Medical

Grinding solutions for the medical industry

ANCA®

TOTAL PRECISION

Medical *Flexible solutions for orthopedic implants and instruments*

Confidence in a world class technology supplier

ANCA, an industry leader in CNC tool grinding, has been in the industry for over three decades and has since built a strong reputation for delivering customized solutions. The ANCA name has become synonymous with quality, precision and flexibility and has taken this knowledge into the medical industry where it has provided innovative manufacturing solutions for some of the biggest names in the medical business.

Just like other technologically advanced industries, the medical sector is rapidly changing at a pace that constantly challenges methods of manufacture and adaptability. Investment into the right technology is crucial to remain competitive in this evolving market.

A superior CNC grinder coupled with industry leading software provides the best solution to exceed the challenging demands of the medical market.

TX7+: A benchmark in CNC grinding machines

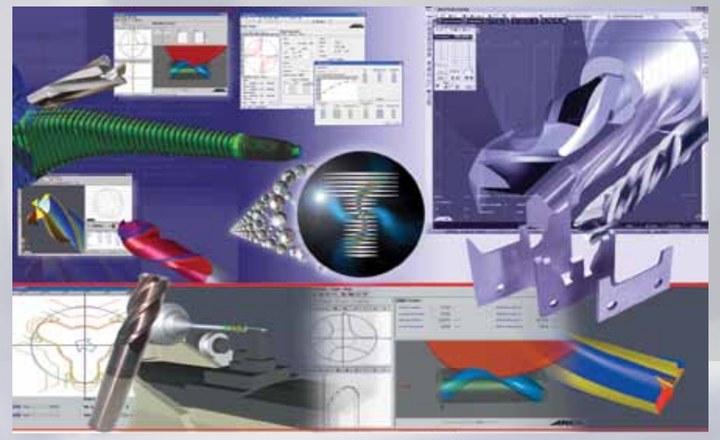
ANCA's flagship TX7+ accommodates the application diversity to cover a broad range of medical components, including implants and instruments. The TX7+ has established itself as a benchmark in the world of CNC grinding and is built upon ANCA's principles of precision, productivity, versatility and confidence.

Built upon a polymer concrete base and incorporating direct drive technology, the TX7+ ensures exceptional dampening properties and machine rigidity leading to superior surface finish on ground parts. The TX7+ is complemented by a wide range of advanced accessory tooling and automation options that can be customized to provide solutions for the toughest medical grinding applications.

MX7 : A new generation of performance

The ANCA MX7 is a powerful and versatile next generation CNC grinding machine ideally suited for manufacturing a wide range of high precision standard tools and medical instruments, such as drills, reamers, bone threading tools, dental tools and many more. The MX7 is optimized to grind tools up to 25mm in diameter and features a 6 wheel-pack exchanger with 10 second wheel change.

The MX7 machine design is based on the TX7+ machine structure which the industry can testify over the past 10 years to be the ideal production design. Some of the qualities include outstanding rigidity, thermal stability and reduced axis travel for minimal cycle times.



Industry leading software

ANCA has long been recognized as the leader in tool design and grinding software, introducing innovations such as 3D simulation to the CNC tool grinding world. Today, ANCA's software offers unsurpassed application diversity and flexibility. This is now complemented by ANCAM NX, the flexible solution for orthopedic grinding. ANCAM NX provides the ability to convert CAD models into ANCA grinding cycles from the Siemens PLM NX environment. This allows grinding of complex orthopedic implants and associated instruments such as knee implants and bone rasps.

Growth and a changing market are creating excellent opportunities for CNC grinding shops with the right tools to diversify into the medical field.

Medical applications

A diverse range of medical implants and instruments that can be produced including;

- **Orthopedic Implants**
- **Bone rasps**
- **Medical drills, reamers, and mills**
- **Screws and fixing pins**
- **Bone threading taps**
- **Medical and dental burrs**

Medical *Orthopedic implants*

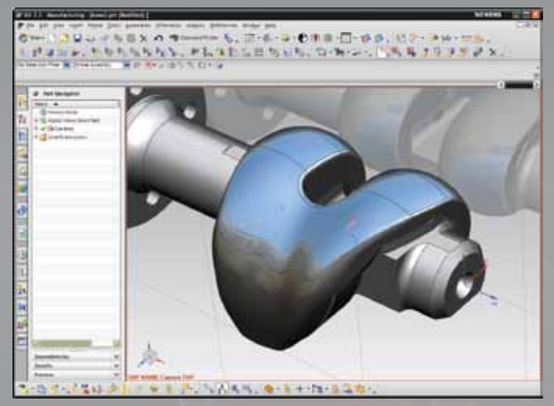
ANCAM NX provides the most flexible solution for grinding orthopedic implants from the Siemens PLM NX environment.

ANCAM NX - A new approach to orthopedic implants

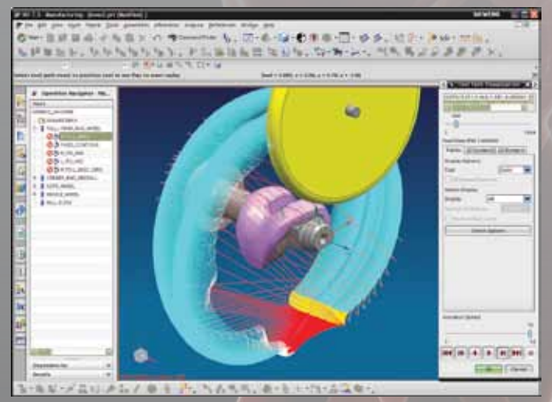
Integration between 5-axis CNC tool grinders and CAD/CAM software has created new possibilities in meeting the challenges presented by the orthopedic implant market. Flexibility, productivity, and integration with leading CAD/CAM systems, such as Siemens PLM NX, are key competencies to identify when investigating potential solutions.

ANCA's solution to orthopedic implant grinding, ANCAM NX, provides key advantages over existing systems. ANCAM NX bridges the gap between Siemens PLM NX and ANCA grinding software. It allows CAD generated models to be used to create NC programs for grinding, or light milling and drilling, from within the Siemens PLM NX software. The generated program can then be used within ANCA's iGrind tool design software to manufacture the part.

ANCAM separates the role of Siemens PLM NX CAD/CAM from the ANCA grinding software to optimally utilize the strengths of each system. The logical separation of the grinding path generation from the manufacturing process exploits the natural synergy of combining two industry leading software packages to produce parts on a superior CNC grinding machine.



CAD model of an knee implant within the Siemens PLM NX environment.



The wheel path is defined within the CAD/CAM environment. ANCAM NX utilizes this information to create a NC program that allows use of any sized wheel during the grinding process, permitting the operator to use multiple wheels and introduce wheel dressing wherever required.

...the most efficient and versatile manufacturing process, and reduced lead times.

The grinding process can be fully simulated using ANCA's Cimulator3D™. Once verified the part is ground on the machine.

Confidence and precision where it matters most.

Some of the features and benefits of the ANCAM NX solution include;

- **Clear separation between geometry and manufacturing process resulting in minimal post processing of CAD data, the most efficient and versatile manufacturing process, and reduced lead times.**
- **Using ANCA's 3D-CRC (3D Cutter Radius Compensation) different diameter wheels can be used for roughing, finishing and sparkout using the same NC data, providing significant benefits in terms of process flexibility and efficiency.**
- **3D-CRC allows wheel dressing, including white-sticking, to fit in seamlessly and can be setup wherever and however required on the machine and independent of the CAD model.**
- **All process parameters, (including feedrates, wheel speeds, wheel and axis adjustments, infeeds, etc), can be modified on the machine without having to revisit the CAD model.**
- **CAD generated programs are treated as standard grinding operations and therefore inherit the full benefits of the power and flexibility of the ANCA iGrind tool design software.**
- **All standard iGrind operations as well as multiple ANCAM NX generated operations can be combined into one program, facilitating the creation of complex parts which may include light drilling and milling in one machine set-up.**
- **Full offline 3D simulation, including collision detection and cycle time estimation using ANCA's Cimulator3D™ software, maximizes machine utilization and minimizes set-up times.**
- **The need to describe a surface mathematically using traditional programming methods is no longer required, allowing complex free-form surfaces to be produced quickly and easily.**
- **Modeling of implants utilizing the power of industry leading Siemens PLM NX software.**

Medical

Medical instruments

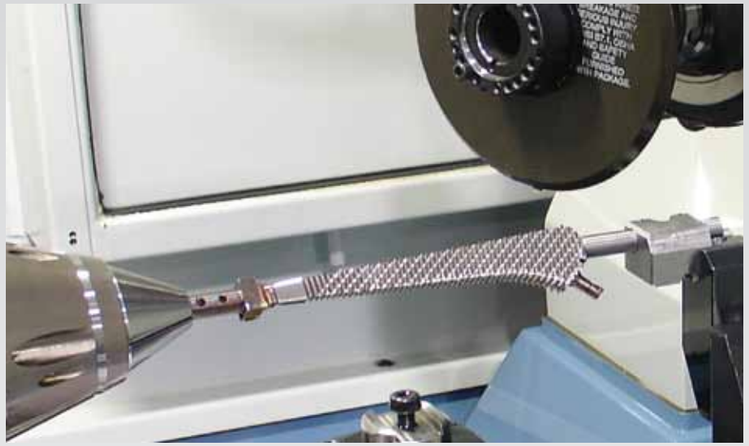
One machine to do it all

ANCA CNC grinders are exceptionally well suited to grind a vast range of medical instruments. One machine can be utilized to manufacture tools ranging from complex bone rasps to round cutting tools. As medical instruments are typically manufactured from medical grade alloys, the grinding process requires careful selection of process parameters and conditions.

ANCA offer advanced systems to achieve and sustain optimal grinding conditions to machine the toughest medical grade alloys. Superior wheel dressing, automatic white-sticking, coolant delivery systems, and in-machine wheel balancing represent a subset of comprehensive machine options that ensure quality parts time after time.

Of course a versatile machine needs to be powered by equally versatile software. ANCA's Toolroom™ software suite includes tool-design applications to grind a diverse range of round cutting tools, punches, blades, and much more.

Solutions that can effectively respond to changing market demands.



Grinding of medical instruments such as bone rasps is facilited by the use of the ANCAM NX software.

Dental taps. Following accurate 3D simulation, the parts are ground on the machine. What you see is what you get.

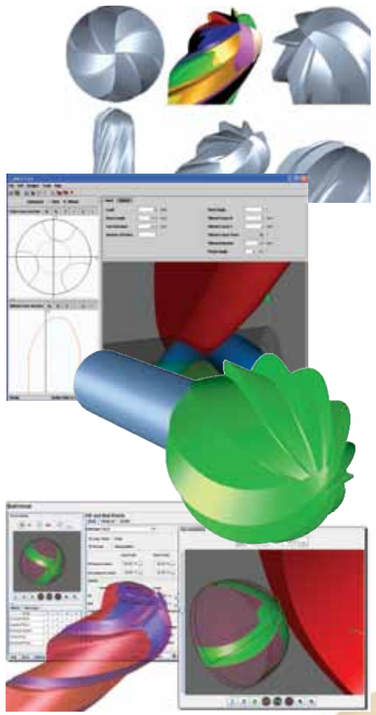
Surgical saw blade.

Dental implant drills.

Software solutions

Powered by Toolroom™

ANCA's Toolroom™ suite of software is bundled with a diverse range of powerful tool-design software packages and complemented by full 3D simulation capabilities using ANCA's Cimulator3D™. Decades of innovation, development, and experience has seen ANCA lead the field in tool grinding software. Application diversity coupled with a versatile tool grinder allows a vast range of tools to be ground on one machine, from orthopedic implants and medical instruments to an extensive range of standard cutting tools.

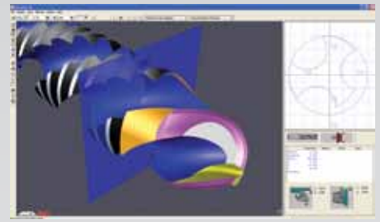


Cimulator3D™ - The first in the business and still leading the field

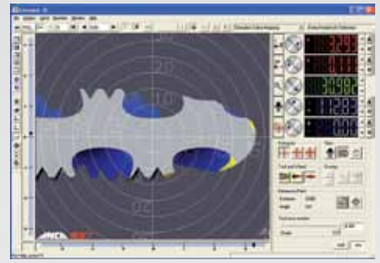
ANCA was the first to introduce revolutionary 3D simulation capabilities to the CNC grinding industry. Over a decade on, ANCA still lead the industry through constant innovation. ANCA's simulation software, Cimulator3D™, provides the ability to quickly and easily verify tool geometry, estimate cycle time, detect any potential collisions, analyze and animate the grinding process, and much more. All this can be accomplished offline, optimizing machine utilization and ensuring confidence in the manufacturing process.

Standard tools as well as complex orthopedic implants can be simulated and verified in 3D. Superior measurement capabilities within the software allow the part to be dissected and measured as required.

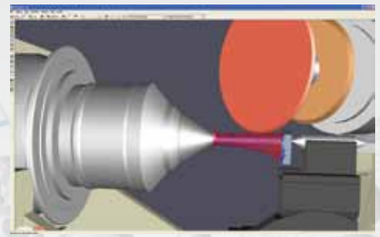
Complex parts designed from CAD/CAM packages utilizing ANCAM NX, can be simulated and then saved to various 3D formats such as STEP, STL, DXF IGES and VRML. These models can then be imported back into the CAD/CAM package to verify the simulated result with the original model.



Freeform tool cross-section views as well as one-click point-measurements of features such as hook and relief angles.



Advanced features allow the tool to be cut in any plane for accurate measurement.



Animation of the entire grinding sequence in high quality 3D. Automatic collision detection and cycle time estimation allow offline optimization of the grinding process.

Unparalleled flexibility and application diversity.

Medical

Process flexibility

Tools to solve the toughest challenges

Grinding of medical grade alloys presents various challenges for meeting dimensional and surface finish requirements on the finished part. The flexibility built into ANCA software combined with a wide range of tooling options ensures solutions to the toughest challenges.

Superior dressing capabilities

3000RPM headstock dresser and optional dedicated dresser unit with quick-change HSK arbours provides the flexibility to perform all dressing tasks when grinding difficult materials such as medical alloys. Optional fully automatic white-stick assembly ensures wheels remain open and free cutting during the most demanding applications.

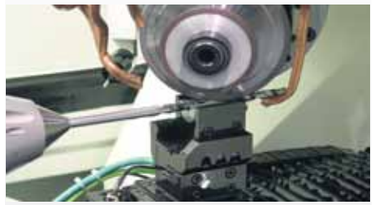
3000RPM headstock dresser

Quick-change HSK arbours

Automatic whitestick assembly

Tool Support Systems

P-Axis travelling tool support with optional bush, arobotec hydraulic support, or programmable force control NC tailstock provides superior tool support solutions. For small tools, tool support systems such as the micro-adjustable steady are also available.



Bush support

Programmable NC tailstock

Arobotech system

Wheel balancing

In-machine wheel balancing using the iBalance software eliminates wheel vibration resulting in superior surface finish and minimal wheel wear.

iView

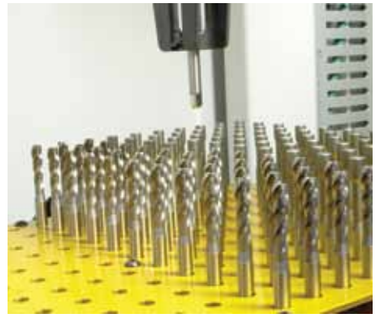
In-machine optical verification of tool geometry eliminates the need to remove the tool from the machine.

Coolant delivery

A range of coolant delivery options delivers coolant where it is needed. Optional high pressure wheel cleaning kit helps keep the wheel free cutting particularly for grinding of medical grade alloys.

Automation solutions

ANCA has built a strong reputation for providing a range of standard and customized automation solutions across a wide range of manufacturing industries.



Pallet Loader

ANCA's standard pallet loaders are suitable for loading round shank tools. Depending on size, pallet capacities range up to 220 tools on TX7+ and 840 tools on MX7.

Robot Loader

For customized loading requirements, ANCA machines can be fitted with a Fanuc LR Mate 200 robot. The robot is equipped with a revolving head on which dual grippers are mounted. This provides excellent flexibility and agility. Apart from providing automatic part loading capabilities, the robot can be utilized to perform secondary tasks such as polishing, within the loader envelope while the machine is grinding. ANCA's Robomate software provides full flexibility in the setup and operation of the robot.

TXcell

For ultimate flexibility and productivity, the TXcell is perfectly set up to take advantage of the benefits of 21 wheel packs and four tool pallet stations. In a single setup, multiple tool types and diameters can be manufactured. TXcell's integrated robot cell offers not only wheel pack and tool changing, but its modular design opens up the possibility for performing other operations normally done across multiple separate machines or work stations. The final result to you is a superior return on your investment.

Your global support partner

ANCA's range of CNC tool grinders are chosen by leading industries where high precision, reliability and customization are paramount. When you buy an ANCA product, you can be confident that no matter where you are in the world, ANCA is always behind you with our highly trained, customer-focused sales and support network. While our success is built on being responsive to our customers, ongoing innovation, integration and our global network set us apart.

AUSTRALIA
ANCA Pty. Ltd.
25 Gatwick Road
Bayswater North
Victoria 3153
AUSTRALIA
Tel +61 3 9751 8200
ozinfo@anca.com

USA
ANCA Inc.
31129 Century Drive
Wixom
Michigan 48393
USA
Tel +1 248 926 4466
usainfo@anca.com

UNITED KINGDOM
ANCA Ltd.
2 Eastwood Business Village
Harry Weston Road
Coventry CV3 2UB
UNITED KINGDOM
Tel +44 2476 44 7000
ukinfo@anca.com

JAPAN
ANCA Japan
3-60-1 Sakuragaoka-cho
Owariasahi-shi
Aichi-Ken 488-0859
JAPAN
Tel +81 561 53 8543
japinfo@anca.com

CHINA
ANCA Machine Tool (Shanghai) Co. Ltd
West Wing, 1/F., Building 4,
475 Fu Te No.1 Road(W)
Waigaoqiao FTZ, Shanghai,
CHINA
Tel +86 21 5868 2940
chinfo@anca.com

BRAZIL
ANCA do Brasil
Rua Francisco Ferreira Leão 377
Sorocaba 18040 330
São Paulo
BRAZIL
Tel +55 15 3221 5512
brinfo@anca.com

ITALY
ANCA Italia
Via Retrone, 39
36077 Altavilla Vicentina (VI)
ITALY
Tel +39 0444 341 642
itinfo@anca.com

GERMANY
ANCA GmbH
Alois-Senefelder-Str. 4
68167 Mannheim
GERMANY
Tel +49 621 338100
gerinfo@anca.com

INDIA
ANCA India
India Liaison Office
No. 598/18-1, 2nd Floor
3rd Main, 11th Cross
Sadashivnagar
Bangalore – 560 080
INDIA
Tel +91 80 6546 2152
indiainfo@anca.com

THAILAND
ANCA (Thailand) Ltd
Eastern Seaboard Industrial Estate,
No. 109/20 Moo 4,
Tambon Pluakdaeng,
Amphur Pluakdaeng,
Rayong 21140
THAILAND
Tel +66 3895 9252
thainfo@anca.com

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