baseplates, a little like Lego®, was this something that the market had been asking for?

SV: The machine has been developed very much with a view to improving modularity in the machining area. We are now able to fit a large number of fixed or rotary tools, working on a single axis and/or on laterally opposed axes. Up to 20 tools can be installed simultaneously. Thanks to this approach we are now genuinely able to offer a customised solution for everyone!

DM: Do these units harbour any innovations?

SV: We have noted great and increasing interest from the watchmaking market. Given that this segment is primarily a consumer of tools from section 8/8, it was entirely logical for us to decide to offer

exactly the same capability on the DECO Sigma 8. This machine can now be equipped with turning tools from section 12/12, 10/10 and 8/8. This business sector is calling on us to provide a solution to the task of producing very small components which must be entirely free of blemishes. For these demanding applications, we offer a suction system for retrieving workpieces from the machine. For customers wishing to have their components taken away from the machine for further processing, we can offer a variable-speed conveyor belt as an optional extra.

DM: In terms of sales, what results have you achieved on the various different markets?

SV: Globally, we have now sold over 100 machines. More than half to Europe and the rest to Asia with a few machines to other countries.

DM: How about the US marketplace ?

SV: We exhibited this new machine in the USA at the IMTS in Chicago this September. This trade fair was very successful and it gives us every reason to be just as optimistic about the prospects in this market as any other.

DM: What about the other markets ?

SV: We now have a presence in various countries and I must say that the feedback we have received is unanimous in terms of what it has to say about precision, productivity (very frequently found to be superior to cam-type turning machines) and, more generally, about the high standards of surface finish obtained.

Various users have also praised the high precision of counter-spindle operations. The competitive price and the reduced dimensions of this machine are major factors that make a favourable impression on our customers. Some of them had no hesitation in saying that this machine, in the due fullness of time will be replacing their stock of cam-type turning machines.

DM: Complete replacement of the cam-type turning machine? Surely though this is a machine that operates with a guide arbor, a principle quite at odds with that of the DECO Sigma 8 ?

SV: The advantage of cam-type turning machines used to be their ability to work with and without a guide bush, but it is true to say that the majority of these units operate with a guide bush. We are aware on an almost daily basis that workpieces produced on cam-type or CNC turning machines with headstocks in conjunction with a guide bush could be machined with a better efficiency and saving of material costs if machined on the DECO Sigma 8. Just consider the advantage of being able to use standard bars and reduce the bar waste that is commonplace with bar ends.

The DECO Sigma 8 turning machine, operating on the sliding headstock principle but without a guide bush offers genuine benefits for this type of workpiece.

DM: You talk of very high precision, and I will take this opportunity to come back to you on



this point. You quote in your documentation that you are able to eliminate secondary operations such as grinding; does that not overstate the case ?

SV: No, in many cases this is a proven reality! DECO Sigma 8 is capable of obtaining that high standard of precision and quality. In turn, I will take this opportunity to state clearly that the high standards of precision we are achieving are anything other than random outcomes. You need to have a good machine, a fully controlled machining process, suitable tooling, high-performance cutting oils and it goes almost without saying an operator with the right level of expertise. All these elements have an important role to play.

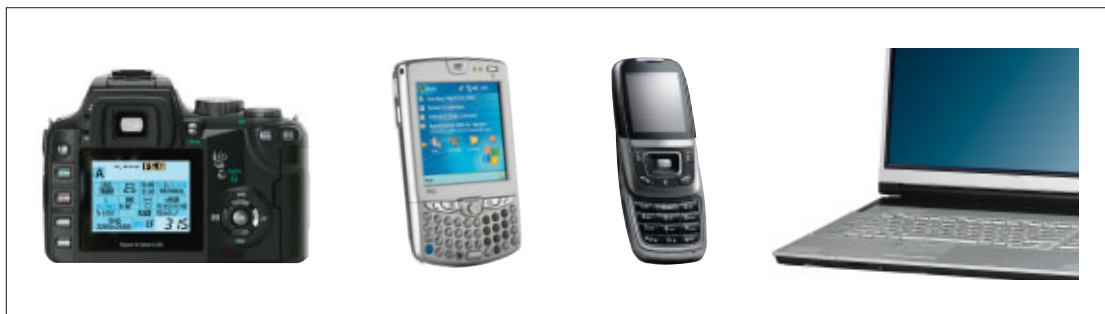
DM: We have touched on the sales outcomes in terms of geography; could you now give me some specifics on which business sectors you are selling into ?

SV: The electronics sector accounts for about 40 % of our machine sales. When we talk of «electronics», we are including the hard disk drive mechanisms, which constituted our target market when we launched this project.

DM: (interrupting)

It would be true to say that data is now, to an increasing extent, being stored on memory cards rather than on hard disks, does this not constitute a risk for a machine targeting this sector?

SV: This market is a very buoyant one for our machine, and as evidence I would quote our double digit annual growth figures and our many technological innovations in this sector. The process of validation for our machines is currently in progress in some of the largest manufacturers of hard disks in Asia.



Electronics is one of the primary sectors targeted by the DECO 8sp, but by no means the only one.

Major efforts have gone into cost reduction and into technologies to increase the storage capacities of hard disks and memory cards. The price/storage capacity ratio is decidedly in favour of hard disk technology.

DM: What about other applications ?

SV: The secondary aspect to the electronics sector is the very large number of mechanisms used in equipment with a mass market, obvious examples being cameras, PCs, notebooks, palmtops and other electrical equipment.

In the watchmaking sector, we are involved in production of the most valuable components in movement, high-quality screws and exterior components. DECO Sigma 8 is committed to the new trend in this sector, «to make things of beauty», which we do by delivering a quality of finish that enables us to create components to jewellery standard.

DM: We are aware that Tornos is market leader in the medical sector; what does this machine have to interest this market? Didn't you already have all the answers with the familiar DECO 10a and 13a ?

SV: DECO Sigma 8 offers solutions precisely adapted to meet needs for which the machines you mention are not entirely suited. This illustrates our desire to offer an integrated and complete range of products to our customers. There are certain components that do not call for complex equipment combinations or configurations. These are for the most part simple components which, while always requiring high standards of quality do not really justify the investment in a DECO 10a turning machine in financial terms.

In terms of their typology, other components in this sector are equally well adapted to «guide bush less» technology and stand to benefit from the advantages quoted above, i.e. greater rigidity and stability during machining operations.

DM: The DECO Sigma 8 would appear to be a real success on the market ?

SV: It certainly is. The vast amount of hard work carried out thus far has borne fruits and encourages me to promote this product in the segments quoted above as well as in a number of other segments that we are now just starting to explore.

I would like to take this opportunity of expressing my thanks to the customers who spotted the potential of this machine and who have helped us to develop its performance capabilities even further.

Would you like more information ? Please do not hesitate to contact Mr. Villard.

*Serge Villard
Product Manager
DECO Sigma 8
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**New
DECO Sigma 8
brochure**

24 pages of general and detailed information

about modularity, options, etc

*Just ask us for a copy or download it from the Tornos website
www.tornos.com/downloads*

BY SINGLE-MINDEDNESS TO WORLD LEADER

Markets worldwide are changing at an increasingly fast rate. Therefore, entrepreneurial instinct is more in demand than ever. And it is precisely these factors that have determined the success of the family-owned company of Alois Berger, which celebrated its 50th anniversary in 2005. Since becoming one of the world's largest precision turning companies, its links with Tornos have continually grown. Now DECO magazine would like to shed more light on this unique success story.



Aerial view of Memmingen, 2006.

With two skilled workers and his wife, Edith; Alois Berger, who was only 22 years old at the time, set up his own businesses in Kaufbeuren-Neugablonz in 1955. Today, he is the senior boss of one of the most outstanding companies in Swabia, employing approximately 1,500 people, with production areas totalling 60,000 m² at plants in Memmingen, Ottobeuren, Wertach, Ummendorf, Canada, USA, Switzerland and Poland. When it was established, the Alois Berger company occupied only 105 square metres. Amongst other things, the company manufactured necklace clasps and ear screws for the jewellery industry, as well as fake wedding rings – simply because hardly anyone could afford to buy gold in the years immediately after the war.

Soon afterwards, the company produced parts for record players and “Alpina” typewriters. After only one year, the production premises were too small. Because Berger’s skilled workers happened to come from Ottobeuren, he purchased a plot of land there and at the beginning of 1957 he and his 21 staff relocated to new company premises that were four times bigger than the previous building. This was followed by a very strenuous consolidation period, during which Alois Berger drove his company forward bit by bit, with immense personal commitment and the practical support of his wife. Even at the time, he invested in the latest technologies, so that he was able to produce top-quality turned parts cost effectively. The main priority was always quality assur-



Christian Schelasin, the Tornos Specialist. 40 years of experience at Berger.

ance. Even today, the motto of "anyone who stops improving has stopped being good" is still pinned to the wall in the Quality Assurance department of the Ottobeuren plant. This quality, delivery reliability and the willingness to make the impossible possible, finally brought success throughout Europe.

The launch into large series production

The purchase of the Tornos AS 14 in 1968 is certainly a milestone in the company's history. The first 6-spindle automatic lathe in the plant, saw the company's launch into large series production. "We landed big customers who have stayed with us right to the present day", Alois Berger remembers. Even in the 70s, when the German economy nose-dived, Berger kept his eye on the goal. Berger was always receiving awards for continuous investment in new projects and technologies and for its performance as a supplier. For the second time since 1987, Berger was awarded the Bosch prize as the Supplier of the Year in the year 2000. As a top supplier, the company also won the Gildemeister *Supplier of the Year award* in 2003. In 2004 and 2006 the Bavarian Ministry of Economics honoured the group of companies with the "*Bavaria's Best 50*" prize, which is awarded to companies that show particularly strong



Bayern's Best 50" award ceremony on June 28, 2006

From the left: Ralf Broschulat (Ernst & Young), Oswald Berger (Manager of A. Berger GmbH & Co. KG, unit of Memmingen), Alois Berger (founder of the Berger group and manager of the Berger Holding GmbH & Co. KG Memmingen, Erwin Huber (Bayer. Staatsminister für Wirtschaft, Infrastruktur, Verkehr und Technologie München).



Ottobeuren unit – glance into the MultiDECO department.



Multi-i-cell latest technology hardening system.



High precision automatic grinding.

growth and have been able to increase their sales and number of employees to above-average levels. Company boss, Alois Berger, has also personally received several awards: his commitment to vocational training and sponsorship of social facilities are frequently recognised, on the last occasion with the *Order of Merit of the Federal Republic of Germany* in 2004. The same year, he was also awarded the widely sought-after distinction of "*Entrepreneur of the Year Award*".

Precision in perfection – position as a global player

Today, Berger is the largest family-owned manufacturer of precision turned parts in the world. However, the group of companies has not just specialised in precision turned parts, but also in the associated heat treatment technology. Apart from traditional heat treatments, such as case hardening, carbonitriding and hardening and tempering, Berger heat treatment also offers innovative hardening processes, such as acetylene low pressure carburising with high-pressure nitrogen quenching. Quenching rates of oil are achieved but the delay is considerably less and no oil is deposited in blind holes. Subsequent cleaning is therefore unnecessary.



Project revue, from l. to r., Baur, Helmut Berger, Christian Berger, Reiner Gärtner und Oswald Berger.



A part also used by Tornos.

The relocation of the company in the year 2000 to Memmingen, together with the simultaneous establishment of Berger Holding, under whose umbrella all the plants are now jointly organised, pointed the way ahead for the long-term, successful positioning of the company as a global player. In its new structure, it provides a range of services that is unique in Europe and America: Berger is in a position to manufacture high precision parts made from all types of metal, as well as sections, biscuits and castings in small, medium and large series, in diameters from 3 mm to 450 mm for turning, dimensions of 1250 x 800 x 800 mm for milling, as well as grinding, right through to complete machining, including hardening and surface treatment. Numerous Tornos single and multi-spindle automatic lathes are used at Berger. However, it is not only the production of complex individual parts but also the assembly of complete functional units, which is pushed forward by Berger. This includes all the usual connection techniques and quality assuring functional tests.

New markets

The Berger Group has gained a worldwide reputation as a "precision specialist", especially for the automotive sector by virtue of its know-how, flexibility and commitment: every large automotive group is either a direct or indirect client of Berger. The highly complex turned parts made from all metals, used for example in diesel injection pumps, ABS and ARS



Example of parts machined by Berger.



In the past five years, Berger invested in 33 multispindle Tornos lathes.

systems, carburettors and valves prove themselves a million times over in everyday use. It is here that the precision of the Tornos machines comes to the fore.

The holding company sees new markets opening up above all in adjustable camshafts and direct petrol injection systems. Solutions are already being offered for roll balancing, because this can be achieved with ball-type linear drives, which is another of Berger's specialities. The company also produces for other industrial sectors. For example, a vast variety of components is supplied to the power tool sector (heavy duty hammer drills, cordless screwdrivers), the electronics and hydraulics sector. Ball type linear drives and hollow shaft motors are produced for the general mechanical engineering sector. In the latter sector, Berger is prominent in the field of milling and drive spindles, hollow shaft motors, ball-type linear drives and casing manufacture. The company produces whirled and ground linear drives with diameters ranging from 12 to 80 mm, high-precision linear drives of quality class 1 and 3, right to a length of 2000 mm and from quality class 5 upwards, to a length of 3000mm. This ball-type linear drive is used

by many German machine manufacturer and, of course, Tornos.

Clear commitment to Germany as a location

The Berger group of companies can look to the future with a clear conscience and full of confidence. The future will continue to be marked by growth. As a leading global player in its market sector, stabilisation and expansion point the way that the group of companies will take in the future, whilst retaining its independent, stand-alone status as a family enterprise, even in generations to come. "Only in this way is it possible to make free and above all, rapid decisions", says Alois Berger.

Reacting flexibly to market demands

Expansion is imminent at various sites of the group as a result of new-builds. A new hall on the green-field site in Ottobeuren is in the process of being built. An additional 4,500 square metres is being created, thereby increasing the working area by around 60 percent. An additional hall was also recently completed in Memmingen. An additional 4,700 square



From l. to r. Marianne Berger-Molitor, Christian Berger, Karin Berger-Haggenmiller, Peter Berger, Edith and Alois Berger, Oswald Berger, Gerlinde Berger and Alexander Berger.

metres were created on a floor area of 2,700 square metres, in part in two storeys, where generous rooms were created for apprentice training, assembly, tool and machine building and the IT centre. The new hall has air-conditioned, dust-free rooms for new products that require maximum cleanliness, as well as areas for assembling components. The aim is to become an important partner for the customers in assemblies over the next five years. The 3,850 square metre new hall (completion in September) will prepare the Wertach plant for future growth for the first time.

The future will demand of system suppliers ever more flexibility and more rapid reactions to market demand. The future belongs to the development of new products – in co-operation with partners. Berger is aware of this and is building on it. This includes securing and maintaining jobs, as well as the qualified training of new skilled workers. This is a matter, which is naturally also being taken very seriously by the “new” generation, who have already been long involved in management work.

The second generation

Six out of the seven children of Alois and Edith Berger have already been with the company in responsible positions for many years, “because they quickly realised the opportunities on offer in a growing company”, according to well-pleased father. And the 73-year-old senior boss still comes in every day – as he has for 50 years, always lending an ear to his colleagues and customers.



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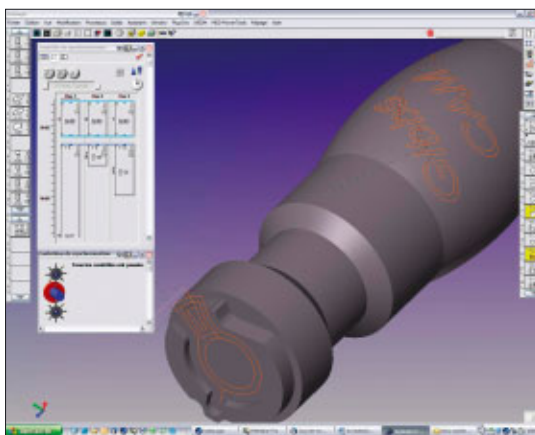
GibbsCAM IS NOW AVAILABLE WITH IMMEDIATE EFFECT FOR TORNOS TB-DECO AND FOR THE FULL RANGE OF TORNOS DECO MACHINES

GibbsCAM, the pioneer of CAD/CAM for MTM multi-tasking machines is a complete CAM system developed to enable all types of CNC milling and turning machines to be programmed in a simple operation. The same system makes it possible to program a simple turning operation for cutting to length, or a milling operation employing 5 axes simultaneously, which can for example make it possible to machine the surface of a micro-turbine.

What do you require to program a workpiece with GibbsCAM ?

All types of data can be used, from a simple 2D drawing faxed in by the person placing the order or a 3D volume model that the user can read in native format on the design office server, or obtain from a client by e-mail. GibbsCAM enables users to draw on all types of data and possesses the capabilities required to read most formats in native format from

geometry details to suit the tolerances required for manufacturing purposes. Last but not least, the integral drawing system enables fixture and special tool-holder systems to be defined to verify, through a process of machine simulation, that no collisions occur during machining operations. The advantage for bar-turning specialists is that their CNC programmers are now in a position to deal effectively in their CAM software with virtually any type of data they may receive from their customers.

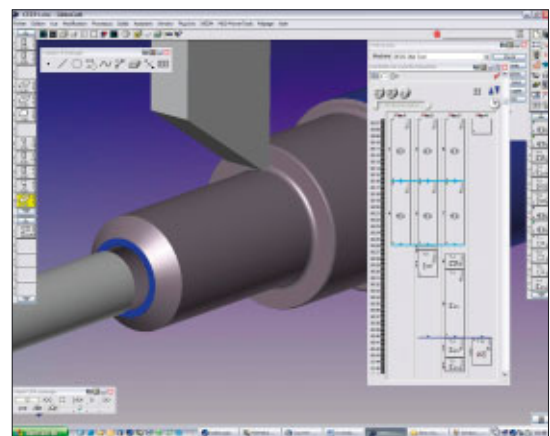


A synchronisation dialogue displays dwell points and the duration of operations. In addition, an assistant signals inconsistencies or conflicts between operations.

file types available on the market such as: **DXF**, **IGES**, **Parasolid** .x_t xmt, .x_b .p_b, list of points .txt, **ACIS** .sat, **SolidEdge** .par .asm, **VDA-FS** .vda, **STL** .stl, **Autodesk Inventor** .ipt .iam, **SolidWorks** .sldprt .sldasm, **plus many more.**

Moreover, in all these import formats, GibbsCAM features a unique «geometric expert» function that enables users to produce drawings and to adapt

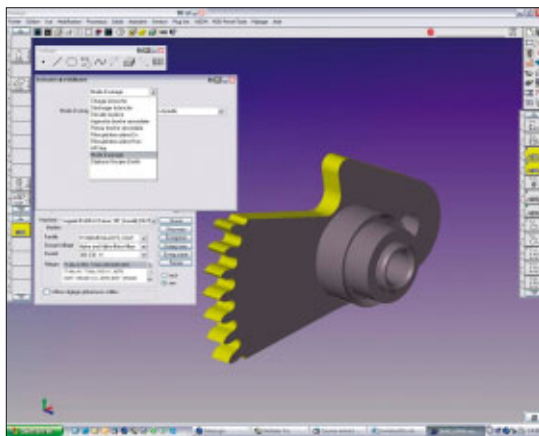
As a programmer, there is no need to learn to use an additional CAD drawing system, leaving you free to focus on your job, i.e. efficient programming for bar-turning workpieces. GibbsCAM also offers drawing tools suitable for workshop applications to enable bar-turning operators working off paper drawings to define the 2D or 3D geometries they require for machining operations.



GibbsCAM MTM manages complex machine configurations of up to 32 spindles, headstocks or tailstocks and 32 turrets / tool racks.

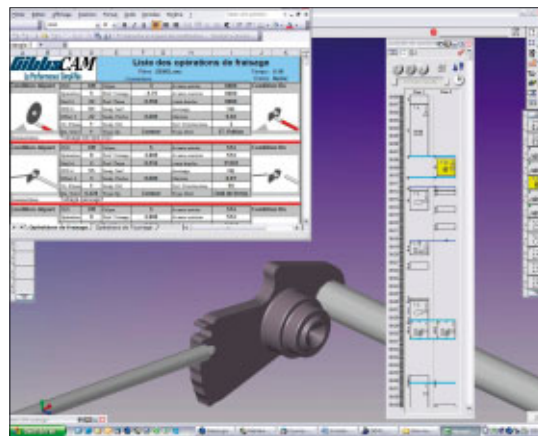
How does GibbsCAM MTM work ?

The programmer defines his tools or selects them from a library, then assigns them to the correct position on combing machines or turret lathes. The operations for machining are then defined graphically by an «offset slide» tool function in the process, and by applying markers to the geometry being machined to indicate the starting and finishing points for that machining operation.



Non-productive operations are managed entirely by the system, ensuring a complete program without fine-tuning of ISO code prior to starting production.

It also enables the operator to program EDM wire erosion machines, which in turn makes it possible for a bar-turning machine to cut small plates to shape for high-volume production runs. This vast array of functions in a single CAM workshop system saves you the need to become familiar with several CAM software packages where one will suffice.

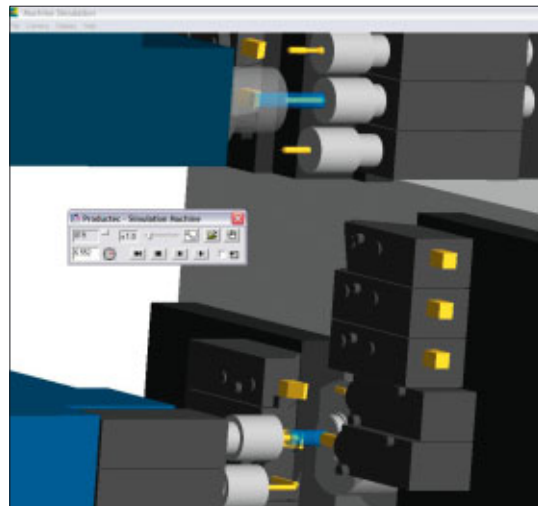


Complete integration of physical machine data allows calculation of cycle times, including non-productive operations such as loading, transfer, ejection, etc.

Operations then appear in the synchronisation management function which facilitates synchronisation between channels, limitations on operations to display productive and non-productive times, synchronous milling operations (transmit), combing and machining of long components with double feed. The post-processor then generates TTFT code which can be launched straight into production across the entire range of DECO machines, or can be edited in the TB-DECO software.

On TB-DECO, the file with sophisticated tool paths provided by GibbsCAM opens as though it had been programmed on TB-DECO. Any experienced TB-DECO settings specialist will find himself in an entirely familiar working environment.

As in the past, that specialist can benefit from the «optimised Tornos» subtleties provided by TB-DECO for optimising cutting conditions, synchronisation of functions and the inter-operational movements generated automatically by GibbsCAM. Not only is the content the simplest and most intuitive product in its range, GibbsCAM also makes it possible to manage an entire machine shop, comprising bar-turning lathes, turning machines, milling machines, multi-turret and multi-spindle machining centres.



View of a DECO machine simulation.

GibbsCAM is the ideal tool for any design office, also being capable of estimating the machining time required and even of calculating retail prices.

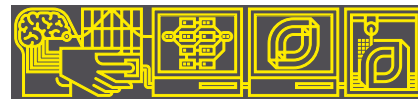
A bridge between Switzerland and California

Productec, the GibbsCAM distributor for Switzerland and France and also the developer of ProXYZ, the 5-axis simultaneous modules aimed at workshop applications has been chosen by Gibbs (California) by virtue of its geographical situation. to work with Tornos. This partnership is working on developing and verifying the kind of post-processor capable of managing programs in the formats specific to Tornos TB-DECO machines. As a consequence, based on the development expertise it has gained with GibbsCAM, the fact that it is geographically located just 12 km from Tornos, and on the 18 years of experience it has acquired in bar-turning operations, Productec was the obvious choice to create the dedicated GibbsCAM interface for Tornos.

At the time of writing, GibbsCAM MTM operates on 300 types of machine employing multitasking concepts.

For more information :

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www.productec.com

A FEW ADVANTAGES FOR PROGRAMMING GibbsCAM ON THE TORNOS TB-DECO :

- Using a single system on all machines in the company (therefore a single philosophy).
- The ability to design the geometry of a component directly in GibbsCAM, either as a 2D wire diagram or as a 3D volume model.
- An associative capability rounds off the operations involving geometries and tools.
- Programming by family of components, similar to the Tornos «skeleton» method, which enables workpieces to be created through a process of cumulative knowledge.
- Constant structure for operations. With GibbsCAM, spindles rotations can be performed from within the ISO code.
- It is possible to program complex 3D shapes by managing the maximum number of axes available on the machine simultaneously.
- All GibbsCAM modules are available, e.g. engraving with angle adjustment of all Windows character sets which follows the shape of the workpiece profile.
- Simulation with stock removal.
- Optimisation of follow-up machining, a function of the residual material resulting from previous machining operations (movement of rough stock between spindles).
- Programming in 4 well-defined channels (lines). The auxiliary lines (C axes, G915/G916, spindle rotations, etc.) are generated automatically by the GibbsCAM DECO post-processor.

PRECISE HIGH-SPEED INTERNAL GRINDING WITH IFANGER

There are a few tool systems on the market for internal grinding of small bores, but only the MicroTurn system from IFANGER sets itself apart quite so clearly from the tool systems offered by other competitors. The special clamping system gives the operator of an IFANGER MicroTurn system a number of trump cards to play.



Fig. 1: MicroTurn tools.

The IFANGER MicroTurn system, comprising a diverse range of cutter inserts and corresponding holders is employed successfully on all the well-known makes of short and long-stock turning machines. The MicroTurn mini-tools for internal turning of diameters as small as 0.7mm are used for a wide range of dimensions as steel cutting tools for corner (with and without cutting guide stage), copy, thread-cutting, groove, facet and axial plunge-cutting applications. Needless to say, suitable blanks are available to enable every user to grind these tools to the specific cutting geometries required. This is supported by the MTHV holder with square-section shaft, employing an identical clamping system to the MTHA holder with round-section shaft. The blank is clamped into the MTHV holder with square-section shaft and the desired cutting geometry can then be ground into the blank part. The MTHA holder with round-section shaft already incorporated in these automatic turning machines now takes hold of the ground cutting insert, precisely positioning it to start work on the production task.

Clamping by means of clamping chucks = powerful and precise

Cutting inserts can be positioned by means of a prism block at the end of the cutting insert shaft, and a corresponding prism seat in the holder. Thanks to this unique clamping system with a small clamping chuck attachment (Fig. 2), the IFANGER MicroTurn system achieves very positive grip on the cutting insert. The contact surface of the clamping chucks on the shaft of the cutting insert is many times larger than the clamping surface area of other tool systems, which are known to favour the use of just one or two small Allen screws to achieve their clamping action. The small clamping chuck in the holder does not secure the cutting insert around its entire shaft circumference, instead just drawing it into the prism recess concurrently with the clamping

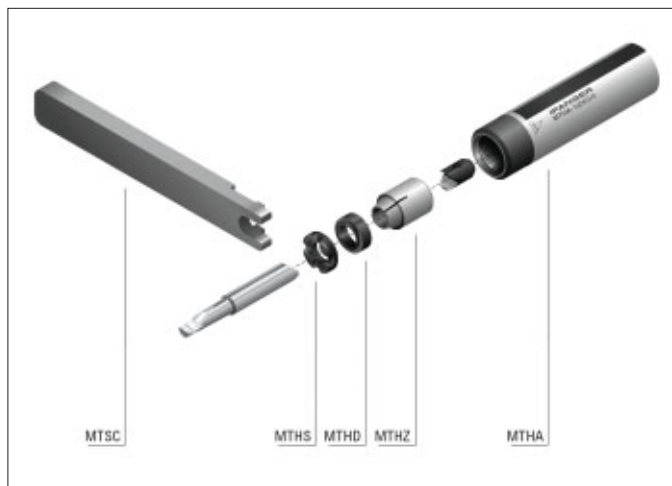


Fig. 2: MicroTurn system

process. This positive clamping action on the cutting insert creates a powerful and solid miniature turning system during the machining operation which achieves longer service lives for the cutting insert and greater dimensional integrity and a better quality of workpiece surface finish. In addition, the prism recess enables very fast cutting tool changes to be made.

Cutting tools changed from the front = quick and easy

Using an MTSC hooked wrench (Fig. 2) you can simply unfasten the cutting inserts in the holder from the front to replace them. Since this is the working area of the machine, freedom of access is assured at all times. This dispenses with the time-consuming and awkward operation of unfastening the cutting insert from the side using an Allen key. A quarter or half turn is all it requires to remove the worn cutting insert and to fit a new one. The machine is ready to resume production operations again very quickly.

Rounder, round, sharp-edged, universal and specific

The launch of MicroTurn angle steels with small radii or even sharp-edged cutting tools has proven to be a complete success. All angle steels with or without cutting guide stage, coated or uncoated are avail-

The present

ble with at least two versions of each cutting tip. A large number of angle steels can be supplied ex stock with radii of 0, 0.05 or 0.08mm. The medical and dental industry are great fans of these sharp tools with their ultra-fine cutting and free surfaces.

Examples of applications in the medical and dental industries

The workpiece in Fig. 3 illustrates a threaded bush of the kind used in endoprosthetics applications on

of the clamping fork, an initial bore is first drilled. Then it is the turn of the MicroTurn MTKO copying steel, used to turn the tapered internal contour of the workpiece. In this third example of a typical application, we are again dealing with an implant from the medical industry. The implant shown in Fig. 5 consists of two parts - a clamping sleeve and a tapered sleeve. This implant is employed in the orthopaedic sector, specifically A&E (accident & emergency) surgery. This implant can be used in operations on crucial ligaments.



Fig. 3: Threaded bush, medical industry



Fig. 4: Clamping fork, dental industry

knees. Endoprosthetics are implants which remain in the body permanently. This threaded bush is part of a system for mending broken knees. The first stage in manufacturing one of these threaded bushes involves drilling out an initial bore with a drill. Next, it is the turn of a MicroTurn MTEC angle steel. This cutting insert is used to finish-turn the chamfers and the bore. Finally, a MicroTurn MTGE special threaded steel tool cuts the tapered internal thread.

The next workpiece originates from an application in the dental sector. Fig. 4 illustrates how clamping forks can be inserted in what are known as «angle sections». The complete «angle section» is fitted to an electric motor and together with the tool, forms the instrument which the dentist uses inside a patient's mouth during treatment. The clamping fork holds the tool, which is centred on the internal taper of the clamping fork which holds it in place. For production

When manufacturing the implant, bores are pre-drilled in the inner and outer sections. The taper and the cylindrical bore of the inner section are then turned using a MicroTurn MTEC angle steel. Next, the internal thread is cut using a MicroTurn MTGE thread-cutting steel. Then the internal taper on the outer section of the implant is turned, once again using a MicroTurn MTEC angle steel.

Wide range of cutting inserts and holders available

As well as a large stock of cutting inserts and holders, turning steels and fixtures can be manufactured to customer drawing. Holders with round shafts and angled locating points also feature internal coolant channels. Only fine-grained hard metals are used for these cutting inserts, and all cutting inserts



Fig. 5: Implant, medical industry

can also be supplied with a TiAlN coating. These very sharp cutting blades have proven extremely popular in the medical and dental sectors. Also, customers in the automotive, telecommunications, mechanical engineering and watchmaking industries enjoy working with these MicroTurn tools.

Alongside holders with round shafts, double holders, holders for machining reverse faces and angled holders in a wide variety of dimensions (Fig. 1) can be supplied. A special feature is the monobloc MTAD tool holder (Fig. 6) for the DECO machines made by TORNOS. These holders integrate two supports in a

single holder. Due to the fact that the monobloc MTAD tool holder is secured directly in the side carriage of the machine, there is no longer any need for a support in the machine or for an angled holder. The great success enjoyed by MicroTurn tools has enabled us to continuously extend the range of cutting inserts and holders we manufacture. Ifanger AG increased its production capacity in the summer of 2006, a trend which looks set to continue into coming years.



Fig. 6: Monobloc tool holder for Tornos DECO machines



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ORTHOPEDIC SUBCONTRACTING OPPORTUNITIES

By Martin von Walterskirchen and Scot Orgish, Swiss Business Hub USA

Overview of the U.S. Orthopedics Market

The orthopedics accounts for about 29 percent of the U.S. medical device industry sales, and is projected to experience a growth rate of 13-14 % per year between 2004 and 2011. There should be ample opportunities for both machine tool manufacturers who sell machine tools to OEMs, subcontractors, and job shops; and Swiss subcontractors who have the capability to machine parts out of materials such as austenitic stainless steels, cobalt-chromium alloys, and titanium alloys. In addition, subcontracting opportunities exist for the production of tools and instruments that are used to insert each of the various orthopedic implant systems.

The trend in device manufacturing is that OEMs are outsourcing a larger portion of their production and assembly operations to contract manufacturers.

There are a number of factors that are driving this trend. Market pressure to reduce prices and shorten lead times are two leading factors. In response, manufacturers are focusing their efforts on R&D investment, regulatory issues, and product marketing. OEMs are thus outsourcing a lot of production and assembly operations to partners who can provide supply chain economies of scale and good operational support. Another leading factor is the trend toward integrated testing starting from the early product development stage and continuing through to clinical validation. The integrated testing process includes materials, components and complete devices, and is expected to become the industry norm. Swiss subcontractors who can provide services that meet these OEM needs will have opportunities to acquire new business.



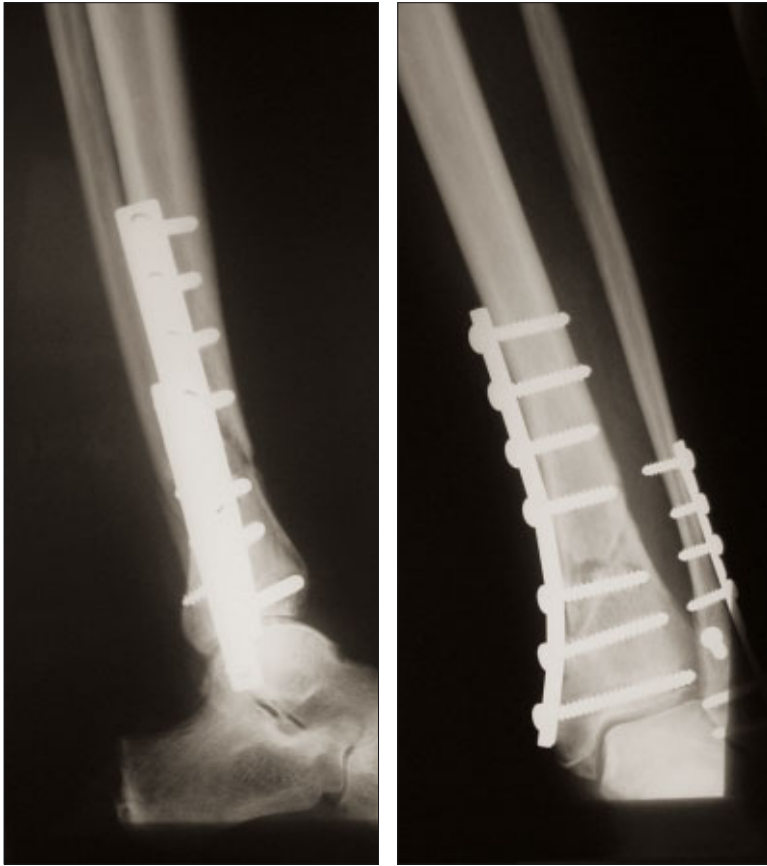
The U.S. orthopedic device market can be divided into two broad categories:

1. Large bone trauma devices and large joint devices. In the U.S. orthopedic device market, many companies have focused almost exclusively on the first category and over the years this has resulted in considerable industry consolidation. As a result, the large bone and large joint category has become a highly concentrated market which is dominated by the leading OEM companies. These companies include DePuy (J&J), Zimmer, Stryker, Synthes, Biomet, Smith & Nephew, and Wright Medical. These companies comprise about two-thirds of the overall U.S. orthopedic device market.
2. Upper and lower extremity devices. This market is fragmented and remains unconsolidated despite the fact that it is a significant part of the overall orthopedic industry.

Although the leading seven companies comprise about two-thirds of the U.S. orthopedic device market, there is a considerable number of small- and medium-size companies that make up the remaining one-third.

There is a wide range of instruments used in the numerous orthopedic implant procedures available today. Each implant system usually has a special set of instruments that is used in the surgical procedure to insert a particular implant system. The number and type of instruments included in a set varies by implant system. For instance, instrument sets for knee and hip implant procedures may have more than 100 instruments, while revision procedure sets may only have about 50 instruments. Instrument systems can generally be categorized as: (1) Implant-specific instruments which are used exclusively for a specific brand of implant, such as certain reamers, broaches, and high-precision knee cutting blocks; or (2) Procedure-specific instruments which are intended for a specific type of procedure, such as a minimally invasive hip implant procedure, but are also compatible with the implant systems of various other companies.





Manufacturing Trends

To stay competitive in the medical device market, it is important for companies to maximize investments in R&D and also develop good relationships with their material suppliers. In order to do this, more and more OEMs are focusing their efforts on R&D, design, regulatory issues, and marketing of new medical devices, and they are outsourcing a larger share of their manufacturing and assembly operations to contract manufacturers. In addition, both OEMs and contract manufacturers are requiring shorter lead times from their suppliers for engineering and development projects.

Medical device OEMs are very good at creating and developing new medical products, but they may not be as proficient at managing their global manufacturing and supply chain logistics. As such, medical device OEMs

In the case of implant-specific instruments, the shape, size, and other attributes of each implant system are unique. As such, in order to ensure precise fitting and alignment during the surgical procedure to insert an implant system, unique instruments must also be used. This being the case, when a medical device company develops a new implant system, it usually develops custom designed instruments to insert the implant system. Medical device companies then supply these complete implant-specific instrument sets to end users (e.g. outpatient centers, hospitals, and physicians) in an effort to promote the use of the implant.

In the case of procedure-specific instruments, complete implant procedure instrument sets usually contain an assortment of instruments that are designed for a specific type of procedure, but can be used with the implant systems of various other companies.¹



¹ Symmetry Medical Inc., SEC Form 10-K, filed Feb. 27, 2006 p. 8, online reference: <http://ccbn.10kwizard.com/cgi/convert/pdf/SymmetryMedical10K.pdf?pdf=1&repo=tenk&ipage=3996184&num=-2&pdf=1&xml=1&todef=8&dn=2&dn=3>



need partners who can help them create market opportunities by combining the OEM's product innovation with the partner's operational proficiency. Contract manufacturers have been assisting OEMs for many years in other sectors by reducing costs through outsourced manufacturing services. Medical device OEMs are now beginning to work with contract manufacturers both to reduce costs and enhance business performance through improved supply chain economics. The swing to end-customer driven demand requires a supply chain that is quick to respond and at the same time can deliver quality, flexibility, and the lowest total landed cost. The trend is clear that medical device OEMs will need to find partners who can work collectively to combine the OEM's product innovation together with the contract manufacturer's operational innovation that will create market opportunities.²

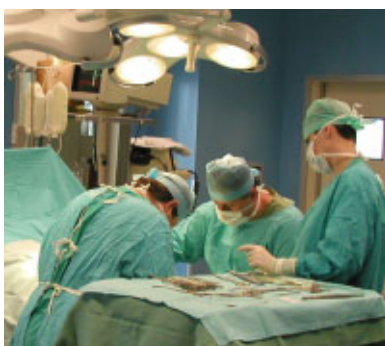
There is also a trend in medical device manufacturing toward integrated design and testing. Rising demands by patients for their ever increasing quality of life needs combined with more and more complex

devices designed to meet these needs are creating new procedures in orthopedic design and testing. Design engineers have begun to incorporate testing throughout the entire development process from the beginning concept stage to clinical validation as testing abilities have continued to improve. The overall trend for the full integration of testing is expected to become the norm and will include materials, components and complete devices. One way that test system suppliers have been able to keep pace with the increasing complexity of orthopedic device designs is by assimilating advanced test technologies and techniques previously used in the automotive and aerospace industries.

There is also a growing trend in the medical device manufacturing industry to allow customers to decide where they would like to have their products produced. For example, Pacific Plastics & Engineering, a privately held California based manufacturer of specialized devices for medical companies, gives its customers the option to have their products produced in the U.S., or at plants in India or Taiwan (for at least

² "Contract Manufacturers Aid in Enabling Supply Chain Optimization" by Dave Busch, Medical Design Technology, May 2006, online reference: <http://www.mdtmag.com/scripts/ShowPR.asp?PUBCODE=046&ACCT=0007258&ISSUE=0605&RELTYPE=PR&PRODCODE=0285&PRODLETT=A>

25 percent less). Other medical device manufacturers, such as United Plastics Group in Illinois and the Tech Group division of West Pharmaceuticals Services in Pennsylvania, also offer customers a choice between more expensive domestically produced products or cheaper products made in lower cost foreign markets. A spokesman from the Tech Group states that between 15 and 25 percent of the company's clients choose to have devices manufactured at Tech Group plants in Latin America while the other 75-85 percent choose Tech Group plants in the U.S. Driving this trend is the need to reduce costs on one hand, and maintain high quality on the other. U.S. companies are willing to pay extra for precision products which require more talented tooling making; however, there is a trend to manufacture less complicated devices and molds in lower cost locations like India, China and Latin America. Industry experts believe that giving the client the option to choose is exactly what customers want.³



³ "Made in USA? Now Customers Get to Choose" by Christopher Conkey, The Wall Street Journal, August 9, 2006, p. B1



SwissMedtech at the MD&M West 2007 Anaheim, CA February 13 - 15, 2007

Meet the representatives of renowned Swiss suppliers and manufacturers of precision state-of-the-art machines and tools:

- Agathon Machine Tools
- Amsonic SA
- CM Medical
- Maillefer
- Polydec SA
- Rego-Fix AG
- Swiss Tec AG
- Tectri SA
- Tornos SA
- Weidmann Plastics Technology AG

Swiss Business Hub USA, the trade promotion arm of the Swiss Embassy and the Swiss Consulates in the USA, will publish in October 2007 the third amended and updated edition of its well renowned report «The American Market for Medical Technologies – Opportunities and Challenges for Swiss Companies». For a copy of this report please send an e-mail to martin@SwissBusinessHub.org or contact Osec business network Switzerland at (044) 365 5151 or (021) 613 35 70



Francis Koller, following your active participation in the launch of the SIAMS microtechnology trade fair a good 20 years ago, why are you choosing now to launch a new exhibition and what will be the topic of this one ?



Essentially because the SIAMS event management team has decided to set a new challenge by launching a new exhibition called «mediSIAMS» to present 'medical technologies'. If all goes well, this event will be organised in Moutier on alternate years to the SIAMS salon, i.e. on every odd-numbered year.

Yes, but why go for a «medical technologies» trade fair?

The choice of subject matter is based on a global analysis of the situation facing 'medical technologies', but also and above all on an analysis of the remarkable expertise in this sector clustered in our region, the 'Jurassic Arc'.

Globally, specialists are announcing that the market for medical technologies is a market subject to continuous development with an average annual growth rate to the order of 7.5% (7% for medical staff and 8% for the dental sector). With regard to the Swiss market, the medical equipment industry is now made up of over 500 companies specialising in leading edge technologies and in products and services with a high value-added component.

You stated that the Swiss region, the «Jurassic Arc» possesses a remarkable level of expertise in this field: how do you explain this ?

We know that watchmaking effectively gave birth to the microtechnology industry. It was to respond to the needs of this incredible industry that our engi-

neers conceived and developed the machine tools and machining processes (not to say secrets) still in use today, especially in the bar-turning sector. This remarkable expertise has been able to respond to fluctuations in the economy, thereby benefiting other industries in the automotive, electronics and connectivity sectors.

More recently, in the wake of progress achieved in medicine and in surgery, we have seen a tremendous rise in the demand for products known in the trade as biomedical. The know-how in our cutting-edge industries, the networks that have been established, the industrial makeup of the Jurassic Arc and the exceptional level of education achieved by the men and women who work here have put us in a position where we can respond instantly to the needs of the market.

What types of exhibitors are going to be presenting their products and expertise at the mediSIAMS trade fair ?

As we have seen, the Jurassic Arc is perfectly positioned in the «medical technology» sector. It would not be unfair to describe ourselves as market leaders.

The people placing the orders and their subcontractors, industrial companies in the machine tool and tooling sector as well as material manufacturers are all invited to exhibit their creations, borne of their research effort and the skills they have been able to mobilise in the 'medical technology' sector.



It is precisely this range of tools and microtechnical products intended for the world of healthcare that mediSIAMS intends to exhibit from 25 to 28 April 2007 in Moutier, Switzerland. Many companies have already announced and confirmed their intention to take part in the mediSIAMS trade fair.

Who are the visitors the mediSIAMS trade fair intends to attract ?

It will target potential customers not yet familiar with the incredible skills resource of our region that work in the 'medical technology' sector.

All companies thinking of getting involved in this extremely lucrative adventure in the 'medical technologies' sector.

Professionals, poly-mechanics, bar-turning specialists, engineers who can come and discover this fascinating world – an industry at the service of healthcare.

All companies already active in this sector, who will have the opportunity to discover the very latest technological innovations.

For all these people and for those who wish to build up skills-based networks. In this context, this initiative aims to offer targeted support by establishing skills-based networks among the regional players involved in order to derive maximum benefit from the scope for co-operation and of knowledge and technology transfer.

What are the objectives of mediSIAMS ?

To bring together 80 exhibitors spread across the vocations and skills sets listed above.

To offer these exhibitors a new platform that will enable them to present their products and expertise and enable them to position these in relation to the needs of potential customers and also with possible future employees and business partners.

At the same time it aims to offer scope for consolidating the existing skill-based networks at the level

of various institutional bodies: MEDTECH, Cluster of precision, Cluster of medical and others.

What actions do you intend to take to achieve your primary objective – the satisfaction of the exhibitor ?

The organiser of this trade fair has the benefit of a broad base of experience; the SIAMS microtechnology trade fair (530 exhibitors for 15,000 professional visitors in 2006). Over the many years of this trade fair, it has helped close professional links to be established with very many players in the general field of microtechnology. These privileged links also have a bearing on the market for medical technologies.

From that starting point, the organiser has the task of making these contacts work for him and the task of launching a vast communication campaign in order to attract the aforementioned categories of visitors to the mediSIAMS trade fair.

We should not forget that exhibitor satisfaction is measured by the number of contacts established during the trade fair and the number of orders logged!

Absolutely everything will be done to achieve this primary objective – the satisfaction of the exhibitor.


Meeting point for medical technologies

To contact the organiser:

SIAMS SA – case postale 452 – CH-2735 Bévillard
Tel. +41 32 492 70 10 – Fax +41 32 492 70 11
info@siams.ch – www.medisiams.ch

EXTENDED POSSIBILITIES...

DECO Sigma 8 offers a wide range of options and equipment (on this subject, refer to the interview with Mr. Villard on pages 6-11), enabling the machine to be adapted to suit different machining constraints. Tornos is continuously introducing new options to enable it to become ever more responsive to the needs of its customers.

In this edition of the DECO Magazine look out for:

Combined support for «2 high-frequency spindles and 1 turning tool» for DECO Sigma 8.

Article number 242199. If interested, please get in touch with your nearest Tornos dealer.

Application

DECO Sigma 8 is usually offered with three powered spindles. Depending on the types of workpiece being produced, it may be necessary to have more units of this same type. Thanks to this new development, DECO Sigma 8 can now be equipped with two additional rotary spindles. The machining capacities of the machine have been increased substantially by this development. The reduced dimensions of the spindles ensure that they can be installed permanently, thereby minimising the use of multiple working positions.

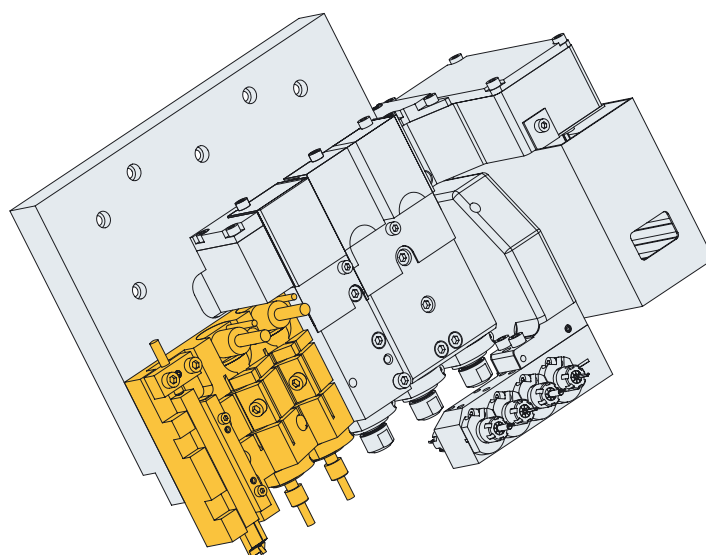
This support has an integral position that enables the cutting tool to be accommodated while also mounting two HF spindles with an external diameter of 25 mm. The dimensions of this tool holder block are identical to the support for 5 turning tools and its mounting position on the comb line is also identical.

Strengths

- Reduced dimensions.
- Perfect integration.
- With the motors for rotary tools on the comb unit, an increase of up to 5 positions for rotary tools (until now, max. number was 3).
- 100 % adaptable to all DECO 8sp / Sigma 8 machines.
- 100 % compatible with other HF spindles on the DECO 8sp (option 232-2550).

Comment

Installation of this support replaces five turning tools with two powered spindles and one turning tool.



Technical characteristics

- High-frequency drive.
- Rotational speed: 5000 to 80'000 rpm.
- Spindle power: 140 W.
- Spindle diameter: 25 mm.
- Clamping gripper: ER 8-UP.
- Assembly in positions T2 to T5.
- Max. number of high-frequency spindles on the machine: 3 (option 232-2550) (one HF spindle in positions T8 to T10 and two others on this option).
- Max. number of rotary spindles: 5 (power spindles plus HF spindles).

Compatibility

DECO Sigma 8.

Availability

Available on request & 100 % retro-fitable.

THREAD-WHIRLING HEAD WITH 5 BLADES FOR TORNOS DECO 13/20

Screw threads suitable for medical technology applications have been produced for many years using the thread-whirling process on sliding headstock machines.



5-blade thread-whirling head, batch of blades.

DIHAWAG 

Customers and suppliers are both called upon to increase their productivity to respond to the continuous growth requirements for precision medical screws.

DIHAWAG has successfully developed and introduced a **5-blade thread-whirling head** for the Tornos DECO 13/20 in collaboration with two major companies in the Swiss medical product sector.

As well as a substantial increase in production, this has also given rise to the other advantages listed below:

- longer service lives
- precision levels improved by $\pm 0.005\text{mm}$
- simplicity of operation
- reduction in downtimes
- reduction in costs per thread.

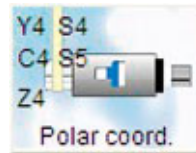
At various demonstrations, we have already succeeded in convincing a number of customers of these advantages and to extend machine service lives, especially when machining **titanium where an eightfold increase has been achieved** in conjunction with a new grade of carbide. The standard heads for the DECO 13/20 are currently available ex stock. Other models are planned and will be available upon demand.

Have we whetted your appetite? If we have, please do come and visit us here at Dihawag.

Tel. +41 32 342 42 33
e-mail: info@dihawag.ch

EXTENSION OF MILLING WITH POLAR CO-ORDINATES ON THE Y AXIS

A new way of milling workpieces with polar co-ordinates is now available with the Tornos TB-DECO ADV 2007. This extension can be used right across the range of Tornos machines using TB-DECO and on Tornos DECO [a-line] and MULTIDECO turning centres.



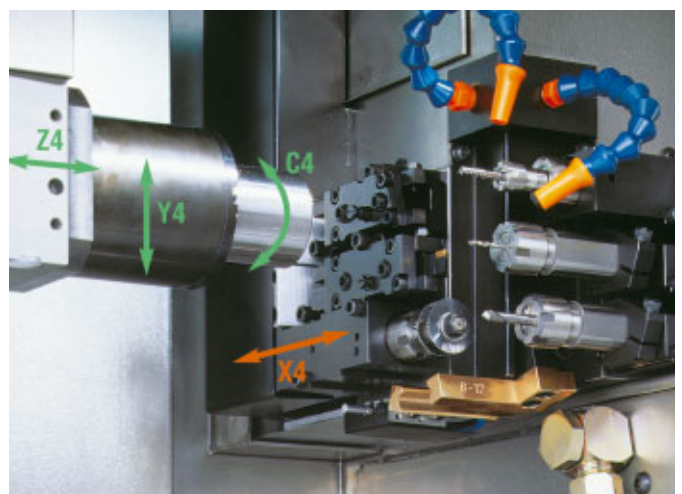
Why extend milling into polar co-ordinates ?

The wide range of Tornos machines calls for greater flexibility on the axes used to perform a milling operation using polar co-ordinates. This is why we are now offering the option of programming the 'Mx98 D-1' function with X/C axes and with Y/C axes.

To do this, you need to configure the operations line with axes 'Y – C – Z' instead of axes 'X – C – Z'. Milling with polar co-ordinates automatically takes account of the fact that the program no longer operates to the diameter determined by the 'X' axis: instead, this is now defined by a radius determined by the 'Y' axis.

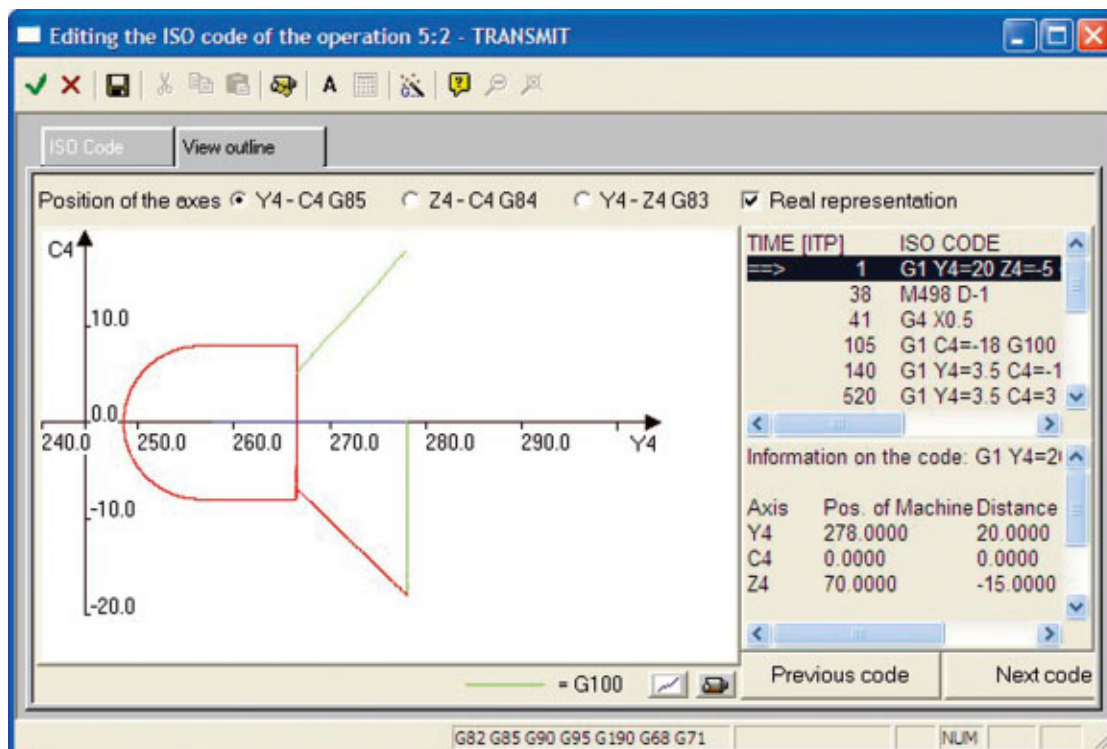
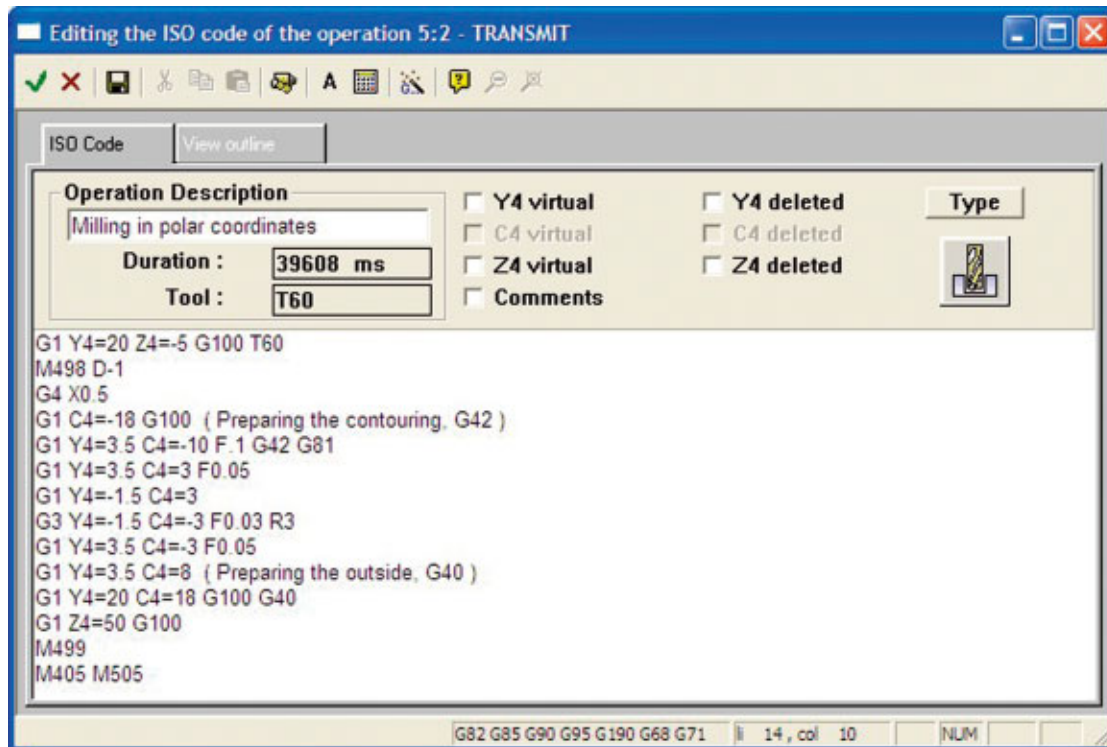
Tornos DECO 13a

This extension to programming will respond in the first instance to the needs of people using DECO 13a machines. Since the positive stroke of axis X4 is limited, machining in polar co-ordinates with axis Y4 makes it possible to extend the options available for machining.



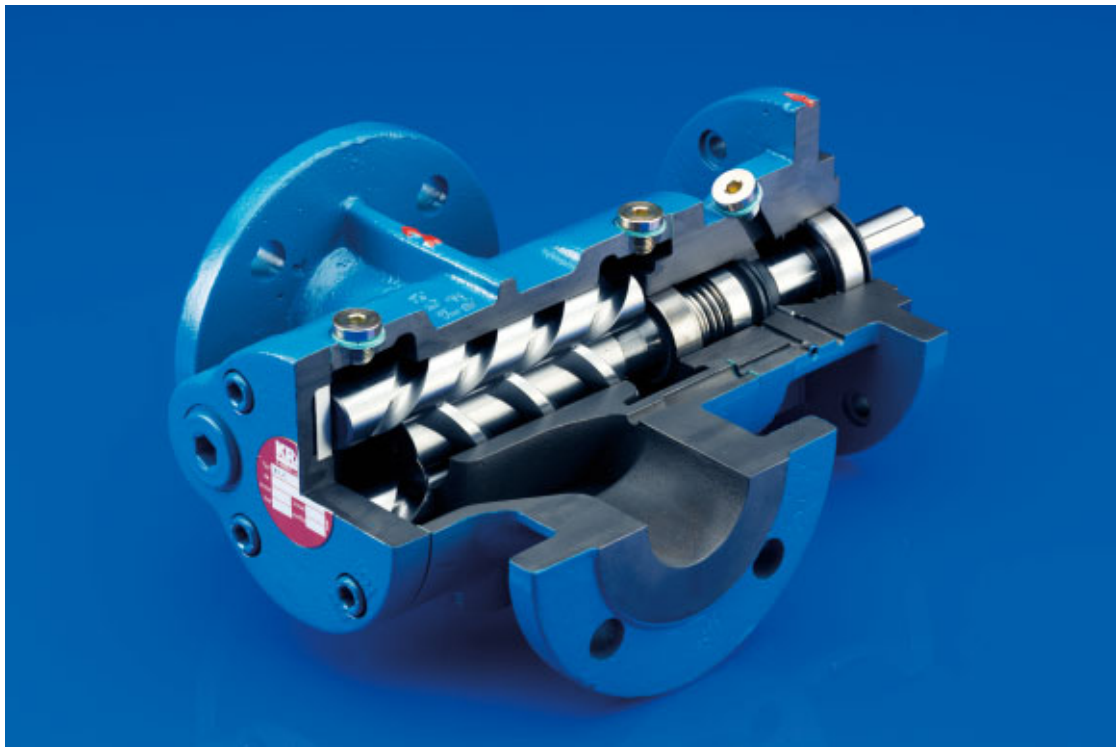
Programming

Example of programming a co-ordinate-based machining operation in counter-operation mode on the Tornos DECO 13a.



USER TEST AT KRAL AG: «...IT IS NO EASY TASK TO FIND HIGH-QUALITY CUTTING OIL...»

The employee magazine of KRAL AG, the renowned Austrian manufacturer of screw spindle pumps and flow meters; recently published the results of a user test with MOTOREX ORTHO NF-X 15. After the success enjoyed with this high-performance cutting oil delivering convincing results at the turning stage, it is now proving equally successful when milling large workpieces.



Photos: KRAL AG, Lustenau

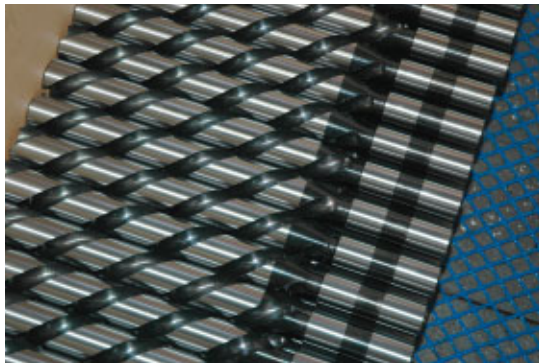
The title of this article is not just one that has been made up: instead it quotes the recently published article in the KRAL AG employee magazine. On three occasions already, this Lustenau-based manufacturer of high-precision screw spindle pumps and flow meters has run tests with various different makes of cutting oil on screw spindle milling machines. This means that every time the machine has to be completely cleaned down and refilled. Despite these efforts, not a single test delivered the level of improvement KRAL was hoping to achieve.

Test candidate number 4: MOTOREX ORTHO NF-X

MOTOREX and the importer for Austria, METZLER GMBH & CO KG needed to present very convincing arguments to persuade KRAL specialists to run another test. However, this is now all likely to change. During the very first test run on a GLEASON-PFAUTER P60 spindle milling machine, it proved possible to increase the cutting speed by 20 % when milling complex geometries.



Successful milling operations during this test at KRAL demonstrate that ORTHO cutting oils are capable of effortlessly marrying mutually exclusive requirements for various sizes of component. Improving performance at the same time!



Precision is the top priority on screw spindle pumps and on complex bar-turning components. Responsible for this: The machine operator, the machine tool, the tool and the cutting oil.



Despite its low ISO 15 viscosity index, MOTOREX ORTHO NF-X really knows how to deliver conviction through its extreme high-pressure stability. The workpiece is cooled perfectly and the relatively small amount of swarf created with this oil is taken away swiftly.

This performance improvement was possible without any other action being taken and the test manager, Mr. Rene Schröter, was then convinced that he had identified the right machining fluid. Herbert Hopp and Stefan Splinter, who attended this test, anticipate further performance improvements, possibly as much as an additional 10 %. The specialists also paid very close attention to swarf formation, heat conductivity characteristics of the oil and of course, the surface quality (R_a value). All three quality features involved in the milling of stainless steel screw spindles were delivered by ORTHO NF-X ISO 15, achieving top-grade test results. With its low viscosity of just 15 mm²/s, it was also possible to utilise the entire performance rating of the oil delivery pump, amounting to 200 l/min. This information provided an optimum basis for swarf removal and cooling.

This higher machining speed also made it possible to achieve higher pitch and lead precision during milling operations. Distortion characteristics during Tenifer finishing (see box) need to be checked more precisely and over a longer period. Here again, initial results are very promising...

What is Tenifer finishing?

A hardening process. Oxidising pre-treatment and post-treatment in a salt melt, with an intervening mechanical smoothing process (salt bath carbonitriding).

Universally applicable cutting oil

Experience gained during this test demonstrates clearly that MOTOREX ORTHO NF-X, a universally applicable high-performance cutting oil, manages to marry these mutual exclusives perfectly. Not only is it suitable for all materials, it also manages all machining modes masterfully. It is these aspects that increase the flexibility of MOTOREX ORTHO cutting oils so substantially in practical operations, which in turn makes them so appealing for bar-turning and metal machining professionals.



Satisfied faces at KRAL in Lustenau, Austria. This internationally active company offers a complete service, encompassing development, design, production, assembly and accredited tests.



Allowing for enhanced performance

Over a dozen additives (active ingredients) in MOTOREX ORTHO make it possible to achieve measurably optimised cutting values and superlative surface finishes. To ensure that heat build-up is managed within a clearly defined range, a special additive is employed to define friction (the key to heat generation) and maintain it within a defined bandwidth. Thanks to MOTOREX γ_{max} technology (increasing of cutting data), the resultant heat can be used in a targeted manner and this influences the machining process at higher production speeds in a positive manner at the decisive moment. However, these desirable chemical synergy benefits can only take place if the speed of machining operations is sufficiently high. This makes demands on machine operators, calling on them to gradually adapt machining parameters to increase productivity.

Faster machining really pays its way

On the spindle milling machine mentioned earlier, it proved possible to increase cutting speed by 20 % during the first stage of testing with ORTHO NF-X ISO 15 and without employing any other new measures! On two machines in two shifts, this represents an increase in annual machine hours from 7'700 to 9500. At an hourly rate of Euro 50.–, this represents additional utilisation capacity to the value of Euro 90,000.–! No mean achievement!

We would be delighted to provide you with information about the new generation of ORTHO cutting oils and the KRAL range of pumps and flow meters:

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PRECISION CLEANING OF BIOCOMPATIBLE WORKPIECES



Parts cleaning has become an absolute must for many industries. Especially for the medical sector, parts cleaning is an indispensable process. This article introduces a precision cleaning system that meets highest demands.

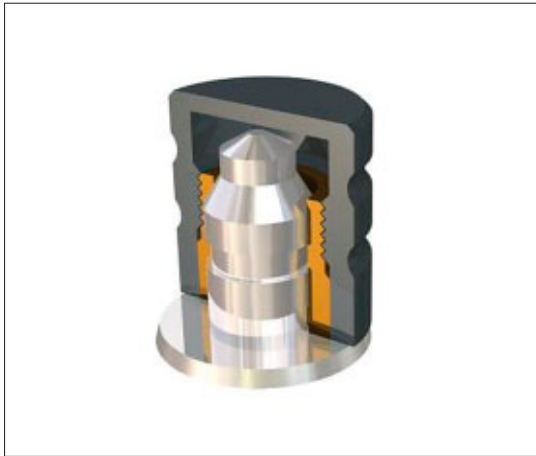
The CM Group – also known as Cendres & Métaux – is a Swiss company whose history goes back 120 years. In 1885, a small precious metal smelter was founded in Biel, Switzerland's watch making region. Over the years, this small company specialised in the production of wedding rings, jewellery, dental implants and medical devices, parts for watch making as well as components for the electronic industry. During the past decades, the CM Group has become a worldwide leading manufacturer of attachments.

Attachments, e.g. anchor systems, are used to connect dental prostheses (dentures) to natural roots or implants. A considerable part of the turnover is achieved through worldwide export.

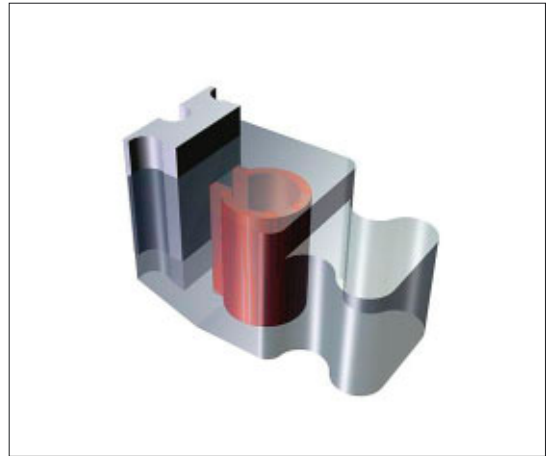
Over 300 employees guarantee for very high quality standards and the adherence to delivery dates.



The CM Group in Biel with 300 employees is divided into various divisions.



Implant



The final cleaning of components is of paramount importance

For a precision company, cleaning is a very important step within the production process. As yet, the CM Group has accomplished the cleaning of components with help of a water-based multi-tank immersion cleaning unit. The company's growth, however, has made it necessary to increase the investment in cleaning machines. When planning this new project, the manager of the micromechanical production department had to take into consideration that the workpieces had to be biocompatible after passing the cleaning process. Amsonic's cleaning process was validated during the evaluation phase. The biocompatibility is checked annually.

If biocompatibility is required, the final cleaning has to be water-based in order to avoid any carbon soilings. Rinsing is essential since detergents (builder and tenside) have to be removed efficiently.

Various companies were considered during the evaluation phase. Amsonic was chosen due to the optimal test results achieved by the cleaning process, the user-friendly machine control (PC) and also because of the wide know-how concerning validation and support for machines qualification (IQ, OQ). The cleaning unit is fully automated and controlled via

PC. The machine's concept is based on the following cleaning phases:

- 2 ultrasonic cleaning tanks.
- Rinsing.
- Ultrasonic cleaning.
- Rinsing.
- 3 rinsing tanks with DI water, thereof twice with ultrasonics.
- Warm air drying, vacuum drying.



With various processes, the Amsonic AquaLine cleans complex components that are used for the medical sector and therefore need to be optimally biocompatible.

Warm air vacuum drying

The machine has a throughput of four baskets per hour. The DI water production unit is integrated. The warm air vacuum dryer "WetEx" has been developed in collaboration with the Fraunhofer Institute. It guarantees a perfect and stainless drying even for bulk goods with tapped blind holes, e.g. attachments.

The baskets were especially developed for use under vacuum. Vibration baskets are used for the cleaning and drying of "delicate" parts. They allow a smooth turning of the parts around the basket's vertical axis.

Virtually the complete CM product range is cleaned with the AquaLine.

The cleaning process is checked with TOC and IR analyses annually. If the analyses are satisfying, it is assumed that the application is guaranteed and that no cytotoxic potential exists. In order to be able to certify the parts, the PC control allows the automatic printing of a cleaning protocol for each charge. Thus, ensuring that the validated cleaning parameters, e.g. sequence of the cleaning phases, cleaning cycles, functions (ultrasonics, basket rotation etc.), temperatures, DI water values etc. are adhered to.

CONCLUSION

Cleaning is an integral part of product quality

The person responsible for the AquaLine cleaning unit estimates a maintenance effort of approx. one and a half hours per week. In addition, Amsonic maintains the machine twice a year according to medicinal technology requirements.

Until a few years ago, cleaning was a necessary evil in production processes. Now it is more and more developing into an integral part of product quality. This conclusion has to be considered within the medicinal technology sector as well as the automobile, aircraft and electronics industry.

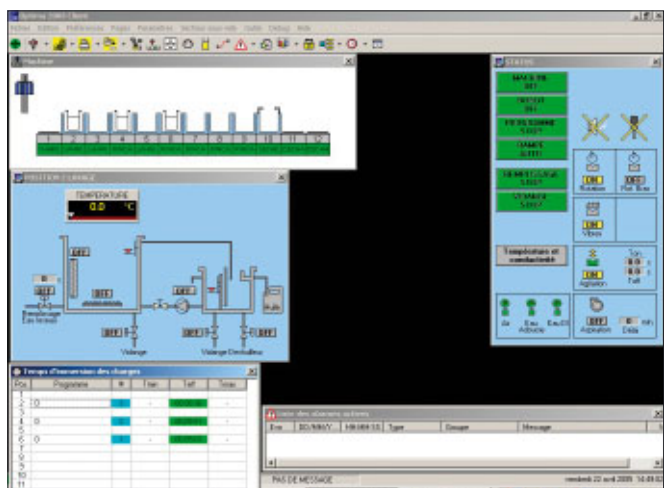
Information

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Cleaning basket



PC control with functional chart of the machine.

TWO STRIKING NEW FEATURES IN THE MULTIDEC® RANGE

Utilis unveils two new inserts for the Multidec® CUT3000 programme.

A capacity insert diameters up to 32 mm by 3 mm wide and an insert length of 10 mm by 6 mm wide are the two new size additions to the existing line of products.



Capacity insert for 32 mm Diameter

This new arrival will enable the CUT3000 program to become involved in trimming operations on machines with diameter capacities of 26 and 32 mm. This extension to the product range will replace the type 2502 insert, which has been an exceptional commercial success.

The previous 2502 insert made a bold impression with its dimensions and its carbide volume, but the new CUT3000 insert makes its presence felt in a very different way. Backed by our considerable experience

with a standard insert capacity of up to 20 mm diameter, the setting-up process for this unit on its holder is not just an operation involving high standards of technical expertise and stability, but also one which enables the initial proportions of the insert to be retained.

This modern concept bestows pure and refined geometric shapes on this compact design of insert, enabling it to be used on cam-type machines where intersecting tool events can sometimes prove hazardous.

Available dimensions and geometries:

Type – width – length (by radius)	Type of operation
3002 – 2.5 – 13 L/R UHM30.... 3002 – 3.0 – 16 L/R UHM30....	Standard trimming operation, leading angle of 15°, without upper cutting geometry, top section on the bar.
3002 – 2.5 – 13 L/R N SC UHM30.... 3002 – 3.0 – 16 L/R N SC UHM30....	Standard trimming operation, leading angle of 0°, with swarf checking geometry, no top section.
3002 – 2.5 – 13 L/R V UHM30.... 3002 – 3.0 – 16 L/R V UHM30....	Trimming operation on counter-spindle, leading angle of 15°, without upper cutting geometry, top section on the component.
3002 – 2.5 – 13 L/R SC UHM30.... 3002 – 3.0 – 16 L/R SC UHM30....	Standard trimming operation, leading angle of 15°, with swarf checking geometry, top section on the bar.
3002 – 2.5 – 13 L/R V SC UHM30.... 3002 – 3.0 – 16 L/R V SC UHM30....	Trimming operation on counter-spindle, leading angle of 15°, with swarf checking geometry, top section on the component.

The coatings available are SX (TiN) and HX (TiAlN). After the insert designation all you need to add are details of the type of coating.

The substrate does not change

The tungsten carbide (Wc) used to manufacture these inserts is a member of the micro-grain family. The average size of grains does not exceed 7 µm (0.007 mm) and their cobalt content (Co) makes this material very tough and hard-wearing.

This cobalt content is partially responsible for delivering the mechanical characteristics of this carbide compound. As a general rule, it would be fair to state that the average dimensions of bar-turning components impose low cutting speeds on a machine but do not require the use of carbide tools with very high hardness levels. For this reason, the choice of carbide level is taken as equivalent to 30 (ISO 513 and DIN 4990 standards). It follows from this that the range of cutting speeds is located between 30 and 150 m/min. By optimising the choice of surface coatings, it is possible to achieve higher cutting speeds.

A single type of insert holder for two sizes of insert.

It follows from this that a form of mounting with identical proportions makes it possible to offer the

user a single insert holder for two inserts of different capacity ratings, in this instance 20 and 32 mm.

These insert holders, rectified and improved up to 130 daN/mm² are available from 8 mm up to a square of 20 mm. For insert capacity ratings of 26 and 32 mm, the minimum size of this square is 12 mm.

This standard range of insert holders would not be complete unless it included models with small dimensions. Types RA and LA, make trimming of short workpieces much easier between two spindles and this prevents the operator having to move away from the trimming zone at the front of the bar, thereby finding himself in the wrong position, especially when working on sections with narrow diameters.

The advantages are retained

All the initial advantages which strongly supported the insert approach are retained for inserts with a capacity rating of 32 mm, i.e.:

- Two cutting edges available to 100 % (even if one of the two is missing).
- Repeatability of the insert ± 0.01 mm.
- Great stability with two clamping screws.
- No shearing stress applied to the clamping screws.
- Tool crossing is easier to manage.



3600 insert 3600 with a width of 6 mm

Another newcomer to the Multidec® CUT3000 range, the 3600 insert with a width of 6 mm. This insert does not have any defined geometry. It is rough and was designed to apply sharpening forms in accordance with drawings for machining operations involving sinking/bottoming or rounding, following the sharpening geometry profile.

This insert is mounted on squares with a size of 8 to 20 mm. It can be mounted on a standard body where it extends beyond the zero line, or on the specific insert holder where it is totally integrated in the body. This insert is neutral and only the sharpening operation will define it as a right-hand or left-hand insert. The carbide rating does not alter the standard inserts in the CUT3000 program and any differentiation or gradation is based on equivalent toughness.

Availability

All sizes listed are available ex-stock, from Utilis Suisse (Switzerland) and from Utilis France. Our sales outlets in Europe, especially in Germany and Italy, are also in a position to supply you with these tools directly from their own inventory.

Summary

These two new inserts now apply the finishing touches to an already vast range of choice. By inheriting the ingenious and highly capable fixing system of its forebears, this new insert with capacity ratings of up to 32 mm is ready to take the place of the type 2502 insert.

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Denis Juillerat*



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IMPOSSIBLE IS NOT AN OPTION IN THE BAR TURNING WORLD!

Burri SA is located in the heartland of the bar-turning world and as a company it is totally dedicated to bar turning. For its CEO, Willy Meier, complex workpieces are just another challenge.

(Photos: Robert Meier)



Willy Meier is co-owner and CEO of Burri bar turning in Moutier.

Founded in 1911, Burri, based in Moutier in the Bernese Jura region of Switzerland, has a long tradition in the bar turning sector. With a wide range of cam-type bar-turning machines, the company has specialised in workpieces with diameters ranging from two to thirty-two millimetres. However, times have changed. The company's CEO, Willy Meier, who came from the watchmaking industry, took the choice of expanding the range of products and markets served by Burri. To achieve this, the entire machine park was adapted to enable it to machine workpieces ranging in diameter from a few tenths of a millimetre right up to thirty-two millimetres.

Complex workpieces come as standard

The bar turning business has focused on the machining of comparatively complex workpieces and the entire organisation, its staff and production facilities are targeted at the manufacture of this kind of workpiece. For Willy Meier, a complex workpiece is an item requiring work on several machines, with a long list of different operations. Mr Meier comments: «For example, we produce workpieces which require bar turning, heat treatment, frequently then go for initial centerless grinding, polishing then a second centerless grinding operation. More often than not, work involves a sequence of complex operations».



From the minutest to the relatively large workpiece: an impressive product range.

rations, rather than just progressing straight from putting a bar on a machine to delivery of a finished component. Each workpiece therefore contains real added value.»

Diversification – an advantage

Since being appointed to the role of CEO, Willy Meier – who has also become a co-owner of the business – is seeking to diversify production. Today, the company supplies sectors like the automotive industry – for which it incidentally produces injectors with deep drilled bores. The company also manufactures for the connector, hydraulic, medical and the watchmaking industries. The materials it employs include simple grades of steel, stainless steel, titanium and a vast array of exotic materials. Precious metals are not machined at this time (yet). As Mr Meier says: «The reason is a question of demand on the market and, failing this, a question of internal organisation which is then easy to resolve».

Activities for the watchmaking industry commenced

just two years ago as the CEO explains: «Watchmaking components call for the highest standards of precision and you need efficient turning capability and a complete absence of burr formation. Having chosen to make complex components our house speciality, the watchmaking sector of which I already had an in-depth knowledge seemed an ideal candidate for our work». He admits that at first it was not easy to convince his staff of the complementary nature of this relationship. However, identical turning machines were already being used in other companies to machine components of this kind, so it proved a fairly rapid process to bring everyone around to sharing his view. «One thing certainly helped me in watchmaking, which was that this industry really stipulates exacting standards. This fitted well with the Burri ethos, where rigorous standards were already being applied to the manufacture of automotive components. All we had to do was apply these same rules to the watchmaking industry and this enabled us to gain proper control of this product within just a few months,» says Meier.

Expanding demands

Our existing customer base regularly requests us to make sub-assemblies from our machined components and to provide other services. Based on this, the company has expanded its range of services to include internal and centerless grinding, polishing and lapping, it has modernised its assembly unit. Another request that often crops up is a call for even shorter delivery lead times. Burri's customers are no exception to this general trend. The company has therefore adapted to meet these new demands.

Long production runs are becoming less common

For Willy Meier there is no doubt about the fact that market conditions have changed: «Today's customer no longer produces what can be purchased directly from the market. As a consequence, high-volume production runs are becoming increasingly rare occurrences.» Indeed, there is a clear trend in favour of shorter production runs. «Even if it costs more, our customers only want to manufacture the exact amount they require at any given time.»

Prior to 2004, Burri rarely produced runs of less than several dozen components at a time. «Today, we are often producing several new parts in a single day. This means that we have moved from production runs of several dozen machine set-ups a year to two or even three hundred a year.

Machine park has evolved

Over the years, Burri had come to specialise in long production runs where manufacturing tracking was relatively unsustained. This meant that, often enough several million components were being manufactured on a group of machines – production runs so long that some lasted for years at a time on cam-type turning machines or on CNC machines. However, today's products have evolved to the point where these long production runs, essentially of components very familiar to the market needs, tend to occur in third world countries where payroll costs are much lower.



The first DECO Sigma 8 has arrived and is under the watchful eye of Willy Meier and the turning operator in charge of start of production.

As a consequence, the machine park needed to be adapted to meet the needs of a more demanding marketplace. Now, Burri fields a machine park with one third comprising traditional cam-type turning machines and lathes and two thirds comprising numerically controlled turning machines. Half of these machines were supplied by Tornos with the other half being sourced from an Asian supplier. Willy Meier defends this choice: «The sheer proximity of Tornos encouraged us to work with this supplier. However, we always carry out a feasibility study for each workpiece. This means that, while a given range of components may seem particularly well suited to a given type of bar turning machine, another range of components may seem equally suited to a different type of turning machine. Our current range of Tornos machines enables us to produce relatively long components in fairly substantial produc-

tion runs. I must say, with some pleasure, that our new Tornos turning machines are proving ever more responsive to the current demands of the market.»

The cam-type machines are retained for simpler components, i.e. well-known watchmaking parts.

Precision – a competition at all times

In the automotive industry, the range of tolerances is frequently within just a few hundredths of a millimetre. Micron-level tolerances rarely arise unless the components have been through a grinding operation. In contrast to this, when you turn to components for the watchmaking sector, micron-level tolerances are the rule rather than the exception.

A requirement which Willy Meier feels to the tips of his fingers: «Making parts for the watchmaking sector requires tighter machine maintenance. Whereas



An inside view of the DECO Sigma 8. Willy Meier has high expectations of his new acquisition.

the long production runs for the automotive sector made it possible to defer major service work on turning machines, this is not the case for watchmaking components.»

These workpieces always require their machines to be in perfect condition, with no backlash in slides or bearings, and with their tools perfectly positioned. Result: it takes more machine maintenance to respond in an ideal manner to the demands of the watchmaking sector. As Mr Meier says: «Machine capability must always be absolutely right.»

The need to reduce downtime

With all the aspects associated with short production runs and the precision levels required in the watchmaking industry, it was absolutely essential to reduce the downtime incurred by turning machines. As it was, two years ago, when the company was still geared up for long production runs, preparation for the next machine set-up did not get started until the previous production run had come to an end. It was not until one of these long runs finished that bar turning specialists opened up the machine and started to set the unit up for the next production run. Back then, it was not uncommon for a machine to remain shut down for a week at a time. Not that this had any great influence however, because the next production run often continued for months at a time. Nowadays, in an era of short production runs, it was essential to bring in new types of planning in the company to prepare for the next set-up while one production run was still in progress. Back in 2004, a machine set-up for watchmaking runs still took a number of days. Now, operators working on just one machine sometimes produce several different workpieces on a turning machine in a single day.

Machining centre ?

No passing trend but instead an essential requirement is the ability to produce a finished workpiece from a turning machine. «This is absolutely necessary. Nowadays, when I make a calculation, I am aware that the hourly rate for a machine is no longer the primary consideration. For complex workpieces,

it is now the operator who constitutes the dominant factor. Our workforce adds value to the workpiece from the moment where additional handling is required,» says Meier. How can this problem be resolved? Meier has just one answer to this: «The focus should not be so much on the machines, but instead on the production methods employed on those machines.»

New innovative ways need to be discovered to increase machine productivity. As a consequence, the CEO stipulated that expertise in methods and related information needed to be set down in writing. For him, all in-house expertise should be accessible to everyone in the company. He does not deny that the capabilities of the individual are of essential importance, but goes on to state that expertise cannot be allowed to reside solely in the head of one person.

In the past, a bar turning specialist used to pass an order for a new workpiece to a new machine, but this way of doing things is now definitely a thing of the past as Meier comments: «An operator must be able to produce two to three different types of workpiece on the same machine within a working day.» For this reason, he has a distinct preference for machines based on a more universal concept.

«Thanks to multi-functional machines, production is now capable of much more rapid response and – a point well worth mentioning – this translates into new customers.» For him, it is inaccurate to call some models of bar turning machine 'automatic turning machines'. He would prefer to refer to them as pedigree machining centres.

And a single fixture setting

In the past, operations were often distributed across several machines. The demand for tight tolerances and the cost of labour prompted every bar turning specialist to find ways of reducing the incidence of workpiece handling. Once again, Meier defends his choice of universal machines: «We have a group of machines of the kind known as universal, fitted with a special kind of equipment. These turning machines are more expensive to buy – about 30 to 40 % more

costly – but in terms of workpiece machining, we are not restricted.»

Impossible! Don't know the word!

Willy Meier is more than a little proud of this: «We produce highly complex workpieces, of a kind which no-one would previously have believed possible to machine on a bar turning unit. This prowess in succeeding where others have failed is possible thanks once again to the fact that we chose to fit our machines with every option available.»

Indeed, on any visit round the workshops, it is easy to find quite surprising workpieces on the workbenches and in crates, all the more so because Burri's only machining option for this takes the form of the automatic bar turning machine. After consulting a number of watchmakers, Willy Meier found that plate sections or to be more accurate, that a group of workpieces were seen as problem parts: the cage, plate and bridge sections. These workpieces are now usually produced on transfer machines.

These machines are relatively expensive and are dedicated to a certain type of work as Willy Meier believes: «Given my long track record in production, I was able to study the turning machines in our company and said to myself that all of them had the tools required to make plate sections of this kind.» In his view, all that was required was to make some minor changes to these machines and to equip them with the right software for producing these workpieces. After a series of tests, the company successfully launched itself into the machining of plate sections, needless to say with the help of bar turning machines. «This kind of manufacturing demonstrates our faculty for seeing and utilising 100 % of a machine's true capacity.»

IT – an ace in the hole

The company uses CAM software (Computer-Aided Manufacturing). With this system, it is possible to program a machine in advance without using the

machine itself. With this virtual programming capability, production planners can fine-tune the machining program, define the tools, the initial settings and the tool commands in advance. Whenever a production run has been completed on a turning machine, it is then simply transferred to the program to the machine control unit and any adjustments needed to the tools are made and then the next production run can start. Meier: «This is a very efficient way of reducing machine downtime!»

However, IT first comes into play at a much earlier stage in the process. Mr Meier says: «From the time we receive an invitation to tender, if our customer is already working with a computerised tool, we request an electronic file and 3D model of the workpiece.» From this file, the specialists at Burri doesn't just produce machining simulations – at the same time they can also run feasibility studies, calculate machining times and work out which tools are required for the job. In this company, all drawing documentation is processed in 3D format and is transferred into the CAM system.

«Manual entry of a programming code on one of our machines is now a thing of the past.» This way of doing things in no way detracts from the expertise required from our bar turning operators, indeed quite the reverse, states Willy Meier reassuringly. In his view, the operators are now better able to focus on their job and they are also able to enter any necessary corrections directly into the control unit.

With the DECO Sigma 8

In mid-September, the company took delivery of its first ever Tornos DECO Sigma 8 automatic turning machine, with a further three to follow in October. The most surprising aspect of this purchase was that Burri did not conduct any machining tests in advance. Willy Meier: «We concluded, after analysing this turning machine, that this type of base frame promised the outstanding levels of stability required to produce work to micron-level tolerances.»



A third of the machines are CNC turning machines from Tornos.

The DECO Sigma 8 is a very compact machine which responds to this particular demand from the market. Meier says: «This machine enables you to get started more quickly. The more compact a machine is, the less it is prone to problems of vibration, dilation, alignment errors and so on – in other words, it delivers much greater precision. I am hoping to find the same levels of reliability and precision that we have become accustomed to getting from our Tornos cam-type machines with the DECO Sigma 8.»

Another highly attractive feature of the DECO Sigma 8 is its ability to accept ISO programming where the operator is able to perform last-minute adjustments to machine settings directly on the control unit: yet another major time-saving feature.

The bar turning operator need have no concerns about the fact that this turning machine, which incidentally does not have an arbor – is designed for producing relatively short workpieces. Willy Meier:

«We deliberately choose to buy complex machines to give ourselves greater flexibility with certain kinds of workpiece. After initial machining, we unload certain components from these units in order to machine them on more appropriate production equipment. For the last two years, we have been producing all our watchmaking components on highly complex machines. However, now that we have some relatively simple watchmaking components to produce, it is much easier to do this on a DECO Sigma 8.» However, Meier is expecting something quite different from this new turning machine – much more widely spaced maintenance intervals.

High precision as well

In the watchmaking industry, tolerances range from four to six microns. Since the DECO Sigma 8 was designed for a much tighter tolerance range of just one to two microns, this means it has considerable

latitude on the machining front. Willy Meier should have the last word on this subject: «The fact that these machines are already in service with other bar turning operators gives me the confidence to go with Tornos.»

Skilled workforce – assured flexibility

The company can rely on the services of its skilled and professional workforce. Moreover, the company is training several apprentices and also takes care to provide continuous training to other bar turning staff. Willy Meier has no hesitation about encouraging a former apprentice to put himself through tertiary education, after which new openings within the company may arise. In-house training also comes into play for new workpieces where one or two machines can be set aside for up to several weeks at a time to enable training staff to bring the workforce up to speed on a new machining process. When the DECO Sigma 8 was introduced, a bar turning specialist had already received in-depth training at Tornos: he then passed on what he had learned to his colleagues.

A key partner

Burri is part of the BM Group, which also includes Exidel, a company actively involved in the development of watches. Exchanges between the developers and the manufacturers ultimately deliver very effective results: «We've just industrialised a new product within just twelve months. This is a massive time-saving,» states a delighted Willy Meier. In the light of this, he is ear-marking a substantial level of production capacity to enable a new product designed by Exidel to be manufactured very rapidly.

The future of cam-type machines

Cam-type machines account for one third of the machines owned by this company. Willy Meier recognises clearly that he will always need turning machines of this kind for production of relatively simple components. The only problem is that he needs to find a way of making them more adaptable more rapidly for new production runs. «Right now, I'm always able to find a supplier capable of delivering a workpiece within a very tight timescale but we do not at present have this capability in place within our own business. As of now, I'm working on changing this.» He's convinced that cam-type machines have a future provided that the workforce is flexible enough.

Seeing further

Willy Meier isn't one for standing still. He's planning to seek out more workpieces and more markets to get the full value out of his machines: You can't just use a small percentage of your machine's capacity – the investments are too high.»



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AGATHON MACHINE TOOLS



AGATHON, is a Swiss manufacturer of precision linear guide element components, consisting of guide pins, bushings and ball cages. They are traditionally used in progressive metal stamping dies, wherever high speed, high volume or close tolerance stamping requirements exist. AGATHON Precision guide elements are gaining popularity in the medical industry, wherever short stroke, backlash free, precision linear motion is required. Some applications in the medical field include injection molds, blister packaging dies, precision optics machinery, CT scanners and custom machinery.

The company website, www.agathon.com offers both 2D and 3D CAD files of these precision guide elements, free of charge.

The U.S. subsidiary is located in Bethel, Ct.

For information please contact us at 203-730-8741. You can also visit us the MD&M Show West 2007 in the Swiss Medtech Pavilion, **Booth 2819**.

AMSONIC SA



AMSONIC presents Aqualine, a multi-tank cleaning system using water based-detergent with ultrasonics, for high-precision cleaning.

The Egaclean A3 cleaning system is specially designed to clean oil-stained parts. The continuous distillation allows minimal consumption of solvent and assures constant cleaning quality. Visit us at the MD&M Show 2007 in the Swiss Medtech Pavilion **Booth 2819**.

CM MEDICAL

CM MEDICAL is a Swiss based company providing the highest quality contract manufacturing for the cardiology, spinal, dental, craniofacial and hearing aid industries. CM MEDICAL has more than 80 years of experience and extensive know-how in manufacturing in the micro millimeter range (40 millionths of an inch) from high quality biocompatible materials such as precious metal alloys and titanium. The precious metals and its alloys are exclusively processed in-house.

CM MEDICAL offers engineering capabilities, design assistance, full service project management and single sourcing. The company can handle prototype to high-volume production, is certified ISO 9001, ISO 13485, ISO 14001 and is FDA registered. Visit us at the MD&M Show West 2007 in the Swiss Medtech Pavilion **Booth 2819**.



DAETWYLER i/o devices



A worldwide leader in tactile solutions and R&D pioneering, Daetwyler i/o devices, Inc. is truly *"a touch better"*.

We are a global supplier of elastomeric keypads, connectors, touch screens, and assemblies for use in electronic input/output devices. Our company supplies custom solutions to the automotive, consumer, medical, instrumentation, and telecommunications market segments worldwide.

Daetwyler i/o devices, Inc. offers a wide range of technologies utilizing rubber, plastic, and various hybrid materials. We possess years of technical know-how and expertise to successfully design, develop, and manufacture quality tailor-made solutions. Real solutions, real time, real easy. Visit us at the MD&M Show West 2007 in the Swiss Medtech Pavilion **Booth 2819**.

MAILLEFER



Finally, Reliable Protection against Re-Use of Single Patient Instruments !

Ensuring that Single-Patient surgical instruments (SiP's) are only used once is a necessity today, in order to guarantee clinical performance of the SiP's, and to reduce risks of cross-contamination.

Maillefer Instruments is providing its clients with an elegant solution to this requirement. OEM instruments manufactured by Maillefer have modified shanks that preclude their re-sterilization in an autoclave.

The plastic sheath on the shank deforms itself if the instrument is autoclaved, thereby precluding its re-use, even if the sheath is removed.

Our SiP technology can easily be adapted to a variety of shank designs, for a wide range of applications in surgery, implantology and traumatology. Visit us at the MD&M Show West 2007 in the Swiss Medtech Pavilion **Booth 2819**.

POLYDEC SA



Polydec is a world leader in the manufacturing of micro turned parts and specializes in metal parts with diameters between 2 mm and 0.10 mm (.08 to .005 in.). Polydec maintains the highest quality standards and complex manufacturing capabilities allowing for cost effective productions, with parts destined for the medical device, electronic testing, automotive, and watch industries. Polydec is a proud owner of Tornos machines and is ISO 9001, ISO 14001, ISO 18,001, TS 16,949, OHSAS 18,001 certified. Visit us at the MD&M Show West 2007 in the Swiss Medtech Pavilion **Booth 2819**

REGO-FIX AG



REGO-FIX cylindrical holders are compatible with the company's ER collets and designed for various automatic machines, including Swiss type turning centers. The cylindrical holders can also be combined with other holders to extend cutting tools for various applications. This feature, along with its broad range of sizes (ER 8M – ER 40) and types, makes REGO-FIX's cylindrical holders ideal for small part machining.

REGO-FIX cylindrical holders are manufactured under tight tolerances, 0.0002" or better with REGO-FIX UP collets, offering superior run-out of 0.005 mm and resulting in better cutting results and repeatability. Each holder also has a distinct product marking to help reduce tool selection errors and a lot number for product traceability. Visit us at the MD&M Show West 2007 in the Swiss Medtech Pavilion **Booth 2819**.

SWISS TEC AG

www.swisstecag.com



Swisstec Micromachining is a manufacturer of high precision, high quality and high performance STENT and Hypotube cutting machines. The NEW "T15F" (FIBRE Laser), the "T15D" (DISC Laser) and the "T17" (Nd-YAG Laser) with a compact granite structure is torsionally stiff, temperature-stable and corrosion resistant. It has a very small footprint of 0,8 x 1,2 m, weight 850 kg. The machine has highest precision X- and A-axis with DIRECT drive motors and optional customizable multi-axis moduls for differerent applications. Cutting length 10 to 300 mm / Cutting speed up to 1500 mm/min / Kerf width 8-30 micron in Stainless steel, NITINOL, CrCo, Titanium, Tantal etc. HAZ less then 5 micron. Fully automatic tube handling system with sensor controlling. Tube Diameter: 0.2 – 8 mm. WET tube cutting with high pressure water pump. Internal laser power supply with cooling system. Motorized beam-expander, Network- and INTERNET-connection. Highly dynamic and powerfull CNC-control system with LCD Touch-screen monitor. Process controlling by dynamic adjustable sensors / valves for GAS, AIR, water etc. Process parameter connection over Network to the HOST-server system. Warranty 4000 working hours. Unrivalled cost / performance ratio. Short delivery time. Visit us at the MD&M Show West 2007 in the Swiss Medtech Pavilion **Booth 2819**.

TECTRI SA



TECTRI SA is specialized in the machining of turned and milled pieces made of metal and synthetic materials.

Our processes based on serial production, are rational and automated. A modern and complementary machine park is composed of automatic lathes up to 11 axes and vertical turning points of 5 axes permitting the manufacturing of complex pieces in a minimum of handlings.

The machining of our pieces is complex and requires relatively long time cycles, which is why we are specialized in the manufacturing and assembly of small and medium size series.

TECTRI SA is a family enterprise that employs about 40 qualified people. Here, you will not only find a marketing department but competent partnership capable of answering your questions to help you develop your products. Visit us at the MD&M Show West 2007 in the Swiss Medtech Pavilion **Booth 2819**.

TORNOS SA



Tornos at the service of human beings

Just like a car or machine, the human body benefits from the technological progress of small-parts turning. In the medical sector, advances in genetic engineering, biology and biochemistry tend to obscure progress in mechanical applications, where precision and stringent requirements in terms of safety and stability are essential and the results very definitive.

Research applied in all areas of small parts turning not only directly benefits medicine but, the demands made on medical parts (bone screw for instance), for the human body are even greater than those prevalent in many other applications.

Tornos has been providing successful machining solutions to this industry for more than 20 years and proudly invites you see us at the MD&M West 2007 **Booth 2819**.

Come and discover how you too can succeed in this demanding sector.

www.tornos.com

Tornos provides turnkey Swiss automatics up to 32 mm diameter capacity.

WEIDMANN PLASTICS TECHNOLOGY AG



Weidmann Plastics Technology is an innovator in high-quality plastics for various industries such as Biotechnology, Medical, Automotive, Plumbing and Sensor Technology. The Medical Division of Weidmann Plastics Technology develops and industrializes, among other applications, disposable microfluidic systems via the large-scale production and integration of molding and bonding technologies for the In-Vitro Diagnostics, Labware and Medical Device markets.

The company's advanced processing techniques in multicomponent molding and microfluidic/micro-optical technologies allow the economical creation of systems with high functional complexity. Complete in-house capabilities from part and tooling design, prototyping, mold design and manufacture, parts production, quality control and testing to packaging and logistics allow fast, reliable and efficient one-stop-shopping for Weidmann's customers. Visit us at the MD&M Show West 2007 in the Swiss Medtech Pavilion **Booth 2819**.



SwissMedtech at the MD&M West 2007
Anaheim, CA February 13 - 15, 2007