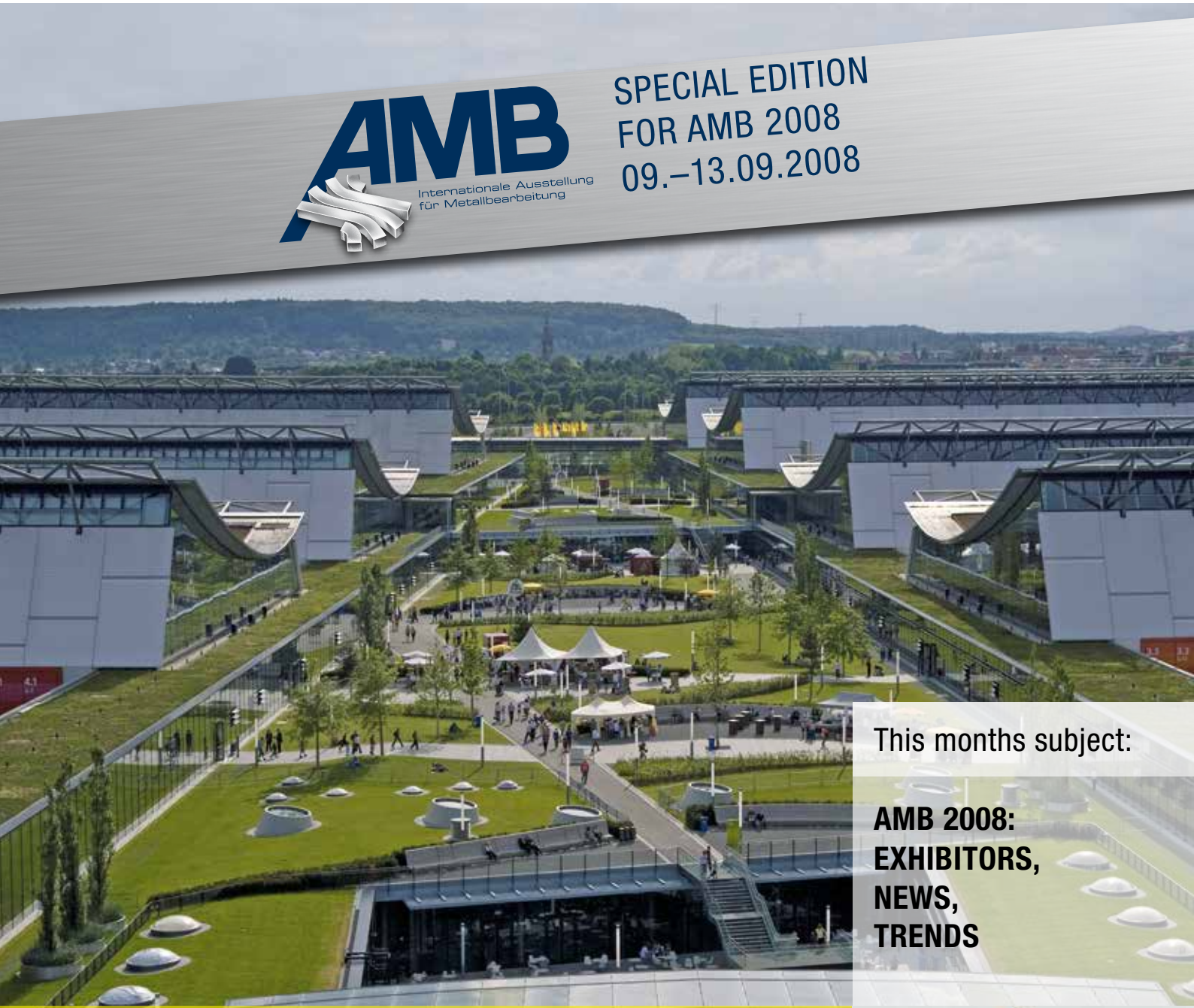
Edition 2/08

# world of tools

HORN

## HORN'S CUSTOMER MAGAZINE




This months subject:

**AMB 2008: EXHIBITORS, NEWS, TRENDS**

- Successful machining, successful forming
- New development for drilling
- New production philosophy for standard and special solutions
- Celebrating 10 years of HORN USA

Hall 1,
booth I 16

**Dear Readers,**

**Baden-Württemberg's technology sector needs a modern exhibition platform to market its products. Baden-Württemberg is the 3rd largest state of Germany and together with Bavaria they are the leaders of industrial know-how in Germany. The new Stuttgart trade fair centre provides our businesses – mostly mid-sized enterprises – with the opportunity to present their products and services to an international audience in an atmosphere that suits the high-tech sector. That is why my employees and I have great expectations of the AMB exhibition, to be staged at Stuttgart from 9-13 September 2008.**

Our involvement encompasses a variety of activities. One of them is the Horn customer magazine, "world of tools", in which we provide you with product- and user-related information, technical developments and company events twice a year. For this AMB edition, we have changed the focus slightly, concentrating on our business partners – machine tool builders – and their range of services. Our objective is to draw attention to the strength and performance of Baden-Württemberg's industry and publicising its capabilities to a wider audience. We also seek to promote awareness among industry outsiders that our region is a centre for innovation, capable of meeting world market requirements now and in the future, primarily with innovative products produced by specialists with top-notch training. Most regional businesses are aware of this responsibility. They live and work in Germany and know that this business location can only keep ahead of global competition by an ongoing process of review and optimisation.

A number of significant developments in processes and manufacturing methods will be shown at AMB. This special edition of our customer magazine is meant to provide a small contribution on the potential of the machine manufacturers.

My thanks go to all the companies that provided current information for this edition and I hope that you, the readers of our special AMB edition, enjoy an informative read.

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

P.S. Editors of the magazine "Maschine und Werkzeug" asked my opinion to topics like Germany as an industrial base, employees, products and solutions, globalization, trends and future business planning. You will find the short version of this interview on page 6.

# world of tools

HORN'S CUSTOMER MAGAZINE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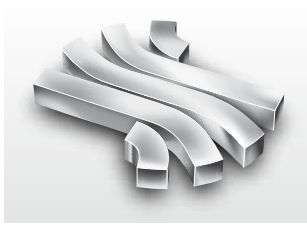

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**Masthead:** world of tools, HORN'S customer magazine twice a year and is sent to customers and interested parties.

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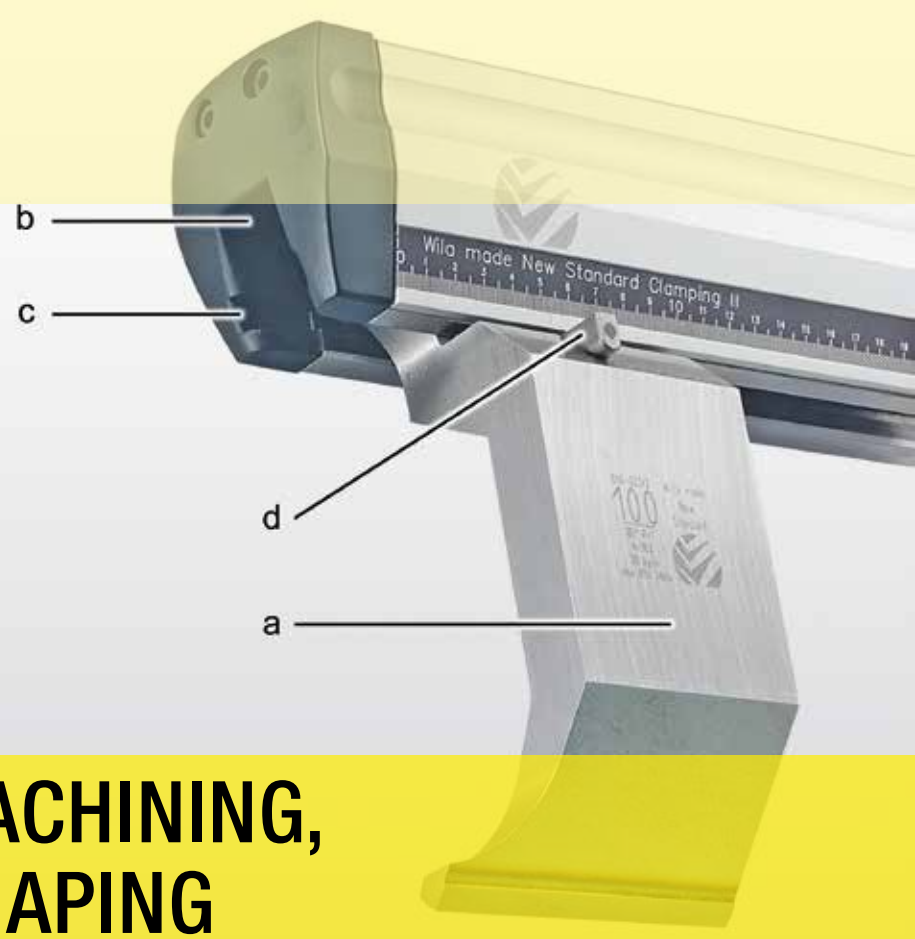



Installation situation on the upper beam: Top tool (a), clamping element for top tool (b), Safety-Click slots (c), Safety-Click actuation on the upper beam (d).

# SUCCESSFUL MACHINING, SUCCESSFUL SHAPING

## Efficient groove milling in clamping elements

**The cost-effectiveness of sheet material bending on press brakes is influenced by the tool change for the top tools, among other things. For the change to take place quickly and with high repeatability, the clamping system must meet stringent requirements.**

### Key competency: increasing press brake productivity

Wila BV in Lochem in the Netherlands has been manufacturing clamping and crowning systems as well as tools and accessories for bending sheet material for 75 years. A host of patents and licenses underlines the leading position of this globally operating enterprise with its 200 employees. One example of this innovative strength is the “New Standard” modular tool system. It can be used on press brakes from all manufacturers, meaning that it can continue to be used if the customer changes brands, unlike manufacturer-specific systems. To ensure a precise connection between the upper tool and the clamping element and thus also the functioning of the “Safety-Click” connection, machining of the clamping and contact surfaces must be precise.

The modular tools are connected to the upper beam using 515 mm (20.276") long clamping elements made of 1.2312 stainless steel. Gerrit Bruggink, Research Manager R&D, was on the lookout for new ways to manufacture them with the aim of bringing critical manufacturing operations in-house. This would bring high value-added processes fully under the control of Wila personnel and enable faster, more flexible

Picture left: After 23 clamping elements, the tools used for rough-milling are changed to ensure process reliability.

Picture right: Following hardening, the CBN custom tool corrects thermal distortion of the 515 mm long parts, bringing them to a straightness of ≤ 0.02 mm.

response. The locating slot for the upper tool (20 x 37 mm) (.787 x 1.457") has been milled at Wila BV for some time and the next step was to machine the two slots at either side of the clamping elements.

Since 'conventional' milling cutters cannot be used due to limited space, our representative Joop Nijland developed the following groove milling strategy together with Erik Klein Beekman, Tool Manager at Wila BV: rough-milling of both slots in two passes only, finishing and milling to the final dimension on all sides following hardening. Roger Kasper from our export department in Tübingen took care that the ideas were implemented rapidly and the know-how transferred to Holland.

## Reliable rough-milling with custom tools

Both slots in the clamping elements are 4 mm (.157") deep and 6.5 mm (.256") wide. The distance from the bottom of one slot to the bottom of the next one depends on the top tool. For rough-milling in the first pass and the return pass, a customised 21.7 mm (.854") diameter slot mill with six cutting edges in the carbide grade TI 25 was chosen. Due to the high chip volume, it has offset cutting edges, meaning that three cutting edges always make contact at the same time. Tool life ranges from 25 to 30 milled clamping elements. However, the tool change is carried out after 23 parts to ensure process reliability.

The slot is rough-milled with a machining allowance of about 1.25 mm (.049"), then finished to the hardening dimension in one pass. Also used here is a custom slot milling insert of 28 mm (1.102") diameter, with three cutting edges and a chamfer of 45° at the top cutting edge and 30° at the bottom cutting edge.

## Precision work with the CBN miller

Following hardening to 58 HRC, the final adjustments are made to the slot cross-section, straightness and parallelism. For this precision machining – the tolerances fall between 0.01 and 0.03 mm (.0004 and .0012") – a custom CBN circular milling insert with six cutting edges was developed. It finishes the clamping plate to the finished dimension in 1.1 minutes, leaving the surface as smooth as glass at Ra values of 0.4 to 0.8 µm and with a minimum tool life of 550 parts.

**The "groove milling" strategy proved its worth, achieving satisfying results for the project team members: Roger Kasper/Export department Horn, Gerrit Bruggink/Research Manager R&D Wila BV, Joop Nijland/ Horn representative at Harry Hersbach Tools, Erik Klein Beekmann/ Tool Manager Wila BV (from left to right).**

## Cutting parameters for milling slots

| Production step | | Rough-milling | Reworking | Final machining |
|---|---|---|---|---|
| Tool | | Carbide slot miller 21.7 mm Ø .854" Ø | Carbide slot miller 28 mm Ø 1.102" Ø | CBN slot miller 21.7 mm Ø .854" Ø |
| Cutting edges | No. | 6 | 3 | 6 |
| Cutting speed | $v_c$ m/min<br>sfm | 250<br>820 | 220<br>720 | 150<br>490 |
| Speed | rpm | 2700 | 2500 | 1700 |
| Feed rate | $v_f$ mm/min<br>$v_f$ ipm | 650<br>25.6 | 600<br>23.6 | 500<br>19.7 |
| Feed rate/tooth | $f_z$ mm<br>$f_z$ . ["] | 0.08<br>.0031 | 0.8<br>.031 | 0.05<br>.002 |
| Width of cut | $a_e$ mm<br>$a_e$ . ["] | 4<br>.157 | 6.5<br>.256 | 0.1 to 0.3<br>.004 to .012 |
| Depth of cut | $a_p$ mm<br>$a_p$ . ["] | 4<br>.157 | 4, both sides simultaneously<br>.157 | 4<br>.157 |

## Growing stock of Horn tools

The first goal has been achieved with these groove milling results: cost-efficient machining of about 200 clamping elements for each size. Wila BV can now react flexibly to market demand. A peek into the tool cabinet also demonstrates that decision-makers at Wila also count on HORN in other areas of production. About 30 different types of inserts are stored there, approximately half of which are custom inserts. However, not only the quality and machining data impressed Gerrit Bruggink. He was particularly impressed by the extremely fast reaction time of two weeks for custom inserts. This timeframe makes it much easier to accomplish his goal of concentrating value-adding processes at Wila.

# Lothar Horn in the interview with Hubert Winkler and Manfred Flohr from the magazine „Maschine und Werkzeug“ (shortened version)

**The complete interview appeared in Issue 7/8 of “Machine und Werkzeug” in August this year**

**m+w: Mr. Horn, as a tool specialist you are just as well-known in the technically challenging German manufacturing industry as the large, globally active full-range tool suppliers. You are recording a growth in sales far above the average for the sector. What is your recipe for success?**
**Horn:** We started with grooving tools as a relatively young company – or as I say today: tools for machining between two flanks. Our most important potential is our employees whose task is to interpret the ideas of the customer in good time so that we can react quickly and competently. Our recipe for success is thus our relationships with our customers.

**m+w: Und dann auch der Weg mit dem Kunm+w: And then also the approach with the customers?**
**Horn:** Developments can be discovered in good time if there is discussion with the customer. Our employees must recognise what the customer has in mind and whether we can provide a solution for it. If we then receive an order, the manufacturing and delivery are only the start. Our field-based employees continue to ask where they can still be of assistance.

**m+w: You describe your product range as the machining of metal “between two flanks”. What do you mean by this?**
**Horn:** We are active in a niche market. For us, machining between two flanks means it is not a matter of level surfaces but such that at least one side is marked as a flank. Both sides are not necessarily always machined simultaneously today. In the course of time the flanks are also spread further apart.

**m+w: Horn provides the smallest boring tools, however is also at home in the world of the largest parts. Are there no more limits?**
**Horn:** No, because where machining is done, tools with different characteristics must be provided, from the mini to the large part machining. Thus, new solutions for quite different areas must always be found.

**m+w: Isn’t that also the benefit of our location? Approaching solutions with new ways instead of**

**always only looking for improvements to existing systems?**
**Horn:** Of course! However, that is only because our country has the greatest experience and the most knowledge technologically. The world wide requirements are the highest for us. If a lower level were required from myself, then I would continue at a lower level. Making something new from our high level is basically more complicated, however also much more effective in the end.

**m+w: You provide products ranging from the standard tool to sophisticated customised solutions. What is your product? Is it tools or is it solutions?**
**Horn:** It is of course tools, however for special solutions. It is a challenge for us as a niche supplier to find better solutions with our own ideas and developments. Our application areas are the classic single-part production and large volume manufacturers from the automotive industry and its suppliers.

**m+w: What puts you ahead of the full-range suppliers?**
**Horn:** We operate in the most technically challenging area, therefore we have acquired much more knowledge and experience. We do not think of tonnages but refined solutions. The objective of our field sales force is not to make higher and higher sales but to solve the problems of the customers. Our employees are therefore always much more directly and effectively involved in our developments than elsewhere.

**m+w: Your field sales force is usually called when a customer has problems and others cannot find any satisfactory solution. What is special about your field sales engineers?**
**Horn:** We are renowned as problem-solvers in the market. Sometimes we also achieve the impossible with a special solution. We only have technicians and engineers in the field sales force who collaborate closely with our development department and most of these have already been working for us for decades. That certainly contributes to their capability.

**m+w: As a medium-sized company, are you afraid of being crushed between the large, global competitors?**
**Horn:** We are not afraid of the large companies. They collaborate with us frequently because they need our expertise. We are rarely the leading company in a joint project with customers. However, our tools and solutions often tip the scales for receipt of the complete order.

**m+w: Are you not also dependent on the economy?**
**Horn:** We can always provide our customers with further rationalisation effects when the demand for economic solutions increases during a boom. If business is booming, it also does so for us, of course. If it is declining, mainly our more economic special solutions are still in demand as they help customers to reduce costs. Our solutions are particularly in demand when the pressure on costs increases.

**m+w: What are the advantages of a medium-sized company?**
**Horn:** The ability to react! We make decisions very quickly. For example, when we established it would be better to purchase 55 machines straight away instead of the planned 30 for the grinding shop, this was decided within a few minutes. That does not happen so quickly in large companies. - By the way, we did not need the new machines as replacements but for expansion of capacity.

**m+w: What are the advantages of the Germany location?**
**Horn:** There is no better production location. We still have the best training system in the world. At the same time, we are active in the most demanding market. If I can be in business here in this country, I can also be in business in the rest of the world. The German drive for innovation and rationalisation prevents standstill. Therefore, I love Germany.
If most companies who are operating today in China, India or anywhere else had only made 50 percent of their foreign investments here, they would have had similar success. Energy, machine and material costs are the same everywhere. At most, elsewhere only the human labour costs are lower. However, I can absorb those with higher productivity and intelligent automation.

**m+w: And the advantage of the location is that most ideas which are capable of export can be obtained here?**
**Horn:** Germany is still setting the production standards. In the case of commodity products, their manufacturers are forced to produce in the dollar area. This currency influence can no longer be compensated for by productivity. However, products with their own identity such as ours are always marketable worldwide.

**m+w: However, you cannot prevent globalisation. How do you cover the requirements of the international market?**

**Horn:** We are now active in more than 70 countries worldwide with our own companies in France, Great Britain, Hungary and the USA. Many of our customers are also globally active companies and we must provide them with the same level of service as in Germany.

**m+w: Materials, machine tools and tools are constantly developing further. What is the trend for the future?**
**Horn:** Composite materials offer a major challenge whilst electronics will replace very many mechanical functions. More electronic actuation can already be seen today in the design of a gearbox. It must already be considered today where the mass production of the future will develop.

**m+w: The trend is also for smaller and smaller and more and more powerful parts, also for what concerns the power transmission.**
**Horn:** I think we have already taken account of that. In the boring area, we have developed tools able to operate in a 0.2 mm bore. The trend towards small parts became apparent 15 years ago and has continued to increase in complexity since then.

**m+w: All companies are currently complaining about the shortage of qualified personnel. You too?**
**Horn:** We have regularly taken on a large number of apprentices in the past. There is still a clear need for development engineers and this is a real bottleneck. We have taken steps to raise the profile of the company. Our sponsorship of The Paul Horn Arena as the sports hall in Tübingen has clearly increased awareness of the company in the regional area and our new company building also has a signal effect. It is a visible commitment to Tübingen and of course to the highly productive German location. We are a solid company. Wages are not everything.

**m+w: You have mastered the complete chain of production technologies in the carbide area. Is that a large benefit in order to react quickly and supply customer-specific solutions?**
**Horn:** That is only one aspect. Mainly, there are more opportunities to influence the process chain. We can do that all the way from the powder to the coating. The first principle is to do as much as possible ourselves and thus also control the quality.

**m+w: Can the value of this expertise about all process steps also be directly communicated to the customers by your field sales force?**
**Horn:** Of course! They are all engineers who love technology and have direct access to the respective in-house specialists irrespective of which process step. They like using this resource.

**m+w: Which key figures for new developments, personnel and sales do you want to achieve your objectives for 2008 and 2009?**
**Horn:** 2008 has already started with a weakening of growth. Therefore we must now change our methods of production to become faster and more flexible. The objective is that we must grow and become more efficient. If our customer is increasingly under time pressure, as a partner we must also become faster to react. I still expect growth of 14 to 15 percent this year. I am more cautious for next year. Therefore I would like to make speed an additional customer benefit in order not to have any problems in 2009 even if the sector as a whole should not be going so well.

fertigung

fertigung
Das Fachmagazin für die Metallbearbeitung

# Lightweight construction: A new age is beginning

**Lightweight parts do not need as much energy to move but are tricky to machine. Therefore, the precision tool manufacturer has a lot of development work to do.**

The driver of the lightweight ideas is the simple view: Moving parts must become lighter to save energy. In this context, the approach of the American aircraft manufacturer, Boeing, is certainly spectacular. It's "Dreamliner" - the first wide-bodied aircraft with a fuselage largely made from carbon fibre-reinforced plastics (CFRP) - should consume at least 20 percent less fuel than conventionally manufactured aircraft. Boeing's lead in avoiding the threatened energy collapse using composites has been followed since by other industrial sectors – with the automotive manufacturers in the vanguard. Progress is slow because these materials have a highly abrasive effect on the tools; as a consequence tool life is low as are cutting parameters. To make matters worse, there are more than a dozen different manufacturing processes whose final products demand specific approaches to machining.

On the other hand, fibre composites are very attractive to constructors as parts can be tailor-made for the potential static loads. This designers dream can quickly become a nightmare for tool manufacturers: new machining situations are lurking behind every form transition which in turn demand completely different cutting parameters or even different tools. This gives rise to new and unfamiliar quality issues.

It was not for nothing that Boeing had to significantly delay the delivery date of its "Dreamliner". Among other things, not completely crack-free rivet bores and problems posed by detachment of the fibres from the resin matrix due to mechanical overstressing were to blame. Such parts are shredded immediately.

Break-out of the fibres on the discharge side can only be prevented with a very sharp tool, for example with diamond-coated drill bits and PCD (polycrystalline diamond) tools. Though these are capable of achieving a service life of up to 800 bore holes, a wide-bodied aircraft can need up to 1 million rivet bores.

Wider use of the composites is currently still being braked by the complexity and expense of manufacture. The question is not whether but when the breakthrough to a wider base will happen. This process will certainly be accelerated by the extreme upward price trend for crude oil and general energy costs.

**Wolfgang Pittrich, Chief editor of the magazine "fertigung"**

**Revolutionary project: With the Dreamliner, Boeing has proved that carbon fibre-reinforced plastics are completely suitable for aircraft manufacture; other sectors will follow.**

GP

GP: Ganzheitliche Produktion
www.gp-script.com

Jürgen Kromberg, Chief editor of the magazine "GP"

# Total Lost of Ownership

**(jk) No – we have not made a spelling mistake, you have not misread the title; it's what we really mean. Because, if automotive industry purchasers are aiming to exceed the notoriety of José Ignacio Lopez when ordering machine tools or precision tools, the regrettable collateral damage implied by "Total Lost of Ownership" can all too easily materialise.**

Ultimately the moulding specialists had to complain. They "had to" because the alternative was commercial suicide (because against their better judgement and in the hope of better times again they would have to agree to ruinous conditions which would probably force them into insolvency) or they were able to offer their undisputed strengths to aerospace, medical technology or motorsport customers. These sectors also require very complex parts to be precisely machined and fair prices can be agreed with them. (Nonetheless, it also the case that those tool and mould manufacturers who continued to serve the automotive industry did improve their methods and now work more efficiently than ever before).

Yet as well as straightforward price pressure and discount requests which qualify some buyers for career progression, there has long been a different more subtle but equally dangerous instrument. This is the demand for quantitative and qualitative "guarantees" for products which the customer produces himself (using production equipment indeed sold to him but finally operated by him). In the worst case this would result in the „Total Lost of Ownership" of the supplier, depriving the end-user of support.

How is it that a customer can seek to offload responsibility and liability for something that it has under its complete control onto a third party?

Although this is an extreme scenario there are parallels in the behaviour of excessive chain smokers, cola drinkers and burger eaters who have sued tobacco, drinks and fast-food enterprises for the alleged illnesses they arguably inflicted on themselves. At least in Europe the courts tend to dismiss such claims.

And that is also how manufacturers of machine tools and tooling should react when widely drafted "guarantee" requests are made. Qualified 24/7 service for example is OK; it is necessary for 24/7 operation and therefore legitimate. But an open ended guarantee for quality and quantity output of the parts produced by the user is much more questionable.

World-wide competition between different manufacturers of machine tools and tooling is fierce. Likewise the power balance between the manufacturing systems suppliers and the automotive industry is one-sided. In a buyer's market, where is the need for excessively punitive performance guarantee terms?

Thus, "Total Cost of Ownership" applies not only to the machine tools and precision tools manufacturers but must also take into account the way in which the equipment is used and supported by the end user. The project needs to be examined from all angles by the purchasers. Only if they think things through will maximum benefit accrue to "their" company (and if they know how to argue, also for the benefit of their career).

Postscript: but that requires a holistic, knowledge-based approach to production.

NCFertigung

# Stronger than ever before

**It could all be somewhat simpler. Here the (keyword USA property crisis) downward slide of the international banking system, there the explosive rise in energy and raw material prices - and then the more than only unfavourable exchange rate between Euro and Dollar. Not good conditions for the traditionally export-dependent German capital and consumer goods industry.**

Despite this, production statistics for the German machine tools industry are surprisingly good. At €12.5 billion, the sector has achieved a record production value with constantly growing incoming orders in the meantime. But how do record values reconcile with the stated rather poor general conditions? For a start, readiness to invest by Asian export markets has continued without interruption; there is also pronounced dynamic growth in Eastern Europe and - unexpected by practically all experts – domestic machine tool orders have reached an all-time record level of more than € 6.7 billion. That cannot be conclusively explained with a good economic cycle alone (otherwise why would the Japanese machine tool industry show a two percent decline in real terms?). The “secret” lies completely in the technological strength and organised approach of the German manufacturers. They drew the correct conclusions from the 2002/2003 “crisis” and implemented the lessons consistently. Today, they provide not only the most modern machine designs in the world but also offer their customers solutions for complex, frequently automated, tasks.

In the automation field, domestic machine manufacturers benefit from domestic manufacturers of precision tools having developed long ago from being reliable suppliers of good products into problem solving partners. Automated production with standard tools may not be impossible, but rationalisation now goes hand in hand with increased productivity. And like the German machine constructors, German tool manufacturers are also in a class of their own. Today, using modern tools, cutting values can be achieved which only a few years ago were absolutely unattainable; that is combined with service lives which were previously undreamt of. But this is only one side of the (success) coin. With innovative complete machining tools (for mass producers), tool manufacturers are also currently setting new standards with cutting material development for materials which tend to be difficult to machine.

I am absolutely sure that the coming AMB will demonstrate yet again the special position of the German metalworking sector. We can all look forward not only to many innovations and improvements but also to an excellent exhibition environment. Simply strong!

**Helmut Angeli,**
**Chief editor of the magazine “NCFertigung”**

VDI-Z Integrierte Produktion

Dr.-Ing. Birgit Etmanski, Chief editor of the magazine "VDI-Z Integrierte Produktion"

# Information as success factor

**Since its founding in 1857 and for 150 years – briefly interrupted only by the Second World War – the magazine "VDI-Z Integrierte Produktion" has reported technological development in Germany and internationally. In its jubilee edition, a large number of mechanical engineering companies look back on their own histories. The beginnings of some of these companies are even further back in the past: Names like Carl Zeiss, Sandvik, Kasto, Boehringer and Witzig & Frank were already established by the middle of the 19th century. Many providers of precision tools have a long tradition. Others have a comparatively short history in which they have made a steep climb – particularly in emergent sectors like software development. Paul Horn GmbH similarly describes how it has become the technology leader in „only" 40 years.**

Many milestones in the history of technology are recorded in our pages. For example, automation became an important topic around the middle of the 1970s – with the emergence of the industrial robot "flexible production systems" and the progressive use of computers. The prospect of factories without people in which only "colleague robot" and computer-controlled linked machine tools performed their work soon raised its head. As well as the technical feasibilities, the social consequences for people, the humanisation of the work and also possible loss of jobs were discussed here.

Early fears that mainly the medium-sized companies that form the "backbone" of the German economy could lose market share as they could no longer be produced product economically have not materialised. New, higher value jobs have been generated instead of "manual jobs". Numerous examples show how a one-man business with innovative products and services and suitable strategy has grown into a large, medium-sized employer.

Since the end of the 1990s, the topics of "globalisation", "high wages location Germany" and "production relocation to Eastern Europe or Asia" have often occurred in the publication. Survival strategies vary. While some companies – mostly family businesses – with difficult to replicate high tech products still operate independently in the market, others have merged into groups of companies. Thus they can use synergies in technology, sales and purchasing and establish themselves more globally. Nevertheless, reports of relocations of "outsourced" production back to the home location are also surfacing. The success stories of these companies show that there is not only one generally applicable concept, but many paths that can be followed.

A lot has happened in one and a half centuries of technical progress and this will continue in the future. New and further developments with shorter and shorter product life cycles assure a head start in the market for innovative companies. They need current information about technical and organisational advances for this. The technical magazines provide a good opportunity to be always "up to date". At the coming AMB technical trade fair in Stuttgart, companies from the German metalworking sector will again demonstrate their innovative strength – and the magazines will provide comprehensive coverage of this.

Werkstatt + Betrieb

WB Werkstatt + Betrieb
Zeitschrift für spanende Fertigung

# Tool life increased from 5,000 to 12,000 parts

## Optimised boring tool for machining automobile components

**There are complex interactions of diverse influences in large-scale production. This can limit the scope for development of an optimised solution as the influence on other process factors – such as overall cycle time - must be taken into account.**

With batch quantities of one or two million parts, consistent quality must be maintained over a long time. This is a demanding task with many influential factors, among them a requirement for 100 percent process reliability for 365 days per year. “We are often operating under extreme time pressure at the limits of feasibility for our parts.” comments Urs Steinemann, Managing Director of turned parts manufacturer Häni in Arch, Switzerland. Christoph Schlaginhaufen, Regional Sales Manager of tool supplier, Dihawag, is familiar with these conditions: “We must face up to the need to provide tooling solutions which function and fit into the process as optimally as possible despite external influencing factors which we are not allowed to alter”. An example where the Supermini® boring tool has been optimised for production on a multispindle lathe shows that this objective could only recently be achieved.

## Boring tool doubles output quantity and tool life

The machine inventory of Häni includes a MultiDeco 20/6 multispindle machine from Tornos. Anchors made of stainless steel 1.4105 have been produced on it for two years. The process includes an operation where the internal diameter is bored out to 5.65 mm (.222") with a Supermini®. The machine outputs six parts per minute at speeds between 2700 and 2800 rpm and feed rates of 0.02 to 0.01 mm/revolution (.0008 to .0004"/rev).

As the inserts of a different manufacturer did not prove to be very reliable for the process and also did not achieve the required accuracy, trials were initially run using with a standard tool from Horn. Problems arose with long chippings and variations in material characteristics between batches. Schlaginhaufen remembers “Despite changes in the geometry, pressure at the cutting edge was so great that the tool ruptured repeatedly”. The process was finally stabilised with a second cutting edge in the chip removal edge of the .H geometry.

A new problem occurred a few months ago: surface grooves which have been traced back to different material batches, This problem has been solved with changes to the grinding process and the new super nitride coating which is distinguished by a very fine structure and smooth surface as well as high resistance to temperature and wear.

As a result tool life has risen by 140 percent, from 5,000 to 12,000 anchors, using the Supermini which has been optimised in several stages. “Today, we are achieving a tool life of two days while the previous insert often had to be replaced after one day”, says Andrea Esposito, Department Manager for multispindle machines at Häni. “We are mainly producing a much better surface with Ra ≤ 0,20 µm“. “The two days utilisation time also means that the Ra value in this time is certainly between 0.08 and 0.14” says Esposito. Thus, not only is the effort for the subsequent finish rolling less, but that for the quality control also reduced significantly.

Dr.-Ing. Michael Hobohm, Editor of the magazine „Werkstatt + Betrieb”

Anchor made of stainless steel 1.4105

Werkzeug Technik

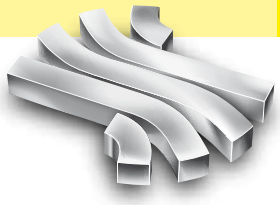
Maxime Mader,
Chief editor of the magazine
„Werkzeug Technik"

# Specialised for specialists

## Tool-related information in the German trade journal Werkzeug Technik

**The cutting edge is a moneymaker now as much as ever, which is why it deserves its own publication. The trade journal Werkzeug Technik provides manufacturers and users with detailed information on technology, applications and the industry.**

What's new in the tool industry? What geometries, cutting materials and coatings achieve more cutting performance? Who supplies high-performance tools for special applications?
The specialised trade journal Werkzeug Technik provides the answers to these and similar questions. Dedicated to tools and their use in machining operations, Werkzeug Technik concentrates on mid-sized enterprises in industry – machine builders, suppliers, subcontractors. It prints carefully selected, cutting-edge information for the field. Industry specialists and journalists show current trends such as the increasing demand for more comprehensive services, for example. Many production plants no longer limit their operations to one field such as mould making or series production; rather, they work in multiple fields simultaneously.
Buyers and production controllers are calling for rationalisation of the supplier base. Production plants are increasingly turning to tool suppliers who can provide an extensive or at least a wide range of tools for a great variety of cutting tasks – turning, drilling, milling, reaming, tool logistics and tool data management, all from one source. Not only that, solid expertise is also required of suppliers in all areas of application. Corporate strategies like this will determine the future development of tool manufacturers. Passing on the state of the art and current trends to the user is a key objective of Werkzeug Technik.
With this in mind, Werkzeug Technik frequently profiles tool manufacturers distinguished by their special capabilities. These are often the industry's hidden champions. Paul Horn GmbH in Tübingen is one of them. Werkzeug Technik has been in close contact with this tool manufacturer for many years. The outstanding benefits of HORN grooving tools are communicated regularly in technical articles and detailed product information.
Werkzeug Technik is specialised for specialists.



# PROSPECTS

## AMB, 09. - 13. September 2008, Stuttgart

**Among other things, we are exhibiting the following innovations and new developments in Hall 1, Stand I 16:**

## System 274 with KM 16 Micro and Graf System

The new toolholders with attachments for the Kennametal KM 16 Micro and Graf systems extend the application areas of the proven H274 / S274 tools. The holders available in straight and offset versions facilitate a clear increase in flexibility for parting off, side turning and threading – not only on Swiss type machines.

## Tool family for chamfering

These new products offer a large variety for chamfering of internal and external grooves with chamfer angles of 15°, 20°, 30° and 45°. The milling of 45° chamfers already covered by some products is thus clearly extended.

**The illustrated tools:**
DA milling cutter can be used for face milling and 45° chamfers with the same indexable insert (in the centre of the picture).
DS solid carbide milling cutter system DS and DM system milling cutter with carbide exchangeable head for chamfering bore holes (left and right of the DA milling cutter).
Standardised chamfer insert. Supplementing the previous chamfer angle of 45°, now also available for angles of 15°, 20° and 30° (horizontal at the front).

## HSK-T interface for turning tools

Support for primarily turning but also for milling tools brings high positioning accuracy and rigidity and thus guarantees maximum precision on multifunction machines. Graduated main body lengths also facilitate the selection of the optimum linear dimensions with respect to the associated cartridges. Available in different versions: straight or 90° offset or in each case for 10° spindle adjustment for external machining and boring bars with cartridges for internal machining with direct arbour HSK – T 63.

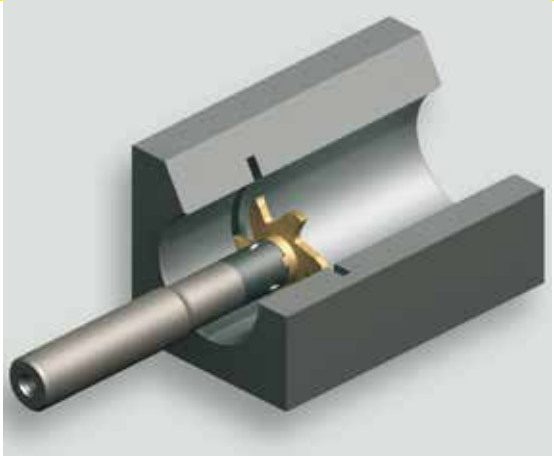
## .HR geometry for indexable insert S 229

".HR geometry" (Hard Roughing) is our solution for avoiding snarl chips. The platform chip breaker and chip former keep chips short as they fall away. Detailed information for this on page 17.

## Exchangeable head drill system DD

The combination of wear-resistant carbide head with tough, rigid steel support is the special feature of this new development. Information about the system benefits such as a holder for different diameters and fast replacement and clamping of the carbide head from page 18.

## Circular milling inserts with 6 cutting edges Type 636



Groove depths up to 12 mm (.472") can be realised with this new circular milling inserts. The inserts are available in widths from 1.5 to 3 mm (.059 to .118"). A cutting circle of 35.7 mm (1.405") has been selected and enables the unlimited high performance of this milling cutter design.
The shanks of the inserts Type 332 are used as tool carriers.

# GROOVING TOUGH MATERIALS WITHOUT SNARL CHIPS

Indexable insert type S229 with .HR geometry.

## New HR geometry breaks chips during roughing and finishing

**Grooving tools are often used to avoid tool changes for groove plunging operations in combination with turning complex contours. Dependant on the material this practice can generate stringy swarf which undermines some of the advantages gained from this apparent flexibility; forgings are a particular area of concern.**

Quick, trouble-free grooving with a high standard of quality requires a geometry that produces short chips in full and partial cuts and permits a contour pass during finishing. Lengthy chippings and stringy swarf need to be avoided. As well as swarf clearance problems – which can necessitate machine shut-down for manual clearance – poor swarf control can lead to damage to the surface of the tool and premature tool failure. The cutting edges of conventional grooving tools are sensitive to the consequent high loads and high temperatures and can quickly become damaged.

### Chip breaker, platform/chip former

Horn has developed "HR" (hard roughing) geometry with a platform chip breaker and chip former to ensure trouble-free machining of certain materials. The .HR geometry keeps chips short as they fall away, especially for large diameter workpieces and materials that tend to result in long chip formation. The new cutting edge shape has been optimised for production by a combination of sintering with cutting characteristics that are stabilised by new geometric details.

### Strong in full and partial cuts

An outstanding chip break at cutting speeds of vc = 180 to 220 m/min (590 to 720 sfm) and feed rates of f = 0.18 to 0.22 mm/revolution (.0071 to .0087"/rev) is achieved for forged workpieces. In the case of a partial cut, depending on the workpiece's stability and the clamping, a feed rate of f ≤ 0.35 mm (.0138") is selected. These values apply to wet and dry machining. Our new high-temperature carbide grade, AS66, counteracts thermal problems that can occur on the cutting edge when workpiece diameters are large and engagement times are long.

### Available ex-stock

The high cutting forces during roughing require stable toolholders. We therefore recommend toolholders with a cartridge or monoblock for the new inserts. Due to the special stability requirements for radial and axial machining, .HR geometry is only available for sintered S229 inserts. The inserts are available ex-stock in widths of 3, 4, 5, 6 and 8 mm (.118 to .236 and .315") in the grades AS62 and AS66. The smallest corner radius is 0.4 mm (.0157") for the 3 mm (.118")-wide plate.


.HR geometry with platform chip breaker and chip former.

# HORN TECHNOLOGY NOW AVAILABLE FOR DRILLING

Fast and easy change of drill heads with one key.

## New development expands the range of capability

**Turning, milling and drilling account for the dominant proportion of metal removal processes. Given that drilling requires a significant amount of process time for metal removal, at around 30 percent, it is easy to appreciate the importance of a stable and reliable machining process for follow-on production stages.**

### Improving drilling processes

The focus for drilling is on increasing process reliability while maintaining the specified quality of the parts. The efficiency limits concerning solid carbide drill bits are quickly reached for diameters larger than 10 mm (.394"). Though tougher, HSS tools do not offer an alternative due to lower productivity and increased wear rates.

### Exchangeable head system optimisation factor

A combination of wear-resistant carbide head with tough but rigid steel support represents an optimum combination for the drilling process. This is the outstanding feature of the new HORN DD development. The benefits are obvious: one holder suits various diameters and allows fast replacement and clamping of the carbide drilling head – on or off the machine. The replaceable drill heads are clamped with a key – without laborious screwing. As finish grinding is not necessary, constant length and consistent tip geometry are provided. Indexability in the insert seat ensures constant machining conditions and the optimum combination of carbide, geometry and coating provides the best possible machining result. The holders are designed for a 5 x D aspect ratio at the moment and are hard material coated like the DA milling system. Further holders with length to diameters ratio 3 x D and 7 x D are planned for the future. They are particularly resistant to corrosion and wear by chips. The internal coolant supply directly to the cutting edge brings further benefits.

### Premiere at the AMB

The new tools with diameters from 12 to 15.9 mm (.472 to .626") in increments of 0.1 mm (.0040") will be presented at the AMB for the first time. The complete range of the system will be extended from dia. 8 up to 18,9 mm (.315 to .744") (step by step). The flexible, easy to use and efficient DD drill system – initially designed for steel machining – is completely suitable for every machining task and closes a gap in our tool range. With this innovation and together with the DA, DM and DS systems, we can provide a complete range of tools for mechanical engineering, plant construction and mould making demonstrating once again that HORN is ahead in technology.


# NEW PRODUCTION PHILOSOPHY FOR STANDARD AND SPECIAL SOLUTIONS

## Shorter product manufacturing times, higher flexibility in the production process

**Our new building already visually communicates a part of the company's future objectives. This article provides a glimpse behind the scenes with an insight into the production philosophy that will take the company forward.**

### Flexible production concepts in new premises

The starting point for all planning for the new building was to continue to expand and secure our leading position for grooving, groove milling, groove milling by circular interpolation and thread and contour milling. As the specialist for machining between two flanks, our aim is to grow in niche markets with technologically challenging tasks. As well as new high quality products and mastering different process chains from development to completion, this requires very fast delivery ability. The short product manufacturing times which distinguish us must therefore be reduced again so that rapid adaptation to changing market conditions is possible both for production volumes and for the technologies. In the long term, this could only be achieved in a limited way using our existing production structure. Therefore we decided on spatial expansions with a structural adaptation of the production. In doing so, we relied heavily on our employees, because change can only be economically implemented if well-trained, creative and independently acting employees contribute to rapid, high quality product manufacture.

### Tool holder production in only one clamping

Short delivery times of our standard and special tools can only be realised with in-house production. Annual production of around 10,000 orders for tool holders will be completely machined in one clamping from the bar even more in the future. Combination of several work operations into a single set up is already a proven method. However, its more widespread implementation requires development of new modular machine concepts with additional machining possibilities which we developed together with the machine manufacturers.

Walter Wiedenhöfer, Production Manager and member of the executive board, realised the new production philosophy with his team.

We divide the tool holder production into four groups in the new structure: saw-cut parts / semi-finished products, cubic small parts, square shanks and – as a new group - round shanks. The necessary machining processes with predominantly newly purchased machines are assigned to each group. The machining of the cubic small parts is performed exclusively on vertical machining centres with rotary and swivel tables; the square shanks are completely machined on machining centres with swivel head and machining station for the sixth side and the round shanks on mill-turning centres with counter spindle and steady rest. Thanks to the new production organisation by part families, the set-up times can be significantly reduced due to rationalisation of the starting materials. In addition our production management has succeeded, particularly for the round shanks, in eliminating all grinding operations. The standardised user interface of the machines also makes allocation of employees to different tasks more flexible.

## Modular concept simplifies process planning for grinding

In the grinding shop approximately seven million inserts annually in average batch sizes of 100 are brought into their final form. So how can it be ensured that different batch sizes with increasingly more complex requirements for the geometry and shape are manufactured economically in even shorter time?

A basic requirement, as demonstrated in the past, is a very high degree of modularity and automation. Therefore, the team of Walter Wiedenhöfer, Production Manager, decided to build on proven experience and to adapt the new grinding machines more specifically to our requirements using expansion modules. Thereby a “basic grinding machine” – which is common to all six departments of the grinding shop – can be set up and retooled for each specific product range and automated accordingly. As this concept is based on a standard machine configuration it enables great flexibility. It becomes possible to relocate an order to other departments and react extremely quickly to market changes and customer requirements.

Tool holder production

Grinding shop

## Process speed before machine utilisation

Our goal is to use this philosophy, somewhat usual for a manufacturer, to further improve our current 97% on-time delivery capability. To accomplish this, we are implementing both the aforementioned new machine concepts and a “self-regulating order processing system”, which processes orders by priority on a cross-departmental basis.

This scheduling system allows non-production departments to set the delivery dates they need regardless of production’s utilisation rate – a particular advantage for special tools. Because production staff are kept informed about how the orders have been prioritised, they can act flexibly, freely determining in which sequence they perform the work at hand.

In addition to order processing, the system addresses the issue of responding to faults that occur at short notice, providing various options that can be used to rectify interruptions without delay.

This means that our staff are equipped to manufacture products on time to a consistently high level of quality. It goes without saying that maintaining a high level of flexibility and creativity in production requires an equal degree of personal work organisation.

The objective of this and other measures is to produce more quickly and more efficiently regardless of time pressure, and to react quickly when problems occur. With our well motivated staff and these innovations in production and organisation offering a stable foundation, we strive to provide our customers with high quality standard tools and custom products in the shortest possible time.

Automated insert production


1


2

# BIG COUNTRY – SMALL TOOLS

## Celebrating 10 years of HORN USA

**HORN USA Inc. celebrated its 10th anniversary in April 2008 at its site in Franklin (Nashville, Tennessee). In a relaxed atmosphere and with members of the trade press on hand, HORN USA looked back on 10 successful years and presented an outlook for the future.**

The celebration kicked off on 26 April 2008 with an "open house". Family members, business partners and the trade press had the opportunity to tour the sales and administration offices, logistics centre, showroom and production facilities, all the while receiving detailed information on our subsidiary. Wrapping up the festivities was a typical southern barbeque on the historic grounds of Carnton Plantation House, a military hospital dating back to the American Civil War that has been mentioned in history books.

### Made in Germany and USA

HORN USA employs a staff of over 40 people this anniversary year. Turnover has increased constantly over the past ten years. Particularly helpful in this regard was starting production of indexable inserts in 2001. Thanks to "on-site production", HORN USA can take advantage of two synergy effects, "Made in Germany" and "Made in USA". On one hand, producing in the U.S. makes sense economically at the present time; on the other hand, having in "Made in USA" on our products is a way to convince our steadily growing customer base that we are serious about continuing our activities in the U.S. over the long term.

**President of HORN USA Andreas Vollmer (left) presents the anniversary gift …**

**… to Duane Drape (right), National Sales Manager**


3


4


5

**Celebration (1) in an appealing scale (2) with delicate food and drink (3), hot rythms (4) and music for every age (5).**

## Quality feature: comprehensive advice and support

Reputable business dealings and high-tech, cost-efficient solutions have helped the company gain a strong footing in the American market. Not only there, but also in neighbouring Canada and Mexico, fellow members of the NAFTA economic area. HORN USA will also be present once again at North America's largest trade fair for tool making and machine building, IMTS in Chicago, scheduled to be held in September this year.

Finally, the motto of the anniversary event indicates the next steps for our development overseas: "10 Years HORN USA – It is just the beginning". We have got things rolling so that our small tools can hit it big in the future. Thanks go to all the colleagues involved in this success, both in matters big and small.


**… to Dave Fabry (left), Operations Manager of HORN USA.**

The staff of financial accounting and internal cost accounting: Adolf Holder, Monika Rilling, Markus Kanter, Tanja Schamm and Peter Munder (from left to right).

# Financial and internal cost accounting

**The activities and mind-sets associated with accounting are sometimes the subject of mocking exaggeration. Our staff of five in the financial and internal cost accounting department gave an entirely different impression.**

The team consists of internal cost accountants Peter Munder and Adolf Holder. Their sphere of responsibility also includes Horn Hartstoffe GmbH. Tanja Schamm, Monika Rilling and Markus Kanter are in charge of financial accounting. All the business processes go through their hands, and they provide indispensable data for assessing the operational performance, the profit and loss account and cash flow. Controlling involves a special task, namely, organising business processes to support management strategy.

Peter Munder is responsible for financial control. He spends his leisure time playing sports and listening to music, from Bach to modern composers. Adolf Holder also plays a number of sports and has been coaching a boys' football team for 20 years. Tanja Schwann, another active sportswoman, can be found both at the gym and cycling outside in the fresh air. Their colleague Monika Rilling is interested in literature. She enjoys Nordic Walking and walking her wire-haired dachshund. Amateur cook Markus Kanter likes to experiment. He doesn't have any preferences regarding a particular cuisine and is open to trying new things.

As our company grows, so does the number of accounting transactions; processing times become shorter and shorter, the number of statistics to be generated becomes larger and larger, German and European legislation and regulations become more and more extensive and so forth. Without the aid of data technology and data exchange with our business partners and banks, our small team would not be able to handle all these tasks.

Despite using state-of-the-art communication technology, our accounting department places great value on personal contacts with both co-workers and customers. Resolving conflicts on an individual basis and not according to the book is standard procedure, particularly for contacts outside the office. We consider this to be an important contribution to customer satisfaction.

# Our ladies from the reception desk

**Whether in person or on the phone, first impressions are critical. Our company receives very positive feedback in this regard, and much of the credit for this goes to our ladies at the reception desk.**

A pleasant voice on the telephone, a friendly greeting and a winning smile at the reception desk give callers and visitors the first indications of what a company and its style are like. When communication with the right contact person can also be established competently and quickly, an important step towards customer acquisition and customer satisfaction has been made.

Inquiries on the phone often have to be analysed and "translated" for them reach the appropriate department or product area in our organisation. That is why working at the reception requires good knowledge of the organisation, the range of products and the division of responsibility. The PC is an indispensable aid for this. It provides information on sales territories and contact persons, structured by postal code.

The reception desk and the main telephone lines are staffed ten hours a day. Sabine Bauknecht and Birgit Uhrig divide this work between them in two five-hour shifts. Heike Bauer recently started familiarising herself with the tasks at the reception desk, ready to fill in for her colleagues at the reception desk when they go on holiday, for example. As well as working at the reception desk these three ladies are responsible for getting outgoing post ready in time, stocking workshop rooms with beverages and snacks, and ordering office supplies and distributing them to employees.

After a long day spent dealing with many customers and switching back and forth between waiting visitors and phone calls from Germany and abroad, which can be hectic at times, a few quiet minutes after work are greatly appreciated. Birgit Uhrig relaxes by practising yoga and reading. She visits far-away destinations in her holidays. Her favourite place to visit is Florida. Heike Bauer has a "sweet" passion. She bakes cakes for the residents of a retirement/nursing home. She also enjoys jogging. Sabine Bauknecht also stays fit with sports activities. She doesn't concentrate on any particular sport; she just exercises to stay in shape for her work at the reception desk!

**Our ladies from the reception desk: Heike Bauer, Birgit Uhrig, Sabine Bauknecht (front left to right).**

# NEW PRODUCTION FACILITY IS SETTING STANDARDS

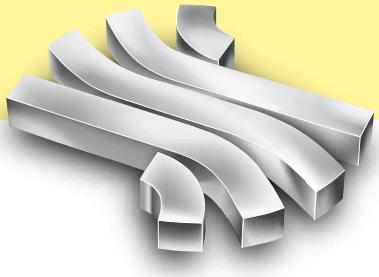
## Environment-friendly production

With the completion of the construction of the new production facility the production surface increased by additional 5.500 sqm (appr. 55.000 ft²). The new two storey building with a total height of 15m (appr. 45 ft.) includes also social areas such as dressing and meeting rooms with a total surface of 800 sqm (~ 8.000 ft²) and an underground car park of 3000 sqm. (~ 30.000 ft²).

Another unique detail: the progressive energy concept which will save long term high valuable natural ressources. The concept is based on a combination of heat recovery and photovoltaic cells. The photovoltaic installation is currently the largest of a private company in the district of Tübingen.

Appr. 33 Mio. € ($ 50 Mio.) will be invested in new production equipment this year and next year.

The photovoltaic installation is built of 252 cells (solar modules) with a total surface of 400 sqm. (~ 4.000 ft²).



# Our business partners at the AMB

## Focus on machine tools

On the occasion of the AMB in Stuttgart, our customer magazine "World of Tools" focuses on the exhibition. Our business partners – manufacturers of machine tools – have provided information about their strengths, products and innovations.

You will find current information one page per company which, considered as a whole, demonstrates the strength and capability of our domestic industry.

We would like to thank all companies who have contributed information for this AMB edition.

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# ALZMETALL Werkzeugmaschinenfabrik und Gießerei Friedrich GmbH & Co. KG

## The company:

ALZMETALL is a company with an international reputation and world wide activities. We have been technology leaders for drilling, milling and casting for six decades. Our products have proven themselves many times in general mechanical engineering, in the automotive industry and in the wide range of medium-sized manufacturing companies. ALZMETALL is a competent manufacturer of CNC machining centres for complex metal removal tasks. All the machining centres developed and constructed by ALZMETALL are designed for the machining of all metallic materials, mainly machinable steels or high alloy aluminium and also for CFRP machining.
The quality image of ALZMETALL is based on integrated production processes and a focus on innovations.

## The products:

- CNC machining centres and HSC milling machines for production, mould making and tool making
- Table, pillar and column boring machines
- Special machines for drilling and milling
- Foundry for grey and spheroidal graphite cast iron with machining technology
- Series production for piece weights 5-300 kg
- Manual cast iron piece weights 150-4,000 kg

## Innovations for the AMB:

ALZMETALL is continuing the development of gantry machining centres with a 5-axis version and expanding its product range of the GS series. The new GS 1000/5 FDT from ALZMETALL is a 5-axis machining centre for milling and turning. The C-axis is designed with a speed of 300 rpm; thus complex parts can be finish machined with drilling, milling and turning in one clamping. The turning tool is removed from the tool magazine after the main spindle pick-up process. The transmission of torques and cutting forces for turning tools is ensured by a positive fit and play-free Hirth gearing of the main spindle shaft. The pivoting-turning combination for the A-axis and C-axis is fitted with 3 torque drives as standard. Technical data: Traverse paths X/Y/Z 800/800/600 mm
Main spindle: speed 12,000 rpm output 40 kW max. torque 139 Nm
Axis drives torque:
A-axis: n = 50 rpm
C-axis: n = 300 rpm Table load capacity:1,000 kg
CNC controller: Siemens


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BENZINGER
PRÄZISIONSMASCHINEN

# BENZINGER PRECISION MACHINES

## The company

Founded in 1916 as a craft business, the Benzinger company has developed into a modern industrial business of a manageable size.

We have been at our new premises in the Buchenbronn district of Pforzheim since the beginning of 2008. Together with the better structuring of internal company processes, our new building provides the space to meet the highest future requirements for precision and reliability of ultramodern CNC lathe and milling technology.

Our machines are used in the automotive, dental, medical and optical industries as well as in electrical engineering, aerospace technology and in the jewellery and watch industry.

Technical competence, social strength and dedication to the requirements of our customers will continue to be the focus of all processes.

## The products

High precision and optimum surface quality for small and medium-sized workpieces - this is the classic application area for Benzinger machines, usually supported by very fast, flexible and integrated loading and unloading handling systems which also take over peripheral tasks such as measuring, drying, washing, brushing etc.

From single-part production to large volume production on a completely automatic system, from turning to milling to offset boring and milling, complete machining on one machine, hobbing and turning in one clamping, NC-controlled rotary tables, centre drive spindles - from the simple solution to the perfect special solution - you always obtain the configuration which corresponds to your respective requirement.

## Innovations for the AMB

**Take5**
A turning/milling centre for 5-axis machining on main and counter spindle for simultaneous complete machining of maximum precision, complex workpieces with minimal retooling times. Milling spindle HSK-40 with 30,000 rpm installed on a Y-B axis unit, tool changer with 52 stations in combination with the milling spindle, bar capacity up to 42 mm, 16 tool position magazine VDI 25, etc.

We are also showing our GOFuture new development. This combines maximum precision and flexibility on a compact footprint and is provided in various configurations.

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# Gebr. Brinkmann GmbH

## The company

Gebr. Brinkmann is a family business with 200 employees and was founded in 1945.
The company has secured a solid position due to consistent investment in modern production technologies, forward-looking planning of production facilities and innovative ongoing development of the product range.
Technological progress in the industry has been taken into account with the currently available product range of the V 210, V 250-Z, V 315, V 400 and V 315 DS vertical lathes.
The strategic alignment of Gebr, Brinkmann is the business area of customer-specific solutions. The company has been successfully active in this business area for years.
Today the company is one of a select group system suppliers who provide the complete production solutions with machine, technology, automation and measurement and who can provide full project management.
Market and customer orientation are the focus for Gebr. Brinkmann.

## Products

The machine range includes horizontal / frontal lathes as single and double spindle machines.
The inclined bed machines for large parts production
NC 500 -> 640 mm swing diameter
NC 600 -> 860 mm swing diameter
The vertical lathes, which are the main contributors to sales, round off the range.
As a “Full Liner” in the vertical area, the company Gebr. Brinkmann can satisfy all technical and technology requirements.

| | |
|---|---|
| Single-spindle machines: | V 210, V 315, V 400 |
| Double-spindle machines: | V 210-Z, V 250-Z |
| Combination machining turning / grinding: | V 315 DS |
| Double-sided machining: | V 210-2, V 315-2 |

## Out of the niche to the system supplier

Demanding and diverse requirements from all sectors, such as automotive suppliers / automotive sector, drive technology, gearbox technology, food / foodstuffs and the hydraulic / pneumatic equipment industries are potential customers for Gebr, Brinkmann.
System supplier means providing the project management for the complete process chain:
machine, automation, measurement, technology and peripheral adaptation.
In particular, the hard turning / grinding combination machining is of special interest for many users.
High quality parts are finish machined in one operation on the machine.
Higher quality, shorter cycle times, low investment, simple logistics and the associated higher efficiency speak for the design.

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BW BURKHARDT + WEBER
Stark und genau seit 1888

# A partner for challenging tasks

## At the top for decades

BURKHARDT+WEBER Fertigungssysteme GmbH, Reutlingen, has been manufacturing largely dimensioned machining centres and special purpose machines for challenging machining tasks in all industrial sectors since 1888. Today, the company is part of the Italian machine manufacturer Gruppo Riello Sistemi. At BURKHARDT+WEBER, 220 employees design efficient and highly-precise machines for the machining of workpieces made of steel and cast iron of up to 30 kg carrying capacity. For this reason, BW-machines are counted among the largest MC's for machining tasks. The company disposes over a strategically high vertical integration and produces all basic parts of the machining centres in-house, in order to assure the high quality and efficiency of BW-machines. For instance, the original BW-tool magazine which can handle up to 570 tools, is internationally leading.

Our range of products includes machining centres for the efficient machining of complexe steel and iron parts, as well as custom-specific special purpose machines for the cylinder head and -block machining of large diesel engines.

Within the MCX series you will find the perfect machine for maximal dynamics combined with strong machining. The roller guideways guarantee high long-term accuracy, even when it comes to rough machining combined with fine finishing.

The MCR series is the perfect solution for all jobs that require top damping characteristics combined with highly precise fine finishing. The sliding guideways made of Teflon and bronze guarantee extremely high long-term accuracy due to low face pressure. The guideways are hand-scraped by experienced specialists and function on all sides as sliding guideways.

The machining centres dispose over strong spindle units with a torque of up to 3500 Nm. In every machining centre we use the modular higly flexible tool magazine, made by BW.

**At the AMB 2008**, BURKHARDT+WEBER launches officially the entirely reworked MCR series. The experiences of the MCX series took an influence on the new construction: for the first time, the machine column was executed once again geometrically FEM-optimated. The axis strokes were adapted to the requirements on the market, the machine design underwent a retrofit.

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chiron

50 JAHRE Werkzeugmaschinen

# Seconds ahead

## Reach quality and unit cost, output and delivery date objectives reliably.

### The company

CHIRON is one of the most in demand manufacturers in the world of high performance machining centres and complete fully automated solutions individually configured to customer requirements. The export proportion has been reaching 50-60% for years with the automotive and its supplier industry contributing around 50% of sales. CHIRON generates the other 50% with customers from mechanical engineering, aviation, medical technology, watch and jewellery manufacturing, .... and many other sectors.

The CHIRON group employs 1,500 people internationally. There are 1,000 employees at the CHIRON headquarters in Tuttlingen and the nearby Neuhausen ob Eck; the proportion of apprentices at more than 12% is striking.

### The products

CHIRON focuses on moving column machining centres. The range covers the top seller FZ 08 with traverse paths (X,Y,Z) of 300-250-250 mm to the MILL long bed and pendulum machining centres with working ranges of 8,000-840-715 mm. CHIRON is a partner for complete solutions individually configured to customer requirements from one source. Irrespective of whether 5-axis machining, multifunctional 6-sides complete finishing, multispindle machining or other metal removal solutions are the objective; supported by the world wide available CHIRON Services, users achieve their quality, unit cost, output and delivery objectives reliably and at the best proven “Total Cost of Ownership”.

### Innovations for the AMB

CHIRON is exhibiting the new MPC 40 as the highlight - a flexible production cell with pallet changer and pallet pool and background magazine with 240 tools. The production cell is based on the FZ 12K S five axis with 2-axis swivelling rotary table. The production cell is ideally suited for variant production from a batch size of 1.

Another eye-catcher will be the MILL 2000 for bar machining with integrated spindle for back end machining. As representative of the long bed machining centres, the FZ 18 L with basket tool changer will demonstrate its benefits such as maximum precision, high running, positioning and long term accuracy, complete enclosure, easy to maintain and good accessibility, simple crane loading of large and heavy equipment and outstanding chip evacuation. Among other exhibits, the 5-axis simultaneous milling theme is demonstrated on a FZ 12K S five axis with a complex part from medical technology as an example and a Mill 800 five axis. CHIRON is presenting a DZ 15 kW Magnum multispindle machine.

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# Citizen Machinery Europe GmbH

## The world market leader for CNC Swiss type machines

Citizen Machinery Europe GmbH is owned by Citizen Holdings Co., Ltd and is the European subsidiary of Citizen Machinery Japan, a world wide leading manufacturer of CNC sliding head/Swiss-type lathes. As well as the Japanese origins, Citizen Machinery Europe also has German roots as it also owns Boley GmbH in Esslingen am Neckar.
The European headquarters of Citizen Machinery is in Esslingen today. The complete European and in particular the German market is supported from here. The high importance of the location can be seen in that it is one of the three world wide Citizen development centres - the other two are in Japan and the USA - is located here.

**Range of products and services**
Citizen Machinery Europe GmbH provides CNC Swiss type machines with and without guide bush for bar diameter up to 32 mm. Basic models for entry level applications and machines for highly complex parts from numerous areas such as, e.g. medical technology and the watch industry are also provided.
Furthermore, you are also provided with the complete range of support services to optimise the performance of the machine. You receive the machine design, unit time calculation, lathe turning tests, training, machine installation and commissioning, financing proposals and after-sales service. Depending on customer requirements, the Citizen Technology Centre also develops “made to measure” special solutions.
Citizen also provides used machines tested by the manufacture and the buyback of older models.

## Innovations for the AMB

**Cincom A32**
The new Cincom A32 with a maximum machining diameter of 32 mm offers an unbeatable low price. It also provides sufficient stability to make heavy duty machining possible.
With features like 45 m/min high speeds, fast coprocessor with new NC controller and Citizen’s unique “Streamline Control”, a 1.3 times higher productivity is achieved. The NC controller (Mitsubishi) with colour LCD screen provides outstanding visualisation and simple operation.

The new Cincom A32-VII

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# Precision turning and gearing technology, designed for simple to complex parts

## The company

The company D&M Drehtechnik & Maschinen GmbH & Co. KG, with headquarters in Weilheim Teack at the foot of the Swabian Alb, was founded in 1993 as an agent/distributor trading company for machine tools. As German/Austrian distributor of the Swiss machine tool manufacturers Esco S.A and Affolter S.A. we are the point of contact for our customers for the series production of turned parts and gear parts in small and smallest diameter ranges. Sales, service, supply of spare parts and support are available from one source. Carbide tools from Paul Horn GmbH have proved to be the best during chipping tests in our demonstration centre and also in production at our customers.

## The products

**Esco Swiss type machines:**
The Escomatic product name has stood for accuracy and long service life in the area of automatic lathes for more than 50 years. At the beginning it was rather “simple parts” in large quantities which justified the reputation of the “fastest automatic lathes in the world” (Escomatic D2). Today, we provide a range of CNC automatic lathes matched to customer requirements for practically all application areas and part geometries. Whether as ring or bar machining, whether simple parting off or a complex turned part with diverse reworking in the diameter range of 0.2 to 12 mm starting material, the unique production concept of Esco automatic lathes with rotating turning tools and stationary material is setting standards for productivity and cost-effectiveness.

**Affolter gear machines:**
Affolter CNC-controlled milling and grinding centres for gear production and micromachining. Designed for challenging tasks in the series range up to Module 0.8 (mechanical engineering) and corresponding precision engineering applications of other sectors e.g. dental and medical technology or the watch industry.

## Innovations for the AMB

Presentation of the latest ESCO D2, the legend without cams - the Escomatic D2 CNC produces up to 110 parts per minute. Suitable for production of simple turned parts in the diameter range of 0.2 to 4 mm.

German premiere at the AMB, Escomatic D5 CNC. Based on the D2 CNC, the D5 facilitates additional machining options due to the use of 3 powered spindles.

The Affolter Gear AF100, like all machines in the Gear series, is impressive with maximum dynamics and smooth operation. Mechanical engineering, motor spindles, controllers - quality made by Affolter.


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# The EMAG Group – production systems for precision metal parts

## A powerful partner

The EMAG Group provides machines and production systems for machining disc-shaped, shaft-type and cubic workpieces using many production technologies. Whether, lathes, grinding machines, gearing machines, laser welding machines or machining centres, the EMAG Group provides the optimum production solution for practically every application. Customers from the automotive industry and increasingly from the non-automotive sectors appreciate that EMAG combines the latest technologies from the areas of turning, boring, milling, grinding, gearing, joining and laser welding under one roof. The EMAG recipe for success is that the company and its 1,900 employees react flexibly and react to customer requirements as medium-sized businesses. These are primarily looking for solutions to the core issue of how they can best increase the productivity and quality of their production - by using space saving and reliable machines which will also not let them down after many years of use in production.

The EMAG Group and its subsidiaries provide a large range of standardised machines and customised production systems. The term “production solutions” has usually been associated with production systems for large volume production. Yet today’s customers also require “production solutions from one source” for medium sized batches. Due to the many production and automation technologies and the expertise in process design, the EMAG Group is ideally positioned to respond. Thereby, the company provides its customers with machines in which several different machining technologies can be integrated.

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EUBAMA
RUNDTAKTMASCHINEN

# Complete machining with EUBAMA rotary transfer machines

## From coil, from bar or for the effective finish machining of turned, pressed or cast workpieces

### The company

EUBAMA is the pioneer of the rotary transfer method. With the development of rotary transfer machines, Eugen Bader created in 1957 the first production solution for the machining of precision parts which made the complete machining possible in one clamping and in which one workpiece was finished in each cycle.

EUBAMA has developed from pioneer to the world wide market leader today in the area of clamping ring machines and occupies a leading position for switching plate machines.

A global sales and service network as well as the subsidiary companies EUBAMA USA Inc. and EUBAMA Italia S.R.L. provide customer support in key markets.

Mainly for suppliers from the electrical engineering, automotive, fastener and fittings industry as well as medical technology and general machining, EUBAMA has developed from machine builder to solution provider for cost-effective, productive and precise production systems. EUBAMA'S aim is to be an effective partner with innovative process and production technology.

### The production solutions

EUBAMA provides a unique range of machines with horizontal switching ring or horizontal switching plate for the complete machining of rotationally symmetrical parts and complex cubic workpieces. Depending on the selected configuration with respect to the controller, the machining units and the transfer system, many individual production solutions for workpieces up to 60 mm diameter and a length of 650 mm can be realised using standardised machines.

The flexibility provided by the current machine range covers the small to the large series with one and the same machine type. The individuality of the production solution is based on a modular construction kit which enables retrofitting and modifications at any time. Thus, modern production technology for optimum production processes is always available for EUBAMA customers.

### AMB in Stuttgart: 5 strong themes

For complete machining of rotation symmetrical workpieces from the coil or from the bar loading magazine: Clamping ring machines EUBAMA S-6 and EUBAMA S-8 • For complete machining of cubic workpieces: Switching plate machine EUBAMA S-20 • For finish machining of turned, pressed or cast parts: Minibama coil-fed automatic lathe and indexing drum machines from Kneissler KE • For end machining on both sides with up to 650 mm workpiece length: Kneissler KE-D • For simultaneous double production: EUBAMA S-8 Two-in-One.

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# FELSOMAT innovations

## Pioneering performance in production technology

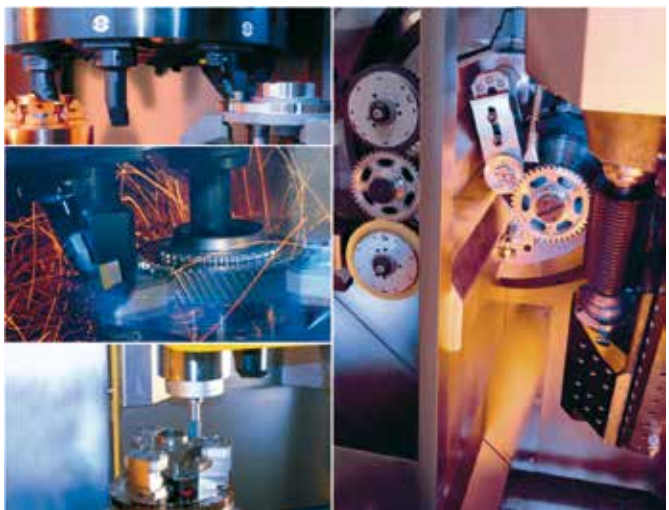
The future has begun – higher range of supply, flexible adaptability and less use of resources. With target-orientated agility, we permanently challenge production and assembly processes regarding cost, time, quality and environment. Our answers herein define new production techniques, substitute processes, slash process chains and generate potential for the lasting benefit of our customers.

With lean and harmonised automation solutions, we are the leading partner of the automotive and supply industry for the key work pieces of the Powertrain, driveline and chassis sectors.

From the innovation leader in production automation, FELSOMAT has grown with high speed to become a global system integrator of universal and complete process chains and generates a remarkable added-value for our customers. We have concentrated on being a worldwide system supplier with innovative machine tools and agile assembly systems on the complete process chain of the Powertrain technology, taking it from rough part to the finished end product.
Explore FELSOMAT and Genius Production. In straightforward dynamics – innovative and reliable.

With intelligent process integration, Felsomat offers an effective and profitable overall concept for the complete gear manufacturing process from one source. The GearManufacturingCell GMC reduces the complete process chain of the green and hard gear machining from the rough part to the finished part to one standard cell with two intelligent automated, multi-functional machine tools.

The all-in-one all-rounder is designed for continuous accuracy, added value, dry processing and for robust processes.



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10-station rotary swaging transfer line

# FELSS: Innovative Forming Solutions for a world in motion

## The Company

FELSS was established in Pforzheim in 1905 and already started to develop and produce swaging and reducing machines in 1925.

## The Products

As a specialist in economic cold forming of tubes FELSS offers with its chipless processes rotary swaging and axial forming a huge potential for weight saving at the workpiece. Some of the workpieces are formed only close to the required final shape, but the majority are finish formed to close tolerances ready for installation. Short processing and set-up times result in low piece costs. In order to compensate volume variations at the blank respectively in order to form filigree grooves, apart from cold forming units also turning stations are used. Our reliable and esteemed business partner, the Paul Horn GmbH, frequently elaborates economic tool systems. FELSS rotary swaging and axial forming machines are based on a sophisticated modular system and can be customised for special production requirements. Automation can extend to multi-station, fully automatic transfer lines with numerical control.

## Innovations at FELSS

Being worldwide market leader in the rotary swaging technology, FELSS developed in addition the recursive axial forming, for the precise manufacture of external and internal splines. FELSS axial forming machines are suitable for the forming of tubes by reducing or expanding as well as for forming serrations or involute splines on tubes or bars. The oscillating forming is one of the many FELSS patents in metal forming. The incremental deformation increases the possible degrees of deformation and minimizes the arising forces. For the manufacture of splines especially developed horizontal or vertical machines are used. Often the automation is the decisive criteria for the choice of the design. The axial forming units can be used as manufacturing cells, as multi-station transfer lines or in combination with swaging on transfer lines combining chipless and machining operations. Moreover, different workpieces can be manufactured or several splines can be formed in one clamping.

## FELSS Group:

Within the group of companies FELSS and FELSS Burger represent the division machine building. FELSS Burger specialised in end forming as well as bending. The division machine building is supplemented by the subsidiaries ROTAFROM, which manufacture components for their customers using our technologies in plants in Germany, Switzerland, the USA and from end of 2008 on also in China.


New machine generation AXIMUS in vertical design

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GILDEMEISTER

# GILDEMEISTER Aktiengesellschaft

## The company

GILDEMEISTER is one of the world wide leading manufacturers of metal cutting machine tools and together with the “turning” and “milling” technologies provides modern “ultrasonic” and “laser” future technologies. The product range includes low-cost machines which are sold on the world markets in large quantities as well as high-tech machines for highly complex production tasks.

## The products

The lathes from GILDEMEISTER, GRAZIANO and FAMOT, the milling machines from DECKEL MAHO and ultrasonic and laser machines from SAUER solve many different machining tasks in the world daily. They produce precision parts for the automotive industry and machine mobile telephone cases in the telecommunications sector. They produce moulded parts for ski bindings, machine powertrain parts for the aerospace industry and produce artificial hip joints for medical technology with maximum precision or laser microcavities for the electronics industry. With the recently developed process of ultrasonic-supported machining of hard and brittle materials such as glass, technical ceramics or carbide, GILDEMEISTER is also participating in the future market of „Advanced Materials“.

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## Innovations for the AMB

GILDEMEISTER is simultaneously showing six world premieres in operation on its 1,100 square metres exhibition stand in Hall 7 at the AMB in Stuttgart which will be presented to the technical visitors in the already several times award-winning New DMG Design. The innovative highlights on the DMG stand include the new CTV 250 vertical lathe and the large DMU 210P 5-axis milling machine as well as the DMF 260-7 linear moving column machining centre, the DMF 260-7 linear, the DMC 75 H duoBLOCK®horizontal centre, the DMU 60 FD duoBLOCK® milling/turning centre and the LASERTEC 20 linear as representatives of the new technologies.

Furthermore, together with many other high-tech machines from all areas of technology, the subject of automation and especially the use of industrial robots are playing a special role at the AMB. Altogether, GILDEMEISTER is once again showing its status at the AMB as the world wide largest manufacturer of metal cutting machine tools and global innovation leader. Against this background, GILDEMEISTER exclusively has confidence in the area of tool technology in the technology leaders in its segment and in particular grooving applications on tools from HORN.

# GROB-WERKE GmbH & Co. KG

## Competence in Advanced Technology World-Wide

### The company

The GROB group, founded 1926, is a world-wide operating company with plants in Mindelheim (Germany), Bluffton, Ohio (USA) and São Paulo (Brazil). The GROB group furthermore has sales and service offices in Mexico, Great Britain, China and South Korea and agencies all over the world.
With in total 3,000 employees and a turnover of approx. 400 million €, the GROB machine tool division is more than a manufacturer of special machines and machining centers. Our product range covers stand-alone machines and complex flexible systems from assembly and automation systems to complete system solutions. The company history which goes back more than 80 years and the continuous growth of the GROB group are evidence of the reliability, quality, delivery in due time and innovative power of the company.

### News at the AMB

The five-axis Universal Machining Center G350, which was already introduced at the EMO in Hanover (Germany) in September of 2007, has now been presented to the trade press in January and to the trade visitors at the METAV 2008. From an engineering and design point of view, the G350 is based on the G series which is very successful in the systems business and completes this particular product line. Therefore, the G350 is not only of interest to GROB's long-time client base in the automotive and automotive supply sector. In fact, the company uses the G350 to target and to appeal to new clients. All customers who are using some kind of milling technology to produce workpieces from various materials, from plastic to stainless steel, in small or medium productions, the G350 offers solid advantages.
These users can be found mainly in the tool and die making industry. What distinguishes the swivel table G350 from the swivel head model is the fact that angled surfaces do not require interpolation via two or even three axis. When compared with similar machines using swivel table and a vertical milling spindle, the horizontal spindle of the G350 offers much greater stability and an improved chip flow. An additional advantage of the Universal Machining Center by GROB is its very easy accessibility. Furthermore, the G350 has the potential to be expanded according to the user's requirements. The optional automatic pallet change, a pallet pool, and a linear gantry make the G350 a prime candidate for any type of automation. The users of the machining center benefit from GROB's extensive experience in the area of manufacturing systems.

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# Gebr. Heller Maschinenfabrik GmbH

## HELLER technologies for the markets of the future

### The company

HELLER develops and produces state-of-the-art machine tools and production systems for metal-cutting processes. As a leading manufacturer in the industry, the company employs approx. 2300 staff worldwide. Production facilities in Europe and North and South America guarantee reliable customer care. In addition to that, the HELLER Group is represented on all major markets through sales and service organisations and qualified service partners.
Development of a customer-oriented structure was a logical step in the development of the HELLER Group and for safeguarding its future. Even stronger orientation towards customer requirements ensures optimum proximity to the market. The decision to establish three independent business divisions, i.e. HELLER Automotive, HELLER Machines and HELLER Services, was based on the very diverse customer requirements in the various markets and the objective to provide individual customer care for all markets.

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### The products

The HELLER group offers customers tailored end-to-end manufacturing solutions, complete handling and management of major projects and a customised range of services for the machines. The product range comprises horizontal machining centres, flexible manufacturing systems for car and truck components and machines for camshaft and crankshaft machining.

### Novelties presented at AMB

**H 5000**
At AMB Stuttgart, HELLER Machines will be presenting a further addition to the successful H series, the H 5000. The horizontal machining centre offers 800mm travel in all three axes and provides outstanding milling power and load capacity. The machine provides highest precision from heavy-duty through to light-metal machining. With four different available spindle types and two varieties of axis dynamics, customers can precisely tailor the machine to suit their specific needs. An outstanding feature is the HighPowerCutting unit offering a phenomenal torque of 2,292 Nm for high-performance heavy-duty machining.

**H 1000 with robot cell**
Another highlight at AMB is an automation solution combining the entry-level H 1000 with a robot. This automation solution offers our customers high process dependability and ultimate flexibility. Due to the modular design, any given process can be configured to achieve optimum manufacturing quality.

# Many tasks – one solution:

## Founded in 1938

Hermle AG is a renowned company with a leading position on the national and international markets. Continuous innovations make Hermle a leading producer of milling machines and machining centres. More than 18,000 users throughout the world trust Hermle universal milling machines and machining centres. A closely meshed sales and service network guarantees a reliable partner on-site in all important countries of the world. Hermle machines are produced in Southwestern Germany in a region which has been the home of precision mechanics and machine tools for many generations.

Hermle's machining centres are used for the rational machining of tools, moulds and series-produced parts. Owing to their quality and high precision, they are being used in a large number of production areas, including in particular highly demanding sectors such as medical technology, optical industry, aircraft, automotive, car racing industries and their subcontractors.

## Vertical Machining Centres

C 20, C 30, C 40 and C 50, the highly dynamic machine generation in modular design in which all packages have been integrated for economic metal-cutting.
Machine basic body multifunctional, pickup tool changer, spindle speeds from 10,000 to 40,000 rpm, iTNC 530 or S 840 D control units, automation packages, tool storage facilities and extensive option packages. All models of the C series are available in 3-, 4- or 5-axis design.

## Automation solutions

By offering its machines completely from a single source, ranging from simple special components to a flexible manufacturing cell, Hermle is able to provide individual customer solutions. They include handling systems in a wide range of designs, many different variations of magazine extensions, palletisation of Hermle products and also turn-key projects.

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# INDEX and TRAUB – two strong brands

**Together with its TRAUB subsidiary the INDEX Group today is one of the leading manufacturers of CNC automatic lathes.**

The product range of the Essling group of companies includes production automatic lathes, turning/milling centres, turning/grinding centres, vertical lathes and CNC multispindle automatic lathes. TRAUB-Drehmaschinen GmbH & Co. KG, Reichenbach/Fils which has been a member of the group since 1997 concentrates on the development and manufacture of universal turning centres and short bed and long bed Swiss-type lathes and turning/milling centres. The INDEX Group thus has an extremely wide product range for turning and is today a world leader in lathe technology. The objective is to further expand this position and to provide customers with the respective best and most cost-effective production solution. Since 2002, INDEX has been providing multifunctional production centres in which different process technologies can be integrated. Due to complete machining, not only are quality and precision higher but the unit costs also reduce due to shorter machining times. INDEX customers throughout the world appreciate this benefit as it strengthens their competitiveness. The main customers for INDEX and TRAUB automatic lathes include mainly the automotive and automotive supplier industries, mechanical engineering, electrical engineering and electronics industry and the manufacturers for hydraulic technology and fittings construction. Growth markets are emerging in medical technology and in aerospace. The experts from INDEX and TRAUB find a convincing solution even in the case of difficult to machine materials. Further pillars of the INDEX success are the customer relationships and the wide range of services on offer. In parallel with the areas of product development, engineering and production, presence in individual markets world wide has already been established. The group is one of the pioneers for the implementation of teleservice and has outstanding spare parts logistics with short response times.


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Karl Keppler
Maschinenbau GmbH
Pfullingen

# Karl Keppler Maschinenbau GmbH

Keppler has been building machines for more than 40 years. Our concentrated expertise of employees and technology is correspondingly large.
Our range of services covers the planning and the design to the production and assembly of equipment, assemblies, special assembly systems, pallet changers, tool changers, cycle lift tables, magazine equipment, rotary transfer machines and special machines.

**Keppler is best equipped for overcoming challenging tasks.**

As a medium-sized company, we see our task as practically realising the requirements of our clients for difficult technical products in compliance with the agreed delivery time at a favourable price/performance ratio.

Using the exact documentation of measurement results we are setting the quality standard for high quality precision products.

**3-axis unit for rim machining with HORN tools**

A 3-axis unit from Keppler GmbH and milling tools from HORN form a successful combination in order to apply several rim bolt holes with ball seat on a pitch circle diameter of a wheel disc simultaneously.
With a self-sufficient, completely automatic machining system, cycle times between 12 and 18 seconds depending on the workpiece are achieved.
The loading and unloading of the double clamping device of the machine is realised in parallel with machining using a loading gantry (H-loader),
An interchangeable milling head is installed on the machining unit which can be semi-automatically exchanged depended on the wheel disc type (pitch circle diameter) to be machined.
The milling heads with between 6 to 20 spindles are fitted with toolholders and inserts from HORN which provide ideal metal removal. It is important here that short, brittle chips are produced during the machining of the wheel discs which are made of St 37.

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# The KETTERER GROUP

# Milling+Drilling – Turning – Forming – Measuring

## KETTERER GROUP

The rare combination of the three companies SEIBOLD+KETTERER GmbH and KETTERER MASCHINENBAU GmbH in Germany and HSTEC d.d. in Croatia allow individual customer care and professional consulting. We can find the best concept for your needs and can implement economic solutions for small up to large series.

With the inventive talent of the 1920s, the enterprise SEIBOLD+KETTERER, founded in 1923 as an engineering office, developed to a trading firm for metal-cutting machine tools and special machine tools. Concentrating on the special machine tools, the subsidiary KETTERER MASCHINENBAU was founded in 1956. In 2001 HSTEC became a member of the KETTERER GROUP after years of cooperation.

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**HSTEC d.d.**

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## Ketterer Gruppe

## CORE BUSINESSES

**MILLING+DRILLING**
- Multi-Station CNC Machining Centers FLEX-CENTER
- Highly flexible CNC Manufacturing Cells
- Vertical and Horizontal CNC Machining Centers FLEX-MODUL
- CNC Rotary and Linear Transfer Machines VOLLMA-MATIC
- Customized installations
- Modular CNC components, e.g. 3-Axis Units and High-Speed Turret Heads, Motor Spindles

**TURNING**
- CNC Swiss-type lathes HANWHA
- CNC Turning lathes TAKISAWA
- CNC Multi-Spindle and Transfer Machines BUFFOLI

**FORMING**
- Spring forming machines BAMATEC
- Spring forming, bending and shaping machines ASAHI-SEIKI
- Measuring technology by MICROSTUDIO
- Heat treatment (annealing), spraying, automation by AGIBI PROGETTI
- Grinding technology by ARIGOSSI

**MEASURING**
Measuring systems with image processing, checking probes, length / diameter / concentricity gages, measuring machines and projectors as well as all other kinds of measuring devices, e.g. by MITUTOYO.

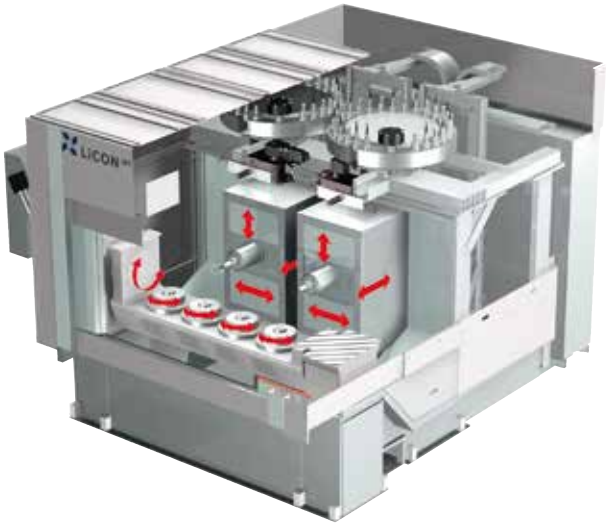
Our service also includes spare parts, maintenance and overhauling. We also have a varying stock of second-hand machines.

## NEWS AT THE TRADE FAIR AMB 2008

Our Multi-Station Machining Center FLEX-CENTER now exists in three sizes Small / Medium / Large for cubic part sizes of up to 150 / 250 / 500 mm, respectively.
The newest series FLEX-MODUL represents the ideal extension of the flexible KETTERER CNC manufacturing cells offering an advantageous cost/performance ratio within the field of vertical and horizontal CNC machining centers.

Within our SWISS-TYPE LATHE TECHNOLOGY we present the especially rapid and space-saving XP series and the new model X3 which excels in multiple cutting (e.g. simultaneous roughing and finishing) as well as in complex machining processes.

Since June 2008 the TURNING LATHES of our new partner TAKISAWA supplement our range of products.



LiCON MT
modular machining centers

# Made to measure flexible machining centres

The origins of Licon GmbH & Co. KG as manufacturer of metal cutting machine tools go back more than 40 years.

Machining spindles and slide units were developed under the name “Lindenmaier” and modified into different machine concepts, mainly rotary indexing machines. These workpiece-specific machine concepts were sold world wide until the 1990s. They were distinguished by short cycle times and consistently high production quality. These were primarily special machines.

In 2004, Lindenmaier Maschinenbau was renamed as Licon mt (mt = machine tools).

In the past, Licon developed a new, modularly designed product range under the name “LiFLEX” for machining centres and was successfully positioned in the market for many different applications. This product range basically pursues two objectives:

1. Tailor made, customer-specific workpiece modification flexibility
2. Capacity scalability

The two objectives mentioned seem to initially contradict each other, similar to squaring the circle. However, on closer examination, it is established that it makes it possible for the large range of machine tool modules in the LiFLEX construction kit to configure the machining centres so that the customer achieves both objectives for his respective requirement.

Under the slogan “tailor made modular machining centers”, 3, 4 or 5 axis LiFLEX machining centres have been produced for many different machining tasks such as, e.g. the machining of crankshafts for large engines, cases and chassis parts.

The newest configuration example is the development of a double-spindle machining centre with independent axes.

As well as Europe, Licon is active in the USA and China markets with its own personnel for local sales and service.

Due to the very broadly designed construction kit which is constantly further developed by its own development team, Licon is able to follow very individual customer requirements (tailor made flexibility) for the configuration of the machining centre. This distinguishes Licon from the manufacturers of standard machining centres.

In addition to the LiFLEX machining centres, Licon sells individual machine components from its own development and production such as, e.g. carriage units, spindle units and tool revolvers.

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# MAG Hüller Hille

## Machining centres for cost-effective and modern production solutions.

### The company

MAG Industrial Automation Systems founded in 2005 has been one of the largest machine tool manufacturers since 2006. The company provides economic production solutions world wide via three regional units - MAG Americas, MAG Europe and MAG Asia/Pacific. More than 4,000 employees achieved sales of around one billion Euros in 2007.
Within the MAG Group, Hüller Hille specialises in development and production of machining centres and in fact the standardised individual machine using flexible production cells and flexible systems culminating in technology solutions. MAG Hüller Hille adapts to the constant changes in the market using modern and innovative product development and production methods. Customer satisfaction is one of our most important corporate objectives. This results in the implementation of customer requirements in cost-effective and modern production solutions.
There are approx. 300 employees in a total area of approx. 22,500 square metres in Mosbach.

### MAG Hüller Hille NBH machining centres.

**Robust, reliable and fast in all performance classes.**

Machining centres from MAG Hüller Hille have been well-known for generations as high-precision, stable and reliable production machines. Our customers can select different installation sizes from the pallet size 400x500 mm to 1250x1600 mm and a load capacity from 500 kg to approx. 7 tons from a modular machine concept. With the use of motor or gear spindles, optimum adaptation to the machining task, whether light metal or steel and cast iron, is possible very easily. For the tool magazine, the range covers the disc magazine with 40 tools to the traditional original Hüller Hille cassette magazine with up to 8 tool cassettes each with 50 places. For multiple machine operation, continuation of production during breaks or production in an unmanned shift, MAG Hüller Hille has been providing the ideal components for years with flexible production cells and systems, consisting of NBH systems and pallet storage systems matched to the corresponding production structure.

**MAH Hüller Hille is presenting the new NBH 630 with tool cassette magazine at the AMB:**

- Successor machine to the legendary NBH170
- Basic design according to the jig boring machine principle
- Shorter auxiliary times due to higher acceleration and rapid traverse speed
- Reduced chip-to-chip time
- Optimum adaptation to production due to modular design of the tool magazine

**Technical data:**
X-/Y-/Z-axis: 1025/800/1,000 mm
Swivel range: 1,150 mm
Clamping area of the pallet: 630 x 630 mm
Max. speed of the gear spindle: 10,000 rpm
Drive output 40 % ED: 46 kW
Torque 40 % ED: 1130 Nm
Rapid traverse speed: 70 m/min
Acceleration: 7 m/s$^2$
Chip-to-chip time: approx. 4.5 seconds

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High requirements on chucking at titan machining

# Traditionally successful

## MAG Boehringer and MAG Hessapp: Two innovators under one roof

In 1844 began in Göppingen, in the Fils Valley, the story of a success that continues until today, when the Boehringer machinery factory was entered in the register of companies. Since then, the Boehringer name is the embodiment of quality in mechanical engineering. The lathes and crankshaft turning lathes from Göppingen are sought-after throughout the world. In 2007, Boehringer joined the MAG family like another fine-sounding name in turning parts: Hessapp.

The company based in Taunusstein is regarded as the specialist in vertical turning machines. Within the company group, this duo consisting of MAG Boehringer and MAG Hessapp supplies the turning machine market together with MAG FMS. This means that – whether horizontal or vertical – MAG will always have the best possible solution with these three well-established family members.

Established in 1946, Hessapp quickly acquired an outstanding reputation. The turning machines from Taunusstein had the reputation of being robust, modern and productive. In 1954, Hessapp introduced the first vertical turning machine into the market and revolutionized turning machine processing. Shorter processing times, coupled with making the work easier, were the result of the new concept. Users were excited. Since then, Hessapp evolved into a flourishing company whose innovative developments kept cementing its reputation. In 1996, the well-established company was taken over by ThyssenKrupp MetalCutting GmbH. Hessapp, in turn, became part of MAG in 2005.

## Machining solutions from one source

The MAG Boehringer name also radiates strong confidence, because Boehringer's more than 160-year-old tradition stands for advanced and innovative technology as well. The horizontal turning machines made by the company based in Göppingen have always been technological market leaders. Thanks to its broad product range, MAG Boehringer is capable of offering various machining solutions. These solutions become especially flexible through the integration of different technologies into the machines. As a manufacturer of horizontal turning machines, MAG Boehringer is able to integrate into the machines technologies such as lead free turning, boring, milling, hard turning and super finishing, cutting to lengths and centering.

The specialist of crank shaft machining

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Well equipped for high productivity

The MAG group has two high-profile technological leaders in its ranks: Boehringer and Hessapp, two absolute specialists that mutually benefit from their joint research and development work. Result: The machines made by MAG Boehringer and MAG Hessapp can be used for many purposes and are capable of completing even the most difficult maching solutions removal tasks economically and with high productivity.

For Dr. Markus Weiler of MAG, the close collaboration of both manufacturers is an important step in the sustainable development of the company. “The turning area is an especially important pillar of our strategy. We would like to keep improving our market position in this area in the coming years, because demand for high technology is very high here as well.” In order to be even better equipped for the future, both companies will become even more integrated in the future. “The objective of the new MAG business line Turning Solutions is to offer various high-tech turning solutions from a single source.”

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## Close collaboration

Yet productivity and profitability do not just depend solely on the machine. An equally importanty factor is the tool. Only an optimally tailored unit consisting of tool and machine can offer the best possible performance. To reach it, MAG Boehringer and MAG Hessapp collaborate extensively with quality tool manufacturers such as phHorn. According to Dr. Weiler and basing his opinion on his many years of expertise, “the full potential of the manufacturing process will be utilized only with quality tools that are individually configured to the application and the machine.”

There are numerous examples of how successful a close and trusting collaboration between tool and machine manufacturer can be: “When tool and machine are optimally tailored to the processing operation, large jumps in productivity are not rare at all.”

Precise machining on individual applications

# For your competitive advantage:

## CNC Swiss-Type Automatics from Maier

### The Company

MAIER CNC Swiss-Type Automatics are the result of a long-time experience, successful innovation and the consistent reply to customers needs.

The machine concept is the convincing outcome of a clear vision: To design and produce machines from scratch, by oneselve. Machines, which allow metal machining at highest level, with ultimate precision and short production times.

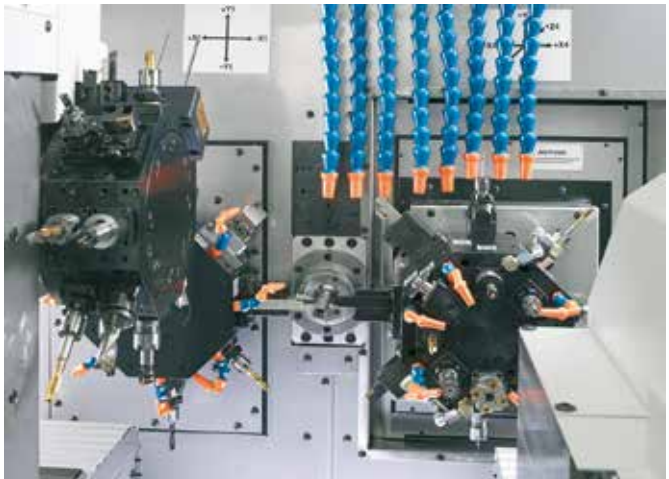
### The Products

We offer machines for serial production individually adapted to the customer´s needs and his specific production requirement. Hereby we focus on a cleverly devised, modular concept, in which the different types of machines vary mainly in kind and complexity of machining possibilities. Our current product portfolio ranges from machines processing simple workpieces with 4 CNC axes and a maximum of 11 tool stations up to our “High-End-F-Series” for complete machining with 16 CNC-axes and up to 40 tools.

### AMB News

**ML-ProLine Series F4**

ML ProLine Series F4 is the flagship under the CNC Swiss Type Lathe machines. Consequently build up and henceforth with 3 tool turrets ready for complete machining of rotation symmetric parts with high machining periphery. The Series F4 has 16 axis available and 40 tool stations are at your disposal. Considerable reduced time studies for large series of simple as well as complex parts are guaranteed.



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The new Makino Technology and Training Centre in Bratislava

MAKINO
Long lasting partnership – Precisely.

# Makino Europe GmbH

## When Precision Becomes Passion

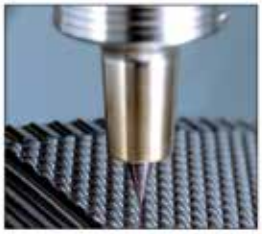
Makino Milling Machine Co. Ltd. is recognised as one of the leading technology and service providers in the machine tool industry. The company is listed on the Tokyo Stock Exchange and employs approx. 3,700 people in America, Asia and Europe. The sales in the financial year which ended on 31 March 2008 were 1.3 billion US Dollars.

Makino's wide range of first class products includes machining centres for the part production as well as for tool making and mould making. As the only global machine tool manufacturer, the company combines its competence in milling, erosion and complete machining (milling and grinding) and can thus meet maximum requirements for part production. Irrespective of whether you are involved in the area of aviation, construction and agricultural machines, automotive industry, industrial components, tool making and mould making or micromachining, Makino provides you with sector-specific solutions.

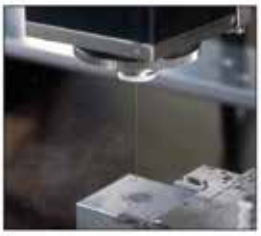
Furthermore, Makino also enjoys the reputation for providing outstanding consulting and technical support - world wide and without language barriers. Makino supports its customers with training and provides fast and competent assistance for maintenance, repairs and spare parts. The company has technology centres Europe-wide in Hamburg, Stuttgart, Paris, Milan and Bratislava with the focus on marketing, sales, application technology and service with a technical network of experts which ensures the success of the customers locally and globally.

## OUR PRODUCTS

**53 HORIZONTAL MACHINING CENTRES**
Pallet size:
From 400 x 400 to 7200 x 2000 mm
14 spindle variations up to 33,000 rpm



**18 VERTICAL MACHINING CENTRES**
Table size:
From 450 x 340 to 2300 x 1000 mm
8 spindle variations up to 40,000 rpm



**11 WIRE EDMs**
Cutting Height: Up to 500 mm
Available wire: From 0.02 to 0.3 mm

**23 SINKER EDMs**
Table size:
From 350 x 250 to 2500 x 1450 mm

**10 GRAPHITE MACHINING CENTRES**
Table size:
From 450 x 350 to 1400 x 700 mm
4 spindle variations up to 40,000 rpm

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MATO
CNC TECHNOLOGIE

# Future-oriented technologies and technical competence

MATO, the trading company for CNC lathes and machining centres understands how to combine future-oriented technology with technical competence. The diversity of machine models which MATO can provide using the product range of DOOSAN, one of the largest machine tool manufacturers in the world, covers practically all machining requirements.

There are plenty of good arguments for doing business with MATO. Absolute customer orientation is in the foreground – "it cannot be done" does not exist here.

Fairness of advice, competence in all areas of the application technologies and reliability of support; these are values which customers, and potential customers, know how to appreciate today.

The MATO service is, however, also underpinned by the sustainability with which customer relationships are looked after here. The latest knowledge is imparted in training courses; service and spare part availability as well as installation still mean here what people think they mean.

## The MATO range of services:

- Individual advice
- Financing proposals
- Information about new technologies and developments
- Advisers with manufacturing know-how
- Machining proposals
- Unit time calculations
- Machine demonstrations
- Programming training
- Commissioning
- Training / workshops
- Customer service
- Spare parts service
- After-sales service

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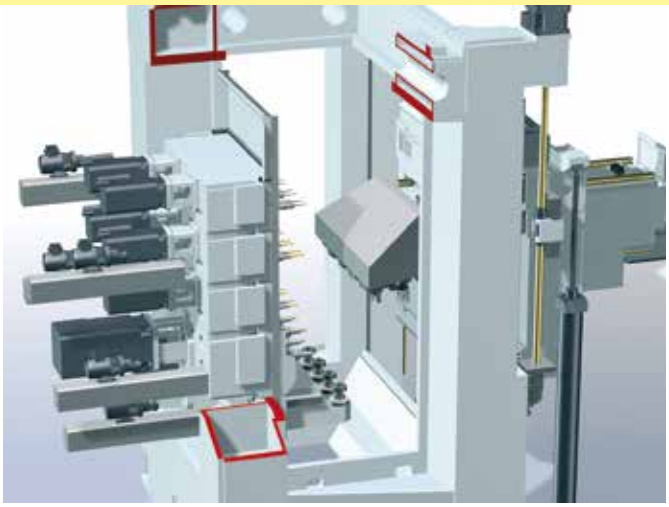

# KRAUSE & MAUSER Machine Tools

## Always the proper solution for chipping – laser machining – cracking

KRAUSECO Werkzeugmaschinen GmbH, located in Vienna, and MAUSER– Werke Oberndorf Maschinenbau GmbH are engineering, manufacturing and marketing transfer machines, special purpose machines, machining centres as well as hybrid machining modules for the automotive industry and its component suppliers as well as metal-cutting systems for high volume production parts with high accuracy requirements in the micron range.

The workpiece spectrum of KRAUSE & MAUSER ranges from engine components like cylinder head and block, connecting rod, crankshaft and camshaft via transmission case up to axle parts like drag bearing , steering knuckle, wheel carrier, side rail and many more.

KRAUSE & MAUSER rely on the competence of HORN company with whom they are co-operating in many projects.

## Productivity, Flexibility and Precision united in innovation

The hybrid machining unit for flexible production requirements PS INVERS³ combines the flexibility of a machining centre with the productivity and accuracy of a special purpose machine and created a modular and highly productive machining concept.

Inverse machining means that the quill-lead work piece is moved towards fixed spindle units, resulting in clear advantages: As there is no tool change, the auxiliary process time is reduced considerably, leading to extremely short chip-to-chip-times, and the arrangement of the boring heads is optimized, according to machining and workpiece type. Therefore the PS INVERS³ has a remarkably higher output than a machining center. The INVERS³ module is capable of machining a wide variety of workpieces because the multi-spindle heads can be mounted on up to four sides of the working area and can be changed easily. The loading and unloading will be made automatically or manually.

In addition to having a compact, rigid and close structure, the entire machine box frame and column, and all process influencing components can continuously be water-cooled by a self contained system, and chips fall freely. Because of this innovative cooling concept the PS INVERS³ always works highly precise and with absolute process reliability, also when machining dry. The way for complete machining from raw to finish-machined parts is smoothed.


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MONFORTS
Werkzeugmaschinen

# A. Monforts Werkzeugmaschinen GmbH & Co. KG

The name Monforts has represented turning at the highest quality level for almost a century. The company, managed by the Monforts family since 1884, produces a comprehensive range of CNC lathes with different configurations for machining with counter-spindle or 4 axes, and flexible turning / milling centres with 5-axis machining. Cycle-controlled lathes are also included in the product range.
Competent application engineers develop individual solutions in consultation with the customers. A capable customer service ensures the high availability of the machines and smooth supply of wearing and spare parts. The Monforts head office is in Mönchengladbach. A production facility in Bulgaria and a global network of representatives are the basis for the international operations of the company.

A special feature of all CNC machines is a hydrostatic slideway. This guide functions without friction contact and is thus maintenance-free and wear-free. Monforts gives a warranty of 10 years on this system.
The longitudinal carriage with the tool carrier moves very evenly due to this guide principle. This makes itself noticeable with very good surface characteristics for hard turning. The stick-slip effect does not occur; so even the smallest path increments can be moved. The thin film of oil between bore hole and pillar also gives the machine very good damping characteristics. In the case of difficult metal removal, vibrations are largely suppressed.

Monforts is exhibiting the new UniCen 502 turning / milling centre at the **AMB**. The machine can be configured with a main spindle and optionally a counter turning spindle, or a tailstock. The tools are held in a pivoting motor milling spindle. A second tool carrier can be added as a bottom turret as an option. A tool changer and tool magazine are standard; a steady rest is an option. The machine shows very good characteristics for difficult metal removal and for hard turning. Hard milling is also possible with this machine.
The UniCen 504 can also be fitted with special laser tools for hardening and hardfacing by welding as a special expansion stage. This process combination of soft turning, laser machining (hardening, coating and alloying) and the hard metal removal in one machine makes possible an enormous reduction of the production time and an increase in product quality.

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# NILES-SIMMONS-HEGENSCHEIDT

## High flexibility and leading quality standards

The NILES-SIMMONS-HEGENSCHEIDT Group with headquarters in Chemnitz and other locations in Erkelenz, Albany (USA) and Nanchang (China) is an experienced provider of machine tools with part-specific technologies and system solutions for the international automotive and railway industries as well as mechanical engineering, tool making and mould making.

In 2007, the company achieved world wide sales of EUR 185 million and employs approx. 960 people plus 65 trainees. The NSH Group is thus one of the 50 largest machine tool manufacturers in the world. Due to intensive market observation and successful product development, the NSH Group has developed into a globally recognised manufacturer of precision and innovative machine tools and the associated services.

## The products

The product range which is aligned to the customer requirements is used by different industrial sectors. This range covers CNC lathes and CNC machining centres, special machines, planning and realisation of complete production lines (turnkey projects) for the automotive industry. Likewise, the NSH Group is able to realise wheelset manufacturing systems and repair workshops for the railway industry. Product development is always performed with the objective of guaranteeing a long service life and best suitability for the machines and systems.

## Use of Horn tools

Tools from Paul Horn GmbH are used on the CNC lathes and CNC turning/milling machining centres of the NSH Group for grooving, profile grooving, and slotting. Joint successes have mainly been achieved in volume production for the automotive industry. Among others, the following technologies were used in doing so:

- **Camshaft production**
  Hard machining of flanks and reliefs on main bearings with CBN special grooving tools.
- **Gearshaft production**
  Machining of plunge cuts with shape turning inserts
- **Crankshaft production**
  Preliminary and finish grooving on the chain wheel contour
- **Differential case production**
  Slotting longitudinal slots

Due to the specialisation in the well-known product range, we always receive competent support as a machine tool manufacturer from Paul Horn GmbH. This is reflected in very good tool solutions and ensures effective production for our common end customers.

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Complex workpieces for the automotive industry which are realised on a rotary indexing machine from Pfiffner.

# Producing world wide with Swiss precision:

## With rotary indexing machines and systems from Pfiffner.

When your objective is to satisfy the demands placed on the workpieces of tomorrow, you need the iron discipline required to develop new technologies, new machines, new tools, new machining processes and new approaches to thinking.

All machines and systems from Pfiffner have something in common: an innovative machine concept, modular design, high quality machining and the fact that they grow together with the customer's requirements over generations.

**Keep time in the production:**
**With Hydromat® rotary transfer machines from Pfiffner.**

- The Hydromat® rotary transfer machines turn, mill, bore, grind and hone with up to 16 horizontal and 8 vertical machining stations.
- They can be fitted with a hydraulic controller or with the most modern CNC controller.
- They produce large numbers of complex workpieces in short cycle times with maximum precision.

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Pfiffner
precise solutions

**Open up new dimensions in production:**
**With the pallet transfer machine from Pfiffner.**

- The machine has nine autonomously operating CNC-controlled machining stations, a separate loading and unloading station, a maximum efficiency pallet transfer station and the proven SINUMERIK 840D machine control system.
- The workpieces are fed to the machining stations together with the coded EROWA clamping device via the pallet gantry.
- The machine is impressive with an output of between 10 and 60 seconds, depending on the complexity of the workpiece.

**Ensure an economic wonder in the production:**
**With the rotary indexing centre from Pfiffner.**

- Using the rotary indexing centre from Pfiffner, complex workpieces can be produced in large quantities in the shortest cycle times in a single centre with up to 12 independent work stations.
- 18 machining modules, 12 workpiece spindles and a cast mineral composite base form the basis for maximum quality, precision and performance.
- Up to 93 axes can be machined thanks to the SINUMERIK 840D CNC controller developed by Siemens.

**Take customer proximity literally:**
**With services from Pfiffner.**

Pfiffner understands the business and the commercial environment of its customers. We recognise the challenges which our customers face and let these perceptions flow into the development of our machines and in the structure of our services. However, we also understand the need to be close to our customers. A world wide network of affiliates, partner companies, sales and service organisations ensure that you will find us and our expertise from the planning to the manufacture, the commissioning and to the training very near you.

If you want more productivity, flexibility and profitability for your company, you are very welcome at Pfiffner.

Complex workpieces produced on the automatic pallet transfer machine from Pfiffner.

# Pittler T&S GmbH

## Innovative turning centres

### The company

Pittler T&S GmbH has represented competence and technical knowledge for advanced automatic lathe systems for more than a century. As a medium-sized manufacturer, Pittler is well-known for technological innovations and special customer orientation for the many different production solutions.
Behind the core idea of “unit cost reduction”, the experiences and the expertise from many thousand delivered automatic lathes in the whole world, specific customer requirements have been systematically analysed and the latest technological perceptions have been taken into account for the new developments.

### Pittler automatic lathe series PV SL

The self-loading (pick-up) machine series PV SL is used in the same way for difficult to machine materials as for high precision machining. Workpieces are processed with a high degree of capability not only in turning but many times in complete machining. The integration of grinding, milling or boring operations is thus possible without problems. Extremely short auxiliary times with simultaneous good useability of the machine are also achieved. All machines in the PV SL series also exist as two-spindle versions allowing parallel or sequential operations to be performed simultaneously.

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### Pittler automatic lathe series PV

The Pittler automatic lathe PV series is based on a modular design and can be installed as 1-spindle or independent 2-spindle machine with one or two cross carriages.
Large turned parts can also be machined completely and from both sides. As a pendulum carriage machine, setting up in parallel with machining is possible.
An optional multifunctional head transforms the vertical lathe into a machining centre with practically unlimited possibilities for many different production processes.

### Innovations

There are two focus points for the current new developments of the company Pittler T&S. On the one hand, the product range is constantly being expanded with machines for larger workpiece diameters. Turning diameters of 3000 mm and workpiece weights of up to 10 tons are no longer a problem. On the other hand, the flexibility of the machines is being constantly increased. New modules, e.g. for milling keyways, supplement the possibilities of the machines. In this way, particularly for large parts, complete machining in one clamping is possible not only for rotationally symmetrical geometry elements.

# REIKA GmbH & Co. KG

## 100 years of experience

## Machines and Lines for Tubes and Bars

### THE COMPANY

**Key Features**

- Innovative, mid-sized company
- Specialises in development and manufacture of machines and lines for the tubular products and bar industry
- State-of-the-Art technologies and material
- High performance machines and lines according to special application requirements
- A leading manufacturer of turnkey tube and bar machining systems and lines
- Numerous, worldwide patents
- Continuous, innovative development strategy
- Engineering and software development by high qualified employee pool, modern CAD-, 3D -, CAQ and PPS-systems
- Inhouse assembly hall for commissioning and inspection of machines and lines
- High quality standards according to DIN EN ISO 9001 : 2000
- Member of the Graebener Group since 2003 – with special advantage of synergy effects

### REIKA PRINCIPLE

**Stationary workpiece – rotating tools**

High performance machine design based on the well proven REIKA machining principle to ensure:

- high cutting speed
- optimized tool life
- low tool cost
- highest output
- high machine availability
- less personnel

**Reika GmbH & Co. KG**

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**Fax: +49 2331 969036**
**www.reika.de**
**info@reika.de**

SCHERER® FEINBAU

# Scherer Feinbau – Vertical is ingenious

## Building on the proven – committed to innovation.

Scherer Feinbau. Professional machines. Machine professionals. Perfomance, efficiency and precision - The highest standards are indispensable prerequisites to be successful in global competition. As specialists for automation and workpiece clamping, Scherer Feinbau GmbH offer attractive all-inclusive solutions in this segment. It is no coincidence that well-known representatives of the automotive industry, for example, have been relying on innovative technology by Scherer for over 30 years.

With our premium machines like the vertical cnc-lathe VDZ 420 we proof our technology-competence. Due to its stable cast construction, latest drive technology and wiede range of automation possibilities, this machine typ is hold in high regards not only in the automotive industry.
Another innovative and very successful machine model ist the shaft lathing machine WDZ 250 that convinces with its modular and most efficient concept – an example of very simple, economic automation on the top of technology!
Complete solutions, individually on customer request, from the island-site solution to the fully automatic production line - that marks our understanding of innovative production systems as economical solution for your production.
Our vertical range of manufacture makes possible to receive all from one source, from the handling system over the automation of the supply up to the measurement of the workpieces.
Sophisticated engineers plan production centers and modules for you – you achieve in consequence, considerable cost reduction and increase in accurancy.
Challenge us!

**Scherer Feinbau Maschinen GmbH**

**Frankenstraße 2**
**63776 Mömbris**

# Alfred H. Schütte GmbH & Co KG, Cologne

## Long tradition and strong innovation

Alfred H. Schütte, domiciled in Cologne, Germany, is a leading, globally operating manufacturer of machine tools. The company builds multi-spindle automatics and 5-axis CNC grinding machines and is represented on all continents by subsidiaries, marketing companies and trading partners. The Schütte sales company also offers the German market a range of trading products from foreign machine tool manufacturers.

### 5-axis CNC grinding machines

The Schütte 5-axis CNC grinders of the 305 series are very accurate, highly flexible and can be used for a great variety of applications. Schütte grinders are in service in almost all branches of industry and are suited not only to the manufacture and resharpening of cutting tools but also to the pre- and finish-grinding of production components. Numerous machines are being used, for instance, in the medical equipment industry, e.g. for the grinding of artificial knees and hip joints (hall 8, booth B54).

**Alfred H. Schütte GmbH & Co.KG**

**Alfred Schütte Allee 76**
**51105 Köln Poll**
**www.schuette.de**

### Multi Spindle Automatics

Schütte offers an extensive range of multi-spindle automatics, a highly efficient production tool on which the machining processes and sequences for the manufacture of the workpieces run parallel. The programme covers a wide range of machines and processes, from the classic cam-operated multi to its highly flexible CNC cousin.

High end product is the series SCX a new generation of multi-spindle automatics. The series SCX realises in full, and for the first time, the vision of the “Multi single-spindle automatic” that provides access to a variety of machining processes as part of a highly productive machine concept that makes resetting easy and operation simple.

The nine-spinle version fo the SCX offers a completely new dimension in machining the backside of workpieces. Complex workpieces can now be machined in one continuous work cycle without leaving the machine.

Schütte has also adhered to the concept of freedom with the design of the new SCX tool system Tool assemblies with one or more stationary or live tools, or a combination of the two, can be used for both endworking and crosss machining. Procise standard quick-change interfaces enable pre-adjustment outside the machine and Hirth-couplings for tool heads and equipement units allow an easy and quick machine set up.

# Specialist for the ready to install rotation symmetrical part

## The company

The company SCHUSTER with 160 employees is one of the leading manufacturers of vertical lathes for machining production (cutting to length, turning, milling, deburring up to quality assurance and automation technology). With more than 30 years of experience we have established ourselves on the world market. The systems are completely mechanically and electrically developed in-house at Schuster. The associated software is also written and documented and the technology developed for it is specified in-house. Schuster systems are tried and tested in our HQP Kaufbeuren production plant. Parts for the automotive and all other industrial sectors are developed, produced and assembled in this HQP plant in accordance with the latest scientific methods.
This combination of mechanical engineering and production guarantees mature machine systems (process reliability and quality) for our national and international customers.

**Schuster Präzision GmbH**

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SCHUSTER Präzision

## The products

**Vertical lathes Futureline F15, F30, F40**
The F15 motor spindle with a thermally stable machine stand is impressive due to maximum precision, rigidity, process reliability, flexibility, large machining capacity, maximum productivity and micrometer accuracy. The maximum turning diameter is 300 mm and the maximum length is 200 mm.
The F40 system platform provides an optimum production solution for practically all parts on the market. A configurable system for shafts and flanges and end face machining. The maximum turning diameter is 300 mm and the maximum length is 800 mm. Spindles with speeds up to 8000 rpm and spindle outputs with max. 56 kW are available.

## Innovations

With the F15 and F40 series the Schuster company is treading new paths in the area of the configuration of both systems and with respect to easy servicing. Using the cleverly thought out systems, not only can the different technologies be integrated in the future but also in the case of a service event the modular component can be replaced by pressing a button. Record time for ready to install component with this new configurable platform.

The results of the past Meteor research project will be presented.

# SPINNER Werkzeug-maschinenfabrik GmbH

## The complete provider for CNC turning and CNC milling

### The company:

The company was founded in 1949 as a small subcontract production business. Cam-controlled automatic lathes, initially for our own use, were developed and constructed in the 1950s and also sold from the second half of the 1950s. In the following years, the mechanical engineering share continued to grow and the contract production proportion reduced continuously. From the start of the 1970s, only machine tools were produced, in particular hydraulically and cam controlled automatic lathes. Then the first CNC automatic lathes from the middle of the 1970s. Today, more than 500 employees world wide at several production locations produce more than 1200 CNC automatic lathes and machining centres which are sold in all important markets.


Production facilities, sales companies and subsidiaries in Switzerland, Austria, Great Britain, Italy, Poland, Hungary, Romania, Bulgaria, India, China, Taiwan and Turkey

There are also 30 representatives world wide.

### The products:

CNC automatic lathes are produced for ultra-precision machining, universal lathes with 1-3 turrets for small, medium and large batches. Also machining centres with traverse paths of 500x400x400 to approx. 1000x3000x1000 mm with vertical spindle. Horizontal machining centres with pallet size up to 630x630. 5-axis machining centres for tool making and mould making.

### Innovations for the AMB:

As well as many detail improvements, a completely new developed series of universal machining centres with 5 axes will be presented for the first time at the AMB in Stuttgart.


**SPINNER Werkzeugmaschinenfabrik GmbH**

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STAMA plant Schlierbach

# STAMA Maschinenfabrik GmbH

## Save time – cut costs

### The company

STAMA has developed into one of the most important partners for the metalworking key industries in its 70 years of existence. Today, the Schlierbach machine manufacturer is known world wide for its comprehensive range of machining centres and its engineering excellence. And it is exactly the creative engineering capabilities which have created the company's reputation as an innovative pioneer in the sector: In 1969, the first NC controlled automatic turret drilling machine, in 1979 the first machining centre with travelling column and in 1982 STAMA launched the first double-spindle machining centre on the market which became an enormous success under the name "TWIN". In 1997, it launched the STAMA bar machining centre which includes Paul Horn among its customers. The continuously advancing development of MT (Milling Turning) technology for its customer base has made STAMA the leading provider of milling/turning centres. Whether medical technology, tool making, hydraulic systems and precision workpieces, automotive industry etc, customers who use STAMA milling/turning centres are growing continuously.

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### The products

STAMA's core competences are in the manufacture of vertical machining centres with 1, 2 or 4 spindles and milling/turning centres for the complete machining from bar or chuck.With a range of 45 centre types, STAMA develops and builds individual turnkey solutions based on the TWIN and MT technologies which accounts for more than 70% of its production. With excellent project management and monitoring and more than 70 service and spare parts support points world wide, STAMA is providing users with economic production processes offering high availability.

### Innovations for the AMB

**Integrated automation solutions**
An MC 526 with integrated workpiece handling shows the benefits of a compact automation solution – the ultra-fast portal loader assures flexible, economic and process reliable manufacturing. Equipped with TWIN technology, the single-place centre machines many different workpieces which all fit in a spindle distance of a = 266 mm.

**Production run with TWIN power to the power of two**
The new four-spindle MC 531/TWIN² shows highly productive 5-axis machining with torque drive. For workpieces with long drilling operations, the single-place centre is a distinctly economic and flexible solution.

**The new generation of 180° swivel table centres MC 331/TWIN-Plus**
The first TWIN centre of the 31 class with spindle distance of a = 320 mm is the ideal production solution for high requirements for milling performance, flexibility and productivity.

**STAMA machining centres are used in almost all sectors ...**

# StarragHeckert

# Complete provider of horizontal machining centres

## Supplier to the leaders

### The company

The StarragHeckert Group is a globally active machine tools group and produces machining centres with 3, 4 and 5 axes and flexible production systems.
Our company focuses on customised product development, particularly for precision and production of innovative solutions in specific market segments whether automotive, agricultural machines, aerospace industry or the area of engines, gearboxes and chassis parts.

- Subsidiaries in China, Great Britain, France, Russia, Spain, USA
- Representatives world wide

**StarragHeckert GmbH**

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### The products

The product range of StarragHeckert includes a comprehensive series of compact and dynamic horizontal machining centres with pallet size 400 to 1800 mm, usable both as standalone machines in production cells and in flexible machining systems. The machining centres are primarily distinguished by high productivity, optimum cutting performance, long term accuracy and reliability.

### Innovations for the AMB

**HEC 400 D – The new generation of high dynamic machining centres**
Completely oriented to customer benefits, StarragHeckert has designed its small series of high dynamic machining centres to be even more efficient. The increase of the dynamics in tool and workpiece handling increases the productivity by reducing the non-productive times, particularly for light metal machining. However, there are also the most up to date solutions for machining steel and cast iron.
Other highlights include innovative, flexible tool management, the ideal conditions for dry machining using the fastest and most reliable chip extraction and the compact, thermosymmetrical machine design.

We have been able to realise specialised, technological applications in the area of circular milling operations and grooving machining in various projects with the company Paul Horn GmbH.


# STUDER SCHAUDT GMBH

## SCHAUDT – a guarantee for future-oriented developments

Studer Schaudt GmbH provides high tech solutions for cylindrical, non-cylindrical and camshaft grinding as a centre of competence particularly for the automotive industry and automotive suppliers. The product range also contains a vertical machining centre for cylindrical grinding and hard turning of chucked parts. Interesting solutions for external cylindrical grinding of long and heavy workpieces can be provided for customers in the printing machines and rolling industry. There is comprehensive expertise available for the area of cylindrical grinding of special bearings.
Studer Schaudt GmbH is responsible in these area for application development, technology, installation and sales. The machine platforms of Fritz Studer AG were obtained as a result of the collaboration with Schleifring.
Schaudt supplies machines world-wide. The products and services also include hardware, software and a wide range of services in the pre-sales and after-sales areas. Together with

SCHAUDT
KÖRBER
SCHLEIFRING

Schleifring SERVICE AG (Team Schaudt) and Schaudt has approx. 170 employees and achieves world wide sales of more than EUR 57 million.
Schaudt has succeeded in inspiring many customers due to innovative and high tech solutions, particularly in the automotive sector. Schaudt lays the foundation for a successful partnership by constant consultation with its customers.
Continuous development and improvement of in-house technologies is a special focus of Schaudt. We endeavour to find the correct concept for all our customers.
Schaudt considers combination machining with the CombiGrind h as another innovation. Schaudt combines the many different machining operations in one machine including hard turning, grinding, milling, thread grinding and also brushing. These processes can be used optimally particularly for gearshafts or turbochargers.


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# SW – Schwäbische Werkzeugmaschinen GmbH

## Multispindle production.

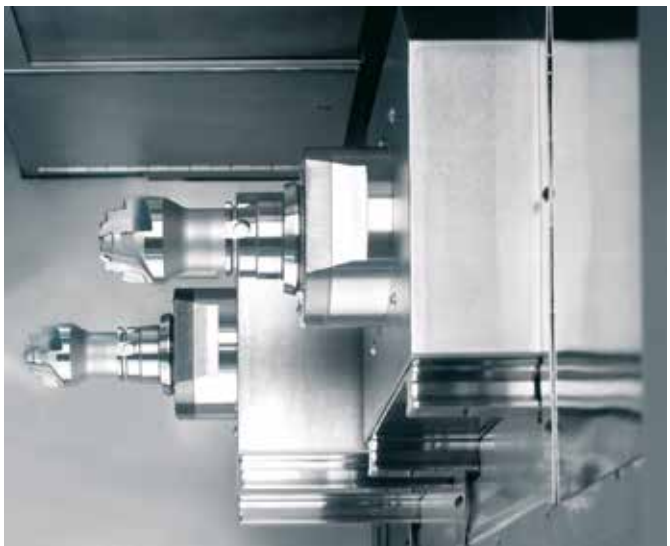
### The company:

The Schwäbische Werkzeugmaschinen GmbH, in short SW, is an expanding manufacturer of internationally successful production systems for metalworking. With 320 employees in Waldmössingen we develop and plan machine tools and special accessories and achieved sales of more than EUR 110 million in 2007.
SW emerged from Heckler & Koch GmbH which was taken over by British Aerospace in 1991 and restructured. The British company spun off the mechanical engineering & plant construction area in 1995. The management at that time recognised the opportunity and founded SW. Against the background of the shareholder successor regulations, the company, after nine successful years of independence, was sold to the EMAG Group with headquarters in Salach in June 2004.
Just like EMAG, SW is not only a manufacturer of machines but primarily known as a supplier of workpiece-specific (i.e. optimum) solutions for demanding series production. Machines from EMAG for turning, grinding, laser welding and automation are optimally planned, matched and combined with machining centres from SW. Our customers thus receive several process steps of a production chain “from one source”.
One and two spindle vertical, two and four spindle horizontal machining centres and multispindle drill head centres are used in the automotive sector and mechanical engineering as well as in the areas of hydraulics and pneumatics. As well as large companies like BMW, Continental Teves, Daimler AG, Scania and Volvo, our customers also include local companies such as Georg Fischer Automobilguss, Kratzer, Pfeiffer and Lupold to mention only a few.

### Innovation for the AMB:

The BA W06-2W. With integrated loading unit, expanded working range in the Z direction and 800 mm swivel range, the two-spindle BA W06-2W is ideally suited for machining large parts requiring intensive machining. The additional Z-parallel axis on the workpiece side with 1,000 mm stroke facilitates the transfer of the workpieces from the loading area to the working area. The BA W06-2W is suitable for workpiece pick-up and gantry loading.

- Two-spindle machining centre
- Additional Z-parallel axis on the workpiece side:
  - 1,000 mm stroke (225 mm of this in the working area)
  - Ball screw in gantry connection
  - direct, absolute displacement measurement system
  - can be clamped hydraulically on both sides
- 800 mm swivel range of the clamping bridge
- 550 mm max. tool length



**Schwäbische Werkzeugmaschinen GmbH**

**Seedorfer Strasse 91**
**78713 Schramberg-Waldmössingen**
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# Tornos Technologies Deutschland GmbH

## Precision from Switzerland

The companies from the Swiss Jura have epitomised precision and quality since time immemorial. The roots can usually be traced to the craft production of watches and the parts needed for this. TORNOS, the manufacturer of CNC single-spindle and multispindle automatic lathes, certainly plays a leading role in this scenario. It masters the art of challenging machine construction like no other and has consistently applied itself to the needs of the markets. TORNOS has succeeded in combining craft precision with the requirements for cost-effectiveness in series production.

As partner of the turned parts manufacturers, TORNOS has been closely collaborating with practical uses for decades and developing machines which optimise the production processes.

Products have also emerged in recent weeks and months which in turn set new standards and will again ensure sensation at this year's AMB. The customer is not so much interested in the machine but rather the workpiece that he wants to manufacture in the shortest possible time to a strictly defined quality at minimum cost. TORNOS designs and builds machines for special ranges of workpieces according to the motto "THINK PARTS THINK TORNOS".

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TORNOS

## Unbeatably productive and yet totally flexible

The CNC multispindle automatic lathes from TORNOS are clearly a highlight for large volume production. Complex parts can be produced and finish machined with maximum efficiency on one machine without reworking on other production equipment. However, as the user is usually interested not only in the machine but the complete process, TORNOS provides these machines as a complete system with integrated MSF bar loading magazine and the appropriate peripheral equipment. The suitable tools, tool adjustment devices and control systems are also selected by the experts from Moutier. With the new MultiDECO 6/32 DM2, TORNOS is exhibiting CNC multispindle automatic lathes with twin counterspindles for the first time at the AMB.

## The further development of an ingenious idea

The classic NC-controlled single-spindle automatic lathes in the DECO series have already emphasised their speed and performance world wide. But even here, the TORNOS developers have gone one step further and are presenting the new DECO series at the AMB for the first time. This comprises absolute low-cost machines with 3, 4 or 5 axes and a diameter range from 12 to 20 mm. These machines open up completely new dimensions for the machining of simple, standard turned parts. The new Delta 20/5 will be exhibited in Hall 3, Stand C 14.

# Toyoda Mitsui Europe GmbH

## Progress with innovations

Toyoda Mitsui Europe provides a comprehensive range of products which includes horizontal and vertical machining centres, grinding machines and complete automation solutions at the highest technical level.
Sales, service and spare parts are organised together on 1,600 $m^2$ of exhibition and storage area in the European headquarters in Krefeld. A highly motivated team works hand in hand with each customer from here in order to provide excellent service and all-round support.
Every investment in high quality machine technology is always made according to requirements which come from the existing production tasks. Thereby, the demand for completely automated systems has increased constantly in recent years. Therefore, Toyoda Mitsui has specialised in the seamless integration of the most up to date machine tools and automation components into an economic overall concept. Because only the perfect combination makes it possible to provide each customer with an individual and future-proof production concept exactly matched to his needs.

## Our products and services:

### Machine tools

**Horizontal and vertical machining centres, grinding machines**
Toyoda Mitsui provides a complete range of machines. From dynamic, roller-guided to high load capacity flat guided machining centres, there is a suitable machine model available for every application case. Directly driven spindles for high speed machining or gear spindles for heavy duty machining and many optional configuration variants round off the comprehensive range.

**Automation solutions**
**Pallet storage**
The rotary pallet pool forms an entry point for automated production and is suitable for adaptation to an horizontal machining centre. The pallets can be stored up to 3 high for unmanned series production. There is thus sufficient space to provide up to 15 pallets for the production. In doing so, control is performed easily and uncomplicatedly via the CNC of the machine.

**Flexible pallet automation**
Toyoda Mitsui provides a modular design which economically covers both the standard as well as the special case. The flexible production systems from Toyoda are therefore particularly distinguished by a consistent modular basic design. This is the basis for customised automation meeting the customer's needs and ultimately being successful.

**Tool storage**
Fast and reliable tool handling is indispensable for complex turnkey solutions. Toyoda's robot-supported tool provision with capacities of 210 to well over 500 tools provides sufficient reserves for all production tasks. Versions for all common tool shanks are available.

**TOYODA MITSUI EUROPE GMBH**

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transco
Drehautomaten

# Automatic lathes for second operation works

## ... profitability and flexibility in mass production

If you're involved in second operation works of rotationally symmetric work pieces, we are your partner. Our AUDREMA® automatic lathes type series tm10, tm20, CNC91 and CNC92 reliably fulfill the high demands of our customers for quality and profitability. In accordance with customer demands we deliver one stop machine solutions which will smoothly adapt to your production. In the middle- and large-batch production the AUDREMA® automatic lathes are characterized by:
Precision, long service life, profitability and a high automation level. Particularly the cycle times of our machines used in production must be pointed out. Depending on machining tasks, up to 35 parts per minute are possible with our cam operated machine of the type series tm10. In line with this our double-spindle type series tm20 makes an output of up to 70 parts per minute possible.

Regarding flexibility and variability in second operation works the CNC- controlled machines of the type series CNC91 and CNC92 extend the product range of the AUDREMA® series. Many years of experience and customer accessibility made us become one of the leading manufactures in this industry with agencies in Europe and overseas. Constantly advanced tasks demand innovative action.
Gladly we demonstrate our expertise.
Call us, look up our homepage www.transco-gmbh.de or visit us at our works.
We look forward to see you.


**transco Drehautomaten Gmbh**

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variomatic
Rundtaktmaschinen

# VARIOMATIC Werkzeug-maschinen GmbH

## Progress in rotary indexing

### The company

New ideas have been part of the business right from the start for VARIOMATIC. Machine tools for assembly line production of large and medium product volumes were arranged in groups until 1925 and the company then looked for new ways. The requirement was to: complete several work operations with one machine and in only one clamping. The principle was quickly successful and rotary indexing machines to date represent an economic enhancement to machining centres.

Today, the performance characteristics of current system types are continuously enhanced so that customers from many different sectors can be catered for. Each system is individually produced in order to provide customer-specific special features ideally. In doing so, the 30 employees rely on decades of sector experience, innovative detail solutions and the proverbial Saxonian talent for invention.

### The products

The VARIOMATIC range includes three machine types which are particularly required by customers from the electrical, locks and metal fittings industries, from apparatus and fittings and from the automotive and automotive suppliers industries.

The “VARIOMATIC T3” series is used when workpieces are machined in large volumes and short unit times are required. These machines have maximum reliability and are extremely efficient due to a positively controlled movement process via a centrally driven cam system.

If workpieces and parts families are less complex and the series are smaller, the “VARIOMATIC T3P” is the better choice. This machine series is a further development of the T3 which is adapted for smaller batch sizes and a higher requirement for machining accuracy.

The particular strength of the “VARIOMATIC RTC” is its versatility. The consistent use of CNC-controlled machining units in all combinations of axes facilitates made to measure flexibility. For example, the adaptation to new or changed part variants in many cases can be realised by modifications to the corresponding CNC machining program.

Variomatic has been successfully working with the tool systems of Paul Horn GmbH for several years for the realisation of grooving operations in many different workpieces of the electrical engineering industry.

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WEILER

# Machine tools for the whole world

The successful company history to date of WEILER Werkzeugmaschinen GmbH was started in the year 1938 by the WEILER and Hubmann families. Their precision automatic lathes immediately enjoyed an outstanding reputation both for craftsmen as well as in industry. The company was bought by VOEST-Alpine Steinel Werkzeugmaschinen GmbH in 1990 and the business management was assigned to Mr. Friedrich K. Eisler (Dipl.Kfm). In order to align WEILER with the requirements of the international markets, the VOEST range was incorporated in the product range of WEILER; afterwards the complete company was restructured and relocated to Emskirchen.

Since 1995, Mr. Friedrich K. Eisler (Dipl.Kfm) has been functioning as the sole Managing Director; the traditional company is thus again in family ownership. The business management is supported by Mr. Mag. Alexander and Mr. Michael Eisler, the two sons of the Managing Director. Thanks to this specific realignment, WEILER today is one of the most well-known machine tool manufacturers in Europe. A large competitive advantage is shown by the fact that WEILER as a medium-sized company can respond flexibly to individual customer requirements.

With turning diameters of 300 mm to 1,750 mm and turning lengths of 500 mm to 12,000 mm, WEILER is presenting a comprehensive range of cycle controlled automatic lathes - which is finding a particularly high resonance world wide. Simple handling, a mature, self-developed WEILER controller, diverse accessories and maximum accuracy let the cycle-controlled automatic lathe become a particularly productive unit for the single-part and small series production. WEILER also produces powerful CNC automatic lathes and conventional precision lathes which have achieved an extraordinarily high market share in the training area.

WEILER currently has 500 employees. The machine tools manufacturer provides his customers around the world with innovative and high quality products for efficient production and service covering all the customer needs. More than 140,000 machine tools supplied world wide document the outstanding quality of the products from Emskirchen.



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**www.weiler.de**
**info@weiler.de**


# J.G. WEISSER SÖHNE GmbH & Co. KG

## High-tech which emanates from tradition

J.G. WEISSER SÖHNE – This name has stood for expertise and highly innovative developments in mechanical engineering and plant construction since 1856. As a traditional company which is today still managed by the family as in the past, we are one of the most important manufacturers of automatic lathes and system solutions which integrate other production processes such as hard turning, grinding, non-cylindrical turning, boring and milling for complete machining.


**J.G. WEISSER SÖHNE GmbH & Co. KG**

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**Tel.: +49 7724 881-0**
**Fax: +49 7724 881-371**
**www.weisser-web.com**
**info@weisser-web.com**

Our machine range provides a comprehensive machining range for small, medium and large batch sizes. From the gear wheel with a diameter of 40 mm to a ship's piston with a diameter of approx. 700 mm. WEISSER machines are distinguished for every machining task by maximum precision, high productivity and the famous technical „one step ahead" of the competition.

The leading position of the company for the most modern production technologies is once again effectively underlined with the new, patented "rotation turning" process. Developed for the manufacture of surfaces with a completely flat finish, the process, even if the latter is not required, is superior to other hard turning processes. It has been demonstrated in practice that the machining time for rotation turning is only 1/5 of that for conventional hard turning.

However, it is not only the production of surfaces with perfectly flat finish and the time saving in comparison with conventional turning which distinguish rotation turning. Surfaces with perfectly flat finish were previously produced in a complex machining process. As well as the turning and grinding, a superfinishing process was usually necessary to obtain the required surface quality and the necessary contact area ratios. Grinding and superfinish machining can be replaced by the rotation turning. Decisive cost benefits are also produced for the customers due to shorter machining times and carrying out the work as dry machining. WEISSER implements the rotation turning which has proved its series compatibility in use at numerous customers in the last two years for hard or soft machining for external, internal and surface turning.

Yet customer satisfaction is not defined only by innovative and reliable products. A close, partner-like collaboration starting in the planning phase and extending through commissioning through to after-sales support are all part of the J.G. WEISSER SÖHNE service.

# Witzig & Frank GmbH

## Tomorrow's innovative manufacturing solutions – already here today.

### The Company:

Standardized high quality machine tools are the specialty of MAG Witzig & Frank. With their product range, MAG Witzig & Frank have proved their abilities and strengths for many decades and established an excellent worldwide reputation with their customers in the automobile industry and its sub-suppliers, as well as the sanitary fittings industry.

As a MAG Industrial Automation Systems company, MAG Witzig & Frank produces individual machine designs that satisfy demanding requirements with regard to quality, productivity, flexibility and efficiency. MAG Witzig & Frank is with you throughout - from the initial concept, to the design of your products, and as far as the implementation and supervision of complete turnkey projects, together with the follow-up servicing and maintenance. Thus we can exactly meet your requirements with standardized modules that are configured for your needs.

Since 1986 we have achieved an intensive level of activity in the North American market via our own subsidiary company, MAG Turmatic Systems Inc., located in St. Louis, Missouri.

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MAG Industrial Automation Systems, which was founded in 2005, is now positioned within the leading global machine tool builders. With over 4000 employees it achieved a turnover of circa 1 billion Euro during 2006. MAG consists of three regional units: MAG Americas, MAG Europe and MAG Asia/Pacific.

### The Products:

We classify our products between machining centers and transfer lines for workpieces with high quality and productivity requirements.
TURMAT: Multi-way rotary transfer machine for flexible automated manufacturing
LSA: Multi-way production cell for 3-sided machining in one clamping
TRIFLEX: Modular multi-station CNC machining center
TWINFLEX: Multi-spindle two station CNC machining center for 5 axis machining

Mazak
Your Partner for Innovation

# Yamazaki Mazak Deutschland GmbH

## Your Partner for Innovation

### The Company

The Yamazaki Mazak Deutschland GmbH, founded in 1981 with its headquarters in Göppingen, is a subsidiary of the Yamazaki Mazak Corp., a family owned company which has been the world market leader in machine tool building for many years. The Yamazaki Mazak Deutschland GmbH offers sales, service, application technology as well as engineering for Germany, Austria, Liechtenstein and Switzerland.

Next to its production sites in Great Britain, the USA, Singapur, China and four sites in Japan, the Yamazaki Mazak Corp. with its corporate headquarters in Oguchi, Japan, disposes of 77 Technology Centres at a total of 64 locations all over the world to be able to offer their customers optimal on-site service and support.

Yamazaki Mazak was the first Japanese machine tool manufacturer to set up a production facility in Europe in which virtually all stages of production were carried out from a single source – from the blank up to the finished part.

### The Product Portfolio

The product portfolio comprises approx. 200 different machine tools - from the 2-axis lathe up to the 5-axis machining centre of various sizes. Among which are multi-tasking machines, CNC lathes, vertical and horizontal machining centres, CNC laser cutting machines, flexible manufacturing systems (FMS), CAD/CAM products and software for the production management.

### Products on the AMB

1. HYPER QUADREX 150MSY – CNC lathe with twin turrets and twin spindles for the various tasks of bar machining
2. INTEGREX i-150 – compact multi-tasking machine with short axis travels combined with high operator convenience and easy of operation
3. VARIAXIS 630-5X II T – vertical machining centre for five-face machining with simultaneous 5-axis control
4. VERTICAL CENTER NEXUS 700D-II – vertical machining centre with high machine rigidity featuring high-speed spindles
5. INTEGREX e-500H II – revolutionary multi-tasking machine - the complete fushion of machining centre and CNC-turning centre
6. VTC 800/30 SR – vertical machining centre with travelling column for machining applications with simultaneous 5-axis control
7. HORIZONTAL CENTER NEXUS 8800-II – horizontal machining centre for large parts combined with a small footprint
8. QUICK TURN NEXUS 200-II M with Parts Handling Cell – CNC machining centre with a parts handling cell served by a 6-axis robot

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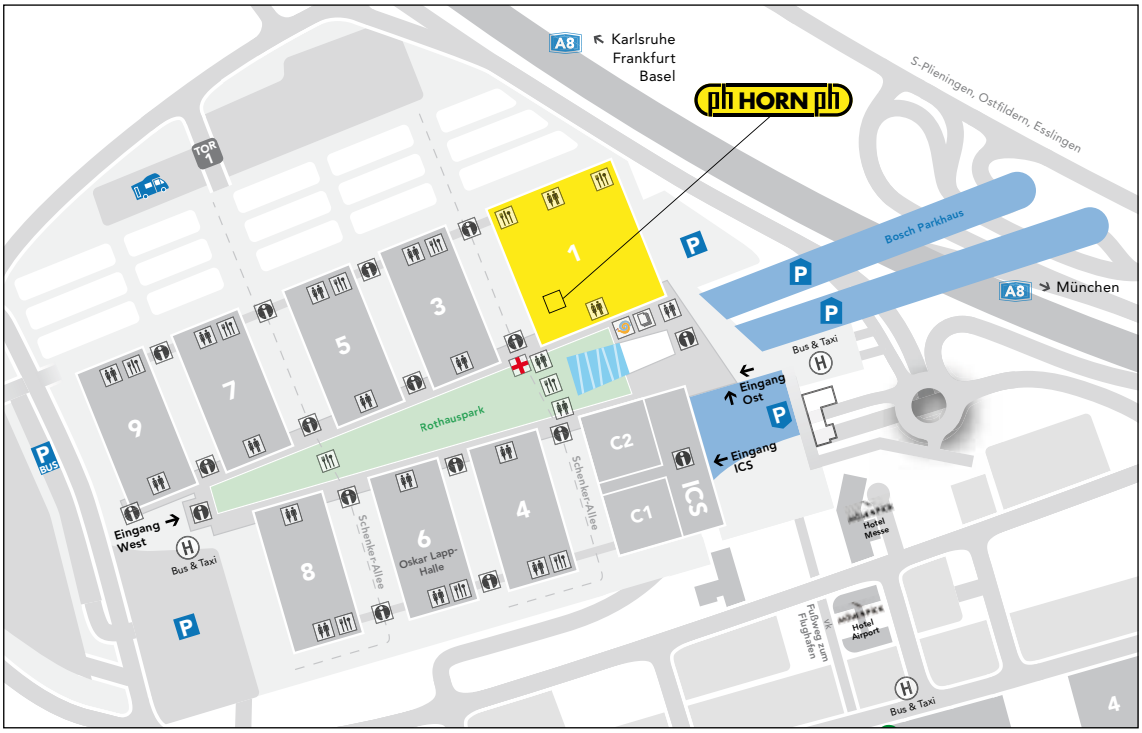
# AMB 2008 – Hall plan

## Welcome to our booth:

Please use the east entrance and proceed to the right, there you will find hall 1. In hall 1 you will find our booth in row I booth 16.
We look forward to seeing you at the exhibition.




**Exhibition date:** 09. - 13. September 2008

**Opening hours:** Tuesday to Friday: 9.00 - 18.00 (cash desks close at 17.00)
Saturday: 9.00 - 17.00 (cash desks close at 16.00)

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