

newsletter

February 2021



Great variety with the indexable insert holder systems from K+G



K+G tools systems made in Renchen (GER)

SCHNEEBERGER grinding machines Are the obvious choice wherever there is a need for a fast and flexible response to individual customer demands and ultimately to the most varied and complex production requirements.

One of many reasons why the **Kristen + Görmann KG** carbide tool factory relies on SCHNEEBERGER technology. Around 70 employees manufacture high-precision tooling systems that are used in numerous industries around the world. The family-run innovation company headed by John Görmann is a true "hidden champion" in a challenging market.

The tool systems developed by **K+G** are made up of special tool holders that are fitted with different indexable inserts or profiled indexable inserts to meet specific requirements. The most common areas of application can be found in the synchronised, rotary machining of precise components, predominantly in the automotive industry, as well as other sectors. Special attention is paid to the requirements to the production of gearboxes. Chamfering and rounding, back tapering, notching and flute milling as well as profiling and gear cutting have to be mentioned.

The indexable inserts in the tool holders have a significant impact on the demanded quality and performance in the manufacturing and production of the parts. In fact, the more intelligent the indexable inserts are arranged in the toolholder, the more different and geometrically complex a machining processes can be reliably carried out in one single operation. This reduces machining time and consequently the production costs per part thanks to the reduced tool changeover and machining cycles.

For years, **K+G** has placed their trust in nine tool grinding machines from SCHNEEBERGER for the production of indexable inserts. Four **sirius**NGS belong to the latest generation of SCHNEEBERGER machines. Maximum mechanical and thermal stability are essential for achieving the required precision and a repeatable high production quality. The **sirius**NGS is able to grind high-precision profile indexable inserts in automated mode in all three shifts. They are designed for large batch sizes at maximum automation, and also for small or very small series. Every imaginable requirement of modern production can be implemented easily and routinely.

The **Qg1 CAD/CAM** grinding software developed by SCHNEEBERGER supports

A wide variety of production and machining steps are necessary before a tool system is used by K+G's demanding customers. These include:

- *In-depth production experience and engineering expertise for the design of the required turning, grooving or milling processes*
- *Determination of the indexable insert geometry and tool holder required for this purpose*
- *Surface and peripheral grinding of the indexable insert*
- *High-precision profile grinding of the indexable insert on SCHNEEBERGER **sirius**NGS*
- *Edge preparation of the cutting edges*
- *Indexable insert coating optimized for the material to be machined*

K+G tool grinders with optimum ergonomics and efficiency. This is achieved by graphically displaying all geometry data, as well as 3D simulation of the grinding path, including collision control. All imaginable geometries and profiles of an indexable insert can be reliably ground using the **Qg1 CAD/CAM** grinding software and the optimally arranged six machine axes of the **sirius**NGS.

This freedom in implementing new tool systems gives **Kristen + Görmann KG** a major and indispensable advantage.

siriusNGS offers a wide range of accessories for the technology of grinding indexable inserts:

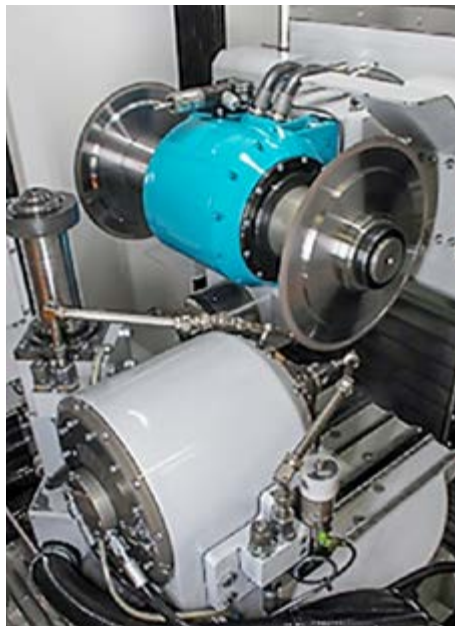
- Double ended grinding spindle for extra large grinding wheel diameters
- High-frequency spindle for highest speeds, which is necessary for geometries with small radii, pockets as well as chip breakers
- Automatic grinding wheel dresser for profiling or reconditioning grinding wheels

(see image on the right)



Capability requirements for a grinding machine at K+G:

- Quick changeover
- Simple programming
- High process stability and rigidity
- Individual part production and smallest batch sizes
- Automated production of series with 6-axis robot



Application simulation KG tool holder, insert grinding with **Qg1**



Tap production on **gemini**NGM TAP

6-axis grinding centre for manufacturing all production thread tools, designed in accordance with the latest machine tool technology, the SCHNEEBERGER **gemini**NGM TAP impresses with its clear architecture. Grinding process, automation and mechanics are well-proportioned and thought out. Programming, operation and material handling are all ergonomically sophisticated. Polymer granite base, linear motors, hydrostatic arranged oscillating axes and innovative software turn this machine into a solid pillar of your production.

One chucking HSS or carbide tap production! Complete machining of the thread profile, spiral point angle and lead cut in one clamping. Calculation and forming of the grinding wheel shape for flutes dressed right on the machine. Optimum thread grinding with single form or multi-form grinding wheel



thanks to linear motors, hydrostatic bearing and a 400 mm profiled grinding wheel.

Forming tap production in HSS or carbide for chipless tapping. Complete production of the thread profile and lubricating grooves in one clamping. Polygon shape via parameter entry for the thread form and the eccentricity, or alternatively form definition as DXF import. Instant visible 3D modelling and process simulation.

Thread milling cutter production from carbide for thread production on CNC machines. Drilling, countersink, reverse countersink and thread cutting are combined into one tool. The thread form is ground using a torus radius grinding wheel in accordance with the DXF profile or use a profiled wheel.

Step drill production and regrinding with Qg1

The expanded step drill program in the SCHNEEBERGER **Qg1** grinding software now offers even more geometries and functions.

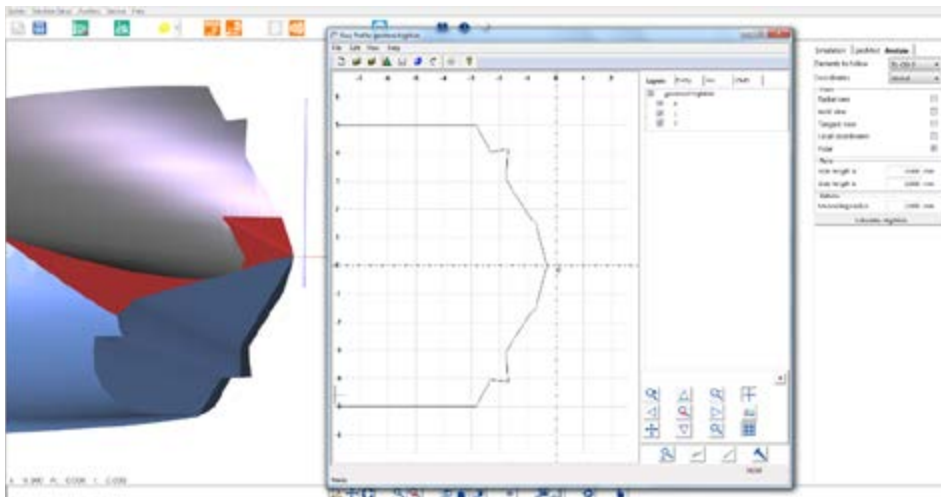
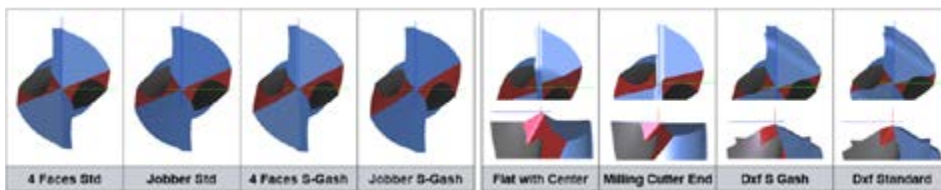
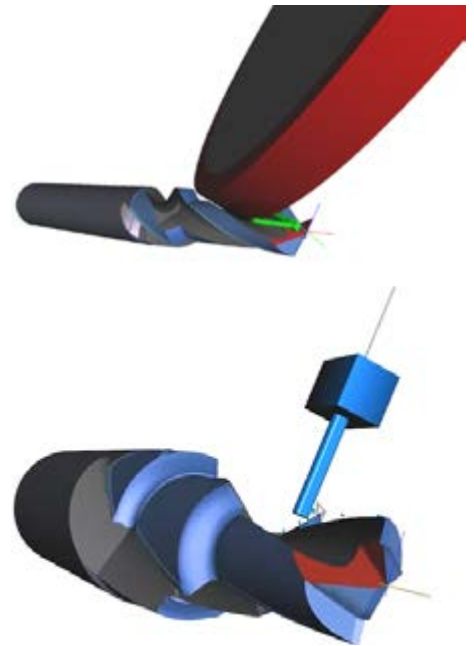
All imaginable combinations of standard steps or defined by a DXF form, steps can be programmed in **Qg1** in no time and combinations and ground into a step drill. Numerous variations of the step shapes can be added using a drag and drop menu.

It is also possible to import sophisticated geometries as DXF or to draw them directly in **Qg1**. A predefined template to program all steps serves as an guide for the users cre-

ating their own drawing. The combination of two subsequent steps was also integrated as a new standard.

The standard integrated 3D process simulation of **Qg1** provides a realistic image of the tool before even going to the machine, regardless of how complex it is (illustration on the right).

The key to small batch production is the use of the simulated flute, which takes into account both process parameters as well as the current grinding wheel. In the transformation of a straight drill to a step drill, pre-grinding of the steps integrated in all other processes is possible.



Drill bit versions

Image on the left:

- 4 areas standard
- Jobber standard
- 4 areas s-shaped
- Jobber s-shaped
- flat with centre
- Cutter face
- DXF s-shaped
- DXF standard

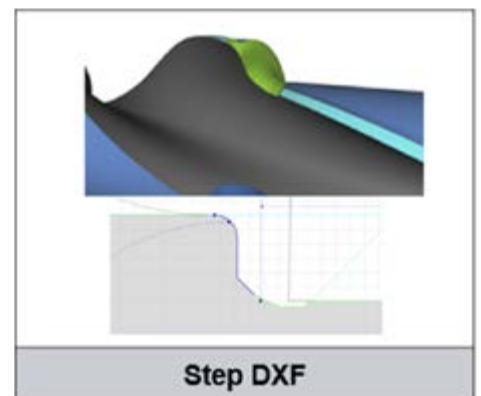
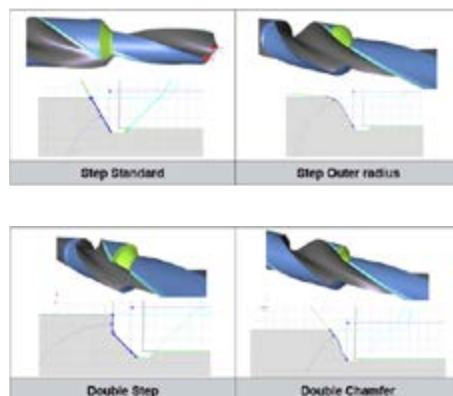
The DXF form, your guarantee for complete freedom in programming and selection of a tool type.

Step drills

Images on the right:

- Standard step
- External radius step
- Double step
- Double chamfer

Unlimited possibilities of step shape, added by drop-down menu for the standard steps or as any DXF file.



Production of globoidal cams on normaNGC

Zhucheng Zhengxin Machinery has been producing index drives since 2008. The quality and precision of the globoidal cams soon reached its highest level after CNC technology in grinding machines was introduced. Manual polishing was no longer necessary and sales figures soared nationwide.

Index drives dictate the pace in numerous automation machines with synchronised movements. The high-precision cams are at the very heart of every gearbox, since they are crucial for the smooth running and long service life of the machines. It was the invention of index drives that really breathe life into the automation industry and the mechanical parts continue to be indispensable even today.

Zhengxin Machinery has invested in a 5-axis cam grinding machine from SCHNEEBERGER to meet customer requirements for smooth and precise indexing transfer. This was based on the successful **norma**NGC, upgraded with two high-frequency spindles. The double spindle made it possible to reduce the number of roughing cycles and to add the finishing process without changing the wheel.

A software package of the latest generation is also used here with the **Qg1 CAD/CAM** grinding software. The already extensive software has been expanded again specifically for grinding globoidal cams. This means that all conventional roller curves for rotary indexing tables can be programmed. ISO code or parameter input, 3D simulation, fine adjustment and automatic grinding programming make the programming work for this complex component a breeze. Multiple threads are also easy to achieve.



Ma Guljie inspects a polished globoidal CAM

Mr. Ma Guljie from **Zhucheng Zhengxin** is convinced by the grinding results. "The surface quality, the precision of the curves and the stability of the process greatly simplify the final assembly of the gearbox," he declares enthusiastically. The successful cooperation is bearing fruit. This year, the second **norma** has already been ordered. The two companies are united by their high demands in quality and the constant pursuit of further optimizing processes and products. Thanks to the local presence of SCHNEEBERGER technicians in China, customers can also be assured of technical support at all times which contributes to their success.

11. BEKB Football Cup



Three of our employees – Antonio Grasso, Roger Felber and Sven Neuenschwan-



der – are successfully coaching the youth soccer team of FC Roggwil. The trio was able to celebrate a major success, together with the team at this year's cup. The team achieved 1st place in the tournament.

trade fair calendar

CIMT	12.04.–17.04.2021	Beijing CN
AFF'TECH	03.06.–05.06.2021	Reims FR
Global Industrie	07.09.–10.09.2021	Lyon FR
LIGNA	27.09.–01.10.2021	Hannover DE
EMO	04.10.–09.10.2021	Milan IT

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