



INSERT LINE

High-speed peripheral grinding machine for productive indexable insert manufacturing



KÖRBER
SCHLEIFRING

Creating Tool Performance

INSERT LINE – Pure dynamics – precision and productivity redefined





High-end 4-axis peripheral grinding machine for highly productive indexable insert manufacturing

The most modern drive and control technology, based on the tried-and-trusted Studer non-circular grinding, was adapted to indexable insert grinding with the wheel periphery. The resulting line contact between the grinding wheel and the workpiece reduces the contact zone and improves the cooling lubricant supply, thus also reducing heat input and, lastly, resulting in higher feed rates.

At the same time, the grinding wheel diameters of up to 500 mm support the new HSM grinding technology of the INSERT LINE and reduce the grinding time by up to 50 percent, depending on the indexing insert applications, compared to conventional peripheral grinding processes. The new grinding process from EWAG also achieves the highest possible form precision and cutting edge quality.

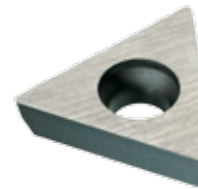
For autonomous operation, the INSERT LINE is paired with a smart integration of a robot cell and a 6-axis robot.

Tool examples

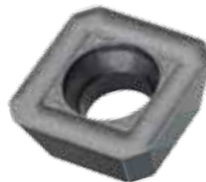
Carbide octomill insert for surface milling¹, Carbide triangle insert for general turning², Carbide quad planing insert with negative chamfer for general milling³, Carbide circular planing insert for copy milling operations⁴, Ceramic quad indexing insert for machining gray iron⁵, Carbide gear cutting indexing insert⁶



1



2



3



4



5



6

INSERT LINE – New standard for productivity



INSERT LINE with the latest technology such as hydrostatic guide systems in combination with direct drive motors ensure highest dynamics and precision. Smart integrated automation using a 6-axis articulated-arm robot optimally supports the productivity of the machine.

Innovative EWAG peripheral grinding technology



Direct drive clamping system

The new innovative clamping system allows maximum dynamics with utmost precision and is therefore predestined for efficient mass production of indexing inserts.



Direct drive dressing spindle

The direct drive dressing spindle integrated onto the rotary axis with two spindle ends is also available with two dressing wheels.



3-D measurement

New indexing inserts are oriented or measured in advance using an integrated 3-D probe directly in the clamped state with automatic software compensation.



HSM (High Speed Machining)

The resulting line contact between the grinding wheel and the workpiece reduces the contact zone and improves the cooling lubricant supply, thus also reducing heat input and, lastly, resulting in higher feed rates. The new HSM grinding technology of the INSERT LINE is optimally supported with grinding wheel diameters up to 500 mm.



Unique machine concept

The unique kinematic design with 4 CNC axes compels with high-quality modules that are optimally aligned. The productivity in the production of indexing inserts is thus raised to a new level.



Hydrostatic direct drives

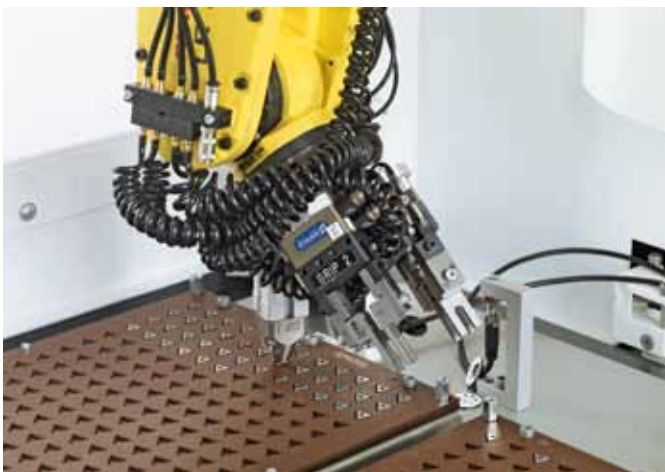
Magnetically pre-stressed hydrostatic guides, a machine bed made of Granitan and modern direct drives on all axes guarantee the highest precision, process reliability and ensure unique dynamics.

EWAG Tooling – Experience and expertise in tool handling



Robot cell

The proven EWAG rotary drum solution for robot integration allows shortest changeover times and thus optimally supports the high productivity of the machine. Indexing inserts are passed by the robot gripper directly to the clamping station. This precise loading action is also supported by a prism guide integrated in the clamping station.



Triple gripper

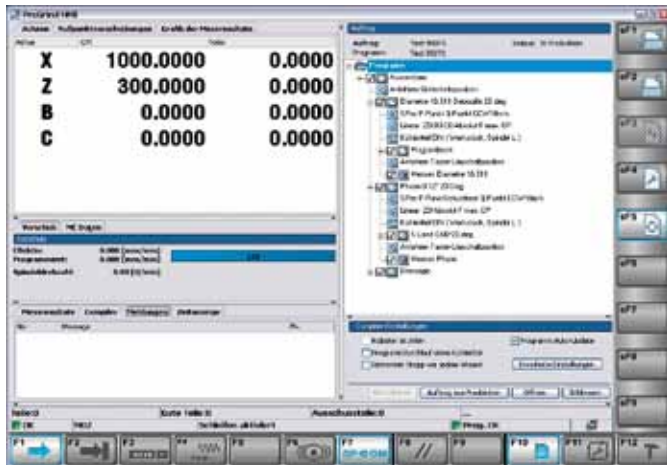
The triple gripper on the Fanuc robot increases the flexibility of the automation even further. For example, indexing inserts can first be picked up from an unoriented insert grid by a magnetic gripper and then passed to a centering station.



Custom Tooling Solutions

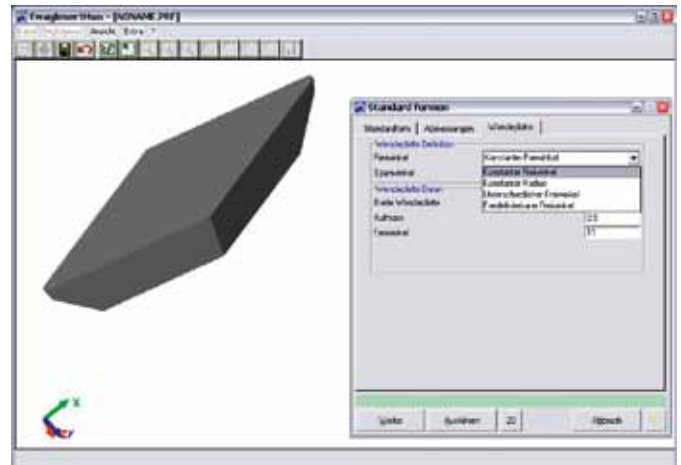
Flexible tooling solutions, from reclamping stations, cleaning stations to optional Laser marking of tools, can be integrated in the robot cell and thus offer the greatest possible customer value.

EWAG ProGrind HSM – High Speed Machining, as quick as it gets!



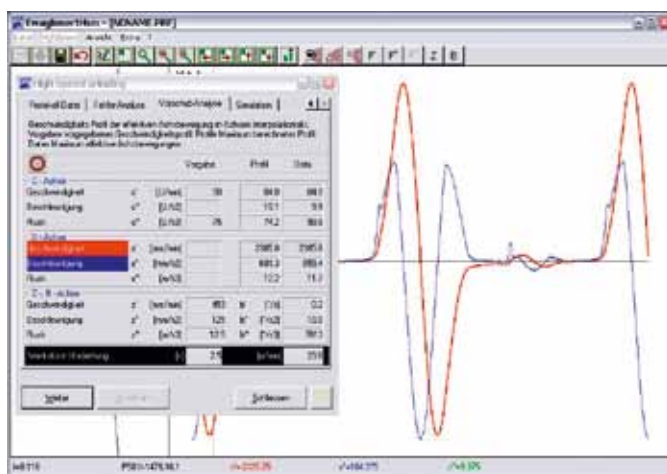
Human machine interface

The human machine interface (HMI) installed on all EWAG CNC machines is provided with all relevant data views. Softkeys allow for easy operation of the machine.



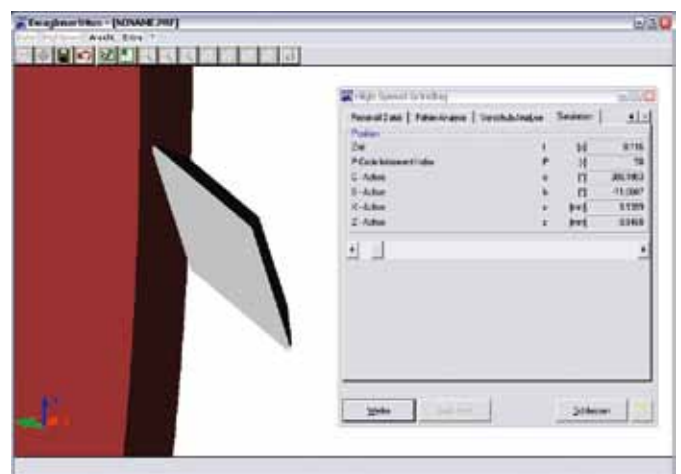
ISO standard shapes

Programming of ISO geometric shapes with the associated variable and constant clearance angles can be easily selected via input screens. The setup effort is thus reduced to an absolute minimum.



Analysis tool

With the integrated HSM analysis tool, the speed profile of the effective axis movements can be tested and optimized by the user, if necessary.



3-D simulation

For advance visualization of the grinding program, a 3-D grinding simulation can be run that displays the grinding results and the wheel engagement.

FANUC control 31i – Highest reliability and availability



With the FANUC control 31i-A, EWAG offers users a maximum degree of availability and reliability. Also for automation, EWAG relies on the versatile robot control 200iB.

Technical specification of the machine control Control 31i-A

- PC Pentium M, 1.6 GHz, 512 MB RAM, PCI bus
- Operating system Windows XP Professional
- 15-inch TFT color monitor, including touchscreen
- 2.5" IDE hard drive, 40 GB
- 4 USB 2.0 ports
- RJ45 network connector
- Internet remote maintenance NTR

Technical specification of the robot system Control R-30iA Mate Robot LR Mate 200iC

- incl. i pendant
- HSCD to Fanuc robots
- Robot interface runtime license
- Compact flash PC card adapter
- CFC 2 GB

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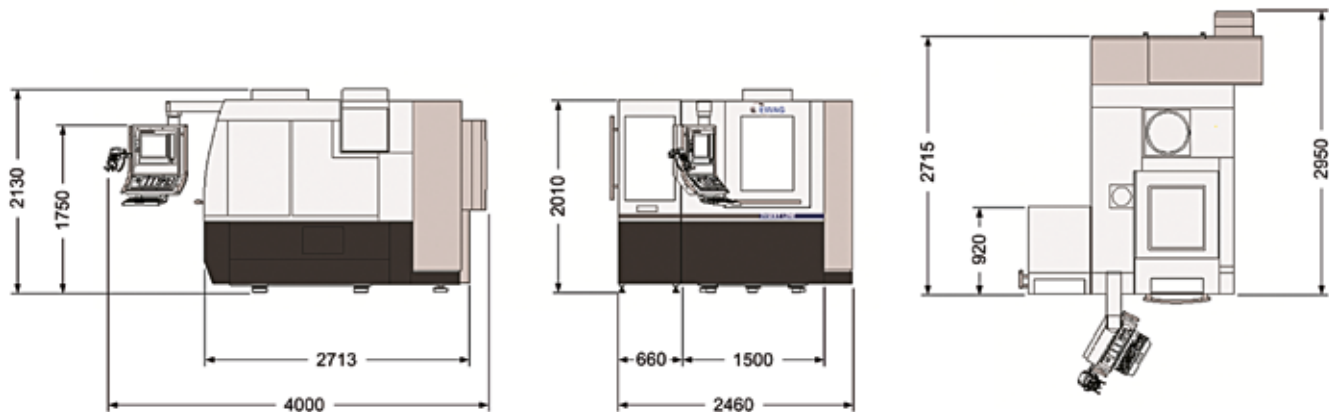
Technical data, dimensions

INSERT LINE

Axes	
X-axis, hydrostatic guide	500 mm
Z-axis, hydrostatic guide	350 mm
Rapid traverse rate X, Z	30 m/min
B-axis	+45 bis -210 °
C-Axis	∞
Accuracy	
Linear resolution	0,00001 mm
Rotary resolution	0,0001 °
Grinding spindle	
Drive power	7.5/12 kW
Spindle speed range	0-3200 min ⁻¹
Max. grinding wheel diameter	500 mm
Dressing spindle (optional)	
Drive power	400 W
Spindle speed range	0-7000 min ⁻¹
Max. wheel diameter	150 mm
Spindle ends	2

Power requirements	
Connected load/nominal current	28/40 kVA
Fuse	50 A
Mains voltage	400/50 VAC/Hz
Coolant system (optional)	
Capacity	approx. 800 l
Pump capacity	approx. 80-120 l/min
Coolant pressure	approx. 8-20 bar
Weight	
Complete grinding machine (including robot cell)	approx. 8000 kg
Coolant system	approx. 750 kg
Direct drive clamping system	
Clamping pressure	1'000–10'000 N
Min tool spindle inner circle	3 mm
Max tool spindle outer circle	90 mm

Specifications subject to changes in the interests of technical progress.
No liability is accepted for any information provided.



Dimensions in mm.

Creating Tool Performance: WALTER EWAG. The system and solution partner with the complete package for the entire range of tool machining.

Technology Spectrum

Access to world-leading technologies in

- Grinding
- Electro-erosion machining
- Laser machining
- Metrology

forms, in conjunction with intelligent software packages, the basis for creative machining solutions with high added value. In close partnership with our customers, precision, quality and productivity are always at the center of our attention.

Services

To leverage the potential of a machine within a machining solution and to ensure its high availability, service and support are indispensable.

From a comprehensive range of services, such as

- commissioning
- training
- spare parts supply
- teleservice

tailored service packages are created for each solution or each customer.

Application Know-how

Many decades of experience and a multitude of successful application solutions make WALTER EWAG a competent partner who closely understands the demands of the industry. On this basis, by the interplay of technology, application and services, we develop comprehensive solutions that demonstrate new approaches and redefine the boundaries of what is possible.

WALTER EWAG worldwide:

2 production sites, 3 technology sites, 11 own sales and service locations from which our customers worldwide are served.



The WALTER EWAG CNC machine range

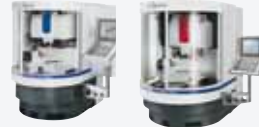


Grinding of rotation-symmetrical workpieces

Universal grinding machines for the production and resharping of micro-tools to cutters.



- WALTER Helitronic Basic
- WALTER Helitronic Micro



- WALTER Helitronic Mini Power
- WALTER Helitronic Power



- WALTER Helitronic Vision
- EWAG EWAMATIC LINE

Grinding of indexable inserts

Universal grinding machines for the production of indexable inserts made of tungsten carbide, cermet, ceramics, PCBN and PCD.



- EWAG EWAMATIC LINE



- EWAG COMPACT LINE



- EWAG INSERT LINE

Electro-erosion machining

Maximum flexibility even for PCD-/CBN-/carbide and HSS-tools:
Grinding and Eroding with one setting.



- EWAG EWAMATIC LINE



- WALTER Helitronic Diamond



- WALTER Helitronic Power Diamond

Laser machining

High-end laser machining center for precision contour machining and production of complex 3-D cavities in one setup.



- EWAG LASER LINE

Measuring

The standard for measuring of tools, production parts and grinding wheels.
Measuring accuracies of up to $E1 = (1.4+L/300)$ μm (L=measuring length in mm, in accordance with VDI/VDE 2617). Smaller E1 values on request.



- WALTER Helicheck Plus
- WALTER Helicheck Pro



- WALTER Helicheck Basic 2
- WALTER Helicheck Basic 3



- WALTER Heliset Uno



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