

HELITRONIC DIAMOND EVOLUTION

MAXIMUM EFFICIENT ERODING AND GRINDING MACHINE
TWO-IN-ONE



HELITRONIC DIAMOND EVOLUTION

APPLICATION

- Eroding and grinding rotation-symmetrical tools for a variety of industrial sectors
- For production and/or regrinding
- Fully automated, complete machining in a single clamping cycle
- Materials include PCD, CBN, HSS, carbide, cermet, ceramic

MACHINE

- Low vibration, solid grey cast iron, gantry type construction
- X, Y, Z linear axes with ball-type linear drive
- A, C rotating axes with worm drives or optional torque motors
- Belt-driven spindle with two HSK ends
- Each spindle end can take up to 3 rotating electrodes/grinding wheels
- FINE PULSE TECHNOLOGY for highest surface quality
- 24" Full HD multitouch display
- FANUC, the global standard for control equipment
- Various loading systems
- Numerous efficiency options

SOFTWARE

- C.O.R.E. OS operating system
- HELITRONIC TOOL STUDIO, CAD/CAM software for design, programming, simulation and production
- HELITRONIC TOOL STUDIO with licence erosion
- Walter WWM
- Numerous software options to extend the system's performance and to increase its efficiency

« Most PCD tools produced are in the diameter range up to 165 mm and lengths up to 200 mm. The HELITRONIC DIAMOND EVOLUTION is the ideal machine for precisely these tools. Inexpensive and highly productive. »

SIEGFRIED HEGELE, HEAD OF STRATEGIC PRODUCT MANAGEMENT

YOUR BENEFIT

Erosion of PCD/CBN tools and grinding of HSS/carbide tools, switching as you wish. A variety of loading systems and efficiency options make it possible to configure the machine as needed for today's and tomorrow's applications.



HELITRONIC DIAMOND EVOLUTION
with robot loader option

C.O.R.E. – CUSTOMER ORIENTED REVOLUTION

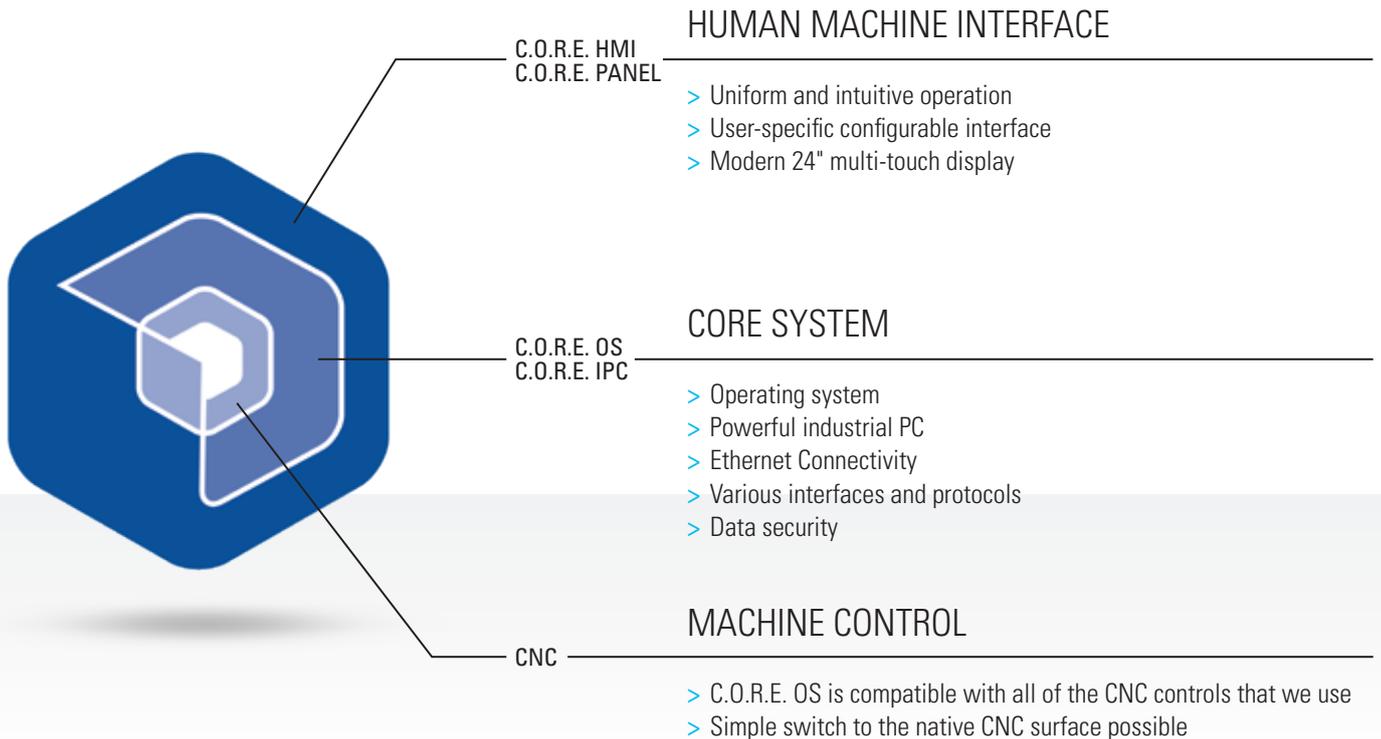
C.O.R.E. helps us make your production fit for the digital future.

It's based on a new operating system, C.O.R.E. OS, that equips the machine with intelligence. Thanks to the uniform C.O.R.E. software architecture, exchanging data between UNITED GRINDING machines is easy. The integrated umati API can be used to communicate with third-party systems as well. It also offers access to UNITED GRINDING Digital Solutions™ products directly on the machine. C.O.R.E. not only establishes the technical foundation for this and other IoT and data applications, it also forms the basis of revolutionary yet uniform operation.

What does this mean for you?

- The user-friendly, intuitive, and uniform operation makes work easier for machine setters, machine operators, and maintenance staff
- Standardized data collection and intelligent processing of data creates transparency and supports process optimization
- The uncomplicated and consistent use of modern digital software solutions is guaranteed – directly on the machine
- The technical platform for the use of modern IoT and data applications has been established

C.O.R.E. ELEMENTS



C.O.R.E. PANEL – THE FUTURE OF OPERATION

Intuitive

Thanks to intuitive design with self-explanatory icons, navigation through the machine menu and process steps is quick and easy. Instead of buttons, the user is presented with a modern and clearly arranged multi-touch display.

User-friendly

Each user configures their own user interface individually. This is called up automatically with the RFID chip after logging in. When the user leaves the machine, the panel switches to "Dark Factory Mode." Production progress and the machine state are also clearly visible from

a distance. And thanks to the ergonomic design, the panel can be tilted and individually adjusted easily.

Efficient

The uniform and intuitive operating philosophy reduces training time. The configurable and role-specific interface helps prevent errors and increases the efficiency and quality of programming. Information can be exchanged quickly and in real-time via the front camera and Bluetooth headset. UNITED GRINDING Digital Solutions™ products can be used directly on the panel.

INDUSTRIAL MULTI-TOUCH DISPLAY

INTEGRATED FRONT CAMERA

SELF-EXPLANATORY ICONS

USER-CONFIGURABLE DISPLAY

STANDARDIZED FUNCTION KEYS

ERGONOMIC OVERRIDE SWITCH



Technical Specifications

- 24" Full HD multi-touch display
- 16-position rotary override switch
- Electronic key switch (RFID)
- Integrated front camera
- Bluetooth V4.0 for headset connection
- 2x USB 3.0 ports
- Adjustable tilt



FURTHER DETAILS

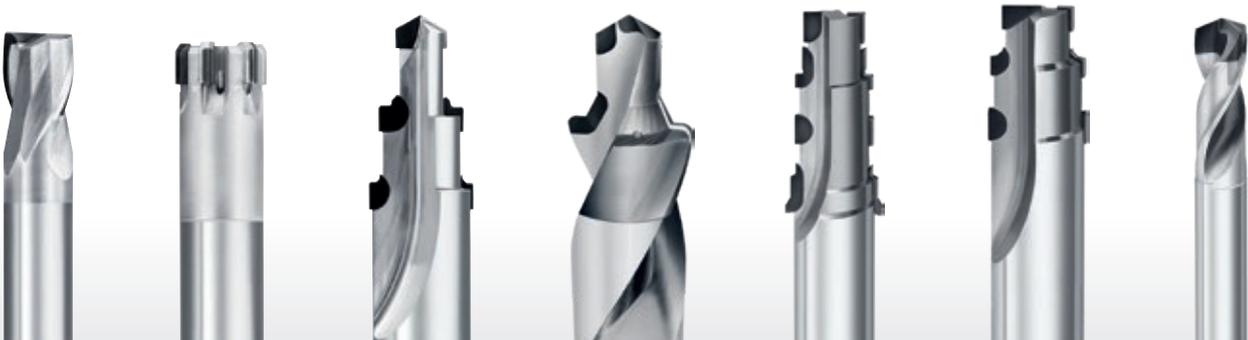
EFFICIENT AND EASY TO USE

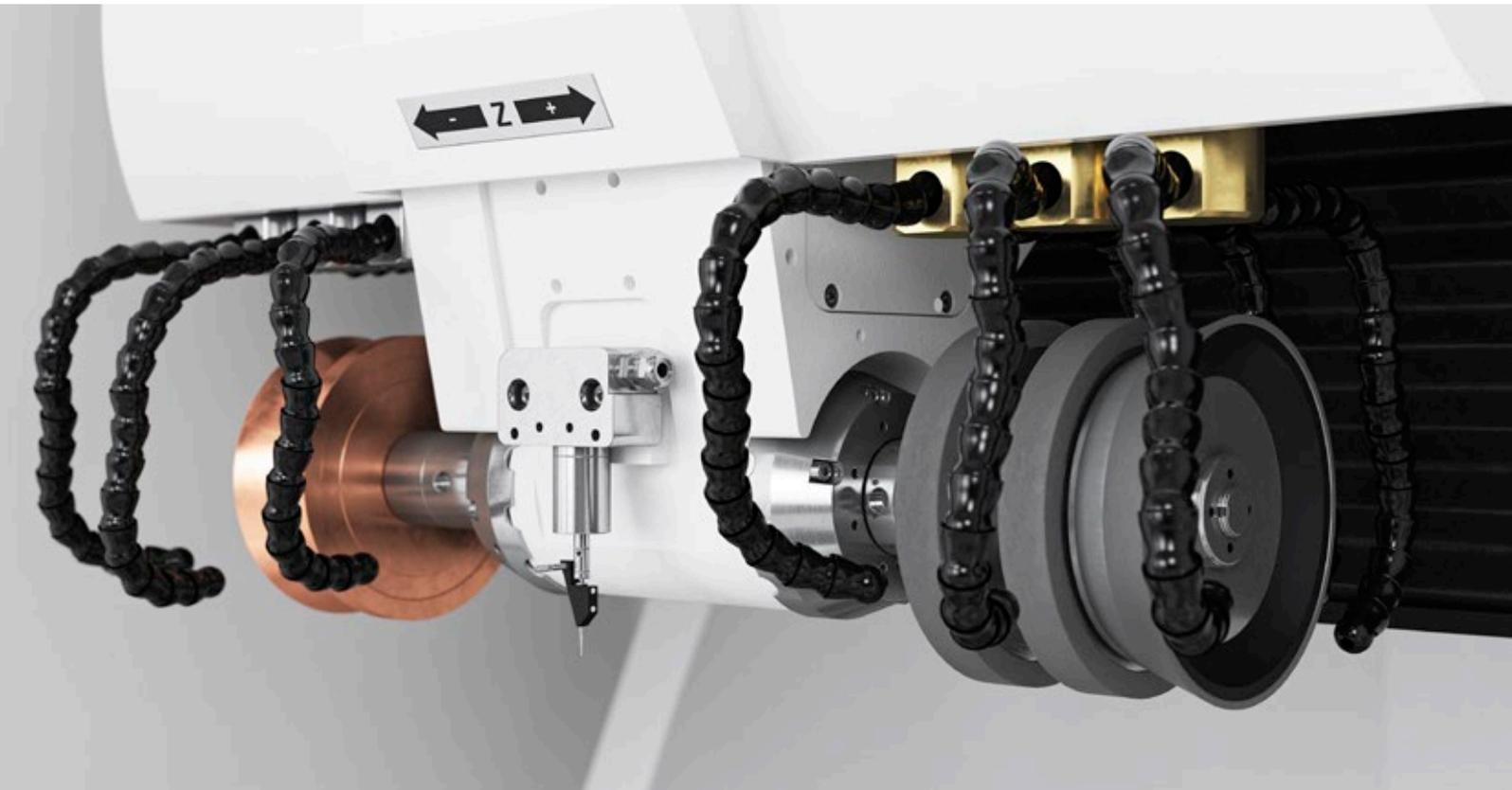
The HELITRONIC DIAMOND EVOLUTION is a highly efficient solution within our erosion portfolio when it comes to eroding PCD/CBN tools and grinding HSS/HM tools in a single clamping cycle and on the smallest footprint. Permissible tool diameters from 1 to 165 mm, tool lengths up to 185 (255), each item can weigh up to 30 kg.

It is possible to save time by machining complex geometries in a single clamping cycle. The combination of spark erosion & grinding provides a real step forward in terms of flexibility and quality. Furthermore, thanks to its two-in-one principle, the HELITRONIC DIAMOND EVOLUTION can be used as a grinding machine for the production and sharpening of carbide tools. The changeover from PCD to carbide tools is "on the fly", since it is possible to automatically change between PCD and carbide tools and back again.

Example tools (from top left to bottom right):

PCD end mill, PCD reamer, PCD step drill, rim drill, 2 x PCD step tool, PCD drill bit, profile round bit, full radius cutter, drill thread cutter, drill bit, corner radius cutter, fir tree cutter, profile bit





INNOVATIVE WALTER GRINDING AND ERODING EQUIPMENT

Belt-driven spindle with two HSK50 spindle ends (standard)

The powerful belt-driven spindle with two spindle ends can be equipped with up to 3 electrodes or 6 grinding wheels and has a peak power of max. 9 kW. In this configuration, both complex and customary tool geometries can be manufactured economically in medium-sized batches (automation options are required). The different electrode/grinding wheel sets are allocated to the relevant spindle along with all data.



Automatic electrode/grinding wheel changer with 6 places (option)

Affordable, compact and flexible. With a holding capacity of up to 6 electrode/grinding wheel packs with 3 electrodes/grinding wheels each. The max. wheel diameter is 150 mm. The coolant supply and grinding set form a single unit. This ensures reliable wheel set replacement and optimum coolant delivery.

C-axis in torque version (option)

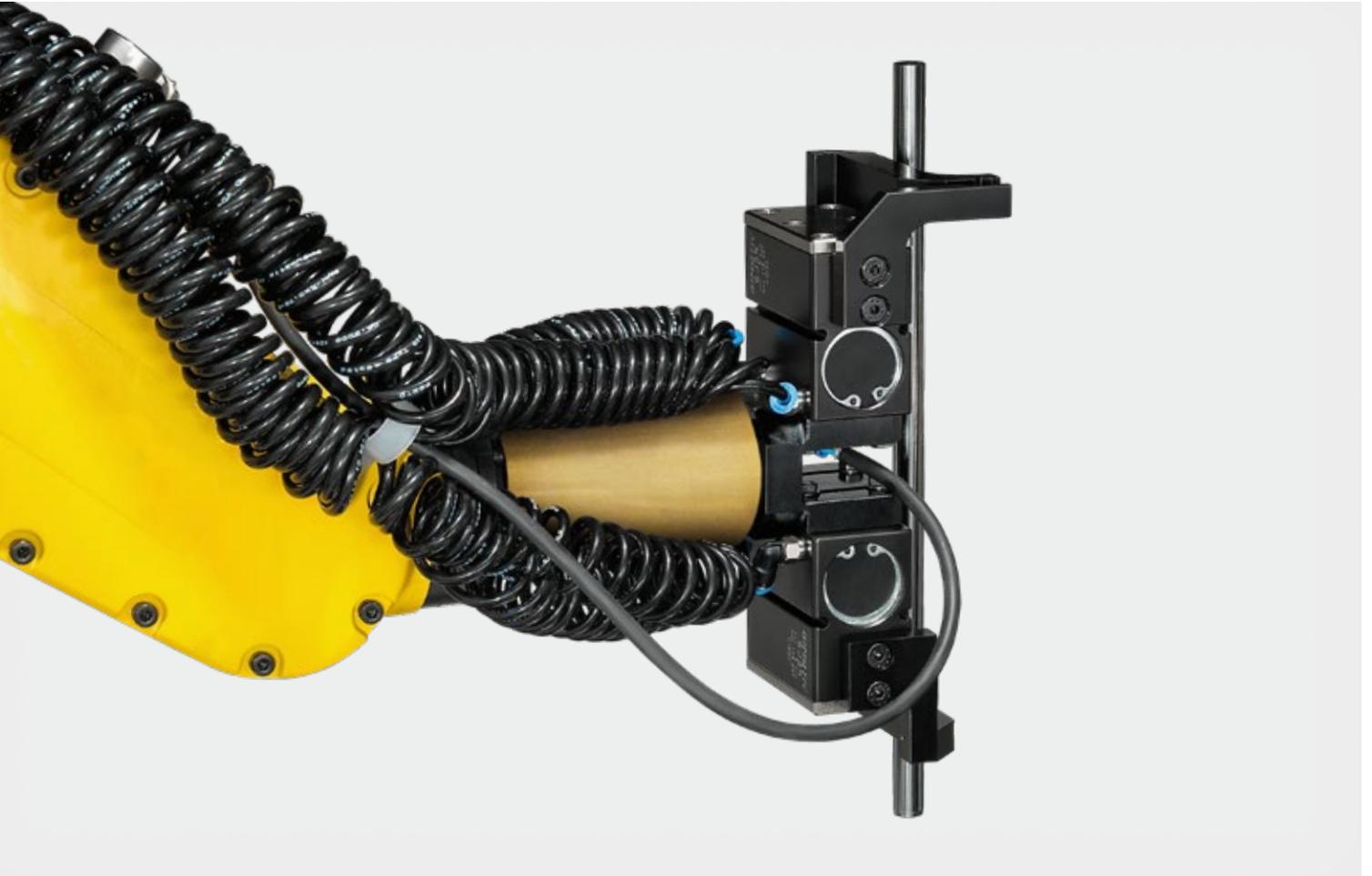
The advantage of the C-axis in torque design is its durability in dynamic and constantly repeating axis movements. Swivelling range C axis (rotary table) +/- 200°.

Glass scales (option)

Glass scales for increased positioning accuracy and higher heat insensitivity. This leads to an increase in quality in tool production.



AUTOMATION OPTION ROBOT LOADER



Robot loader

The robot improves accessibility to the workpieces and makes special applications possible. Automatic teaching enables short setup times. Depending on the type of workpiece or the workpiece diameter, up to 7,500 workpieces can be loaded using the robot. Maximum workpiece weight 5 kg; maximum workpiece diameter 125 mm.

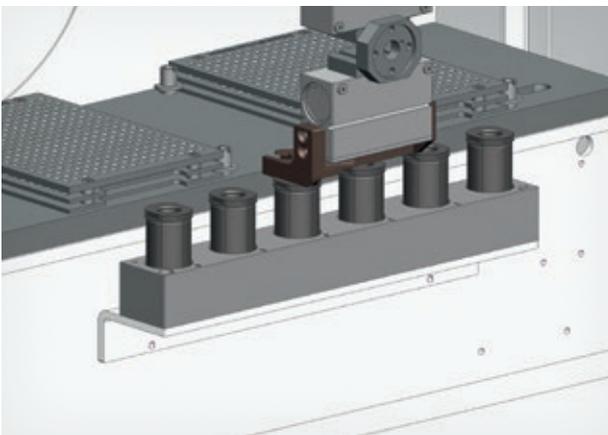


"Combi" equipment package for robot loaders

Gripper rapid replacement system for handling cylindrical tools and tools with HSK-63 mounting shank. The word "Combi" is an exact description of the contents of this equipment package: Namely the two equipment packages "Cylindrical tools" and "HSK" plus the rapid replacement interface for fast, user-friendly retooling.

Advantages of the "Combi" equipment package

- Rapid replacement sequence thanks to only one cylinder head screw
- Pallets that have already been taught do not need to be taught again when grippers are replaced
- Pneumatics and teaching cable need to be connected only once (installation)
- Retrofitting at existing robots possible (software must be adapted)
- Easy handling
- Ergonomic form



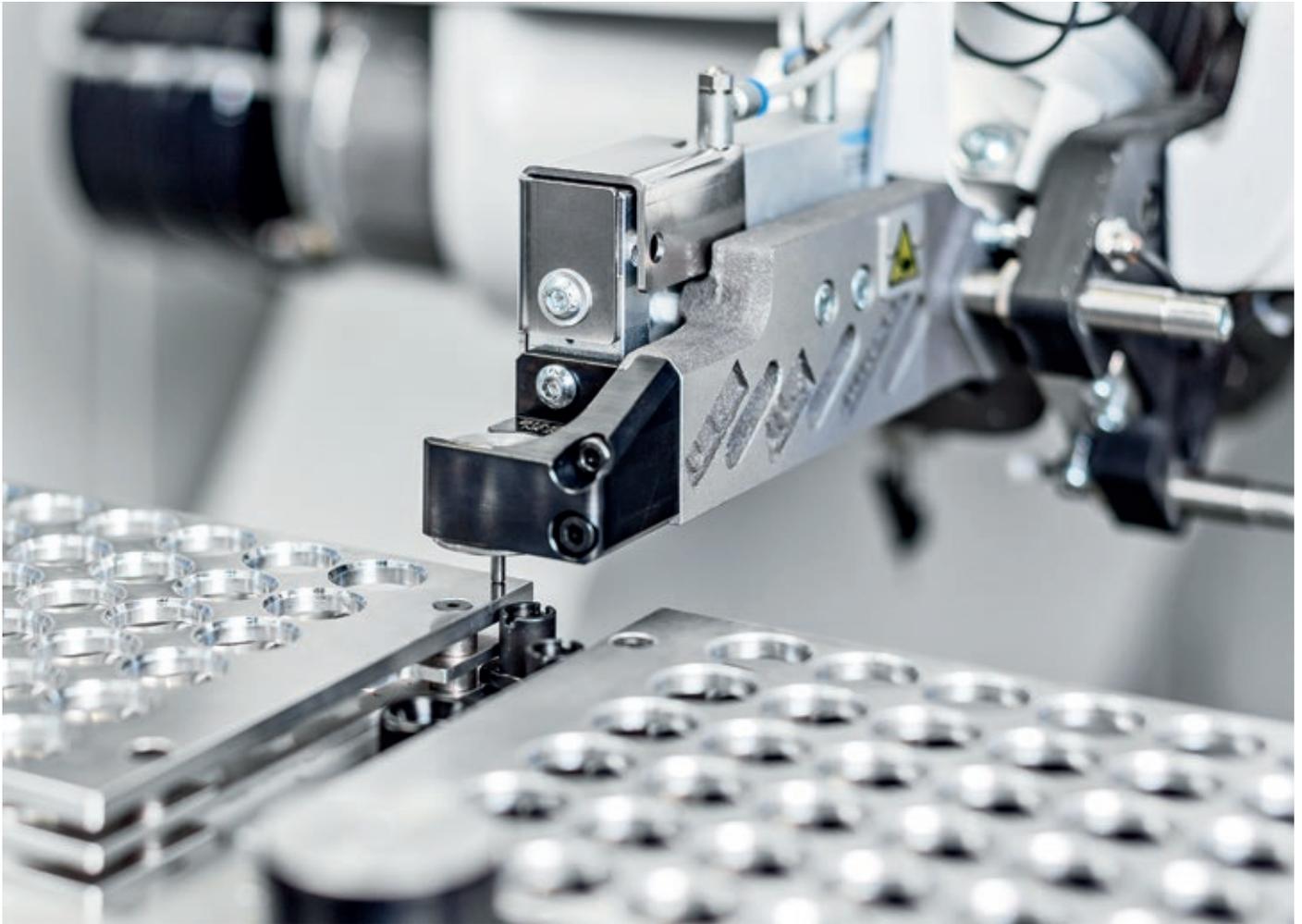
"Multi-Range" equipment package for robot loaders

The Multi-Range equipment package sets new standards in terms of flexibility. Large diameter coverages with a pair of gripper fingers and a collet replacement (Schunk bayonet) are possible with this equipment package.

"HSK" equipment package for robot loaders (not shown)

For handling (automatically loading) up to 72 HSK 63A or HSK 63F tools.

AUTOMATION OPTION TOP LOADER

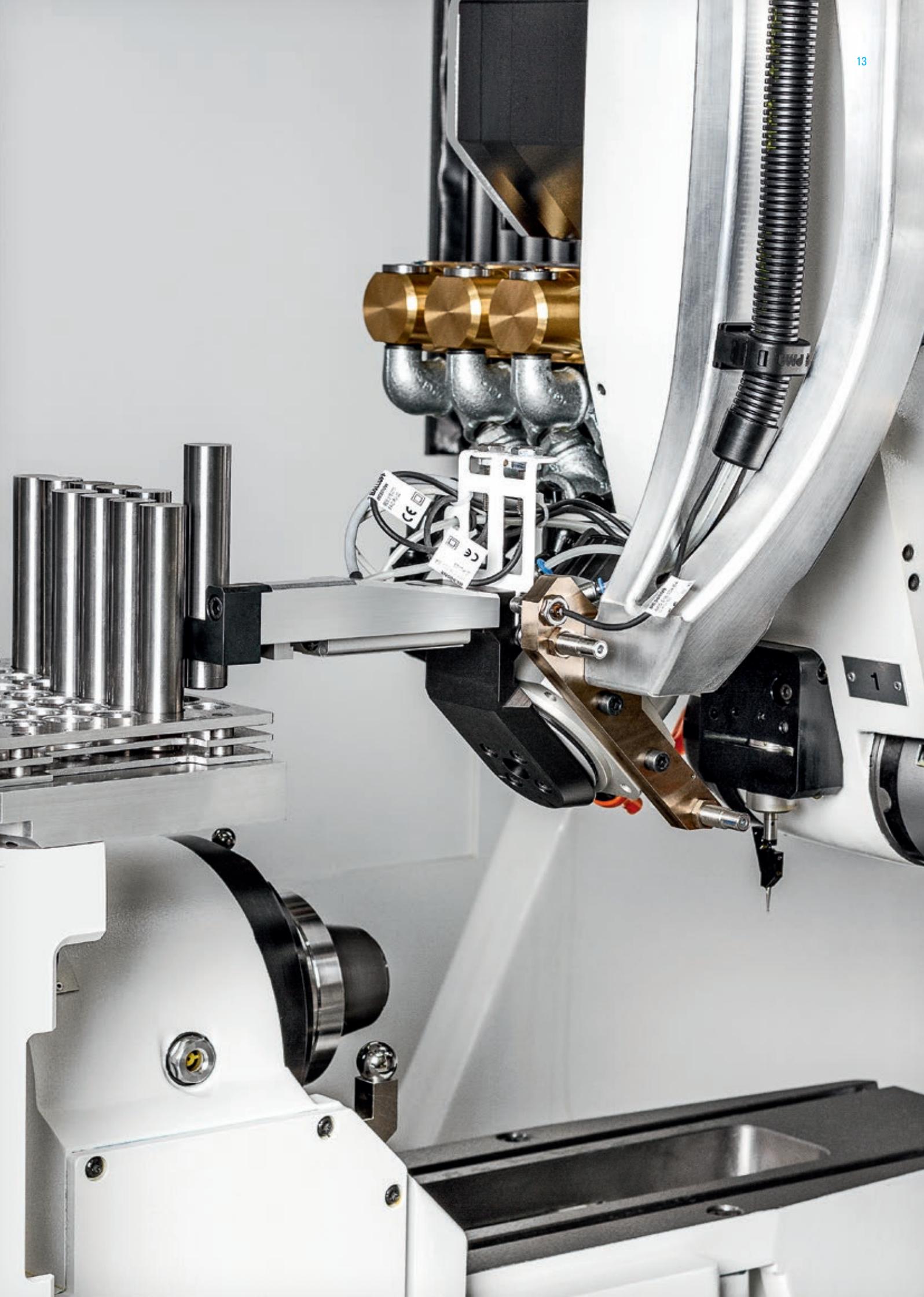


Top loader

This space-saving and inexpensive automation solution is integrated directly into the machine envelope. Automatic teaching enables short setup times. Depending on the tool diameter, the Top loader offers a maximum of 500 places for tools.

Tool capacity, max. (sample diameters):

- 500 tools: diameter 3 mm
- 42 tools: diameter 20 mm
- 20 tools: diameter 32 mm



OTHER OPTIONS

Many other options are available for the HELITRONIC DIAMOND EVOLUTION to optimise your production – from software solutions to hardware customisation.

Tool Vision System

Take advantage of the revolutionary benefits of automatic capturing and tool alignment for correct positioning of the tools prior to machining.

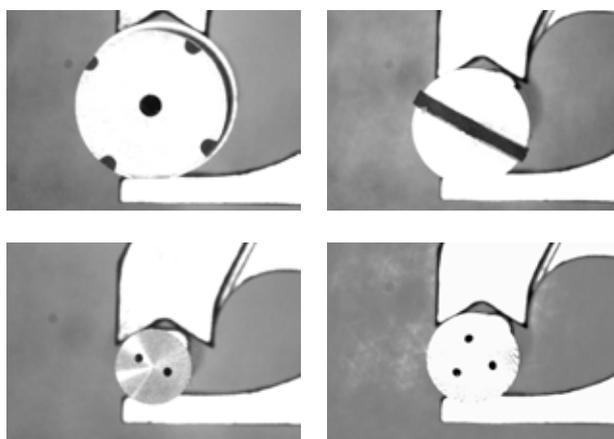
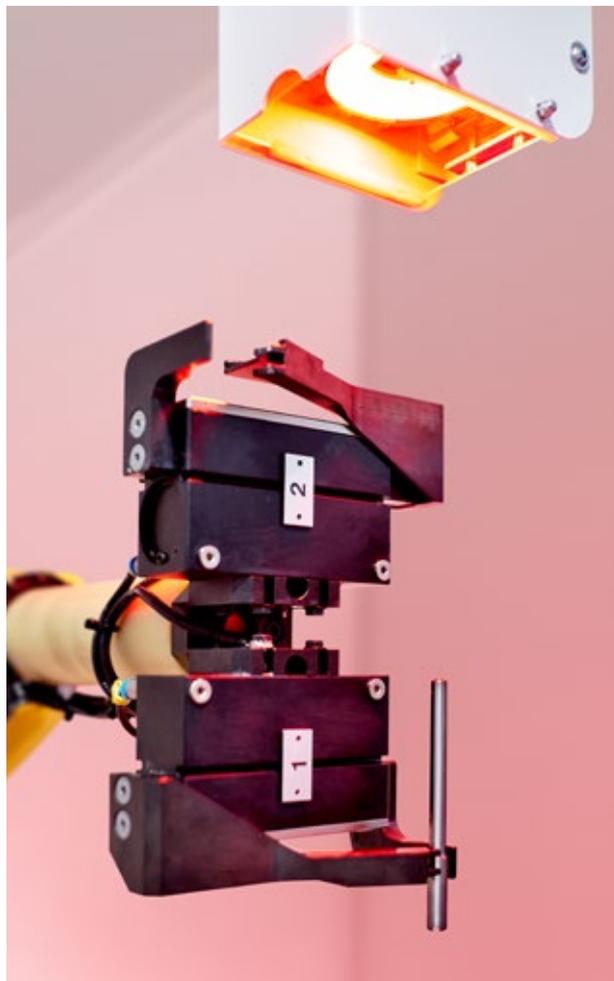
Main applications:

For automated capture of blanks/tools

- With soldered PCD plates on the front
- With sintered PCD veins
- With cooling channels
- And others

Technical details:

- Camera system permanently installed in the robot cell
- Two lenses available
 - > For tool diameter from 1.7 mm to 12 mm
 - > For tool diameter from 12 mm to 32 mm



- Significant time savings with automated processes in comparison to the manual measurement method
- Valuable working time of the employees can be used for other tasks
- Eliminates errors caused by the human factor
- Teaching of new tool geometries is easy and can be done by trained machine operators themselves
- No damage to the tool, thanks to non-contact method
- Camera system works during off-time



Automatic, electrical measurement of the machine reference

Now use the advantages of the automatic, electrical measurement of the machine reference in the grinding and eroding machines from WALTER.

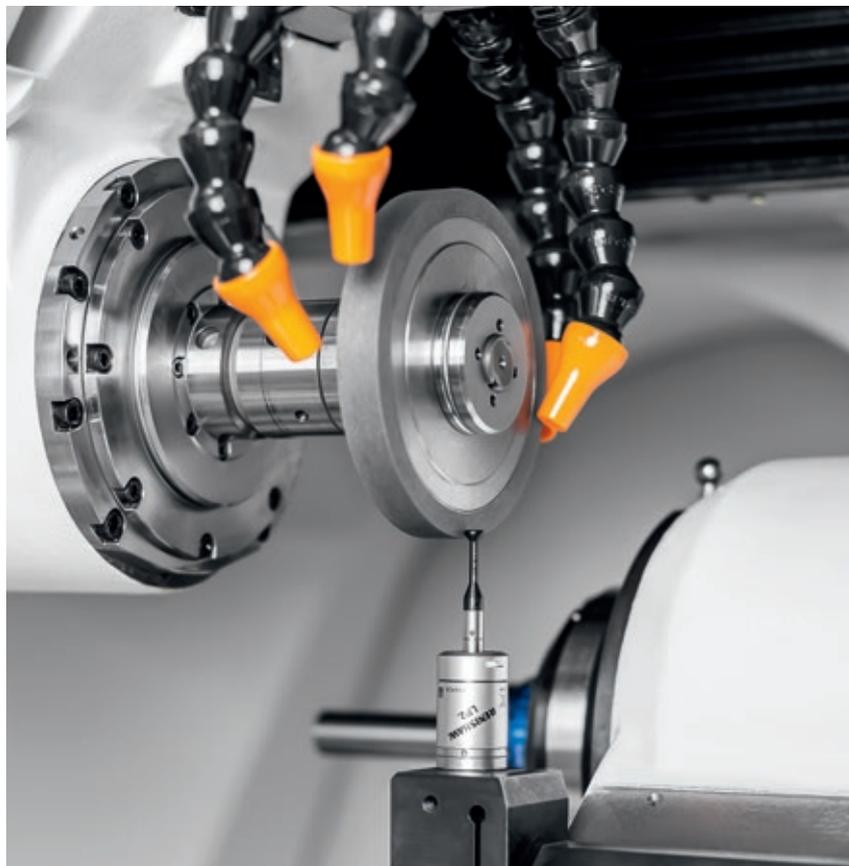
- Maximum precision of measurement results through exact positioning of the axes via electrical contact
- Automatic mechanical inspection of the dimensional accuracy of the C axis
- Significant time savings with automatic operation in comparison to the manual measurement method
- Valuable working time of the employees can be used for other tasks
- Eliminates errors caused by the human factor
- Short amortisation time for your investment

OTHER OPTIONS

Automatic grinding wheel measurement

For even more efficient production. Normally, the machine operator corrects the grinding wheel data manually during the production process based on the current tool geometries so that the geometry of the tool can be kept to the target dimension. With automatic grinding wheel measurement, the wear on the grinding wheels can be automatically determined, precisely documented and compensated for by means of tactile measurement. The measurement is carried out during the production process. The diameter and length of the grinding wheel can be measured and compensated for. This means that the user always has the optimum grinding wheel data at the desired time. Furthermore, the user can draw conclusions about the grinding wheel wear and thus also influence the production process and optimize it.

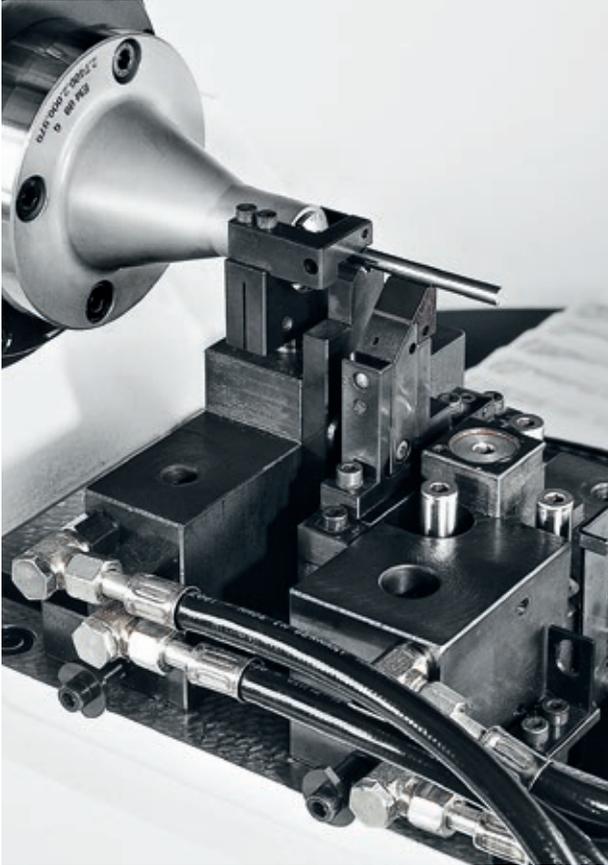
The probe for tactile measurement is attached to the workpiece carrier and is mounted in place of the electric dresser.



Sharpening stone holder

With the permanently installed sharpening stone holder, WALTER enables the automatic opening of the wheel rim during production. The HELITRONIC TOOL STUDIO software controls the wheel opening process and enables the operator to open the coating at a time specified by him.





**Automatic steady rest" option or
Automatic support steady rest" option
(illustration shows shaft and support steady rest)**

High-precision prisms and fine adjustability ensure precise and reliable grinding results for longer tools. Tool deflection during grinding is reduced to a minimum.

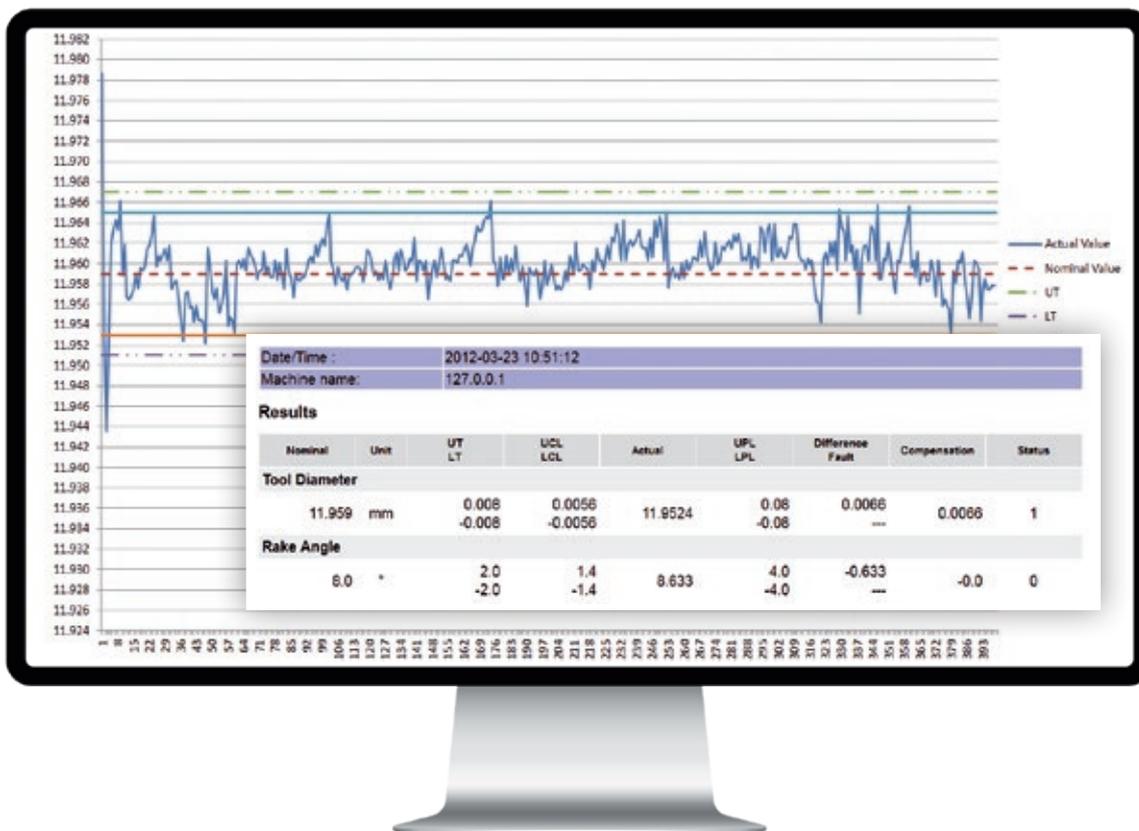
**Manually operated tailstock
(without illustration)**

For holding and centering a workpiece.
Mounted on the top table.

Manual steady rest (not shown)

To support the workpiece during grinding.
Mounted on the top table.

OTHER OPTIONS



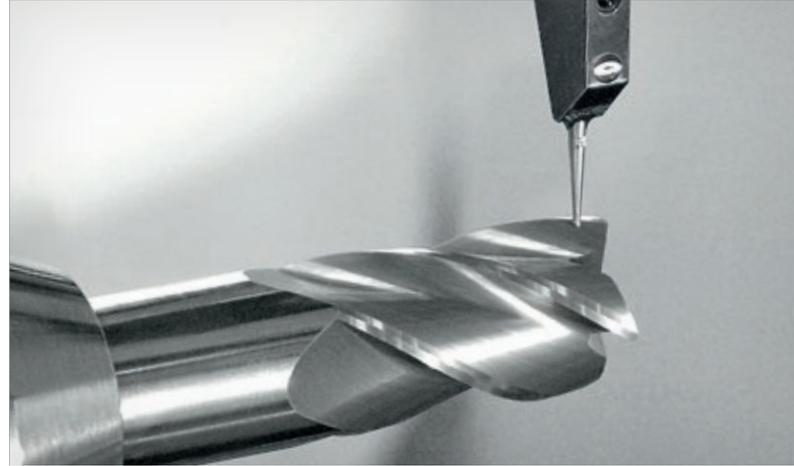
- Determination of the rake angle, the outer diameter and the core diameter for cylindrical tools
- Tactile measuring system for fully automatic tool positioning
- Fully automatic thermal profile compensation for the linear axes

Integrated Measuring System IMS

With the integrated IMS measurement system, the outside diameter, rake angle and core diameter can be measured using the probe ball without having to unclamp the tool. By setting the tolerances, HELITRONIC TOOL STUDIO can compensate for any deviation of the measured values, e.g. by thermal growth or wheel wear-and-tear, and adjust to the nominal measure and thus prevent scrap. The operator no longer needs to make active adjustments and the dressing cycle of the grinding wheels remains constant. Both increase the efficiency, especially when it comes to large-volume production.

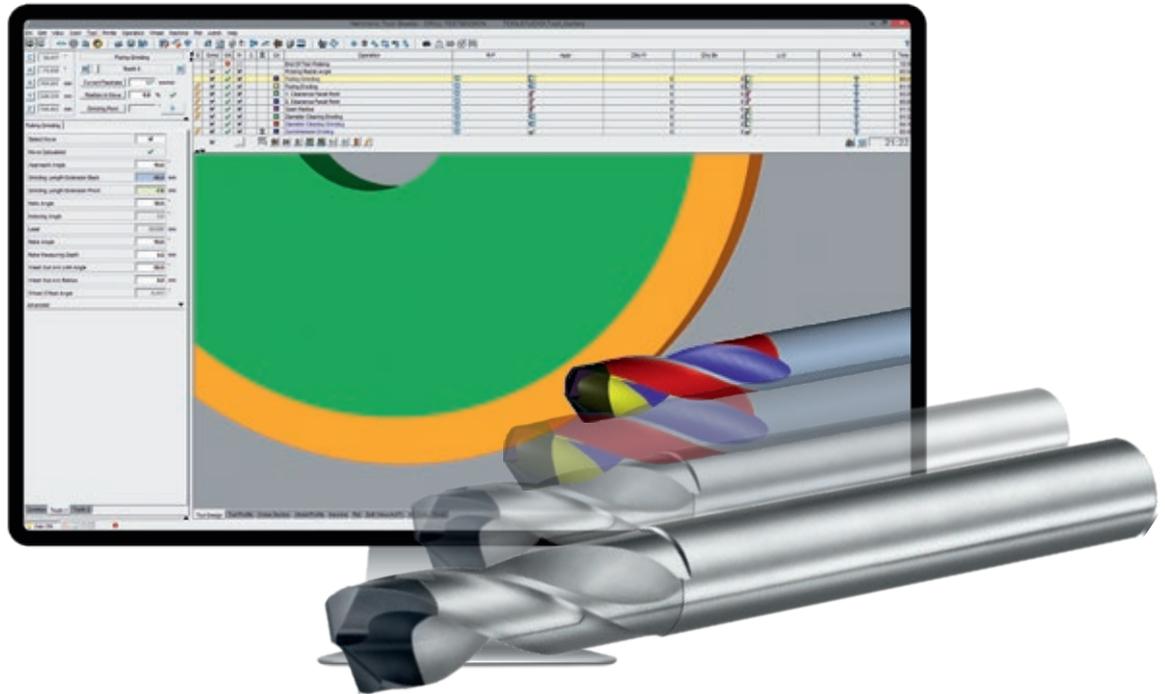
**Calibration (standard)**

Calibration consists of a calibration ball and software. It is used to automatically calibrate the X, Y and Z axes of the machine with a loader. The calibration frequency can be freely chosen in the loader program. Machines without a loading system can be calibrated manually.

**Automatic positioning and measurement system
"Heli-Probe" (standard)**

Heli-Probe records important tool parameters for a perfectly positioned tool in the shortest space of time. This is the best precondition for quick and accurate grinding, quality and productivity.

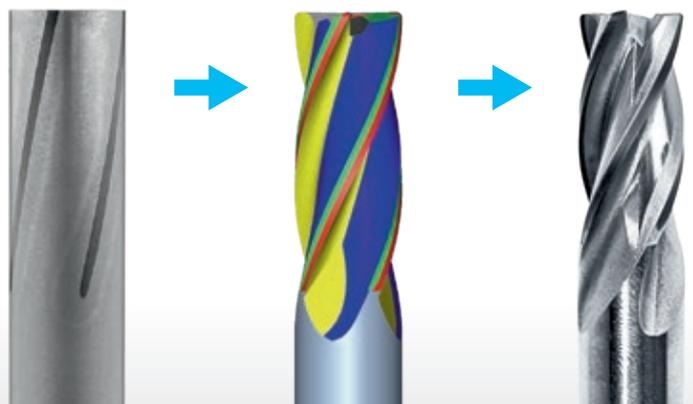
HELITRONIC TOOL STUDIO WITH LICENCE EROSION



- Time savings through comprehensible and simple operation
- Simulation of grinding and/or eroding operations directly on the machine or at the PC workstation
- High-precision integrated 3D-Live-Simulation – Real-time depiction of all parameter changes
- Click & Edit – simple selection of operations by clicking directly on the simulation model
- Flexible modular system – freely combinable and extendible operations for future further developments

Easy design of PCD tools with HELITRONIC TOOL STUDIO

“What you see is what you grind” – This is the motto for grinding with the HELITRONIC TOOL STUDIO. If one would like to describe the advantages of Licence Erosion in a single sentence, then the best choice would be: “What you can grind, you can also erode”. Thanks to the wizard technology, the operator needs only a few mouse clicks for the production of a perfect PCD tool: Design, programming, simulation and production.



FINE PULSE TECHNOLOGY

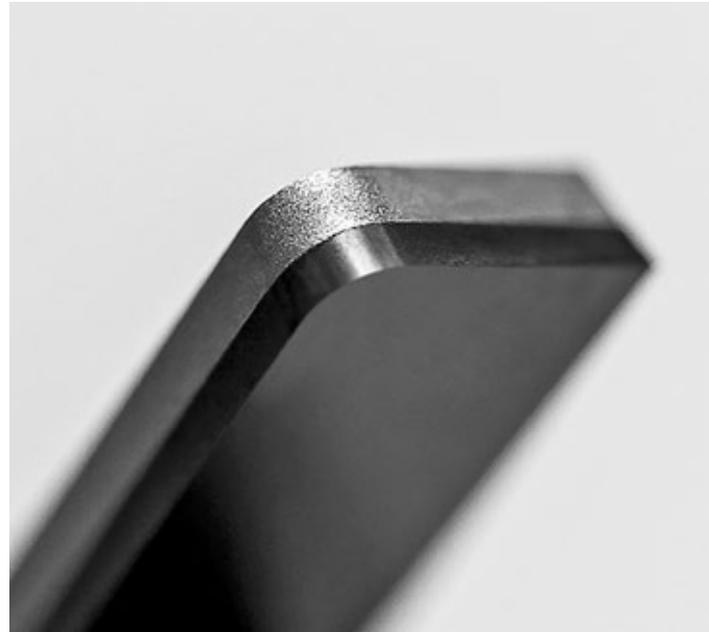
TOP SURFACE QUALITY – TOP CUTTING EDGE

FINE PULSE TECHNOLOGY –

Visible improvement with the naked eye

The "FINE PULSE TECHNOLOGY" sets new standards in terms of the surface quality, cutting edge roughness and process reliability of PCD tools. It is based on a liquid-cooled generator with increased pulse frequency. This is now standard equipment in all two-in-one eroding and grinding machines of WALTER.

The difference to the other tools on the market can even be seen with the naked eye on the most common PCD types with 10 µm grain size. A tool produced with "FINE PULSE TECHNOLOGY" on a WALTER eroding machine shines on its free surface, similar to a polished (ground) tool.



- Greatly improved surface quality
- Perfect blade edge quality
- High process reliability even with difficult-to-erode PCD
- Maximum flexibility with different types of tools
- Short machining times
- Latest state-of-the-art technology
- Optimisation possibilities with all generator codes
- Savings potential in the production chain of PCD tools





CUSTOMER CARE

WE ARE HERE FOR YOU!

WALTER and EWAG deliver systems and solutions worldwide for all areas of tool machining. Our claim is based on ensuring maximum availability of our machines over their entire service life. For this we have thus bundled numerous services in our Customer Care program.

Our products are designed to meet customer demands for as long as possible, they are intended to operate efficiently, reliably, and be available at any time.

From "Start up" through to "Retrofit" – our Customer Care is there for you throughout the working life of your machine. For this reason, you can rely on competent HelpLines worldwide and Service Engineers near you:

- We will provide you with fast, straight-forward support.
- We will help to increase your productivity.
- We work professionally, reliably and transparently.
- We will provide a professional solution to your problems.

UNITED GRINDING DIGITAL SOLUTIONS™

We develop solutions to support you in simplifying processes, boosting your machines' efficiency and increasing overall productivity under the "UNITED GRINDING Digital Solutions™" brand.

We are continuously expanding our solution portfolio in the key areas of CONNECTIVITY, USABILITY, MONITORING, and PRODUCTIVITY to make your work in the digital age significantly easier.

Find out more about UNITED GRINDING Digital Solutions™ services on our website in the Customer Care section.



Start up

Commissioning
Extension of the guarantee



Qualification

Training
Product support



Prevention

Maintenance
Inspection



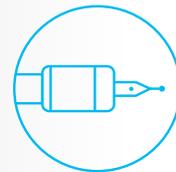
Service

Customer service
Customer advice
Helpline



Digital Solutions

Remote Service
Service Monitor
Production Monitor



Material

Spare parts
Replacement parts
Accessories



Rebuild

Machine overhauling
Refurbishing of assemblies



Retrofit

Conversions
Retrofitting parts

TECHNICAL DATA, DIMENSIONS

MECHANICAL AXES

| | |
|------------------------------|---------------|
| X axis | 320 mm |
| Y-axis | 200 mm |
| Z-axis | 470 mm |
| Rapid traverse speed X, Y, Z | max. 15 m/min |
| C axis | ± 200° |
| A-axis | ∞ |
| Linear resolution | 0,0001 mm |
| Radial resolution | 0,0001° |

GRINDING SPINDLE DRIVE

| | |
|------------------------------|--------------|
| Max. grinding wheel diameter | 150 mm |
| Grinding spindle speed | 0–10.500 rpm |

HELITRONIC DIAMOND with belt-driven spindle (standard)

| | |
|------------------|--------|
| Spindle ends | 2 |
| Tool holder | HSK 50 |
| Peak power | 9 kW |
| Spindle Diameter | 80 mm |

OTHERS

| | |
|----------------------------------|------------------|
| Machine weight | approx. 3,300 kg |
| Power consumption at 400 V/50 Hz | approx. 25 kVA |

TOOL DATA ¹⁾

| | |
|--|--------------|
| Min. tool diameter | 1 mm |
| Max. tool diameter (vertical) | 165 mm |
| Max. complete processing tool length ²⁾ | 185 mm |
| Max. tool length for face grinding/peripheral grinding ²⁾ | 185 (225) mm |
| Max. workpiece weight | 30 kg |

OPTIONS

Coolant system

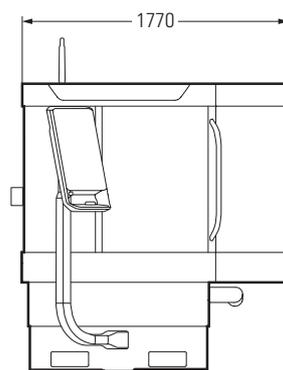
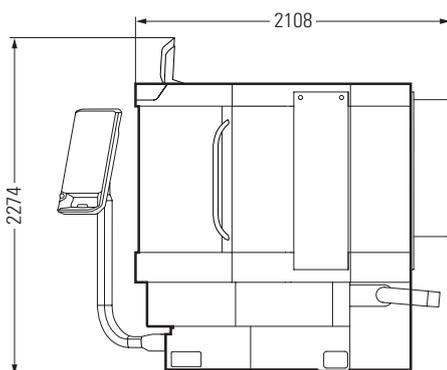
On request – several types are possible

Loading systems

Top loader, robot loader

Others

Torque motor C-axis; Glass scales, steady rests; Walter Window Mode software; Automatic grinding wheel measurement; Automatic, electrical measurement of the machine reference, etc.



HELITRONIC DIAMOND EVOLUTION

Dimensions in mm. Options, accessories or open doors can increase the dimensions of the machine. Subject to modifications due to technical progress and errors. No guarantee is provided for this information.

¹⁾ The maximum tool dimensions depend on the type of tool and its geometry, as well as the type of machining.

²⁾ From theoretical taper diameter of the workpiece holder.

CREATING TOOL PERFORMANCE

We are a global leader among market-oriented technology and service companies, and a system and solution partner for all areas of tool machining. Our range of services is the basis for innovative machining solutions for practically all tool types and materials typical for the market with a high degree of added value in terms of quality, precision, durability and productivity.



GRINDING

Grinding of rotation-symmetrical tools and workpieces, as well as indexable inserts

| Machines | Use Materials | Tool dimensions ¹⁾ max. length ²⁾ / diameter |
|-------------------------|--|---|
| HELITRONIC G 200 | P R HSS HM C/K | 235 mm / Ø 1 – 125 mm |
| HELITRONIC MINI PLUS | P R HSS HM C/K CBN | 255 mm / Ø 1 – 100 mm |
| HELITRONIC RAPTOR | P R HSS HM C/K CBN | 280 mm / Ø 3 – 320 mm |
| HELITRONIC POWER 400 | P R HSS HM C/K CBN | 520 mm / Ø 3 – 315 mm |
| HELITRONIC VISION 400 L | P R HSS HM C/K CBN | 420 mm / Ø 3 – 315 mm |
| HELITRONIC MICRO | P HSS HM C/K CBN R HSS HM C/K CBN | 220 mm / Ø 0.1 – 12.7 mm 220 mm / Ø 3 – 12.7 mm |

| Machines | Use Materials | Indexable insert ¹⁾ Inscribed circle/ circumscribed circle |
|--------------|---|---|
| COMPACT LINE | P R HSS HM C/K CBN PCD | Ø 3 mm / Ø 50 mm |



EROSION

Eroding and grinding of rotation-symmetrical tools

| Machines | Use Materials | Tool dimensions ¹⁾ max. length ²⁾ / diameter |
|---------------------------------|---|---|
| HELITRONIC DIAMOND EVOLUTION | P R HSS HM C/K CBN PCD | 185/255 mm / Ø 1 – 165 mm |
| HELITRONIC RAPTOR DIAMOND | P R HSS HM C/K CBN PCD | 270 mm / Ø 3 – 400 mm |
| HELITRONIC POWER DIAMOND 400 | P R HSS HM C/K CBN PCD | 520 mm / Ø 3 – 380 mm |
| HELITRONIC VISION DIAMOND 400 L | P R HSS HM C/K CBN PCD | 420 mm / Ø 3 – 315 mm |



LASER

Production of tools with laser

| Machines | Use Materials |
|--------------|--|
| VISION LASER | P HM PCD CVD-D MKD/ND |



MEASURING

Contact-free measurement of tools, workpieces and grinding wheels

| Machines | Use E _{UX,MPE} -value | Tool dimensions ¹⁾ max. length ²⁾ / diameter |
|---------------------|----------------------------------|---|
| HELICHECK ADVANCED | M (1.8 + L/300) µm | 420 mm / Ø 1 – 320 mm |
| HELICHECK PRO | M (1.2 + L/300) µm | 300 mm / Ø 1 – 200 mm |
| HELICHECK PRO LONG | M (1.2 + L/300) µm | 730 mm / Ø 1 – 200 mm |
| HELICHECK PLUS | M (1.2 + L/300) µm | 300 mm / Ø 0.1 – 200 mm |
| HELICHECK PLUS LONG | M (1.2 + L/300) µm | 730 mm / Ø 0.1 – 200 mm |
| HELICHECK NANO | M (1.2 + L/300) µm | 120 mm / Ø 0.1 – 16 mm |
| HELICHECK 3D | M (1.8 + L/300) µm | 420 mm / Ø 3 – 80 mm |



AUTOMATION

Solutions for complete tool production: From loading systems that are integrated into the machine's working area to robot loaders and ATP- Automated Tool Production, our innovative solution for networking grinding, eroding and measuring machines from WALTER.



SOFTWARE

The intelligence of tool machining and measuring for production and regrinding



CUSTOMER CARE

Comprehensive range of services

¹⁾ The maximum tool dimensions depend on the type of tool and its geometry, as well as the type of machining.

²⁾ From theoretical taper diameter of the workpiece holder.

Use: **P** Production **R** Regrinding **M** Measuring

Materials: **HSS** High speed steel **TC** Tungsten carbide **C/C** Cermet/ceramics **CBN** Cubic boron nitride **PCD** Polycrystalline diamond

CVD-D Chemical vapour deposition **MCD/ND** Monocrystalline diamond/natural diamond

WALTER MASCHINENBAU GMBH

WALTER has produced tool grinding machines since 1953. Today, our product range is supplemented by tool eroding machines and fully automated CNC measuring machines of the HELICHECK series for contactless complete measurement of tools and production parts.

Our customer focus and our global sales and service network of company-owned locations and employees has been appreciated by our customers for decades.

Walter Maschinenbau GmbH is a company of the UNITED GRINDING Group. Together with EWAG, we consider ourselves to be a supplier of systems and solutions for the complete machining of tools and can offer a wide range of products, including grinding, eroding, laser machining, measurement and software.



Grinding



Eroding



Laser



Measuring



Automation



Software



Customer Care



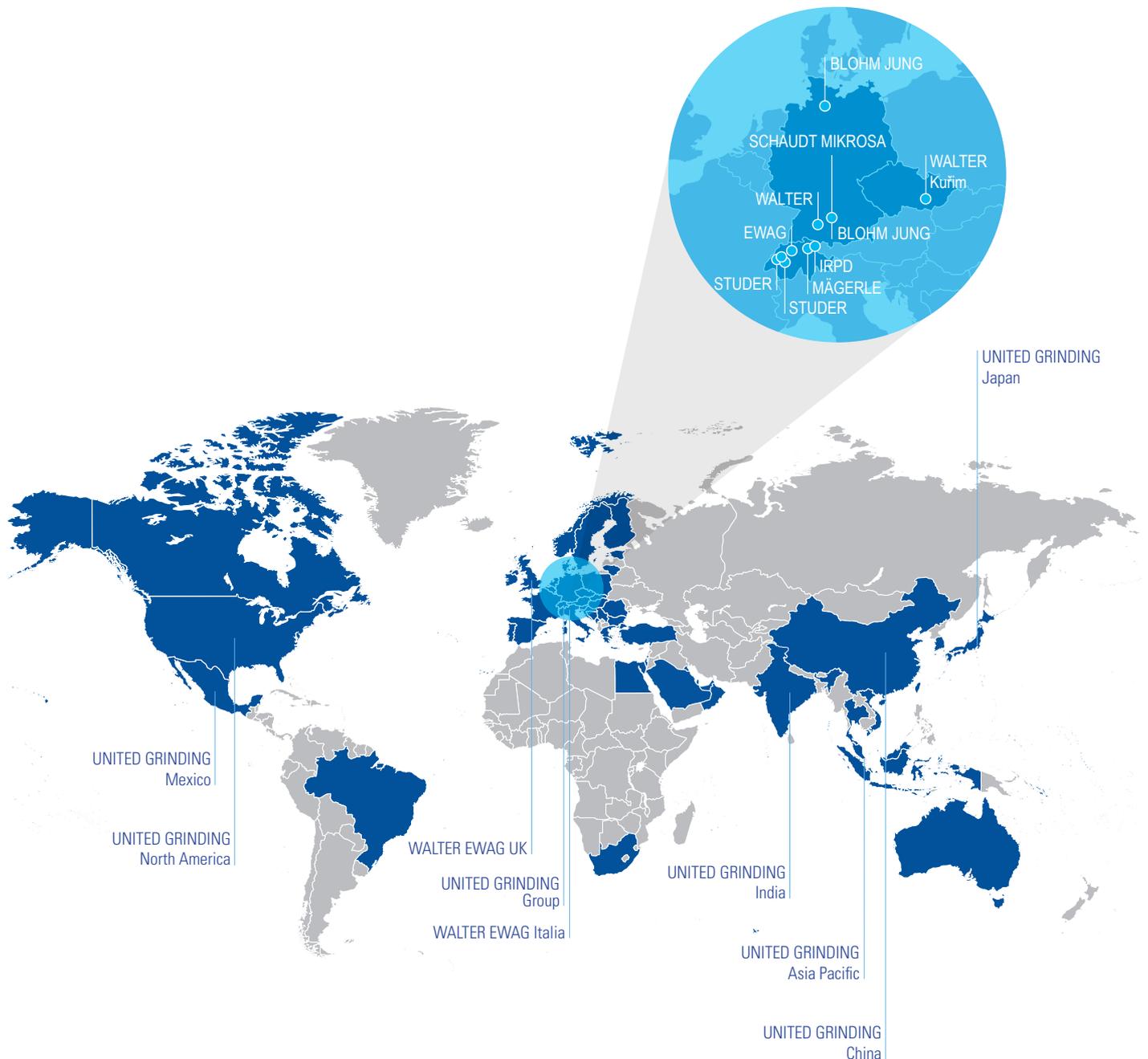
ABOUT US

UNITED GRINDING GROUP

UNITED GRINDING Group is one of the world's leading manufacturers of grinding, eroding, laser, and measuring machines, as well as machine tools for additive manufacturing. With roughly 2.300 employees at more than 20 manufacturing, service, and sales locations, the group is organized in a customer-oriented and efficient way.

Through its MÄGERLE, BLOHM, JUNG, STUDER, SCHAUDT, MIKROSA, WALTER, EWAG, and IRPD brands, as well as competence centers in America and Asia, UNITED GRINDING offers broad application expertise, a large product portfolio, and a full range of services for the production of high-precision components.

“We want to make our customers even more successful – UNITED FOR YOUR SUCCESS”





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