



EAGLE

PRECISION Line

EAGLE G5
PRECISION



EAGLE G5 Precision



Specification		EAGLE G5 Precision
Work tank [W x D x H]	mm	770 x 670 x 440
Dielectric oil height	mm	375
Work tank design		Rise and fall tank – filled movable
Travels [X x Y x Z]	mm	525 x 400 x 450 (inside the work tank)
Table [W x D]	mm	750 x 650
C-Axis		Standard, 1 – 20 min ⁻¹
Tool changer		Plate magazine, 20 (30) positions
Head load	kg	100
Table capacity	kg	1.000
Distance electrode clamping system / table min./max.	mm	135/585
Control		PowerSpark One
Generator		PowerSpark
Drives		digital AC-Servo-Motors



- Innovative new development based on the GANTRY EAGLE series
- **New:**
 - Highly accurate precision package
 - Complete control and drive package from a single source
 - Generator "Fine-Finishing" module for absolutely homogeneous surfaces
 - Programming system - PowerSpark Editor
- **New precision package**
 - Head and spindle nut cooling by a controlled water circuit
 - Thermal concept work tank / basis
 - Active temperature control for high thermal stability
 - Precise control of the dielectric temperature ± 0.1 ° C
- **Thus maximum precision on the workpiece**
 - New PowerSpark control technology
 - Control and drive package from a single source
 - New handheld - PowerSpark Handheld
 - New programming software - PowerSpark Editor
 - Newly developed PowerSpark generator for finest, homogeneous surfaces

Unique machine design



- Fully encapsulated machine
- Active temperature control
- Gantry design for highest precision <math><5\mu\text{m}</math> on the workpiece
- Thermo-symmetric design with unique temperature compensation
- Fully integrated dielectric-tank for highest temperature stability
- Small footprint – large travels
- Fully automatable

Optimal accessibility – excellent operability



Touch guard down



Cover backened

- Possible loading from several sides
- Compact automation solution
- No limitation of accessibility
- Complete reduction of safety guard
- Complete retraction of machine head



Design – Basics

- Gantry type portal design
 - Machine bed as a multifunctional unit to for the table, portal guides, tank drive and dielectric supply including filter system
 - Integrated, room temperature-based regulation of the dielectric (± 0.1 ° C)
 - High thermal stability in the base due to the temperature-controlled dielectric
- **This makes it very temperature-stable and less prone to temperature fluctuations within the workshop**



Design – Portal



- High-precision MONORAIL linear guides from SCHNEEBERGER
 - HEIDENHAIN glass scales in all axes for maximum precision
 - Offset arrangement of the linear guides in the X-axis
 - This makes it very stable, reliable and precise against forces from all directions
 - Directly coupled AC servo motors
- **For high machine accuracy under workshop conditions**

Design – Z-Axis

- Highly dynamic working axis
- High acceleration: 1.4G dynamics
- High interval speed of up to 18 m / min
- Optimal flushing and suction effect for the fastest progress in erosion
- Integrated C-axis with interface to all common clamping systems
- Up to 100 kg head load



Z-Achse – *EAGLE POWER JUMP* – 18 m/min



- Increase in efficiency
 - Reduction of processing-times
 - Increased machining-times
 - Reduced dead-times
- **Optionally also for 3D machining in free space and for line erosion**

Z-Achse – *EAGLE POWER JUMP PLUS* – 5 m/min

- *EAGLE POWER JUMP PLUS* in X and Y axes (optional)
- Efficient interval speed of 5 m/min, also free in space



Design – Work tank



- Stable columns for high workpiece loads
- Special, maintenance-free felt seal for a long service life
- Lowerable work tank
- Tank drive by precision ball screw drives and backlash-free and maintenance-free toothed belts
- Automatic and programmable tank height adjustment

Design – Filter system

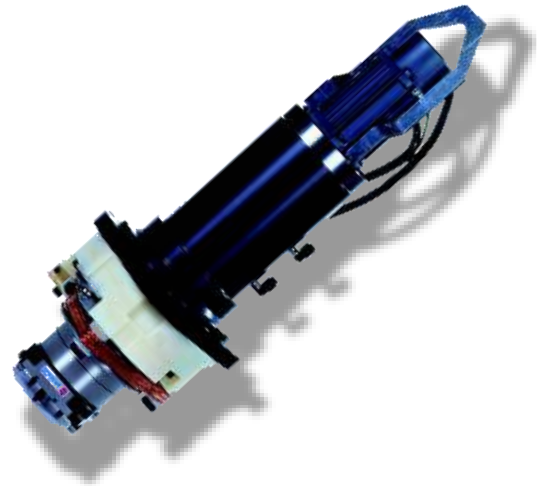


- Cartridge filter with 16 m² filter surface for long service life
- Quick release coupling
- Filters from the inside out
- Filter change easy, quick, clean and cheap
- The machine does not have to be stopped to change the filter, the filter can be changed during machining

Design – C-Axis

- Mass moment of inertia 0.4 kgm²
- Precise positioning even with larger electrodes
- Flushing through the axis
- Optimal power transmission
- With an interface for all common clamping systems

➤ **Accurate - stable - reliable**



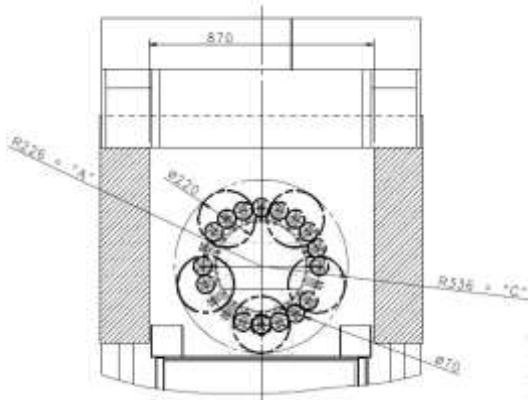
Tool changer 20/30 positions

- 20 positions as standard tool changer
- Direct pick-up, change without transfer unit
- 30 positions tool changer as option
- Can be mixed with large and small electrodes
- Best accessibility
- For all common clamping systems
- Optional with Chipldent





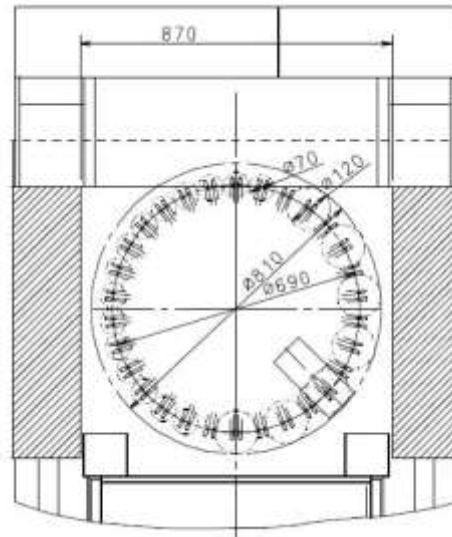
Tool changer 20 positions



- Electrode dimensions examples
- (5x) Ø 220 x 200 mm
- (20x) Ø 70 x 200 mm
- Weight per slot: max.15kg
- Total weight in the magazine: max. 60kg

Tool changer 30 positions

- Electrode dimensions examples:
- (15x) Ø 120 x 200 mm
- (30x) Ø 70 x 200 mm
- Weight per slot: max. 15kg
- Total weight in the magazine: max. 100kg





EAGLE PowerSPARK One – new control technology

- State-of-the-art hardware with revolutionary power enables complex machining cycles
- New and future-proof hardware architecture
- New orbit strategies with “Clean-Finish-Step” for absolutely homogeneous surfaces
- Integrated security technology
- 22 “touchscreen



- Clearly designed
- Main functions at a glance
- Simple operation via touchscreen

- **The most important operating functions are easily accessible via the 22 “touchscreen**

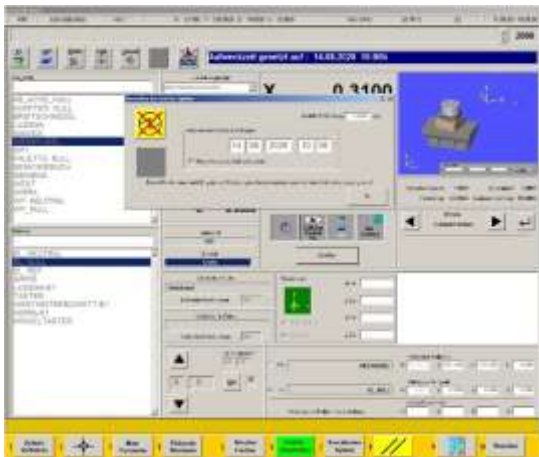
- Open / close touch guard
- Select head chuck
- Open / close table chuck
- Switch on pressure and suction flushing
- Set the flush volume
- Referencing the axes
- Fill the work tank
- Switch the filling pump on and off
- Turn the tool changer



- Maximum ease of use
- Designed for easy one-handed operation
- A few clicks per function
- Multi-axis jogging
- Storage directly on the machine table

➤ **Work easier and faster**

EAGLE PowerSPARK One – EcoTec



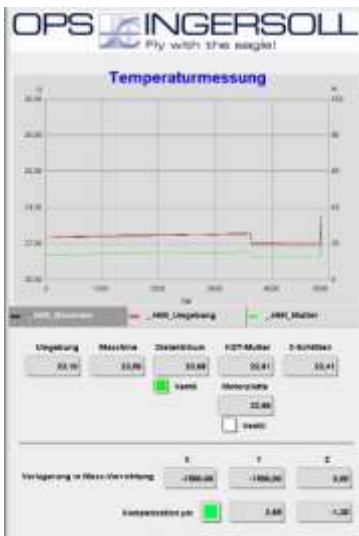
- Reduction of energy consumption during downtimes to a minimum
- Almost all electrical consumers except the CNC are switched off
- Optionally, the machine can be switched off at the end of the program in stand-by mode
- A pre-selectable switch-on time for "warming up" the machine makes the machine available right at the start of work

▪ **Optionally with energy consumption visualization:**

1. Voltage
2. Electricity
3. Apparent power
4. Real power
5. Reactive power
6. Active power factor



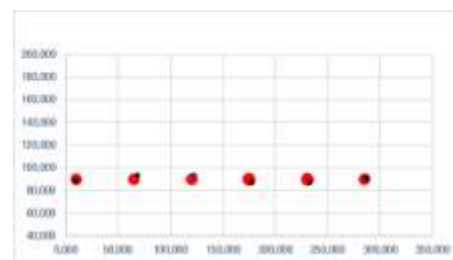
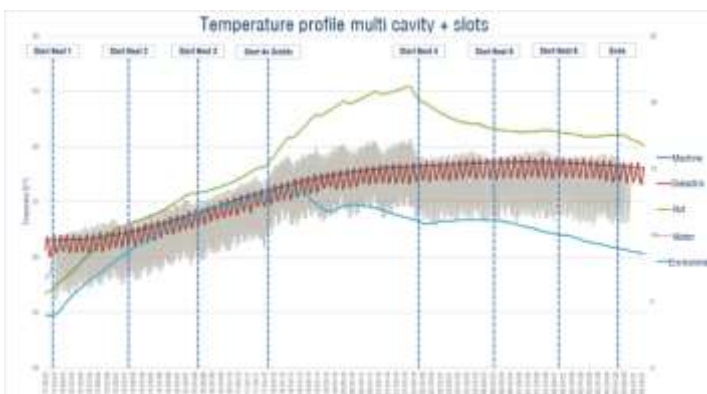
EAGLE PowerSPARK One – Temperature control



- Visualization of the temperature monitoring
- Display of all relevant data such as:
 1. Ambient temperature
 2. Machine temperature
 3. Dielectric temperature
 4. Temperature of the ball screw nut
 5. X-slide temperature
 6. Motor plate temperature
 7. Current compensation

Highest temperature stability

- Highest precision and best processing results
- Although temperature deviation in the shop and due to the process
- Best thermic stability due to the active temperature control



Measurement results shown overstated. 1 mm = 1µm deviation

- Target position Ø 5 µm
- Measuring result

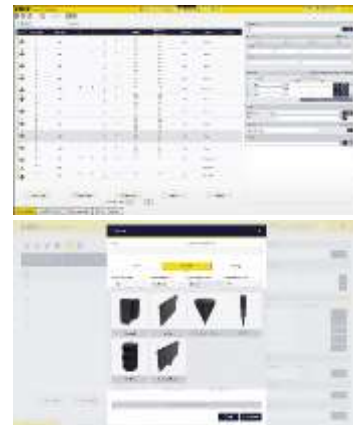
EAGLE PowerSPARK – Generator PT 60



- New PowerSPARK current form without capacitor stages
- Never-seen surfaces, even with large components
- New PowerSPARK pulse generation in the nanosecond range
- Starting with a minimum undersize of 0.02 mm / S is possible
- New, extremely fast control with short pulses
- Eagle PowerSPARK fine finishing package (OKL <VDI 8)
- Up to 50% less wear during finishing (VDI 30 - 16)

PowerSPARK Editor

- New programming software
- Newly defined user friendliness
- Easy creation and adaptation of large programs
- Short loading times
- Handling of programs with many cavities and electrodes
- Clever tools for multi-cavity processing
- Interface for data transfer from CAD / CAM systems
- Optimal electrode and workpiece management

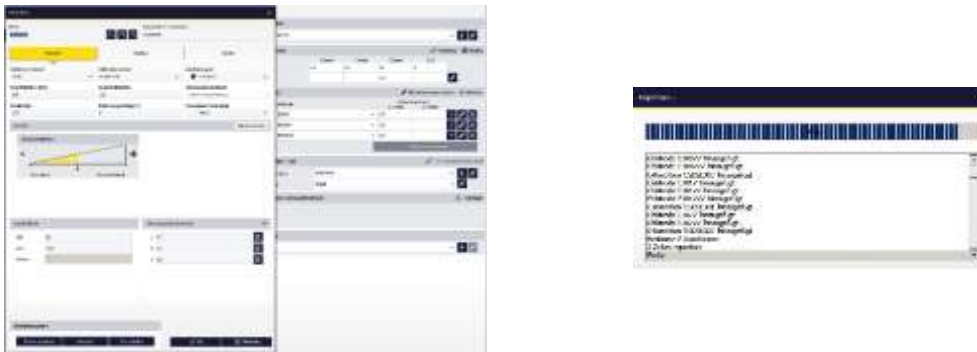


PowerSPARK Editor – CAD/CAM Import function



- Important technology information can be exported directly from CAD / CAM to a file
- This file can be loaded directly into the PowerSPARK editor using the import function
- Import filter for all common CAD / CAM systems

PowerSPARK Editor – CAD/CAM Import function



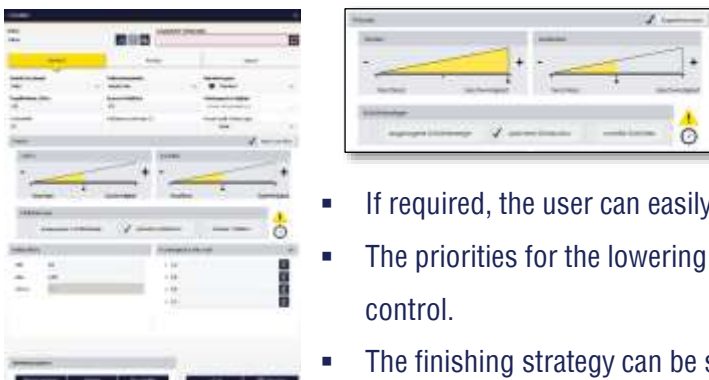
- The technology data known from the file such as:

- Engagement surface
- Eroding depth
- Eroding position
- Undersize
- Draft angle
- VDI
- Workpiece material
- Electrode material
- orbit

are automatically assigned to the correct position

- The import function almost completely eliminates errors caused by “typing”
- Programming is greatly simplified and much faster
- A consistency of the correct data from CAD to the eroding process is guaranteed by paperless working

PowerSPARK Editor – E-conditions



- If required, the user can easily edit the data.
- The priorities for the lowering and deflecting mode can be easily set using the slide control.
- The finishing strategy can be set with a click of the mouse.

The separate selection of the priority for sinking and deflecting allows to react more flexibly to the special features of an eroding application.

Summary - Innovative new development



- **New precision package**
 - Head and spindle nut cooling by a controlled water circuit
 - Thermal concept work tank / basis
 - Active temperature control for high thermal stability
 - Precise control of the dielectric temperature $\pm 0.1 \text{ }^\circ \text{C}$

- **Complete control and drive package**

- **Generator "Fine-Finishing" module**
 - New PowerSPARK current type without capacitor stages
 - New PowerSPARK pulse generation in the nanosecond range
 - Minimum undersize 0.02 mm / S possible
 - New, extremely fast control with short pulses
 - Eagle PowerSPARK fine finishing package (OKL <VDI 8)
 - Up to 50% less wear during finishing (VDI 30 - 16)

- **This makes it extremely economical by saving electrodes**

- **Programming station - PowerSpark Editor**
 - New programming software
 - Newly defined user-friendliness
 - Easy creation and adaptation of large programs
 - Very fast loading times
 - Easy and quick handling of programs with many cavities and electrodes
 - Clever tools for multi-cavity processing
 - Interface for data transfer from CAD / CAM systems



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