Unleash the power of precision: ANCA's FX7 ULTRA guarantees perfection for small tools down to 0.1mm

Designed for small tools, the new FX7 ULTRA is the latest game-changing innovation in ANCA's premium ULTRA machine range

Boasting unparalleled accuracy and exceptional quality, the **FX7 ULTRA** takes small tool manufacturing to new heights.

"The FX7 ULTRA introduces cutting-edge technologies that revolutionise precision grinding for small tools down to 0.1mm diameter. If you produce tools such as ballnose, corner radius endmills, and complex or intricate profile tools, then this machine is for you," says Darren Fox, ANCA Product Manager.

New software, hardware and design features significantly improve surface finish, accuracy, and controlled runout, ensuring batch consistency from the first ground tool to the last. These advancements ensure that the FX7 ULTRA is the go-to solution for precision grinding in industries that rely on small tools, including electronics, telecommunications, medical devices, aerospace, automotive, diemold, and general machining.

Features of the FX7 ULTRA:

- one nanometre control system,
- new servo control algorithm for smooth motion,
- system and mechanical upgrades enhance stiffness and rigidity,
- in-process measuring, balancing and runout compensation for consistent accuracy,
- Motor Temperature Control (MTC) – ANCA's patented innovation, and
- specialist training support from our engineering experts on how to grind perfect cutting tools.

The FX7 ULTRA not only grinds tools faster than other machines, but also produces tools with both finer surface finishes and greater accuracy — which means superior tool performance and quality.

"The ULTRA technology has enabled production of high-quality small tools with the capability to grind down to a size as small as 0.1mm. The nanometer control enables micro-adjustments for smoother axis movement resulting in optimal tool geometry, ensuring superior cutting performance and surface finish. These advancements will have a significant impact across the entire tool range, enabling precise and efficient grinding operations for a variety of applications," Darren concludes.

Pat Boland, ANCA co-founder says: "Our customers who supply to industries where intricate and precise machining operations are paramount are always striving for the best quality tools, and now they can stay ahead of the game with the FX7 ULTRA. After years of dedicated research and development, the FX7 ULTRA is set to revolutionise the way we manufacture small tools."

Visit www.anca.com/FX7Ultra for more information.

A technical look at the FX7 ULTRA's innovative features:

Greater control for the velocity and acceleration or deceleration along with machine jerk limits: To increase the stiffness of the C-axis, the FX7 ULTRA combines developments to the nanometre or micro degree resolution in the linear and rotary axis, tuning parameters, several system enhancements, and major mechanical changes.

ULTRA-fast response to internal or external disturbances: ANCA's newly designed servo control algorithm allows silky smooth motion of an axis with the use of a unique algorithm and nanometre measurement in the control system. This will create finer cutting edges and eliminating micro-chips making it more efficient while used in actual machining of materials.

Better cycle time and higher productivity of high-quality cutting tools: The unique algorithm is key to the performance of the machine and ensures outstanding tracking performance. It also allows ULTRA-performance of the servo system without using a complex, complicated, or expensive mechanical system.

Reduces setup times and scrap: Cutting-edge software has been developed by ANCA to ensure batch consistency in large volumes. LaserUltra will to maintain consistency and accuracy of the grinding process which includes in-process measurement and compensation to accommodate wheel wear and other external variations during large batch grinding. Its analog capability can maintain less than +/- 0.002mm line form accuracy of any profile which includes ballnose and corner radius tools.

Increased wheel life and better-quality tools: Tool and wheel performance can be further optimised by the iBalance software, which guides a user to the optimal grinding position and RPM for vibration monitoring and balancing the wheelpack inside the machine. Correctly balanced wheelpacks result in superior surface finish and reduced wheel wear due to the elimination of wheel vibration.

Consistency in finished tool quality: The total tool runout measurement and compensation operation is available in the iGrind software. When an endmill is in rotation it is important that each tooth hits at the exact same spot along the workpiece for longer tool life and efficient cutting. Every tool in the batch can be measured and compensated for runout to make sure the entire batch is within a tolerance of 0.002mm. It is another piece of assurance that the first endmill will be as good as the last.

Consistent spindle thermal stability: Motor Temperature Control (MTC) is a patent pending innovation built into the motor spindle drive firmware. Smart control algorithm actively manages and maintains the temperature of motorised spindles in the FX7 ULTRA. Dramatically reduced machine warmup time means production can start sooner, once the machine has reached thermal stability. This improves productivity and machine use. Consistent thermal stability of the spindle over time regardless of changes in load or speed, or coolant temperature, greatly improves the dimensional stability of grinding results.

Post grinding processes: The smoother, finer cutting edge and surface finish as a result of the combination of all the above including the nanometre control will assist in all post grinding applications like edge preparation and coating. A finer edge that has been properly prepared has greater stability, which reduces the likelihood of it chipping, while also decreasing surface roughness which can cause increased friction between the tool and the workpiece.