The Cutting Edge in PCD Tool Manufacture
The Cutting Edge in PCD Tool Manufacture

The new ANCA EDGe erosion and tool grinding machine gives you the flexibility to erode PCD tools AND grind carbide and HSS tools in one simple set-up. With its double ended wheel spindle, the ANCA EDGe is suitable for both the complete manufacture and resharpening of all tool types.

With the ANCA eSpark generator at its core, the EDGe is one of the most innovative dual purpose erosion and grinding machines on the market. The ANCA Motion AMCS CNC includes lightning fast EtherCAT connectivity ensuring optimal control of the ANCA Motion AM5X servo drives and the eSpark generator.

Providing flexibility with both machine and software is what sets ANCA ahead of the competition. ANCA’s user-friendly ToolRoom software provides industry renowned tool design flexibility - from the simplest to the most challenging tasks. Incorporating ANCA’s many years of software experience, ToolRoom has a dedicated suite of erosion operations and the usual grinding software.

Overview

- Flexibility to erode AND grind on one machine
- Latest technology ANCA eSpark generator
- New ANCA Motion AM5X digital servo drives ensure each axis is highly responsive
- Industry leading ToolRoom application software
- Adaptive Spark Control intelligently adapts every spark depending on the different substrate resulting in a stronger cutting edge
- Double ended HSK erode/grind spindle
- Ultra-high speed EtherCAT communication between EDG control system and servo system
- Intelligent Adaptive Control (IAC) adjusts EDGe feedrate and gap for optimum erosion speeds
Cutting EDGe Technology

ANCA is a technology leader, with over 40 years experience building innovative and cutting edge CNC machines. This expertise has been applied to the development of the EDGe.

ANCA’s proprietary eSpark generator and the latest generation ANCA Motion AMC5 CNC control system with EtherCAT connectivity provides superior position feedback and ultra-high speed communication between the CNC and servo drives.

Intelligent Adaptive Control (IAC)

ANCA’s eSpark erosion generator automatically monitors and controls the energy level and gap distance of every spark. Its Intelligent Adaptive Control (IAC) adjusts and maintains the optimum spark gap distance based on the energy of every spark.

This is important when eroding complex geometries such as PCD veined flutes on drills and endmills. IAC also automatically adjusts the machine feedrate for optimum erosion speed. As erosion speed changes due to changes in tool geometry, the IAC optimises feedrate to account for this. This results in minimum thermal damage, superior surface finish, increased material removal rate and decreased cycle time.

Adaptive Spark Control

Another intelligent feature of the eSpark generator is the Adaptive Spark Control. This high speed feature automatically adapts the energy level of every spark based on the substrate it is eroding (e.g. PCD or carbide). Monitoring of each spark leads to less cobalt leaching, a reduction in undercut, a stronger cutting edge, and a finished tool that is less prone to chipping and that has a longer life.
EDGe ToolRoom Software

Increased flexibility is the advantage that sets ANCA and its customers ahead of the competition. With over 40 years of tool grinding experience and industry renowned, user-friendly software ANCA machines are simple to use yet powerful enough for complex tasks.

Tool parameters are entered into the user-friendly interface with no need for time consuming programming. The machine operator is able to easily modify tool programs, adjustments to the tool geometry are simple and intuitive.

The EDGe is supplied with 10 predefined eSpark generator settings that make set-up quick and easy. Users are also able to define their own ‘custom’ generator settings and save these for future use.

Other features include:

- Quick set-up
- Ability to customise passes per operation
- Predefined erosion parameter sets
- Real time visual erosion feedback
- Advanced erosion pages for proficient users
- Creation of custom erosion parameter sets
Applications

The ANCA EDGE provides flexibility by including the ability to Erode and Grind on one machine. It enables you to be competitive in the growing market of PCD tools required for composites and other materials used in a wide range of industries. ANCA’s user-friendly and flexible software, and the latest in erosion technology, has been applied to meet the exacting requirements needed for the manufacture of PCD tools. Below are some of the Tool Types the EDGE can manufacture.

PCD Tool Types

Milling Cutters, Reamers, Compression Routers, Roughing Mills, Hoggers & Saw Blades, Profiling Tools, Veined Spiral Drills & Endmills, Shear Cutters, Multi-Step Cutters

PCD Tools for Composites and Alloys

When manufacturing and resharpening complex and demanding PCD tools, the highest level of precision and flexibility is required. The EDGE provides:

- Latest technology eSpark Generator with Intelligent Adaptive Control PCD removal rates
- In Time Spark Adjust for the reduction of cobalt leaching and undercut
- Extended tool life and excellent surface finish < 0.2 Ra
- Workpiece length:
  - Maximum length when OD eroding: 330 mm (13”)
  - Maximum length when end-face eroding: 230 mm (9”)
- Ability to extend machine functionality with grinding applications

PCD Tools for the Wood Working Industry

ANCA’s EDGE erosion and grinding machine is ideal for the production of all Wood Working tools. It provides:

- Decreased cycle times for the erosion of brazed PCD inserts
- Efficient and quick set-up of multi-insert cutters
- A workpiece diameter up to 220 mm (8.66”)
- A workpiece weight up to 20 kg (44 lbs)
- Proven machine kinematics and spindle performance for optimum grinding of carbide/HSS
EDGe Automation

FastLoad Compact Loader

Compact in design, this loader is mounted in the EDGe machine and does not increase the machine footprint. Because it uses the existing machine axes for pallet movement and tool loading it is more affordable than other models. It provides automatic tool loading, enabling extended periods of unmanned operation for maximised productivity.

Benefits:

- Increases EDGe productivity
- Machine footprint is not increased
- Ideal for loading tools Ø2 - 20 mm (1/8 - 3/4”)
- Tool length range 30 - 150 mm (1¼ - 6”)
- Maximum head diameter Ø25 mm (1”)
- Only one gripper set is required
- 20 second loading time

LOADER CAPACITY EXAMPLES

<table>
<thead>
<tr>
<th>Tool Diameter</th>
<th>Pallet Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 mm</td>
<td>245</td>
</tr>
<tr>
<td>6 mm</td>
<td>156</td>
</tr>
<tr>
<td>12 mm</td>
<td>68</td>
</tr>
<tr>
<td>16 mm</td>
<td>42</td>
</tr>
<tr>
<td>20 mm</td>
<td>36</td>
</tr>
</tbody>
</table>

ANCA Global Support

When you buy an ANCA machine you can be confident that no matter where you are in the world, ANCA is always there to support you with our highly trained, customer focused sales and support network. The ANCA team will be your partner with application and machine support, from training right through to maintenance. Our global network of ANCA support centres includes some of the most experienced machine tool field support teams in the world.
EDGe Technical Specifications

**CNC Data**
ANCA Motion AMC5 CNC with Intel i7 core processor, 64GB SSD, 8GB DDR3 RAM, EtherCAT and USB connectivity

<table>
<thead>
<tr>
<th>Mechanical Axes</th>
<th>X-axis</th>
<th>Y-axis</th>
<th>Z-axis</th>
<th>C-axis</th>
<th>A-axis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position Feedback Resolution</td>
<td>0.0001 mm</td>
<td>0.0001 mm</td>
<td>0.0001 mm</td>
<td>0.001 deg</td>
<td>0.001 deg</td>
</tr>
<tr>
<td>Programming Resolution</td>
<td>0.0000039”</td>
<td>0.0000039”</td>
<td>0.0000039”</td>
<td>0.001 deg</td>
<td>0.001 deg</td>
</tr>
<tr>
<td>Travel</td>
<td>435 mm</td>
<td>457 mm</td>
<td>275 mm</td>
<td>320 deg</td>
<td>360 deg</td>
</tr>
<tr>
<td></td>
<td>17.1”</td>
<td>18”</td>
<td>10.8”</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Software Axes: (patented) B, V, U, W

Workpiece: Diameter 220 mm (8.66”) max., weight 20 kg (44 lb) max.

Drive System: ANCA Motion Digital AMD5X (EtherCAT standard). Linear axes direct-drive ballscrew, rotary axes direct drive

**Machine Data**
Grinding spindle: ANCA bi-directional, 8 kW (10 HP) peak power, 3.7 kW (5HP) (S1 at 6000 RPM), 10,000 RPM, integral direct drive
Grinding wheel: max. diameter 202 mm (8”)
Wheel bore: 31.75 mm (1.25”)
Wheel packs: two wheel packs with max. four wheels per pack
Linear scales are standard on the X and Y axes

**Other Data**
Electrical power: 13.2 KVA (18.2 KVA with entry-level coolant system)
Probe system: Renishaw
Coolant system: External
Machine base: ANCAcrete (polymer concrete)
Colour: RAL 7035 / RAL 5008
Floor plan: Width: 2160 mm (85”), Depth: 1530 mm (60”), Height: 1990 mm (78”), Weight: 4500 kg (9921 lb)

eSpark Generator
Voltage output range (min/max): 48-300 VDC
Time ON range (min/max): 0.5-300 μs
Time OFF range (min/max): 0.5-300 μs
Communication: EtherCAT
Other features include: short circuit detection, arc detection, spark detection, adaptive erosion

---

![Floor plan and machine image]