

DECO MAGAZINE

26

3/03

SEPTEMBER

ENGLISH

Z1 - Z3 end drilling
(continued)

EMO 2003:
une occasion
unique de découvrir
des solutions...

Irland weitab von
den Klischees

Il tourbillonage:
economico e
preciso

Revolutionen
går vidare...

Think **parts**
Think **TORNOS**





Think **parts**
Think **TORNOS**

IMPRESSUM

DECO-MAGAZINE 26 3/03

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to turned parts:

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English

| | |
|---|----|
| Adapted solutions | 5 |
| Z1 – Z3 end drilling (continued) | 6 |
| EMO 2003: A unique opportunity to discover solutions... | 8 |
| Ireland a country far from its perceived stereotype | 12 |
| Radical change leads to strong growth | 17 |
| The revolution goes on... | 20 |
| Thread whirling – economical and precise | 22 |
| New options: HSK Tool system on the DECO 20a and DECO 26a | 24 |

Français

| | |
|---|----|
| Solutions adaptées | 25 |
| Perçage en bout Z1- Z3 (suite) | 26 |
| L'Irlande: un pays loin des clichés | 28 |
| Le tourbillonnage: économique et précis | 32 |
| EMO 2003: une occasion unique de découvrir des solutions... | 35 |
| La révolution continue... | 38 |
| Un changement radical à l'origine d'une forte croissance | 40 |
| A votre disposition sur le marché suisse | 45 |
| Nouvelles options: Système d'outillage HSK sur DECO 20a et DECO 26a | 46 |

Deutsch

| | |
|--|----|
| Angepasste Lösungen | 47 |
| Neue Optionen: HSK Werkzeugsystem auf DECO 20a und DECO 26a | 49 |
| Endstückbohrung Z1- Z3 (Fortsetzung) | 50 |
| Wirtschaftlich und präzise: Gewindewirbeln | 52 |
| Irland weitab von den Klischees | 54 |
| Zu Ihren Diensten... | 59 |
| EMO 2003: Eine einzigartige Gelegenheit, Lösungen zu finden... | 60 |
| Der Fortschritt geht weiter... | 64 |
| Radikaler Umschwung führt zu kräftigem Wachstum | 66 |

Italiano

| | |
|--|----|
| Soluzioni adattate | 71 |
| Il tourbillonnage: economico e preciso | 72 |
| Nuove opzioni: Sistema di utensileria HSK su DECO 20a e DECO 26a | 74 |
| EMO 2003: Un'occasione unica per scoprire delle soluzioni... | 75 |
| L'Irlanda: Un paese lontano dai clichés | 78 |
| Foratura frontale Z1- Z3 (seguito) | 82 |
| Un cambiamento radicale all'origine di una forte crescita | 84 |
| La rivoluzione continua... | 88 |

Adapted solutions

Recently, the Internet site www.manufacturingtalk.com ran the following headline:

"Exhibiting products dedicated to specific industries? A new approach perhaps to the exhibition medium?"

This article will discuss the solutions TORNOS would like to present at the EMO 2003 in Milan.

A major manufacturer like TORNOS must always be at the service of its clients and supply them with the best possible customised solutions. Consequently, an approach based on "sector of activity" would seem logical. The solutions proposed by TORNOS, both in terms of single spindle and multi-spindles, all provide quite far-reaching advantages. They can be perfectly adapted to the different requirements of the most varied sectors of activity.

The company's engineers have developed considerable know-how in numerous sectors and would like to see their clients benefit from this.

Along these lines, TORNOS will also present at EMO a new line of documentation, "by sector of activity", which will mainly detail the various facilities offered by the company.

Please do not hesitate to request this.

Please send
your comments to:

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During the first six months, we carried out a wide scale survey on the DECO-Magazine and we would like to thank all those involved for their assistance.

To a lesser extent, the survey was specifically aimed at helping us to improve and to use the magazine as a pertinent vehicle.

It will be a pleasure to meet this objective and we fully believe that this will be our best tool to at your service.

The coming editions will gradually incorporate the changes that are the direct result of your comments. We hope that they meet with your approval. Please do not hesitate to come back to us with any comments, ideas or requirements.

I shall conclude this editorial with a few words about this edition of the DECO-Magazine. The contents are quite extensive, since we shall be

presenting the various options and tips directly aimed at DECO operators, coupled with an explanation on thread whirling, a presentation on new stainless steel grades and on TORNOS clients, not to forget the latest features. A complete copy of this edition will be inserted in the Eurotec review and will achieve a circulation of 24,000 copies!

Happy reading.



Pierre-Yves Kohler
Chief Editor

Z1 – Z3

end drilling

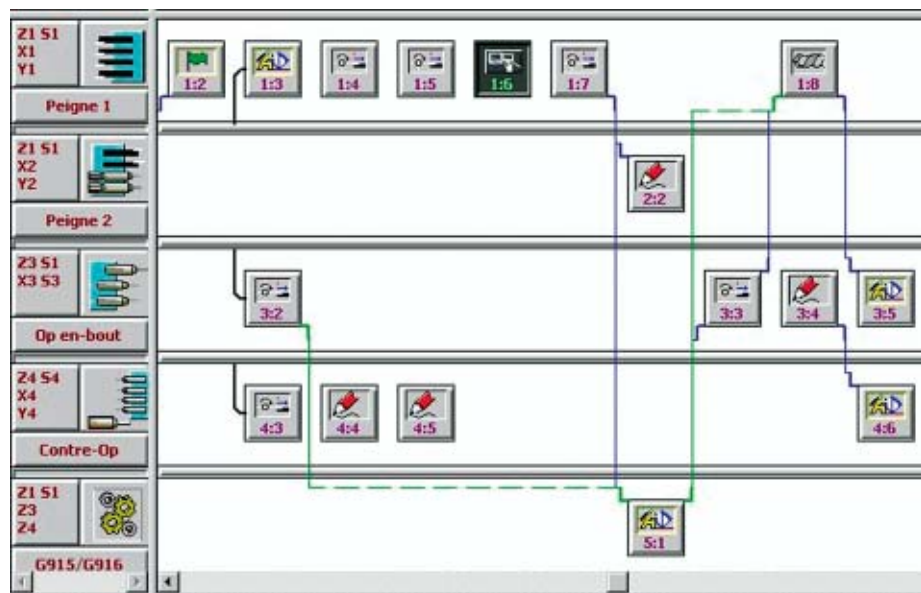
(continued)

This article follows on from the article published in the last edition of DECO Magazine, relating to end drilling using the T3x tool.

What we shall now examine here is the small tip on how to program drilling following partial machining of the part.

Programming:

Partial machining of the part means that drilling will take place after a series of different operations, including turning. Given that the origin of drilling is at the zero part and that programming is always effected in absolute terms from this zero onwards, the drilling operation would cause the part to go back into the guide bush, meaning that bar guidance is no longer guaranteed. To prevent this from happening and to ensure that the part does not move when drilling starts (operation 1:7), you should use an additional T60 geometry, which will be adapted to the T60 geometry at Z.



Tip:

The difference between this tip and the one described in the previous edition is that the value of Z of this T60 geometry must be calculated according to the following formula:

Z = (last value programmed in Z for the previous drilling operation) + (standard GEOMETRY for Z thread chaser 1 and 2)

- the geometry T60 must be linked with the last support used in the operation preceding drilling.

Example 2 (for the DECO 13a):

Drilling tool T31, following turning of a diameter of 8 mm, length 35, with tool T12.

ISO operations code

Operation 1:6: Turning Ø8 length 35

ISO code: G1 Z1=1 G100
G1 X1=5 G100
G1 Z1=0.5 F0.2
G1 Z1=-1 X1=8 F0.05
G1 Z1=-35 F0.2
G1 X1=12 F0.07
G1 Z1=-36 X1=14 F0.05
G1 X1=20 G100

Operation 1:7: Positioning Z1=1, T60

ISO code: G1 Z1=1 G100 T60

Operation 5:1: Macro G915

ISO code: G915

Operation 3:3: Positioning Z3=1, T31

ISO code: G1 Z3=1 G100 T31

Operation 1:8: Drilling Z1

ISO code: G1 Z1=-15 F0.05
G1 Z1=1 G100

These two programming examples relating to the tips discussed in DECO Magazines Nos. 25 and 26 are available by downloading from the following address:

<http://www.tornos.ch/e/tbdeco/TDPT.tml>

These programmes operate in TB-DECO (version 5 onwards). These are supplied as an example and for "training" purposes and must not be incorporated as such into a machine. TORNOS will not be liable if these training and example programmes are used.

T60 tool geometry:

Geometry value at Z:

(last value programmed in Z for operation 1:6) + (standard geometry) (-36) + (-25) = -61

NOTE: Link T60 geometry with support 12, which corresponds to the last tool used before drilling!

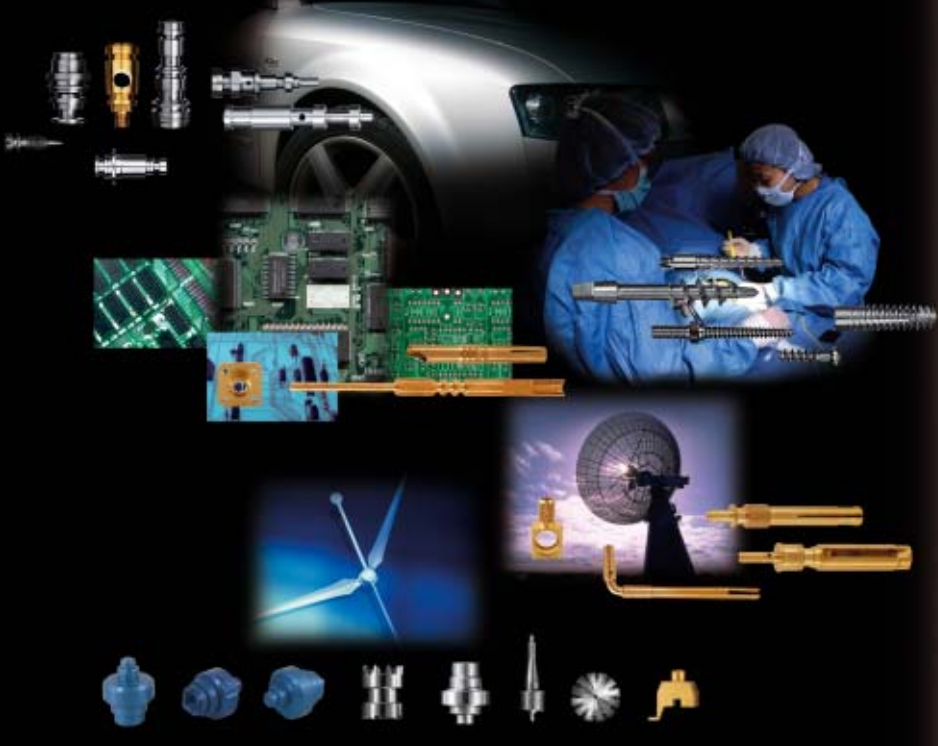
EMO 2003

A unique opportunity
to discover solutions...

Are you looking for a good excuse to go to Milan?

At the EMO 2003 trade fair, which will be held from 21st to 28th October 2003, TORNOS will be presenting real innovative solutions that meet very specific requirements.

Think Parts
Think TORNOS



We shall leave Mark Saalmüller, Sales Manager for the USA, to summarise this approach with his new corporate slogan!

"Think parts – Think TORNOS. Think about your parts, the company will come up with the solution to enable you to produce them."

Whether you are active in the medical, automobile, plumbing, horology, optical, security, electronics or micro-mechanical sector, the company is sure to come up with a suitable solution!

This solution will embrace a machine, together with all the peripherals and accessories required, as well as the know-how and expertise of the TORNOS specialists.

To mix and match a well-known French slogan *"TORNOS owes you more than machines!"*

This year, the EMO Show will be held during a poor economic climate, which has persisted since the last edition. Some specialists believe that the economy is poised to come out of this crisis. Would this not be the opportunity to discover real, added-value solutions? Solutions that are adapted to specific sector requirements? Solutions that can provide real benefits to their users?

Being fully aware of this very difficult climate, TORNOS has been investigating specific solutions that will provide a real benefit and, after EMO, will adopt an approach centred on the parts to be executed.

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|--------------|
| Editorial |
| Expo |
| Forum |
| Interview |
| News |
| Presentation |
| Technical |



Hall 2 – Stand B01

Coming back to **"Think parts – Think TORNOS"**, the Swiss manufacturer will present solutions adapted to the different spheres of activities thanks to its perfectly equipped products, which will match the most diverse economic and technical requirements!

- ◆ Automobile – **MULTI DECO 20/8b**
- ◆ Medical – **DECO-13a**
- ◆ Plumbing – **MULTI DECO 20/6hp**
- ◆ Optical – **DECO-10a**
- ◆ Intricate machining – **DECO-20a**
- ◆ Versatility and reactivity – **DECO concept and TB-DECO**



EMO 2003



"The machines exhibited represent only a portion of the vast range of facilities on offer", according to Michel Salerno, Manager of TORNOS Italy. "Do not hesitate to ask for more information!" he added.

TORNOS would like to use this trade fair to re-assert its philosophy of providing the best customer care by offering the very latest astute solutions.

The company specialists will be available to interested visitors to provide more details on the various solutions presented. They will arrange a meeting in Milan, stand B01, hall 2 from the 21st to 28th October.

The first documents relating to a new range entitled, "area of activity", clearly illustrates this philosophy and can be downloaded from the 10th October from the company site

www.tornos.ch

Please visit it.

Some technical information

The following elements, in particular, are featured:

- ◆ Thread whirling
- ◆ High pressure drilling
- ◆ Rigid tapping
- ◆ Form machining
- ◆ Positioned stopping
- ◆ Machining difficult materials

Also worthy of a mention are the peripherals, which include:

- ◆ Evacuator / conveyor
- ◆ Bar feeders
- ◆ Filters
- ◆ Fire-prevention unit

Not forgetting the master of success – the TB-DECO – which is constantly being upgraded.



The company's philosophy towards trade fairs has never been to "dazzle" its visitors. The high spots of the TORNOS stands are not marketing campaigns or hostesses or even decorations but simply well presented solutions. Hence, when you discover that the automobile sector will be represented by one of the latest Ferrari F1 engines or by a Ducati motorcycle, which has just left the works, you may indeed regard this as sensationalism! And yet, what more logical way is there to present the power and performance of the MultiDECO 20/8b automobile solution?

Reliability and performance are its main qualities, just like these "things one dreams about"...

These exhibited items directly benefit from TORNOS' machining solutions, since they comprise of parts that have been executed on the company's own machines.

Ireland

a country far from
its perceived stereotype

In order to benefit from the rapid development in its economy since the early 90s, Ireland joined the European Union on the 1st January 1999 and in 2002, the Euro became its official currency.

The economic change in the country meant that it progressed from the tertiary sector to the secondary sector to the point where Ireland has become a high-technology European centre.

Ireland is the second largest exporter of software behind the USA and many international companies have set up their European subsidiaries there.

The factories, production and construction plants and public utilities account for 34% of the gross domestic product whilst agriculture accounts for 4%.

Unlike its stereotypic image of a mountainous, agricultural country, Ireland produces virtually all types of equipment and consumer products. The small-parts turning industry also benefited from the country's development, with numerous specialist companies expanding there, thereby allowing TORNOS to offer its solutions through its agent, "Premier Machine Tools Ltd".



Mr. Dwyer of Premier Machine Tools Ltd will present a few clients:

Draper-Erin Ltd

Draper Erin Ltd an ISO 9002 registered company are located 14 miles from Shannon Airport near Limerick University and the River Shannon in the Republic of Ireland and manufactures precision parts for the Automotive, Medical, Computer and Telecommunication Industries.

Draper Erin has invested over 1.5 million Euros in plant and machinery over the past few years. Currently with four TORNOS DECO machines and a five-year plan to double that number. Investment in people with a dedicated workforce is another Draper Erin forte.

The company has over 30 years engineering experience in Ireland and has become a leading manufacturer of quality components by installing the best CNC machines. Draper Erin is a customer driven company and invested in TORNOS DECO machines because they best suited their customer's requirements to produce quality parts with trouble free machining.



PREMIER MACHINE TOOLS

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Bellurgan Precision Engineering

Bellurgan Precision Engineering was founded in 1978 by Bernard Carroll. He recognised the advantages a world-class tool room could offer the growing number of multi-nationals and indigenous manufacturers operating in Ireland. From the start, the company's philosophy has been based on establishing long-term relationships and engaging in regular face to face contacts with all customers. This policy ensures that Bellurgan has a good insight into our customers' continuing needs and special requirements. That's how Bellurgan Precision began and how it continues to thrive.

During the 80's and into the 90's Bellurgan responded to their customer's needs by bringing CNC milling and turning capability in house. In the 90's they continued to respond by installing sliding head and multi-spindle equipment along with wire EDM.

Today Bellurgan employ approximately 55 people, with 20% of the staff trained toolmakers. Their apprentice toolmakers have consistently competed for top honours in the national tool-making competition (with 6 winners in 20 years) and have represented Ireland at the World Skills Olympics.

Bellurgan has an outstanding reputation in precision engineering, which was nurtured in Ireland and has grown to encompass business relationships within Europe, the US and Asia. The company has steadily built up an impressive customer portfolio in a broad range of industries, including Electronics/Telecommunications, Medical Device, Automotive, Industrial, Aerospace and Micro-electronics.

The foundation of Bellurgan's success has been the ability to build long-term partnerships with customers. Many of their customers have been depending on Bellurgan as their preferred engineering resource for well over 10 years.

These relationships have developed further in recent years as Bellurgan has become a preferred worldwide supplier and, as a result, our customers' sister facilities in mainland Europe, USA and Asia have also chosen Bellurgan. Many decades of experience and success have allowed Bellurgan to enter the global marketplace with confidence.

Bellurgan recognises the need to achieve and maintain the highest standards to ensure customer satisfaction. As Mr Carroll says: "we recognise that quality is not just measured by the conformance of a part to specification. Quality encompasses the entire customer/supplier relationship from initial query to product delivery".

Bellurgan is committed to maintaining its ISO9002 status by focussing on a controlled quality system from the first customer contact to delivery and beyond. We are also committed to meet quality expectations, as measured by flexibility and support.

To ensure that their skills, equipment, second process capabilities and systems are always up-to date and at the cutting edge, Bellurgan employs a strategy of continuous re-investment in people, machinery and plant.



Mr Carroll adds: "we are committed to delivering a world-class service to our customers. Our facility operates 24 hours a day, six days a week, resulting in reduced lead times and ensuring that tight delivery dates can be met."

Combining a desire to learn and pride in a job well done, Bellurgan's toolmakers and machine operators are capable of working to tight tolerances in both imperial and metric measurements. Technical representatives of the company call regularly on customers and harness their problem-solving expertise to address customer needs and ensure that their requirements are met.

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bellurgan precision
engineering

Ireland

a country far from
its perceived stereotype



Killala Precision Components

Killala Precision Components Ltd has been established since 1981, manufacturing high quality precision turned components for a wide variety of clients in market sectors such as Automotive, Medical Equipment, Telecommunications and Engineering.

The company is specialised to manufacture components from 3 mm to 60 mm diameter on a variety of machine types including TORNOS DECO, Wickman multi-spindles and Index single spindles.

Mr S. Hannick says: *"our wide range of machinery enables us to facilitate large, medium and small production runs. Our organisation actively encourages a close working relationship with our customers at all stages – from planning, cost control to production planning. Our aim at all times is to ensure complete customer satisfaction."*

The company operates from a modern purpose built factory with a highly skilled and motivated staff dedicated to serving market requirements. Continuous improvements in all business activities employing professionalism, integrity and teamwork have achieved recognition in many ways: ISO 9002, Occupational Safety award and National Quality award to name but a few.



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Benson Engineering

Benson Engineering has for 20 years serviced Irish Industry needs for the most demanding turned parts in brass, aluminium, stainless steel, c. steel and plastics. Its 6000 square foot facility is set in scenic Killarney in the South West of Ireland, famous for its lakes and mountains.



Benson Engineering is a wholly Irish owned Company established in 1980 by Tom and Betty Benson. Their setters are all time-served toolmakers and they bring individually from 10 to 30 years experience to the precision parts business. "We are regularly involved at product development stages with our customers project engineers and also during automation projects and cost reduction projects" says Aaron Benson. Benson Engineering exports to UK, Holland, USA and Asia-Pacific.

The company has been using TORNOS sliding head machines since its inception and has recently added two TORNOS DECO 20a machines to bring the number of CNC machines to four. Batch sizes can vary from 10 pieces to ten thousand to more than one million parts.

Tom Benson also says: "Additionally and uniquely in Ireland we have a state of the art capability for diamond turning using single crystal natural diamond tools, achieving surface finishes in the range 0.4-2.0 micro inches R.a."

In addition to automatic lathes, Benson use six station rotary transfer machines for second operations such as milling, which cannot be completed during the turning cycle.



Specialities of the company:

Diamond finished parts for pens, carburettors and gas appliances.

Pins for surface mount on PCBs with Ag, Cu, Ni, Sn/Pb plating.



Benson Engineering Ltd
"Swiss Precision in an Irish Setting"

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Web Site: <http://www.bensoneng.ie>

So... is Ireland another high precision turning country?

With high-skilled people, high-precision companies and know-how; yes, there is no doubt about it, Ireland is another high-precision country!



PREMIER MACHINE TOOLS

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Radical change

leads to strong growth

DECO automatic sliding lathes are running almost continuously at VCN with minimum operator intervention



Whilst many manufacturers of turned parts are experiencing declining sales, Verspanings Centrum Noord (VCN) in Leek is enjoying vigorous growth. A few years ago, this company in Groningen – in the extreme north of the Netherlands – undertook a radical change of direction. Instead of small series, it now concentrates fully on producing large series of CNC precision turnings with diameters of up to 65 mm. For the range up to 32 mm, no less than five TORNOS DECO 26a automatic lathes were acquired within one year, all of which were fitted with automatic bar feeders and Mayfran "ConSep 2000"II" chip extraction systems with integral coolant cleaning. It very soon became apparent that the change of course had been the right decision: in the meantime, all machines are fully utilised. The machine park is running almost con-

tinuously, six days a week, 24 hours a day, with minimum operator intervention. Wim van Die, General Manager of the progressive family company says: 'We have, in the meantime, demonstrated that our strategy is paying off; we are therefore looking to the future with complete confidence.'

It is an unmistakable fact that, from a business point of view, we are living in difficult times with the Netherlands becoming less and less attractive as a producing country. However, world demand for turning work is still high. Series production in particular, is increasingly being transferred to low-wage countries. "Wrongly", according to Wim van Die. "As automation advances, this form of production relies more and more on machines and less on people. With this starting point in mind, we at Verspanings Centrum Noord under-

took a radical change of direction approximately two years ago", explains the enthusiastic VCN General Manager. "At the time, we took the clear decision that from now on, our strength should lie in large series production. We shall no longer compete in that sector of the market requiring small series of complicated machining work. There are enough other companies which can do this and we are not in a position to excel at this."

Production at maximum efficiency

Verspanings Centrum Noord – based in the vicinity of the mud flats – has been established for thirteen years. Like many such companies, it initially specialised in general turning and milling work, producing both small and large series runs. The number of employees and the size of the machine park

Radical change

leads to strong growth

were geared towards this. "However", van Die concluded, "it was precisely because of this diversity that our production methods were much too complicated. We were unable to master such complicated production methods properly; our company was simply too small for this. To be in a position to do this, a company has to employ a large number of specialists and have the necessary know-how. It's not only difficult to find the right specialists, but it is now almost impossible to maintain the necessary level of know-how. The rate of technical development is so rapid that we are simply no longer in a position to keep pace in every respect."

The alternative for VCN was therefore quite clear. It was decided to direct all energy towards one goal: the production of large series of small precision turned parts with maximum efficiency. It goes without saying that such a radical change had a series of far-reaching consequences. In order to achieve the new goal, a completely different approach was required – an approach which is only feasible

with the right people and the right means of production, with the use of modern technologies right at the forefront.

In order to make the necessary sales efforts, Martin Taling was taken on as sales manager by the north Dutch turning works. "I could identify extremely well with the new strategy", he explained. "It's basically a very simple philosophy. Many thousands of millions of Euros are spent on turning work throughout the world. Even if the economy is sluggish, there is always enough of this kind of work. A small percentage of this would already be sufficient for us. This is why it is important to make one's mark within this market. Quality and aspects such as logistics are, of course, of extreme importance but at the end of the day, the issue always revolves around manufacturing costs."

Lengths ahead

When selecting the necessary production machines, VCN considered a series of brands. Van Die: "The automatic DECO lathes from

TORNOS, offered by Esmeijer left the others far behind. They are not the cheapest of machines but when one considers the results, the price is, in the end, of less importance. The deciding factor was that, because of their versatility, they fitted in so well into the concept that we envisaged. Besides which, the performance of these CNC cutting machines eminently complement our other machine line, which is geared to short-part turning work. We therefore decided, just about a year ago, to purchase three DECO 26a lathes; another two were recently installed, so that we currently have a solid rate of production."

The TORNOS DECO 26a machines are used at VCN for large series of both complicated and straight-forward turned parts with diameters of up to 32 mm. "We are talking of series of up to 20,000, 80,000 or even 200,000 units", sales manager Taling explains. "Appropriate production of such series requires a good programming department, tight organisation and a long working week. All the machines here run approximately six days a week, 24 hours a day. This makes the capital investment, which we have made in these machines, absolutely justifiable."

The people from VCN are not alone in having arrived at this conclusion. Their experience is also backed up by Enrico Akkerman from the importer, Esmeijer, who has had the same experience in recent years with the TORNOS machines. "The market for longitudinal turning has pretty well collapsed in recent years", he noted. "But with the DECO machines from TORNOS we have succeeded in dramatically increasing our market share in the Netherlands. They are flexible and extremely accessible machines. They have very few limitations and therefore stand out clearly from



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| Editorial |
| Forum |
| Interview |
| News |
| Presentation |
| Technical |
| The present |



comparable competitor machines. They are universal, automatic, sliding lathes, which are fairly easy to work with. What is also important is that we are dealing with a concept here, about which a lot of experience has already been accumulated and where "teething problems" have been overcome. We also note that the people who work with these machines are quite enthusiastic. The machines are very user friendly and breakdowns are rare. This not only results in continuous, trouble-free production, but also means that our employees enjoy their work. And of course, that is just as important."

Not a luxury but a necessity

The DECO 26a automatic lathes were supplied complete by Esmeijer with the integral Robobar SBF-532 automatic bar feeder developed by TORNOS. We also selected as peripherals, an advanced chip removal and coolant filter system manufactured by Mayfran. As Akkeman said: "We knew that "Verspanings Centrum Noord" puts great emphasis on productivity. In this case – in contrast to the frequently heard assertion – working with a chip conveyor is not a luxury but a necessity. The fact that we decided on the Mayfran unit, following consultation with VCN, is no surprise; the systems, which the former American company supplies, fit perfectly into the concept that we have decided on here. Mayfran is a world market leader in this area and supplies very advanced machines, which makes

working in this production environment even more convenient."

Rene Sieben, engineering manager at Mayfran International: "The systems of the latest "ConSep 2000"II" generation can be universally applied to all types of metallic materials. For VCN, this means that problem-free chip removal is guaranteed, irrespective of the type of machining, material and machine earmarked for a particular order. Besides which the self-cleaning, integral filter drum of this system is worthy of particular attention. This filter drum cleans the contaminated coolant in a continuous automatic process, thereby ensuring that the machine can be constantly in use. What is more, maintenance and down-times, as a result of the frequent manual cleaning of coolant tanks, are finally a thing of the past. The operating costs associated with maintenance and the consumption of coolants are drastically reduced by using this system."

"The objective we have in mind, would not be achievable without the Mayfran ConSep 2000"II system", confirms VCN general manager, Wim van Die. "With the Mayfran units we have an optimum combination of chip removal and coolant cleaning. This makes things easier for our employees; it also means that the units pay for themselves very quickly, as a result of the increased production capacity that they achieve."

Although the major changeover at Verspanings Centrum Noord took place barely a year ago, the results

are evident even now. Whilst previously only 1% of sales were made outside the region, that percentage is now already over 50%. More and more, the customers are coming from countries such as Spain and France. As a result of our own sales efforts and the essential PR work, VCN has already gained a reputation for miles around – the customers know that they can find the company in Leek. Sales manager Martin Taling sees still further opportunities. "Of course, we are always looking for new market sectors, where we can make use of our ideas and potential with the same enthusiasm. For example, at the moment we are looking at products of even smaller diameters. In the meantime, we have drawn up a list of all the options here. Our final objective is to be a leading machining specialist that can easily hold its own with – for example – a large Italian turning shop. Even on the international scene, we are now regarded as a competitor to fear that is known to be a company where production is almost completely automated, using the best machines."

"There is a lot more that still can be automated", adds van Die. "If we succeed in turning this fact to our advantage, then I foresee that, with our current machine park, we will still be able to expand our output even further. This requires a great deal of inventive spirit but in my opinion, it is entirely possible. And with regard to our market prospects, we anticipate that we will be installing a number of additional machines in the foreseeable future. It goes without saying that Esmeijer and TORNOS should play an important part in this."

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The revolution goes on...

We often talk about machines, tooling and oil in the DECO Magazine but what about the material, essential production component ?

To discover a little more about the trends in this sector, DECO Magazine went to see Mr. Minola of Ugine-Savoie Imphy.

Having enjoyed enormous success with its UGIMA® stainless steel grades coupled with improved machining qualities, UGINE-SAVOIE IMPHY has now met the challenge of launching a new generation of stainless steel for small parts turning.



Hello Mr. Minola. We heard that there's something new afoot in the steel industry – can you tell us a little more?

Yes, we are in fact presenting new stainless steel grades and according to those who have tested these, **UGIMA®2** will be the "new reference!"

Can I just give you a little background. In 1987 the Research Centre of UGINE-SAVOIE IMPHY suggested that the French small parts turning engineers should perform a few tests on the first stainless steel bars for small parts turning, which should lead to improved machining. Then in 1989 these tests were extended throughout Europe and the USA. Nowadays, we can offer 25 grades from the different families of stainless steels: martensitic, austenitic and duplex.

However, the developments in machine tools, with the arrival of numeric control, such as the DECO and MULTIDECO machines for example, together with improved cut-

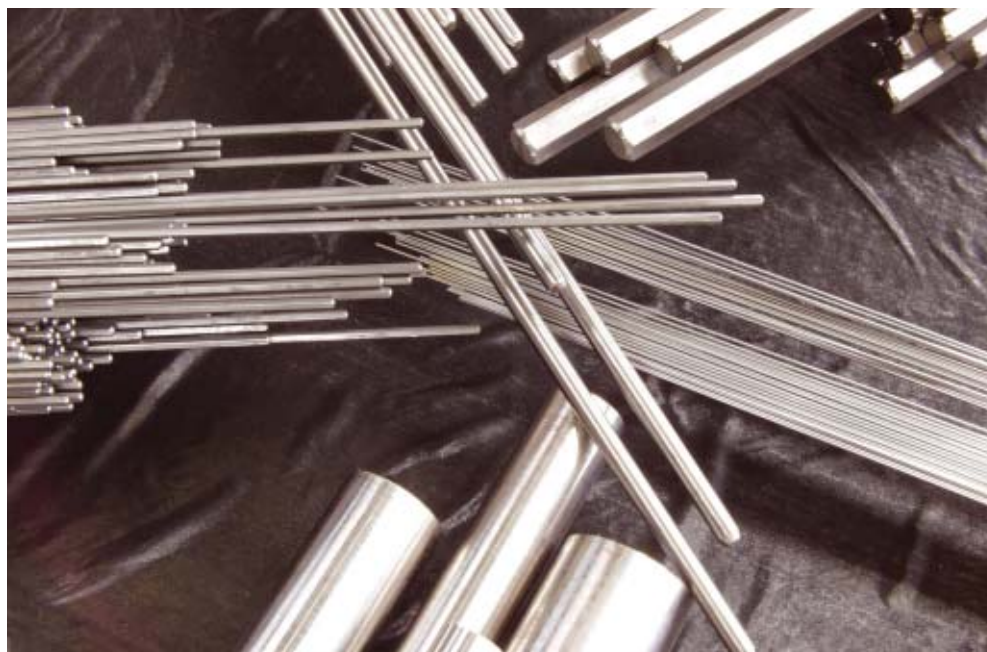
ting tools and lubricants meant that a new level had to be surpassed – in other words **an increase in production capacity whatever the cutting conditions.**

It's quite a challenge, but is it really possible to make further major improvements to material characteristics?

Certainly. The improvement in machine tools, cutting tools and lubricants, the increasing complexity of parts being executed, coupled with the fact that the parts are most frequently produced on one single machine, means that it is getting more common to perform different machining operations on the same part (turning, small deep boring operations, tapping, knurling), which, in turn, entails vastly different cutting speeds. All this, as well as ultimate production capacity and a low-cost finished part.

The improved machining properties of the new stainless steel grades - **UGIMA®2** – will allow you to meet this challenge. Optimising the inclusions leads to improved synergy between the **UGIMA®** sulphides and oxides. Hence, the **UGIMA®2** effect is optimum, given the low cutting and feed rates, thereby **increasing your productivity from 20 % to over 50 %** in some cases. With **UGIMA®2**, the stainless steels with improved machining properties are now even more versatile in terms of machining capacity.





So if I've understood things correctly, new possibilities are on the point of being launched – does this mean that there will be several new grades?

Absolutely! **UGIMA®4305HM** and **UGIMA®303XL** are the first two grades of the **UGIMA®2** family. These grades comply with standards 1.4305 and AISI 303 respectively and provide a new dimension in machining stainless steels. They will also increase productivity from 20% to over 50% (in some cases even up to 90%), with a significant reduction in chip fragments. This is ideal for multi-spindle machines and, at the same time, doubles tool life and provides a vastly improved surface finish.

All this is achieved whilst ensuring that the other features of use remain the same. More than 100 tests carried out on customer premises throughout the world with the assistance of UGINE-SAVOIE IMPHY consultant engineers, confirmed these increases in productivity.

You are quoting some quite extraordinary results, but do you have any specific examples?

Yes, of course. Let us look at a part made from **UGIMA®4305HM** for a dentist's drill, for example. This is a straight bar of Ø 7 h8 machined on the DECO 13.

This part includes, amongst other things, a drilled hole of Ø 2.6 mm over a depth of 27 mm using an HSS drill, milling operations using a Ø 1.3 mm miller and M4x0.5 tapping.

The results achieved with a conventional UGIMA®4305:

- ◆ Spindle speeds of between 800 and 5000 rpm
- ◆ Initial cycle times with **UGIMA®4305** = 301 seconds
- ◆ Productivity of 10.8 parts/hour

And the results achieved with the new UGIMA®4305HM

- ◆ Spindle speeds of between 800 and 10,000 rpm
- ◆ Initial cycle times with **UGIMA®4305** = 230 seconds
- ◆ Productivity of 13.8 parts/hour.

Quite clearly a 27% increase in productivity. This represents 21% savings on the final cost of the part.



Mr. Minola, thank you very much for this interview and for all the information you have supplied. I'm sure this will be of interest to our DECO Magazine readers. We shall now let you finish off this article.

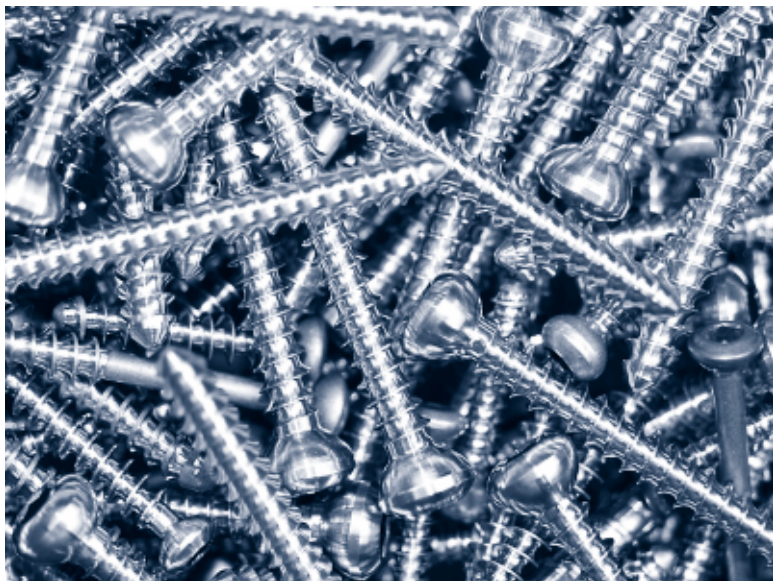
Don't wait! **UGIMA®4305HM** and **UGIMA®303XL** are your best chances of success! We would be delighted to provide you with further details. Don't hesitate to call your normal Ugine dealer or contact us here at Ugine Savoie direct, at the following address.



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Thread whirling – economical and precise:

Whirling is not only more economical and more precise than conventional thread milling but it is this method that enabled stainless steel or titanium parts to undergo series machining of very small internal and external threads.



It is therefore hardly surprising that nowadays roughly 60 % of all threads are whirled for the prestigious dental and medical sectors. This modern form of thread application has also become established in other sectors, such as the small parts turning and horology industries.

With the development of mini-internal thread whirling millers for series machining small internal thread bores (from M1 = Ø 1.00 mm) in titanium or stainless steel on CNC-machining centres or automatic lathes, Friedrich GLOOR AG

overcame a difficult challenge and revolutionised the market. The parts can be whirled and completely machined to the final dimension in one pass without having to be reworked. Compared with conventional processes (thread chasing, tapping), short chips are produced during whirling, which considerably simplify or even make possible, series machining of very small internal threads. In this way, even screws with a diameter from only 1 mm or less, can be very efficiently provided with a thread by the whirling method. Thread whirling produces very high-quality surfaces without additional reworking.

Solid carbide special tools

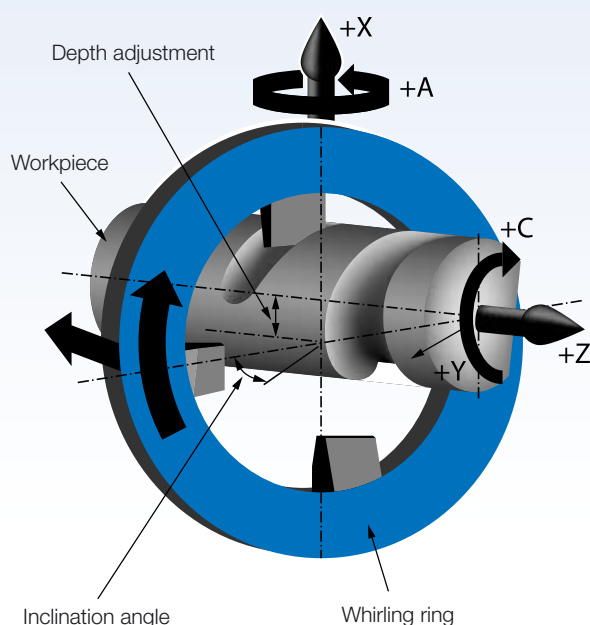
Know-how that has been acquired for over more than a decade is now applied to modern whirling tools. The company, Friedrich GLOOR AG, in Lengnau (CH), is one of the leading manufacturers of solid carbide special tools in Europe and offers a wide range of internal and external thread whirling tools, in addition to many other special tools, most of which are customised.



This single-toothed, mini internal thread whirling miller from Friedrich GLOOR AG is used on machines with high-frequency spindles and whirls at speeds of up to 60,000 rpm.

How does the whirling method work ?

External whirling essentially differs from internal whirling by the cutters that are directed not outwards but inwards, meaning that whirling can also be described as "milling with internally toothed millers". The whirling tool, which resembles a "ring" during external whirling, determines the cutting speed. It rotates eccentrically at high speed around the slowly rotating workpiece. Here, the workpiece circular feed and the workpiece carrier feed are kinematically co-ordinated in the longitudinal axis by an NC feed, according to the thread lead. Whirling produces short chips with comma-shaped ends.



Vitally important machining fluids

Given today's manufacturing depth and technology, efficient metalworking is inconceivable without the use of a machining fluid that is ideally matched to the machining process.

MOTOREX SWISSCUT ORTHO 400 high-performance cutting oil, which is free from chlorine and heavy metals, has proved outstanding for whirling series production. The heavy-duty lubricating film and absolute temperature stability over an extremely wide range makes it eminently suitable for the high feed and cutting rates involved. Basic fluids are provided by low-aromatic, solvent-refined base oils, which are combined with synthetic agents and special additives. This results in extremely long tool lives and excellent surface qualities.



We would be pleased to provide you with further information on: www.motorex.com and www.gloorag.ch

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New options:

HSK Tool system on the DECO 20a and DECO 26a



Client application

This application does not, as yet, have an option number.

Application

The constantly growing demands on tooling systems to achieve even better surfaces, improved cutting conditions and more rapid tool change, provided the reason for TORNOS to adapt a new tooling system to its automatic DECO 20 and DECO 26 lathe series.

The HSK 32 system selected has already demonstrated its advantages when fitted to machining centres.

Make use of the experience and advantages achieved and fit the HSK32 to your TORNOS machines!

Advantages that cannot be dismissed include:

- ◆ Maximum precision and repetitive accuracy when changing tools provide you with confidence when making corrections and during setting-up.
- ◆ Easy handling because of its defined mounting position and very simple changing.
- ◆ Quick-acting locking system makes for very rapid tool changing.
- ◆ The high bearing surface on the front and profile of the holding system ensures great rigidity and gives you outstanding surface qualities even at high feed rates.
- ◆ A large range of standard tool holders is available through companies such as ISCAR, UTILIS...

Compatibility: DECO 20a and DECO 26a

