

TOOL TECHNOLOGIES

Precision from A to Z



KRISTEN+GÖRMANN oHG

Tool Systems from Renchen, Germany

We have been designing, developing and manufacturing precision machining tools at our company site in Renchen since 1971. Our products are not only established on the market for relevant industries in Germany, but our machining solutions are in demand throughout Europe and the world.

ABOUT US

Outstanding tool systems

... for machining applications – that's our world.

Apart from common machining technologies, our design, development and manufacturing services also include customised solutions for special applications:

- Chamfering
- Turning
- Grooving
- Milling
- Gear tooth milling
- Further technologies



Administrative building and production facilities on 12,000-square metre company premises: our **think tank** for solving your machining problems.

We are committed to providing **high-quality products** and excellent workmanship. In addition to being certified to ISO 9001:2008, we are continuously improving and expanding our quality assurance procedures through the application of exacting measurement and control systems. Openness towards innovation and continuous development of our expertise have enabled us to become one of the leading carbide tool manufacturers.

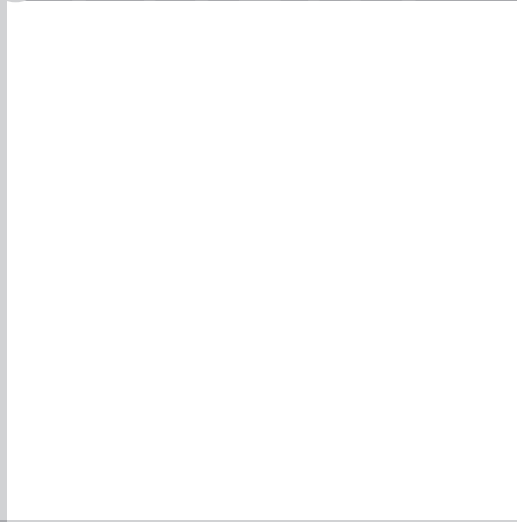


This year marks the 40th anniversary of our company, and with the new edition of this company brochure we look back with pride on forty years of growth and progress. Originally established as a small two-family enterprise in 1971, we succeeded in staying the planned course towards expanding growth with the second company generation. The pioneer enterprise of our founding fathers has meanwhile evolved into a highly capable medium-sized company: an ideal basis for serving as your strategic business partner in the coming years.

DEVELOPMENT

Milestones

- **1971**
Company establishment and new construction of production facility (450 sqm)
- **1978**
New construction of two-story office building
- **1983**
Expansion of production facility to 1,050 sqm
- **1986**
In-house production of custom grinding machines
- **1991**
Einführung CAD-Konstruktion
- **1996**
Introduction of CAD design system
- **1999**
New generation at the helm of the company
- **2000**
Start-up of 3D measurement machine
- **2003**
First 5-axis grinding machine
- **2005**
Successful certification to ISO 9001:2000
- **2006**
Expansion of production facility to 2,350 sqm
- **2008**
Successful re-certification to ISO 9001:2000
- **2009**
Expansion of in-house tool holder production
- **2011**
Successful re-certification to ISO 9001:2008



A family-type atmosphere and keeping to traditions is important to us. Michael Kristen and John Görmann took over managing the business from their fathers and founding fathers, Gerhard Kristen and Karl-Heinz Görmann in 1999.

We are a versatile, but homogeneous team of grinding machine operators and machine setters, designers and planners and material requirements planners (MRPs), and company management who collectively assume responsibility for addressing your concerns.

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Sixty Experts ...

... are at your service to help you meet your machining challenges. Grinding machine operators, machine setters, team leaders, designers, planners, MRPs, personal support staff, and the management. Our knowledge and expertise are always at your disposal.

EXPERTS



We have been operating as a two-family enterprise since our founding with currently **60 employees** in the departments of administration, engineering, and production. We work as a team, and "working as a unit" is a declared and successfully implemented part of our organisational design.



Solutions to problems are often found as a result of exchanging ideas and experiences. For this reason we consult the opinions of our experts from various technical fields.

Our **grinding machine operators** possess extensive experience in grinding our inserts. Their "fine sense of touch" is required for the manufacture of your high-quality tools.

We are Your Partner



Reliable order processing – from initial contact to delivery – is the obvious foundation of successful project implementation. You can rely on our team. A contact person from administration, engineering and production will support you throughout the project.

THE TEAM



You will be able to discuss your machining problems with our highly capable **team of engineers**. Motivated team members are looking forward to answering your questions regarding your machining projects.

Our professional **team of administrators and accountants** is at your disposal for any questions or concerns, or to connect you with one of our engineers. Here you are at just the right place to receive all the information needed regarding project management, accounting and shipment.



Our **production manager** ensures, day in and day out, that your orders and projects are handled efficiently within the production department. And whenever time is of essence: flexibility is one of our great strengths.



Our **quality management representative** ensures that the tools manufactured for you meet exacting quality standards and are in conformity with all relevant standards, regulations and work instructions.



In order to maintain our technological edge, we have not only invested into highly qualified personnel but also into machinery that leaves nothing to be desired when it comes to handling even the most difficult tasks. A wide range of high-quality machines is available within our production department for this purpose.

PRODUCTION

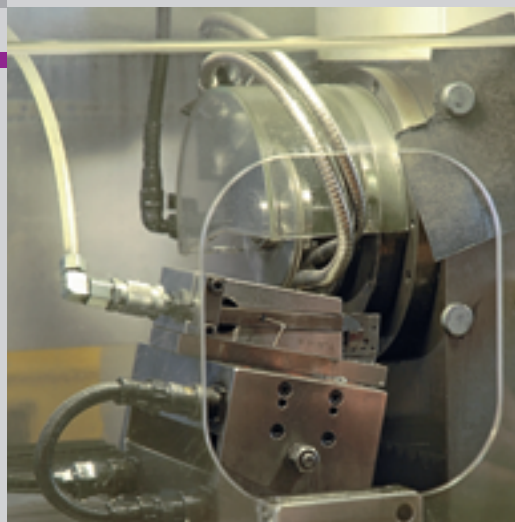


Careful handling, machining, and inspection during **face grinding** is the basis for the subsequent precision machining of blanks.

Modern automated grinding machines are available for the manufacture of **profile inserts**.



Machines developed in accordance with our own concepts are designed for continuous contour-controlled grinding applications and for plunge grinding (**"creep feed grinding"**). The first choice for profiling medium-sized or large-scale production batches with optimum change precision and profile accuracy.



The automatic grinding machines are monitored prior to, during and after they are loaded. **Automated inspection routines** guarantee that the most rigorous specifications for precision can be met.

The use of machines with robotic loading systems is vital for the production range of **"peripheral grinding"** machines. The latest generation of these machines offers ever more complex grinding operations at ever quicker grinding cycles.



The high quality of our cutting tools is obviously not only achieved by the application of state-of-the-art technologies for their manufacture, but by the extensive experience our employees bring to the table.

PRODUCTION



The **preparation of cutting edges** is a sensitive process within our finishing department. This is where **tool life** is "created". We have compiled the necessary parameters in detail and are able to call up this data at any time for the purpose of reproduction. Meticulous documentation supports radiussing tasks.



Extensive experience in programming our automatic grinding machines guarantees **optimised grinding processes** and maximum precision for meeting complex requirements of different grinding operations.



With the utilisation of **laser technology** there are virtually no limitations to the individual labelling of inserts and tool holders. By burning drawing number and commission number as well as grade and coating on the parts, we are able to trace batches within our quality assurance system.



Comprehensive **measurement and inspection procedures** support the production process. Furthermore, individual precision **presettings** for holders and cartridges can be realised.

Precision milling machines are available within our **tool holder production department**. And here as well, expertise rather than the machine dictates whether the result is going to meet our high requirements.



Within the framework of meeting our obligation for due diligence concerning the quality assurance of our products, we have laid down our quality management policy in a manual. The quality management system we have introduced is described in this manual. The implementation of this quality management system ensures that all organisational, administrative, and technical activities that may affect the quality are planned, controlled and monitored.

QUALITY

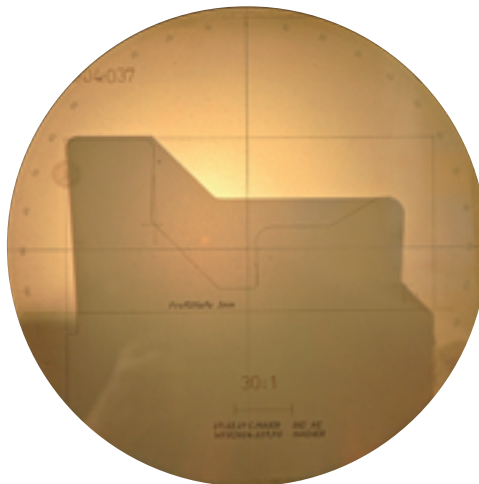


We have been certified to ISO 9001 since 2005 and re-certified accordingly. The QM system implemented by us is based on the latest standards of **DIN EN ISO-9001:2008**.



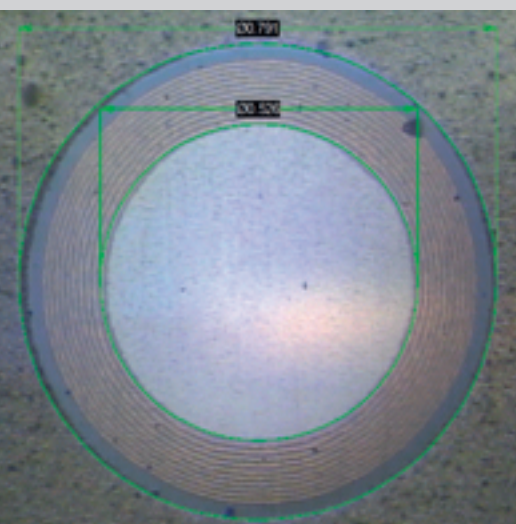
QM Objectives

- Continual improvement of all operation divisions and processes
- Reduction of waste and scattering
- Cultivation of close relations with our customers and suppliers
- Every employee assumes full responsibility for maintaining the standard of quality within his/her sphere of activity
- Compliance with legal and regulatory requirements
- Adaptation of the work environment to ensure that activities can be efficiently completed
- Assurance of occupational safety and health



A combination of **random samples** and **100-percent checks** ensure compliance with quality standards throughout the entire production process.

High-precision episcopes in conjunction with matching transparencies created from CAD ensure maximum profile accuracy.



The cutting edge is adapted to the machining application. The produced **cutting edge geometry** (radius, chamfer) is then accurately measured.

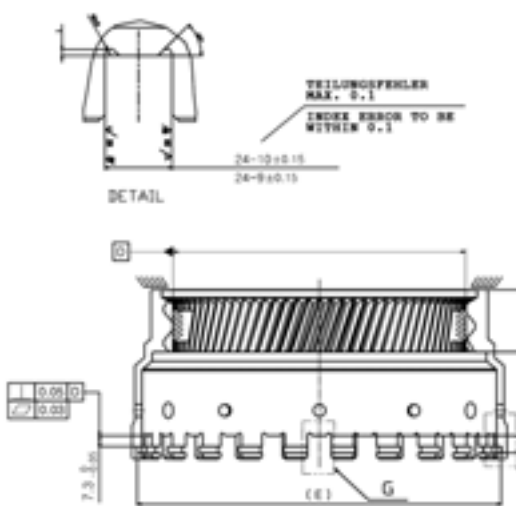
Comprehensive measurement and control equipment enables the examination of the insert coating thickness using **ball cratering**. We optimise the coating layer quality through in-depth comparison of test results.



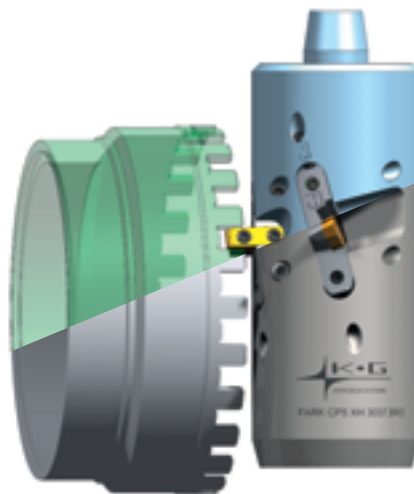
Copycat or Pacesetter?

We have opted for the latter. Bringing new ideas to life and optimising proven tool systems will provide the critical competitive edge; for us, and particularly for you. We therefore invest a significant amount of work in research and development.

RESEARCH & DEVELOPMENT



We tend to every detail from the start of the project. After analysing the results of an initial **feasibility study** and on receipt of drawings and diagrams, we decide in the customer's best interest, whether we are capable of offering an economic solution.



Following clarification of the intended machine concept, we will configure the **actual design** using a 3D CAD system. Machine axes, clamping situation and tool orientation are given consideration, so as to provide virtual representation of movement sequences relevant to rotary (synchronised) machining processes.

The **result** is not a product of chance, but the outcome of years of experience in combination with the utilisation of modern simulation tools. If needed, we provide a simple video clip of the movement sequence (i.e. the synchronised rotation of tool and workpiece).



Tooth Flank Finishing – One of our Specialities

The most important characteristics of a gearshift transmission involve the chamfer of gear tooth tips which ensures smooth shifting. Different chamfer shapes are used to eliminate gear shifting problems or jams. Our task is the development and manufacture of the corresponding tools which are used for the manufacture of virtually all automotive transmissions. Apart from the required precision, the surface quality also plays an important role here.

CHAMFERING



Crown chamfering: Crown chamfering in (clocked) pushing mode, whereby the chamfer shape is defined by both the left-hand and right-hand milling tools. These are preferably double-edge milling cutters which can be fixed to the exact position via the adjustment ring.



Rotary chamfering and chamfering of starter pinions. All characteristic shapes are chamfered synchronously which ensures quick machining times.



Rotary radiussing of inner gearing (truck sliding sleeve). A tool for concurrent deburring can be used, if needed.

Straight chamfering: Manufacture of straight tips via rotation, whereby the shown double-edged cutting tools can be applied as of approx. 48 teeth.



Custom Solutions for High Production Rates

Modern ISO indexable inserts are currently used for carrying out longitudinal and face turning operations. Should you, however, need more than a simple indexable insert due to special requirements, we can offer a customised solution. We offer a wide range of standard and custom threading inserts for precision threading applications. We can also, on request, design a combination tool suitable for several operations (e. g. preturning, finish turning, threading, chamfering), so as to achieve higher efficiency.

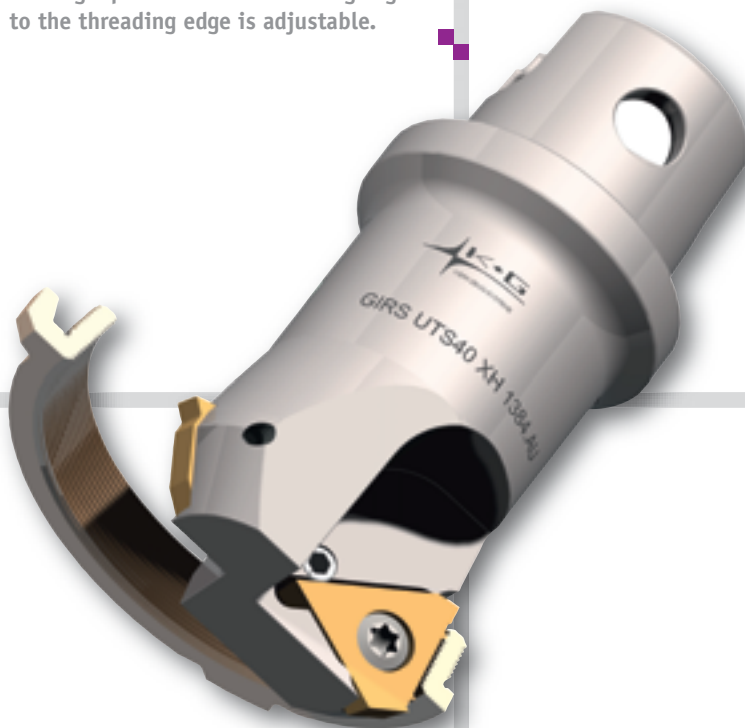
TURNING



Precision **catalogue and custom threading tools** for internal and external machining applications are available (e. g. metric, Withworth, National Pipe Thread [NPT], knuckle threads, trapezoidal threads, UNF).

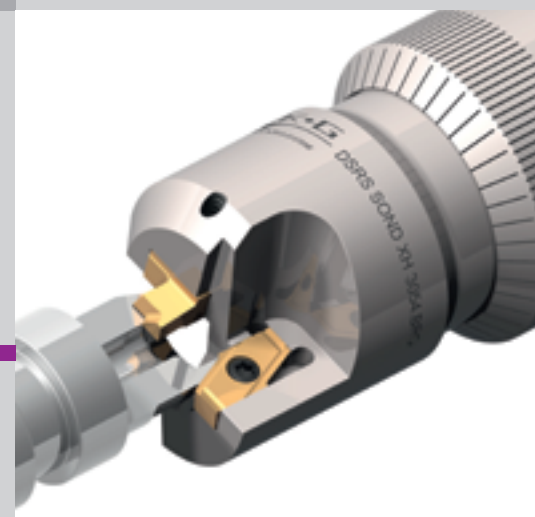


Combination tool for preturning, threading (with finishing) and chamfering. The angle position of the finishing edge to the threading edge is adjustable.



Precision **calibration and cutting** of screwdriver blades in preparation for chipless stamping of Torx engagement points. Differences in batches (flow behaviour) can be corrected and/or compensated by the use of various insert variants.

Simultaneous machining of minor and major diameters (cone) and recess depth with chamfer on indexable CNC multi-spindle machines with high demands on accuracy.



A Wide Variety ...

... of solutions is possible with tool systems from K+G for a multitude of grooving applications. This may be due to the fact that grooving applications were our initial field of operation after the company was established in 1971. Continuous advancements and enhanced with new ideas, this area is one of our key sectors, today more than ever. Cost-effective use of cutting materials is our objective here as well. Less is often more!

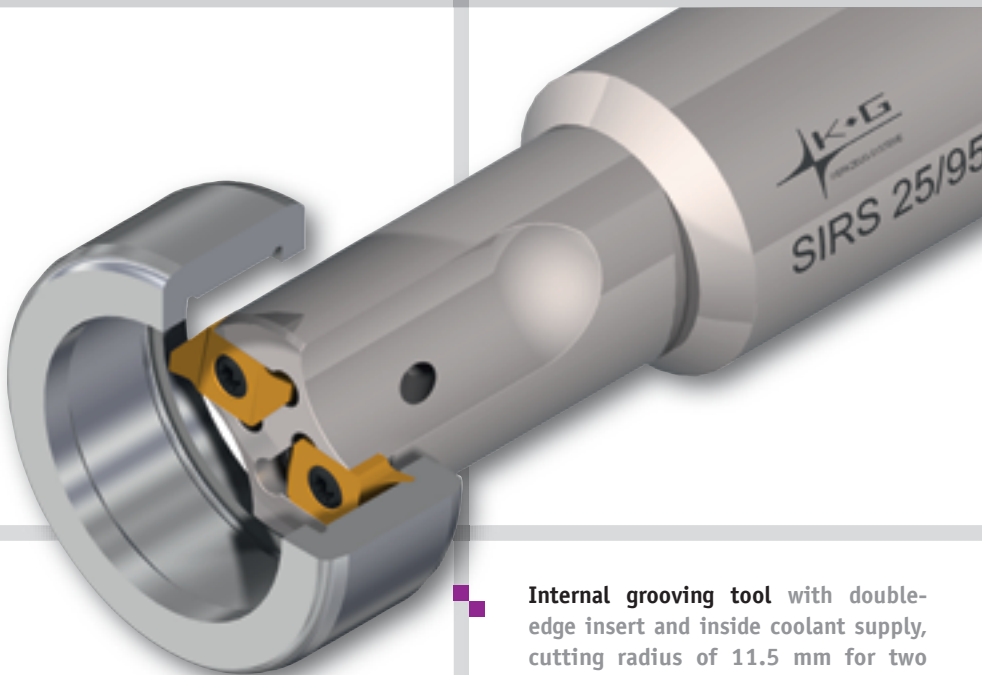
GROOVING



Combination tool for profiling and angling; radial adjustment of ± 0.2 mm is possible via adjustment cartridge (LNKB 1605 RE).

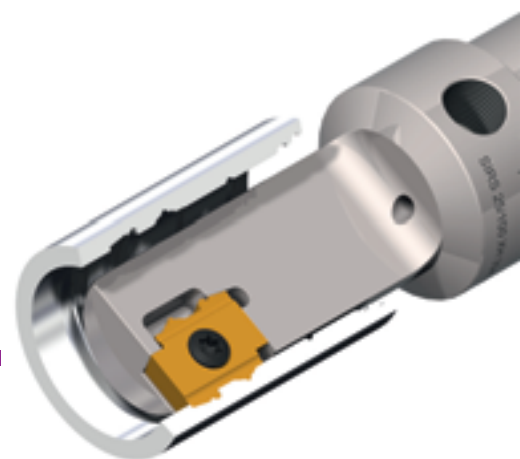


Deep grooving (20 mm) of materials that form long continuous chips. The tool interface is CAPTO-3 with inside coolant supply; the freely protruding blade ensures a long tool life for inserts and tool holders.



Internal grooving tool with double-edge insert and inside coolant supply, cutting radius of 11.5 mm for two different grooves without having to change tools due to radial and axial movement, starting at a 23-mm inner diameter.

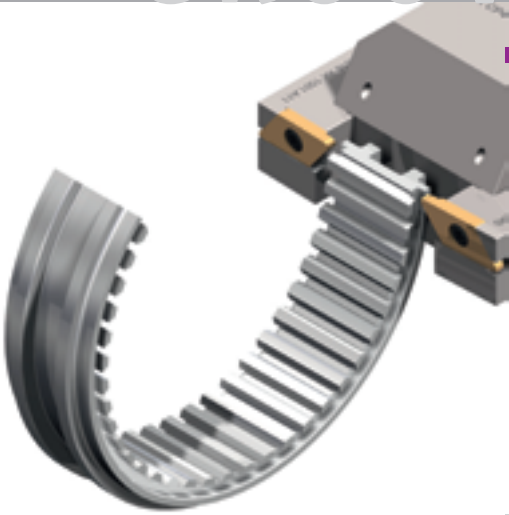
Internal grooving and profiling of complex geometrical features; double-edge insert with adjusted holder system.



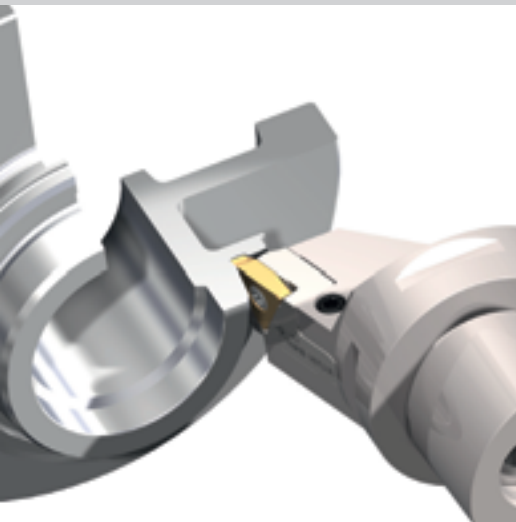
High Productivity

A solution with two smaller rather than one large insert is more cost-effective in the long run because of the reduction in cutting materials and time needed. We make sure that there are no surprises after you have changed the inserts. Our high-quality products ensure outstanding profile accuracy, high tool change accuracy and thus high productivity.

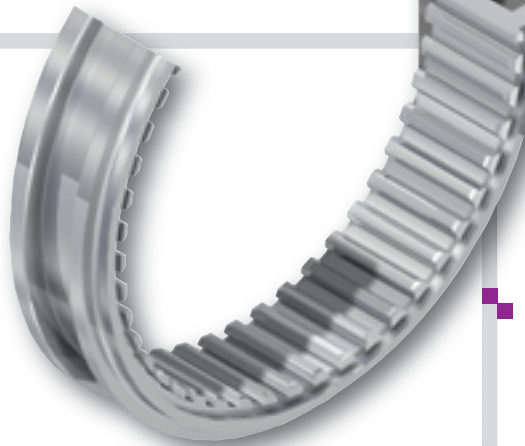
GROOVING



Double grooving tool holders for axial grooving on both sides of sliding sleeves with insert replacement cartridges.



Axial grooving (undercut) with triple-edge insert for synchronising gears (shift wheel). Fitting angle adapted to workpiece geometry; cost-effective standard cartridge as wear part.



Double grooving tool holders with axial and radial adjustment (no play) for external machining applications of sliding sleeves on multi-spindle machines. The level of chip formation in the tooth protuberance determines the tool life, which is the real challenge to meet here due to the interrupted cut.



Internal machining with screwed inserts. Precision axial adjustment via fine pitch adjustment screw.

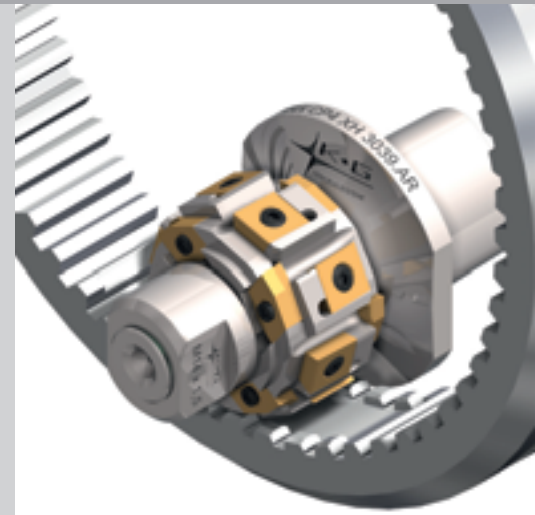
Time is Money

The chip removal volume per time unit is still the most crucial factor for calculations relevant to machining processes. Our milling tools are typically designed with inserts fitted vertically for spatial reasons, so that our customers can benefit from the time advantage. In this way higher cutting rates are feasible or the trajectory radius can be reduced (speed and feed rate can be increased). This design offers significant advantages when compared to horizontally or tangentially fitted inserts.

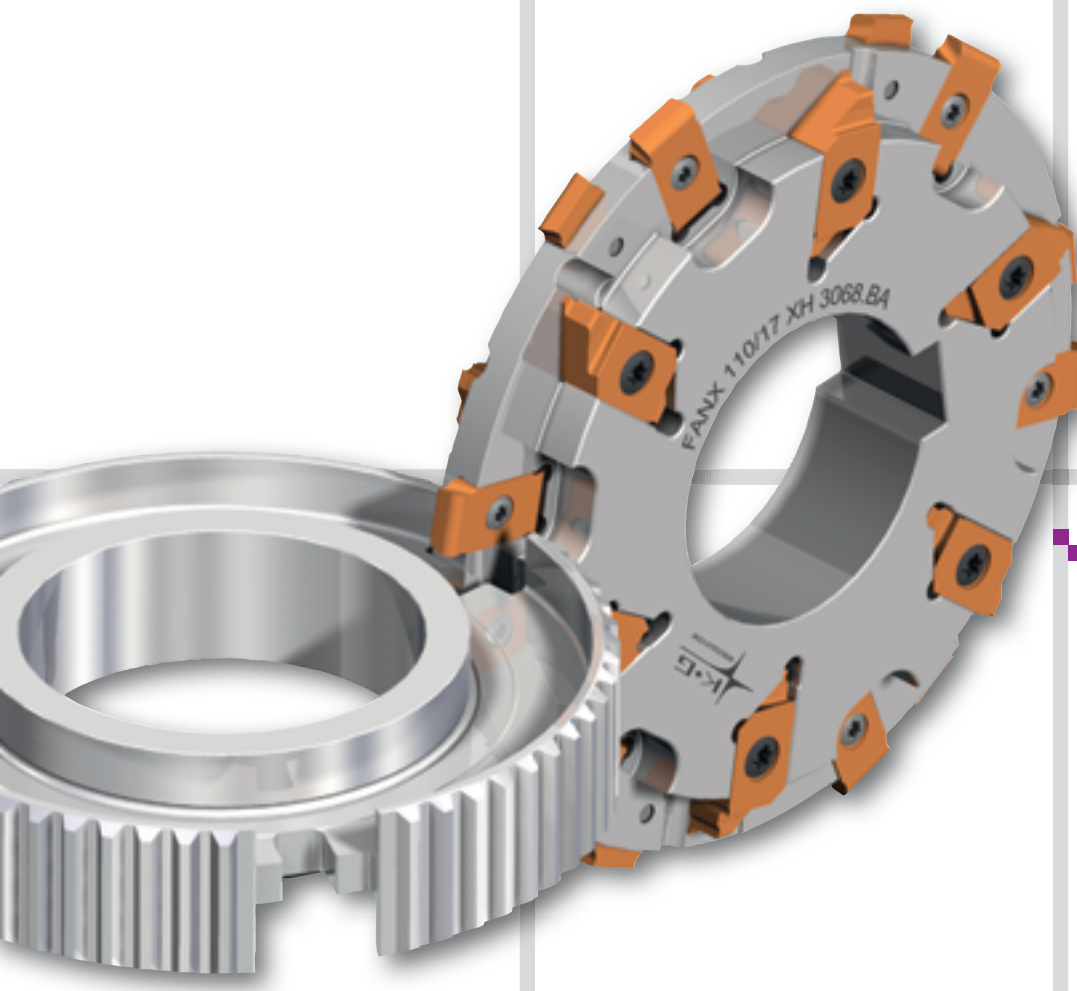
MILLING



Side milling cutter with 22 inserts. The workpiece-specific fitting arrangement of the inserts enables the realisation of four cutting edges per insert. The cutting edge geometry is adapted to the X153CrMoV12 (1.2379) workpiece material.



Compact arbor cutter (4 rows) with 40-mm trajectory radius. Can be combined with eight tangentially and eight vertically fitted inserts.



Profile cutter with quadruple cutting arrangement, whereby the centre 2 by 6 (four-edged) inserts produce the deep groove, and the 2 by 6 (double-edged) inserts machine the wide groove and the transition radius.

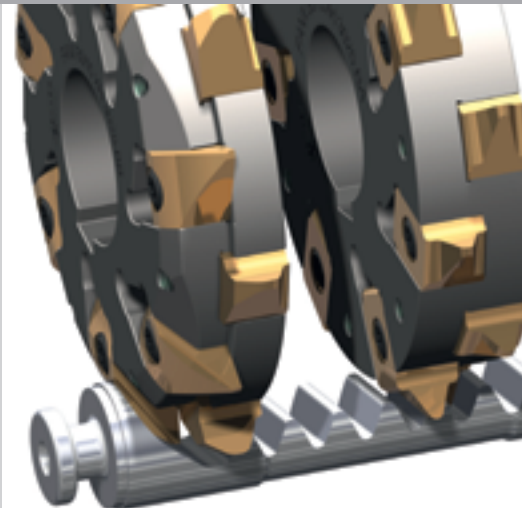
Solutions to Meet Exacting Requirements

Quiet running behaviour is determined by application-specific selection of the cutting arrangement. Furthermore, the costs for cutting materials can be kept low with simple insert forms. Complex and expensive custom profile inserts can thus often be avoided. Your requirements for profile accuracy and tool change accuracy are met unconditionally as well as those for radial run-out and axial run-out tolerances which determine the quality and the tool life.

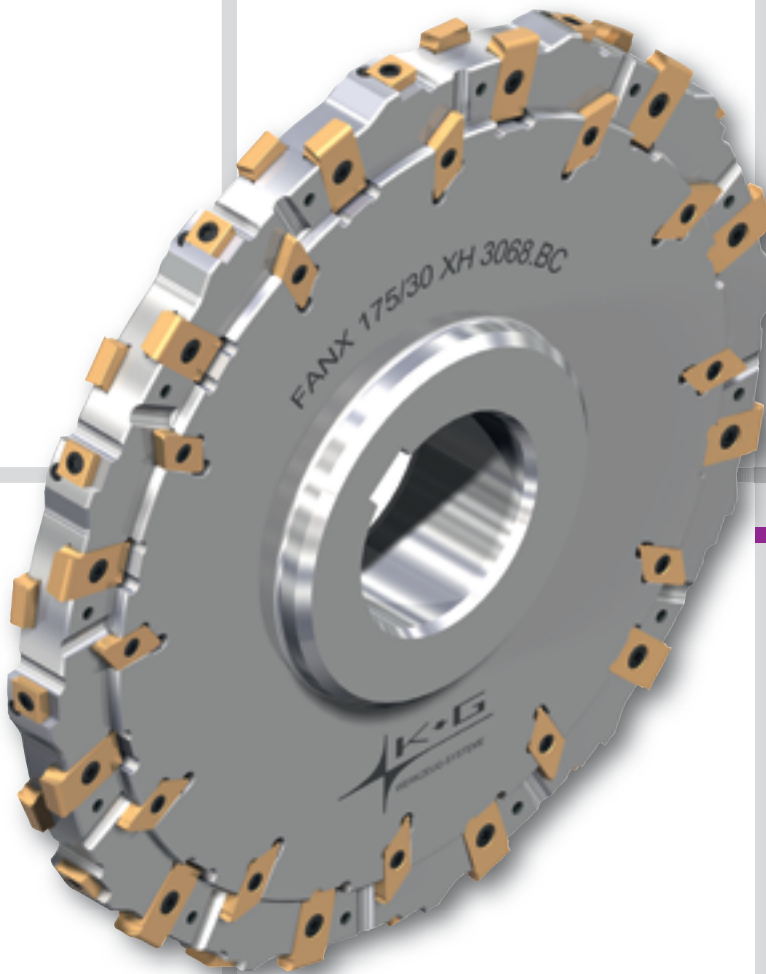
MILLING



Side milling cutter for cutting the guide groove. The workpiece is precision face milled and the remaining neck is also chamfered back.



Profiling of gear rack with 2-row side milling cutter. The left-hand tool cuts the run-out section while the right-hand tool machines two teeth (gaps) simultaneously.



Milling cutter with 175-mm trajectory radius designed for extreme feed rates (60 cutting edges); quiet running behaviour due to effective cutting arrangement – the perfect design for large grooves.

Fly Cut Milling – Economic Gear Manufacture

The fly-cut milling process facilitates cost-effective manufacture of gearing when using corresponding machines (hobbing machines, combination lathes, lathes with driven tool). The use of insert milling cutters offers significant advantages for smaller to medium-sized tooth geometries when compared to the rather expensive hobbing machines, which require additional steps for resharping and coating. Tool costs are in the extremely moderate range since most of the time inserts with multiple cutting edges are used.

GEAR CUTTING



Milling cartridge tool with three cutting edges, two rough cutters and one finishing cutter. The cartridges are adjustable and can be replaced in case of broken or worn inserts.

Combination tool for face and side cutting. Two rough cutters and one finishing cutter are used for side cutting applications. Three finishing cutters are used for machining the secondary sensor face gearing. Axial and radial adjustment is possible for all milling cartridges.

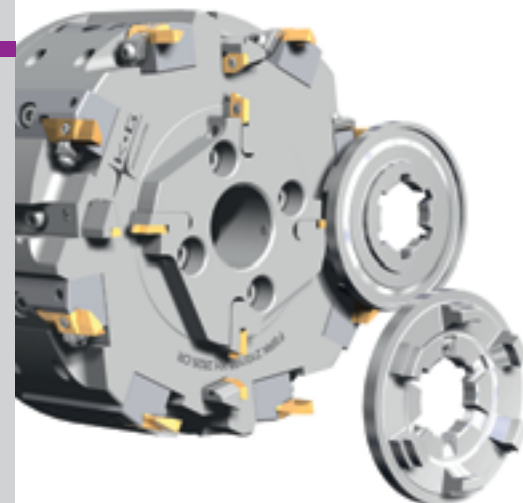
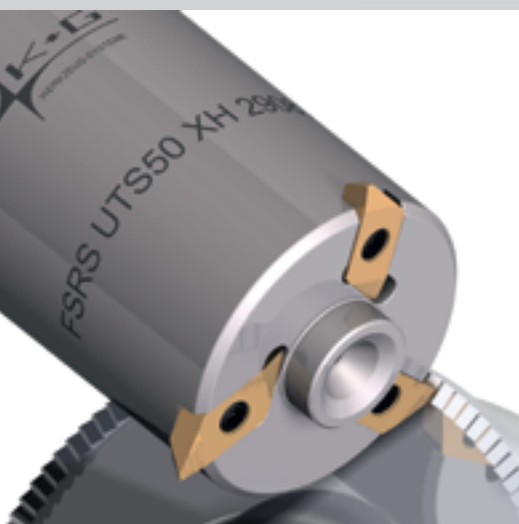


Compact fly-cut milling cutter with direct insert seats. Here the advantage lies in the small trajectory radius of only 45 mm and the precise fitting position. This ensures that the rough and finishing cutters are set correctly.



Rotary face milling of coupling members with parallel workpiece tool axes. While the main cutting edges cut the tooth flanks, chamfering is carried out by the inserts. The insert cartridges can be adjusted via fine pitch adjustment screws.

Tool with three cutting edges for face milling a spline tooth. Due to multiple cutting edges short machining times are possible despite a large number of teeth. The tool can also be used for one-edge cutting applications.



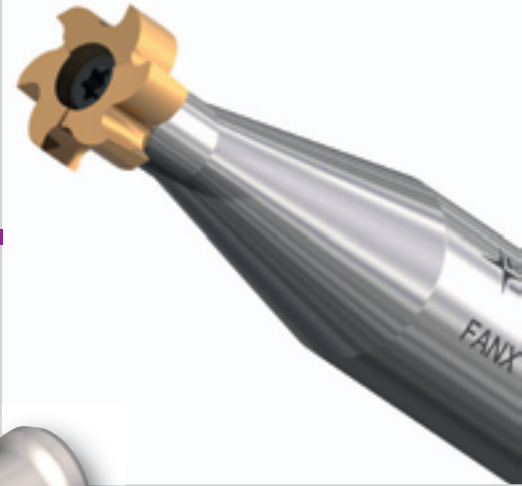
There are further application areas for our tool technologies in addition to the described main sectors. Some of these are outlined below. Ask us to optimise your manufacturing processes and benefit from 40 years of expertise in the field of tool technology. We will help you increase the efficiency and productivity of your machining processes with our engineering solutions and we would be pleased to advise you accordingly.

FURTHER TECHNOLOGIES

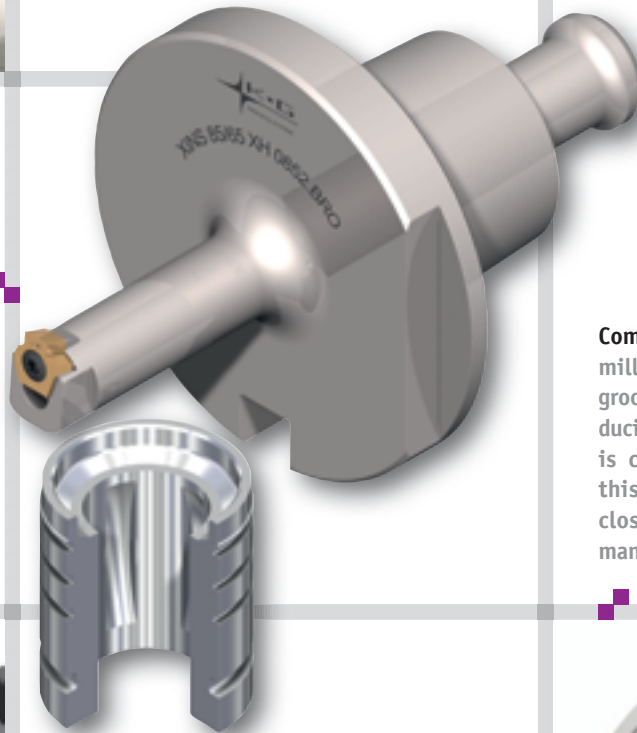


Circular milling tool with 3-edge inserts. Tool is customised for special applications in large-scale production operations (machining of brake callipers).

T-groove milling cutter with precision interface (Hirth serration), which can also be used for circular milling applications of pockets and grooves (dimensions on request).



Groove broaching tool (control grooves on special machine shown here). Keyways can be realised on modern CNCs without any problems. The subsequent removal procedure is thus no longer necessary.



Combination tool for back-angling and milling of snap-in grooves and catch grooves. The machining process for producing back-angling in sliding sleeves is currently quite popular. We cover this topic and design the process in close collaboration with the machine manufacturer and the customer.



Demand for our reamer inserts is rising. A homogeneous cutting edge with the appropriate coating plays an important role for good results here as well.



National and International Customers



We produce custom machining solutions for the auto industry, machinery and plant engineering applications, tool manufacture, and the metalworking industry. We had the pleasure of assisting numerous national and international companies and corporations with our products. Can we help you, too?

OUR CUSTOMERS



"Grimmelshausenstadt" Renchen

Our production site is located in Renchen, Baden-Wuerttemberg in close vicinity to the French and Swiss borders. The Autobahn (A 5) and the airports of Straßburg-Entzheim and Söllingen (near Baden-Baden) provide well-designed infrastructure to this area.

PRODUCTION SITE



Hans Jakob Christoffel von Grimmelshausen wandered aimlessly through Germany in the turmoil of the thirty years' war until he found refuge and a new home in the Black Forest.

He is recognised today as the greatest German novelist of the 17th century. From 1667 to 1676 he was mayor of the town of Renchen where on August 17, 1676, he died. In his honour, the town of Renchen took the additional name of "**Grimmelshausenstadt**".



You can reach our **production site in Renchen** via Autobahn A 5 "Frankfurt – Basel". If you are travelling south, take the "Achern" exit; if you are travelling north, take the "Appenweiler" exit.

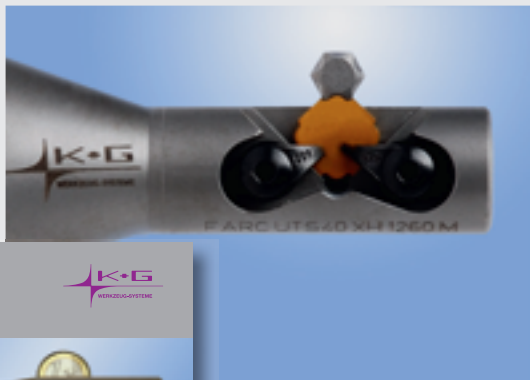
Renchen is located along Bundesstraße 3. Follow the signs for "**Industriegebiet-Ost**".



Renchen is situated at the foothills of the Black Forest, right in the middle of the upper Rhine recreation and leisure area. The picturesque Mummelsee lake along the Schwarzwaldhochstraße scenic road, the spa town of Baden-Baden, the European Straßburg/Alsace (France) metropolitan area, and the Europa-Park in Rust near Freiburg are interesting sightseeing attractions in the immediate area.

If you happen to be in the area ... just drop by. We are looking forward to meeting you anytime.

Request our Brochures:



Bit Manufacture

Bit and driver blade profiles must be adapted in their versatility, individually and precisely, to meet the requirements of the market and production machines used for their manufacture. There are also several synchronised and rotary machining applications in this area, for which a few examples are presented in the Bit Brochure.



Grooving

Precise grooving cuts in virtually any common grooving configuration. Our solutions with inserts in single-, double- or package-holders with cartridges, or directly fitted, leave nothing to be desired for your production processes. We cover a broad range of applications, from simple, straight grooving cuts to profile configuration tasks, so that you are guaranteed a customised solution tailored to your requirements. Let us convince you, too!

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