Edition 1/07

world of tools

HORN

HORN'S CUSTOMER MAGAZINE

This month's subject:

BROACHING DIFFERENTIAL HOUSINGS FOR CONSTRUCTION MACHINES ON A LATHE

- Powerful gear boxes at Fiat
- Sharpening the edge of the tool
- Measuring cutting forces – looking into the load at the cutting edge
- HORN Hungary – an important market develops

Ladies and Gentlemen,

Pressure on prices, quality and delivery time are todays 'Power Generators' in the market. Production portfolio and batch volume there determine the appropriate strategy to react to these requirements. Generally two solution paths are available: existing manufacturing facilities can be optimised/upgraded or renewed, or production can be moved to a low cost country.

Let's not focus on the 'moving production' because the supposed advantage of low labour costs can be outweighed by the disadvantage incurred in communication, transportation time and Zero-error production (to mention but a few). The emphasis should be placed on lean and highly efficient manufacturing procedures. This is a particularly true of manufacture for the automotive industry. This industry is driven by individual customer demands and world-wide competition to develop and produce new products faster and faster.

To facilitate the apparently conflicting aims of flexibility and increased production capacity we offer creativity, innovation and trouble shooting capability. On the one hand we offer the widest range of standard grooving tools available. But in addition, our accumulation of experience in special and combined tools offers potential solutions using the latest manufacturing technologies and strategies. This supports economical manufacture of the increasing number of complex and complicated work pieces.

However it is often possible to maximise cost savings if we can participate with our ideas and proposals during the development stage. As the world's leading specialist in grooving we are focused on these requirements. Our in-house capability, starting from R&D through production to development and application of specialised coatings underlines that. More evidence and details you will find in our customer magazine.

HORN's capabilities are applicable not only to the automotive industry and its supplier network but also for any manufacturing company aiming to face the challenges of our time with optimised manufacturing processes.

I hope you have a enjoyable and informative read.

Yours sincerely,

Lothar Horn
Managing Director
Hartmetall-Werkzeugfabrik Paul Horn GmbH,
Tübingen

world of tools
HORN'S CUSTOMER MAGAZINE

Masthead: world of tools, HORN´s customer magazine twice a year and is sent to customers and interested parties.

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CONVINCING ALTERNATIVE: BROACHING ON LATHES

The requirement for complete machining of the differential housings on a lathe was to broach four grooves on the inner diameter.

Complete machining on one machine with reaches up to 200mm

Changing machines due to the manufacturing process effects not just the production time and the precision of the components, but also relates to logistical requirements and the delivery schedule. Negative influences on the cost calculation can be significantly reduced if a new manufacturing strategy allows complete machining on one machine.

ZF Plant Passau: Specialist for power train engineering and transmission systems

The ZF brand is highly regarded world-wide within the on- and off-road vehicle manufacturing sector as a leading supplier of gearboxes and differentials. Within ZF AG, the factory at Passau in Bavaria covers the power machines sector – power train engineering and transmission systems. This subsidiary is split into several business units. Mr. Harald Zillner is responsible for process planning of metal cutting solutions. This responsibility includes optimising the production process of different versions of the differential housings for construction machines. Until recently the cast iron components of EN-GJS-600-3 had been processed on two machines. Due to lengthy manufacturing time and high cost per component it was desirable to optimise the manufacturing process. This included drilling, broaching plus internal and external turning related to different product families. The target was complete machining on a single lathe. This raised the question: how can the movement of a broaching tool be realised on this type of machine and which tools were available to do the job?

Dare new things and realize it

As is often the case a visit during one of the annual exhibitions delivered important background information. During METAV 2004, Mr. Zillner verified HORN's

competence as supply specialist for special tool solutions. However, although we had experience of broaching on CNC lathes the ZF requirement to produce grooves with length up to 200mm was a new challenge. Nevertheless, it was possible to resolve some of the problem areas and Mr. Zillner could return to Passau with HORN committed to developing a solution. Now it was only neccesary to find a machine builder. Very quickly he realized that this was more complicated than it seemed. A number of constructors refused the challenge but ultimately Niles Simmons agreed to design and build a machine capable of supporting the broaching requirement. The ZF process specification sheet defined the following parameters: Internal and external turning of differential housings with different dimensions and overall lenghts between 200 and 300mm. Drilling of 12 holes in flange diameters up to 370mm. Broaching of four crosswise located grooves on the internal diameter with a perpendicular tolerance of 0,15mm. For the design of our tools we had also to consider the additional data: Groove widths 18 to 22mm. Depth of Groove 12mm max. Length of grooves 150mm to 190mm. Tolerance on all groove sizes 0,2mm and surface quality Rz ≤ 40µm.

Tool System S117/H117

By the end of 2005 it was possible to run the first trials and after a couple of modifications on the machine, particularly on the turret, in May 2006 full production started.
HORN broaching tools of type S117 were dressed to fit the specific 'scales' at ZF. Designed for a reach of 200mm the tool with a Capto C8 attachment and a neck diameter of 81mm weighs appr. 8kg. From the first use the monobloc tool exhibited high reliability and rigidity and it was noticeable that the cycle times for complete machining of the differential housings were not limited by the broaching operation.

Complete machining fulfills requirements

After a usage time of 3 months Mr. Zillner states: 'During the definition of the machine construction we allowed 11 minutes to broach the four grooves. Today we can broach the grooves within 8 minutes, including a lifetime of appr. 9.000 metres per insert. This equals to 225 grooves or a contact time of 7,5 hours. This performance is achieved with a cutting speed of vc=20 m/min and a stock removal of 0,12 mm per stroke. With an average of 80 strokes per groove we were able to reduce the manufacturing time per differential housing on one machine of appr. 12 percent'.

Because of the high process security of the broaching process the machines run easily in a 3-shift cycle with an average working time of 112 hours/week. As a result of this reliability it was also possible to realize the two machine coverage concept. One employee runs both the Niles Simmons machine and a Hüller machining centre, including the workpiece handling and the quality control of the performed working processes.

Picture top left:
Two spindle units and two disc turrets allow the complete machining of the differential housings on a Niles Simmons type N30 lathe. On the left unit the turning operations are perfomed as well as the broaching operation. After the automatic change to the second station the external diameters are turned and the holes are drilled.

Bottom Picture:
Broaching successful introduced. Now there are new application requirements for Harald Zillner (Process planning performance centre cast iron ZF), Michael Götze (Technical Service HORN) and Lothar Horn (Managing Director)
(from left to right).

POWERFUL GEAR BOXES AT FIAT

Grooving Tool System S229 shifts in the background

Forged Blank and ready machined workpiece

After a period of uncertainty Fiat Group has embarked on a strategy of rapid development for long term positive success in both the car and in the truck business sectors.

Total sales volume of Fiat Group shows that the recessionary period for the giant Italian vehicle manufacturer seems to be at an end. Its annual gross profit within the car division is forecast to increase by 10% to a total of € 275 Million. The largest increase could be identified in the model areas of the Panda and the Grande Punto cars.

Ambitious targets

By 2010 Fiat is aiming to introduce 23 new models and update 23 of the existing model range as part of its strategy to increase the market share in Europe to 11%. It currently has European market share of appr. 8%. In the commercial vehicle sector the company expects a profit of € 1,8 billion in 2007. By 2010 it is planned to almost double the profitability to € 3.5 billion.

Gear box production along the Adria

In the FPT plant, the former Powertrain plant in Termoli (Region Molise) components for the M40 gear box of the new Fiat Ducato are manufactured. The Fiat Ducato is the most successful model of Fiat's commercial vehicle division and one of the most popular utility vans in the whole of Europe. There is a long standing relationship between HORN and FPT. The Engineers of FPT appreciate the competence of our Italian technicians, the high quality of HORN grooving tools and the part they play in achieving economical and efficient production processes.

Two operations, one insert

Production of the M40 gear box, particularly parts of the 3rd and the 5th gear was developed in a successful co-operation between the engineers of the FPT plant, Famar, the machine constructor and application engineers from HORN in Italy. To prevent

The HORN application engineers Andrea Panichi and Antonio Cavalluzzi in addition with FPT Engineer Pierluigi Bo solved the manufacturing request (from left to right)

swarf build-up and thereby avoid interruption of the production the machining operation was divided into a roughing and finishing operation. However it was necessary to use the same insert for both operations because of the uncontrolled coolant supply. After various tests the sintered insert of type S229 with a width of 5mm, corner rads of 0,6mm, the coating AS66 and the geometry .L. was identified as the best solution in view of speed and feed rates.

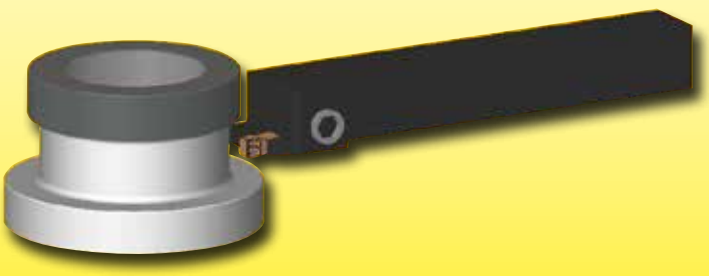
Cutting performance and tool life convinces

On the forged blank a groove is roughed with a depth of 3,8mm and a width of 11mm along a shoulder. On these relatively simple dimensions the main aspect 'controlled process with shortest possible cycle time' swarf control appeared to be the biggest difficulty. To achieve the shortest possible chippings the roughing operation is programmed as an offset pecking cycle. The cutting speed is set at vc=250 m/min and the feed rates for grooving and side turning are chosen at 0,15mm and 0,4mm respectively.

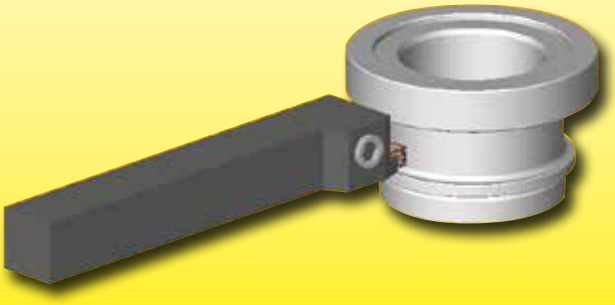
In the second step after turning and re-clamping of the workpiece the same insert opens the groove to a width of 17,65mm. The cutting speed of this operation is vc=230 m/min with a feed rate of f=0,3mm. With these cutting conditions the component is machined in 0,24 minutes. The HORN insert shows a tool life of 470 components; however, because of the shorter tool life of some other tools involved in the process Fiat reduced the planned insert change intervals to 250 components.

Schematic view of the operations 1 and 2

phase 1



phase 2



SHARPENING THE CUTTING EDGE OF THE TOOL

Products from the Production unit P3.

A view into the grinding facility of double edged inserts

Up-to-date production equipment and flexible organization combine with the competence and the commitment of our colleagues the condition to make our wide product range available in minimum time while maintaining quality in the market. One of the production responsible areas is the grinding facility which is split into six product related sections. One of these is the unit P3 which is responsible for the double edged inserts.

Friedrich Muntejon, Manager of the unit P3.

Specialised in grooving systems

In the largest production unit in our facility, the grinding section, more than 250 employees grind annually in a 3 shift system appr. 5 million inserts to their final shape, in a average batch size of 100 pieces. Within this annual number appr. 1.1 million inserts are double edged inserts (inserts with two cutting edges). These inserts are produced by the 40 employees in unit P3. There are more than 5000 different insert shapes and geometries, needed to cover the variety of cutting depths, widths and profiles.

Focus Special Inserts

Around 33% of the total amount is ground to be part of the standard catalog range. The remaining 67% are specials with an application related geometry. For both insert versions the production process is almost identical regardless of whether a carbide insert has to be ground from the blank or a sintered insert needs

to be ground along the cutting edge. But the sintered inserts are produced using a unique production process. With our method we can produce double edge inserts with geometries which are impossible to be produced by grinding. S-prefix precision sintered inserts are ready after sintering with a tolerance of ± 0,02mm and need only a edge preparation and a final coating process.

Development and Experience

Looking on the latest machine technology and the automated processes controlled by the basic equipment 'computer' it is hard to imagine that almost 30 years ago manual working procedures represented the majority of the whole manufacturing process. One person who was part of the situation 30 years ago and who is the P3 section manager Friedrich Muntenjon.

Searching for geometries and testing at customers

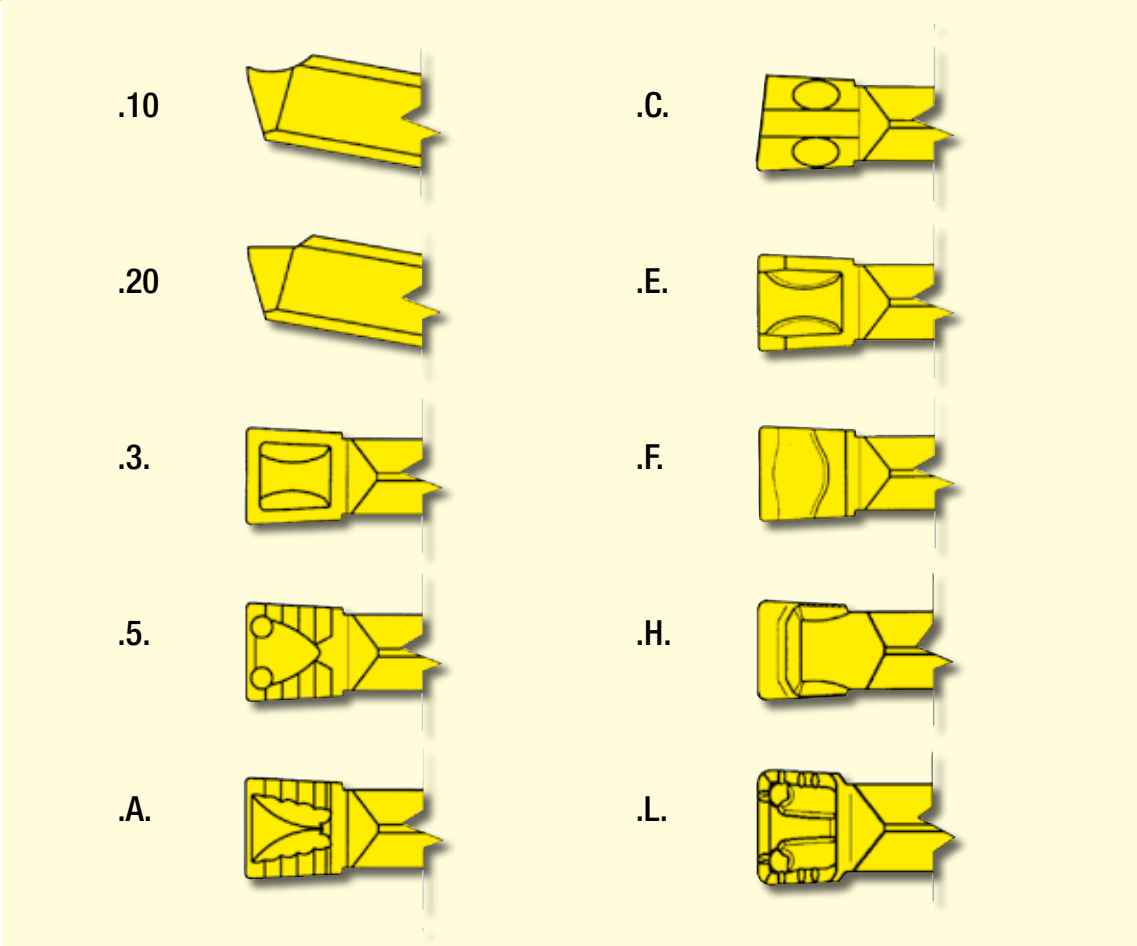
In the beginning the geometry was ground according to a mix of experience and instinct, demanding a high level of manual cutter grinder skills. In this environment the insert grooving system of 229 was established. Creativity was not just part of the manufacturing process but also part in gaining experience about the performance of the developed geometry. Thirty years ago it was impossible to test the new inserts on our own lathes because there weren't any and for this reason we had to arrange with local machine shops to test the inserts.

Automatic insert handling during the grinding process

View into the grinding section of double edged inserts

Automatic processes need practical skills and knowledge

Before moving to the current manufacturing location 'Unter dem Holz' and the new manufacturing process, manufacturing of a type 229 insert required six machines and a total of eleven clampings. This gives some indication of the levels of manual skill that played a central role im developing the HORN reputation for excellent quality. Today the insert is placed only once on a insert tray in the machine and is then machined in one step. However, Friedrich Muntenjon states that individual people are still the most important factor in the manufacturing process. Even with the high level of automation they guarantee the effective, economical and delivery time oriented production flow. Moreover their ideas are very important to obtain a continuous improvement of the manufacturing process. As example it was possible to reduce 'production order peaks' by installing twin machines. The almost identical construction of the machines allows a quick change of the set up to other insert types. As a result not only the automated process but also production capacity can be adjusted to the new order volume in the shortest time possible. This is also a very positive aspect for production manager Walter Wiedenhöfer because it offers the chance to satisfy special customer requests in very short delivery times. Both individuals, production and section manager are very proud of the commitment and practical skills of the personnel. The latter are a critical factor in covering processes which cannot be automated.



Indexable inserts for grooving and side turning showing the most important geometries.

Carbide independence

Optimising the manufacturing process of a tool, from the concept through to delivery, is only possible if we can control the whole process chain. This is the reason why HORN develops and produces its own carbide. The formulation of the powder, the design of the dies (they are manufactured in our internal tool shop) and the specification of the manufacturing equipment sets the basic parameters to produce the insert blank to maximum precision. With this level of preparation our blanks are ready to get the “finish” in Section P3 to supply a high precision grooving tool to the market. Time to market plays a particularly important role and can be minimised by a combination of the above described philosophy and lean organisation with short decision times. This ensures that the customer receives their tooling in the shortest possible time.

Grinding precision and process continuity

Our grooving inserts are available with more than 10 different geometries. This variety is necessary to cut the grooves in different materials, with a different shape, tolerance and surface quality. To make this possible, Section P3 grinds the different angles of the geometry and the widths to very tight tolerances. One of the first geometries which was geometrically defined and published in the HORN catalog was the geometry .31. In line with continuous development of workpiece materials and their availability in the world markets it was necessary to develop and implement additional geometries for grooving and side turning applications. Beside the target of optimised cutting parameters of the new geometry the key goal was always improvement of the productivity and increased process continuity for the customer. This was achieved through the correct selection of the carbide grade combined with the high precision grinding skills of Section P3.

News and Product extensions

Grooving Systems

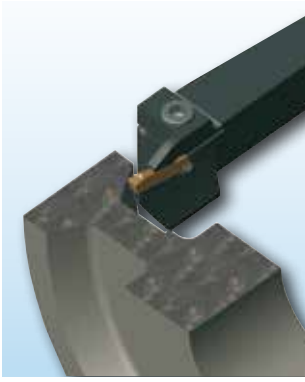
Face Grooving Toolholder A226, A210
External face grooving with depths of 25mm and 15mm, widths of 4 and 5mm on external groove diameters from 95 up to 180mm

Toolholder H100 and insert S100
For cutting widths of 2 up to 3 (5)mm

VDI-Direct attachments for system Supermini 110
With through coolant for internal grooving from bore diameter 6mm

System Mini with increased depth of cut
For bore sizes from 10mm diameter, depth of cut up to 3,7mm and cutting widths of 1 until 3mm

Insert S117 for profiles up to 13mm depth
Five profile inserts, widths from 10 to 26mm, especially for form tool applications



Face grooving toolholder A226, A210

Groove Milling by Circular Interpolation

Milling shank M332 and insert 332 for bore diameters from 32 mm

Milling shank M332 with insert 332 for bore diameters from 32 mm
Cutting depths up to 8,3mm, cutting widths from 2mm to 4mm

Milling shank M335 with insert 335 for bore diameters from 35mm

Milling Cutters for the Die and Mold Industry

Milling Cutters with diameter 16mm for Milling System DS
Double radius solid carbide endmills for machining steel and endmills to machine copper and aluminium

Milling System DA
Milling shanks and indexable head style cutters from 16 up to 32mm diameter for face, corner and plunge milling

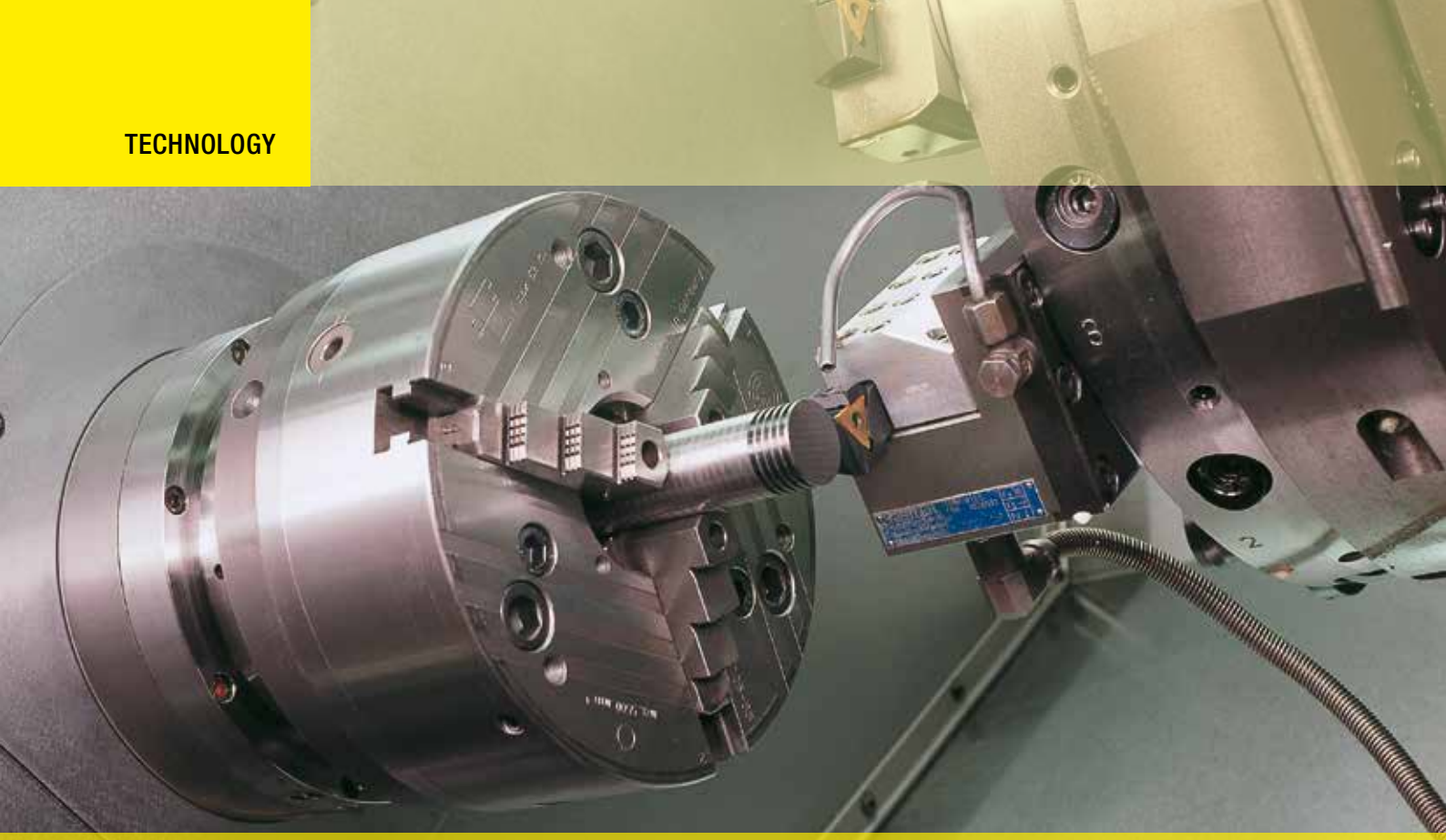
Multiflute Milling Heads System DMX 10 for steel and copper
3-, 4- and 6-flute indexable heads with cutting diameter 10mm

Milling System DA

Slitting Cutter

Disc Milling Cutter M139 with new clamping system
Cutting diameter 100mm, for grooves of 25mm depth and a width of 1,4mm

Disc Milling Cutter M139 with new insert clamping system



CUTTING FORCE MEASUREMENT

A three component dynamometer measures cutting forces during grooving with an insert from system 312.

Inside views into the load at the cutting edge

The increasing importance of the application related development of insert geometries, carbides and coatings as well as the complexity of tool applications require exact knowledge of the edge loading during the machining process. This can be achieved by complicated calculation or measured directly. In practice the empirical path offers more representative results than calculation.

Calculation or measurement of cutting forces?

The cutting force F is the result of all forces affecting the cutting edge during the machining process. Because its reactive force works in the same direction and with the same magnitude on the workpiece it is the critical dimension in development of cutting tools and clamping devices. The most important parameters influencing the cutting force F are the workpiece material, the chip thickness h, the cutting depth a_p and the cutting angle γ.

High cutting forces increase friction and lead to a high load on the tool or the workpiece; this can increase wear rates, lead to a plastic deformation or even result in destruction of the tool or workpiece. At best this can cause problems in meeting tolerances and/or poor insert tool life. At its worst, scrap rates can become unacceptable and damage to the tool holder insert seat location can result.

Possible calculation methods, e.g. Kienzle and Viktor, permit only a limited assessment of cutting forces. Especially on complex insert geometries the forces and moments cannot be calculated or only roughly estimated. On these occasions physical measurement of the cutting forces is preferable.

Practice proven: Strain gauges and force sensors

Measurement is usually carried out using a combination of strain gauge-type extension measuring stripes and piezo-electric force sensors. Extension measuring stripes (DMS) are flat style measuring data receivers or sensors which electrical resistance changes during the deformation. The resistance increases during extension and reduces during compression.
The piezo-electric sensors are crystal based devices which generate an electrical impulse under pressure that is proportional to the mechanical load. Depending how the crystals are placed it is possible to measure forces and moments which are working in different directions. Ideally several crystals are pre packed under high tension to create a transducer.
To guarantee valid information all transducers must

be once calibrated and the calibration and amplifying coefficients entered in the PC. Normally these parameters are supplied by the manufacturer.
Because of the relatively small signal generated by these devices the exit signal needs to be converted into a proportional voltage by using an impulse amplifier which can be read directly on the PC via a PC measuring card using appropriate software to provide a graphical visualisation of the data. Possible thermal influences which can lead to a extension of the crystals and to a drift of the signal can be allowed for by a drift compensation whilst vibrations are filtered by a low or high pass filter.

Three component-transducer for linear forces

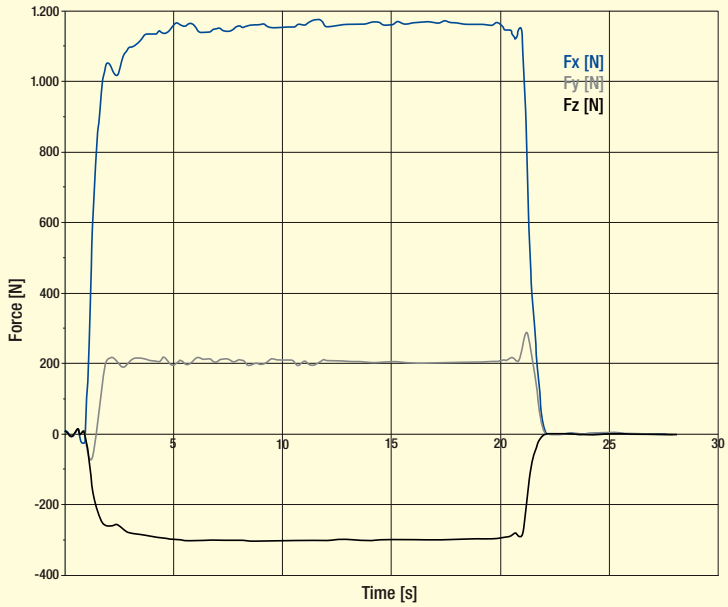
For measuring the cutting forces on a turning application it is recommended to use a three component transducer which measures the forces in the 3 perpendicular machine axis. Direct reading of the cutting, feed rate and passive forces is possible depending on the direction of the feed rate. The cutting force can be determined by vector addition. The transducer is designed to allow clamping of round or square shanks. Using coolant during the measuring process is generally no problem.
For larger workpieces a three component transducer in the form of a measuring plate is more suitable. It contains various piezo electric sensors to measure forces in X-, Y- and Z-direction on the machining surface. It is also possible to calculate the cutting forces with this.
Direct measurement of cutting forces on a rotating tool is not possible because it would be affected by the tool length. It is also important to consider on the milling process that not all cutting edges are working which reduces the average indicated cutting load. Nevertheless determination of the maximum load with the corresponding software is no problem. The radial force is calculated as a resulting component from the X- and the Y-forces. In addition to the radial force it is possible to measure axial force in Z-direction.

Additional measuring of torques

To investigate forces on drilling, reaming and milling applications it is recommended to use four component transducers. As well as the three force directions (X, Y, Z) these also measure a moment which corresponds to the cutting torque by working precisely on the central axis of the tool. It is required to clamp the workpiece absolutely central on the dynamometer. Because the rotary or cutting torque is a very important evaluation criteria during drilling, reaming or milling it is also possible to use a rotary dynamometer. These attachments using a collet and can be used for spindle speed up to 25.000 min^{-1}. Wireless data transfer enables measurement of both the cutting torque and the axial force on the tool.

Picture bottom left:
A load amplifier (top right) allows the data transfer and visualisation of the measured cutting forces on the PC.

Diagramm bottom right:
The diagram shows the progress of the cutting forces in the axis and force directions.



Test set up for measuring the radial and axial forces on a solid carbide endmill using a three component measuring platform.

Conclusion

Measuring cutting forces is relatively simple with modern measuring methods and equipment. The necessary transducers are mobile and can be installed in each type of machine. This solves the problems associated with complicated and time consuming calculation, particularly when comparing different tools. Also the influence of wear on the cutting force, which is easily assessed by direct measurement, is difficult to predict by calculation.

Retrospective

AMB, INTERNATIONAL EXHIBITION FOR METAL WORKING 19.-23.09.2006, Messe Stuttgart

With its headline 'Prepared for high investments, action area increased regionally and internationally, three percent more experienced visitors and five percent more new visitors' the official final report of the AMB exhibition underlined the show's success.

This evaluation was confirmed by Lothar Horn: 'The waves of visitors never stopped until the last day. We were able to have a lot of qualified discussions with our highly important customer base in southern Germany. However the need for an improved exhibition venue was apparent, borne out by the experience from recent years. We are therefore looking forward to 2008 because it will be the moment to transform this, until now, regional show into one with global influence.'

The AMB was visited by 51.522 experienced visitors. There were 802 exhibitors and 70 represented companies showing their products in the fully booked exhibition halls.

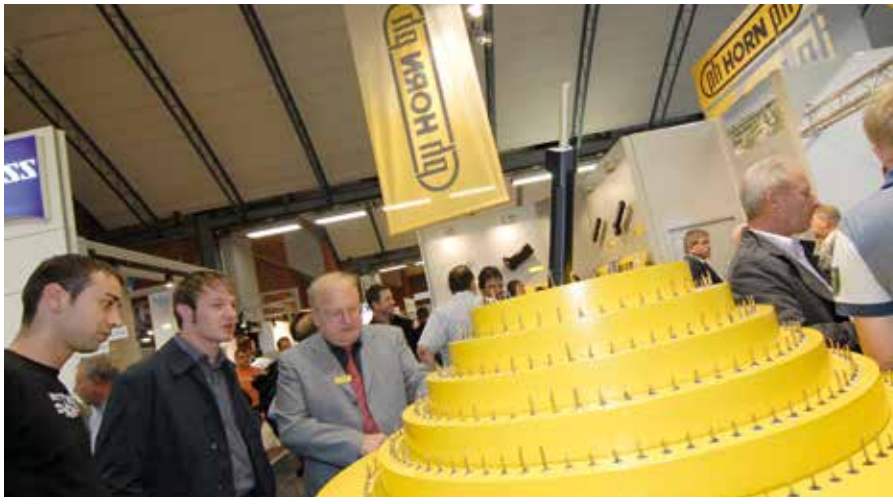
HORN activities were not limited to our stand in Hall 4.1. We also participated in the competition **Lathe operator of the year** which was initiated by the magazine 'fertigung'. In the exciting 'Show-down-turning' five candidates fought against the clock and against their nerves. To earn their place in the final they had qualified from a large number of candidates in a very demanding theoretical qualifying round. After that they made themselves familiar with the competition lathe in a two day training session.

During the competition each candidate in the final had one hour to program the workpiece on a laptop, load the program in the lathe and machine the component. After a half hour the process was stopped and the component was evaluated by a jury. The five finalists were in contention for a trip to Japan, a weekend in a City of their choice, a weekend trip to the Entertainment Park in Rust and other valuable prices. A total of six companies, including Paul Horn GmbH, supported this unique national competition.

We also contributed to the **Tool Technology Innovation Forum**. This event, which is organised by the magazine 'mav – maschine anlage verfahren', showcases the latest trends and machining solutions in the metal cutting and metal machining. HORN was represented by 'Process analysis of broaching on CNC lathes'. Approximately 40 visitors used the presentation of Matthias Oettle, manager of the R&D Office, to find out the latest information about this highly economical method of producing grooves on CNC lathes.

Picture bottom left:
Rose Bauer and Walter Wiedenhöfer congratulate the winners and hand the HORN presents.

Picture bottom right:
The visitor stream never stopped until the last day of the exhibition.



International Manufacturing Technology Show

September 6–13, 2006
McCormick Place
Chicago, IL USA

Retrospective

IMTS, 06.-12.09.2006, Chicago, Illinois, USA

At the largest and most important trade show for the machine and cutting tool industry in North America, the IMTS (International Manufacturing Technology Show) in Chicago, the HORN product range was exhibited on a 180m² stand. The success of the exhibit was confirmed by Export Sales Director Andreas Vollmer: 'Already on the fifth day of the exibition we had as many contacts as on the last day of the IMTS in 2004. HORN in the US is on a continuous expansion path.'

HORN showed at the IMTS new products and applications

Our US colleagues mounted a very impressive, well structured display including two large plasma screens showing different products and HORN specific applications. The visitors could also get a wide range of information about the latest products and developments on a separate presentation module.

More than 90.000 visitors from 80 countries found their way to the exhibition halls of the McCormick Place where more than 1.200 exhibitors showed their latest products and innovations. IMTS with its bi-annual frequency is the second largest Trade Show for production and automation world-wide.

Introducing: Colleagues from the Sales Office VK1

The automotive industry is a very important customer sector for our company. As well as being a major generator of sales revenue, it also plays a significant role in developing new applications for our tools. In accordance with its importance the commercial and technical service for these customers was combined in separate sales groups. For automotive plants in Germany the Sales Group VK1 is responsible. We will introduce you the colleagues of this sales group today.

Rudolf J. Nagel, Member of the Board of Directors

Rudolf J. Nagel, Sales Engineer and Member of the Board of Directors

Close co-operation with the automotive industry is one of the major reasons for the successful development of our company. Daimler-Benz played and still plays an important role because of its regional location. This customer relationship was initiated and developed by Rudolf J. Nagel right from the beginning.

When he joined HORN in 1971 following completion of his studies in mechanical engineering, he was involved in product development and in sales. An early responsibility was to establish a sales organisation which covered the requirements of the automotive industry and the company targets. During this time a significant development for the future was initiated from his side, when HORN was the first company to introduce a grooving tool utilising an indexable insert with multiple cutting edges.

An important supplier evaluation test at Daimler-Benz at that time was the twice weekly quality assurance and scrap rate meeting. Thanks to the outstanding quality of HORN products and competent technical service the scrap rate which related to our activities was very low and we could leave these 'Exams' with a strong position. Beside the activities at Daimler Mr. Nagel was responsible for OEM business and also initiated the company's move into the British market. Today he retains responsibility for Plant 10 of Daimler-Benz in Stuttgart, the Truck Plant 30 in Rastatt and Gaggenau in addition to his Board responsibilities.

Rudolf J. Nagel at 64 years old, is passionate motorbike rider. On his BMW he has already cruised the legendary Route 66 in the US and various hill roads in the Pyrenees and in Sicilly. In winter time he still finds the need for speed and enjoys alpine skiing and improves his constitution additionally by working out on cross country skiing expeditions.

Left:
Reinhold Dettenrieder,
Leader VK1

Middle:
Silke Letzgus,
Commercial Secretary

Right:
Jürgen Wendorf,
Technical Service

Reinhold Dettenrieder, Leader Sales Group VK1

As a commercial sales person Reinhold Dettenrieder has worked for our company for more than 30 years. When he joined, at a time when HORN had 15 employees, he had to cover everything which didn't have a sniff of 'Technology'. Quotations, orders, official red tape, HR management, purchasing and warehouse. For some time postal and despatch were his most important duties.

And all this without a computer, let alone the Internet! The experience he had gained throughout the company was very useful when company relocated in 1981 to a new building (today 'HORN Hartstoffe') and the commercial sales office was divided into a domestic and export section. Reinhold got the responsibility for the domestic section.

With the next relocation in 1999 into the current company building the sales office was restructured and Mr. Dettenrieder assumed responsibility for coverage of customers in Baden-Württemberg including Daimler-Benz. As a result of the increasing importance of the automotive industry the commercial service was combined and put under the responsibility of VK1. In this sales group he is responsible for commercial support for standard and special tools, from the smallest customer order to the most complex OEM equipment. The mainly very complex orders and projects are covered together with his colleague from the technical side, Mr. Jürgen Wendorf in respect of commercial, pricing and delivery aspects. Alternating they also visit all important domestic exhibitions to maintain very good customer relations. Both are supported also by Silke Letzgus.

By contrast with his mainly sedentary working position the 56 year-old's spare time activities include jogging or riding his bicycle in the locality where he lives.

Jürgen Wendorf, Sales and Technical Service

Orders for the automotive industry must be on a solid basis from the quotation until the shipment but also need to consider the versatile technical requirements.

Responsible for this is Jürgen Wendorf, skilled mechanic with additional education of a Technician in mechanical engineering and Technical Economist IHK (Chamber of Industry and Commerce). When he joined the company more than 20 years ago he got his initial position in the central quotation office. When the relocation to the current building took place and the sales groups were rearranged with Technicians and Commercial people his new responsibility became Technical Service and Support in Sales Group VK1.

As a link between internal and external sales he verifies the projects which have been taken from the customers and sent from the external sales people to the sales group, on their technical possibilities and realisation. This means that he also has to work very closely with the development and technical office as well as with the production sections. After that he can calculate, quote and support the project, together with Reinhold Dettenrieder until the final order Approximately 20% of his time is spent on the CAD system to develop possible technical solutions for projects. For Jürgen Wendorf an important factor in the 'efficiency' of VK1 is telephone contact and direct support of the customers and our representatives on the road. This makes it possible to define in the initial stage important parameters of the project, reduce requirements to the technically possible limits and propose solutions – which finally helps to reduce time and cost for all people involved in the project.

The private interest of the 47 year old is focused on travelling, mainly within Europe. An important aspect of this is to combine the active part of the holiday with cultural interests. In addition he enjoys walking in his home area and while he is travelling.

HORN MAGYARORSZÁG – OUR SUBSIDIARY IN HUNGARY

Hungary offers much more than Puszta, Balaton and Sausages

These three words are impressively linked with the picture people have about Hungary. Because of its unique position, forming an 'Interface' between East and West Europe the country has a long tradition as a centre of political and economical developments and a rich history which makes it strategically important for HORN in Eastern Europe.

The offices of HORN Magyarország Kft. are located in the building of the Chamber of Industry and Commerce in Győr.

Since 2004 Member in the EC

Along with the Czech Republic and Poland, Hungary is one of the most important nations in the central European region. Hungary has just 10.1 Mio. citizens which is less than in the other two mentioned countries but Gross Domestic Product (GDP) per head with € 8.708 is higher than in the Czech Republic € 8.559 and Poland with € 6.290. The total economical performance of Hungary in 2005 was € 88 billions. By comparison the German GDP for the same period was € 2.250 billions. The importance of the Hungarian market is highlighted by the fact that Germany has made € 9.7 billions of direct investments in Hungarian industry over the last 10 years. Audi alone invested in the same period € 2.3 billions of this volume.

The most important international economical partner of Hungary is still Germany. On import and the export of goods Germany is ranked in first place with a total share of more than 30%. Alterations of the economical situation in Germany logically effect directly the corresponding economic sectors in Hungary.

From the distributor to the subsidiary

The first sales activities of HORN on the Hungarian market began in 1994. Beside the 'heavy weight customer' Audi in Györ our former partner covered also several smaller direct customers. Important personal changes at our former partner forced us in 2001 to establish HORN Magyarország Kft. with its location in Györ.

Currently HORN employs six personnel in the internal and external sales functions. Beside the order handling technical customer service and support plays an important role in line with our general company philosophy. HORN Magyarország has earned his position in the Hungarian cutting tool market not through offering 'high discounts' but due to the professional, serious and technical oriented working activities. Also Hungarian customers appreciate innovative and economical tooling solutions which create an excellent impression of our subsidiary.

Gate to the South East

Beside the domestic market the office in Györ also handles and organises sales activities in Romania, Bulgaria and the countries of former Yugoslavia. The team around Zsolt Lajtmann continuously and professionally extends the market position of HORN in Hungary and the other countries he is responsible for. In the longer term HORN Magyarország is likely to become one of the most important tool supplier. With our innovative tool systems we can offer the customers economical tooling solutions on the highest level. This was highlighted at the recent MACH-TECH Exhibition in Budapest which took place from 8.-11. May 2007. In total a brilliant outlook in the country of the Puszta, Balaton and the sausages.

National Sales Manager Zsolt Lajtmann

The Team of HORN Magyarország Kft.: (f.l.t.r.) Árpád Márkus, Hajnalka Huszár, Zsolt Lajtmann, Annamária Molnár, Péter Stipsits, Zoltán Farkas

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