

DETROIT ROBOTICS

COMPLEXITY. AUTOMATED.



EQUIPMENT LIST

TOOLS & INTEGRATIONS

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5-AXIS AUTOMATION Hermle 5-Axis Machining Cells



Hermle is the brand-of-choice for leading aerospace, medical, and defense component manufacturers worldwide.

The C 400 is the state-of-the-art machining centre designed for 5-axis/5-side high precision machining.

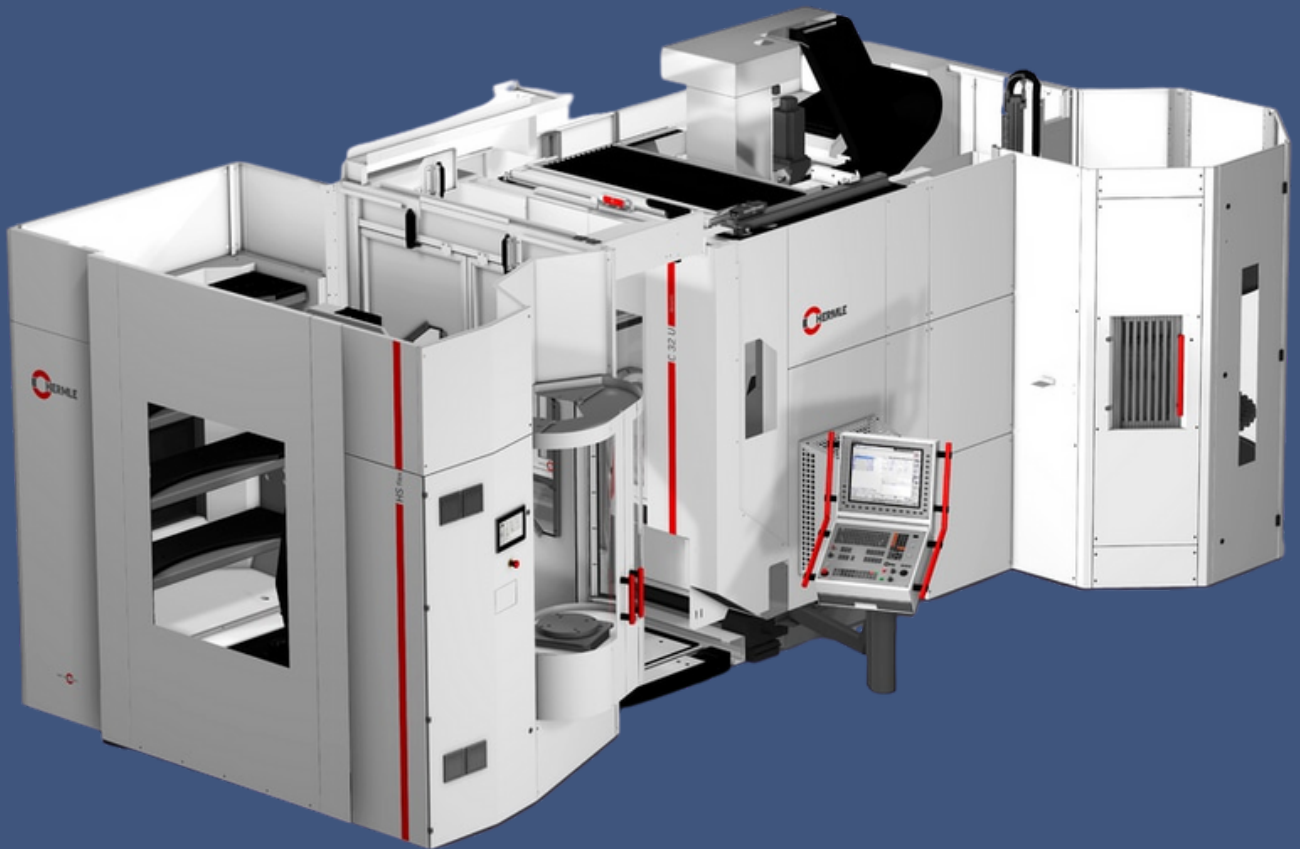
The mineral cast machine bed provides for stable, vibration-free machining. The C-400 machining centre is intended for high performance, large-scale machining of workpieces to the highest accuracy and surface quality



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5-AXIS AUTOMATION

Hermle HS Flex Automated Pallet Changer



Our Hermle HS Flex Pallet Changers enable an automated parallel setup for our 5-Axis dynamic machining centers.

The rotary, lifting and linear axes of the handling unit enable precise movement of heavy workpieces up to 1200 kg, including the pallet, between the setup station, storage modules and the machining centre's working area.

Pallets up to 800 x 630 are handled precisely.



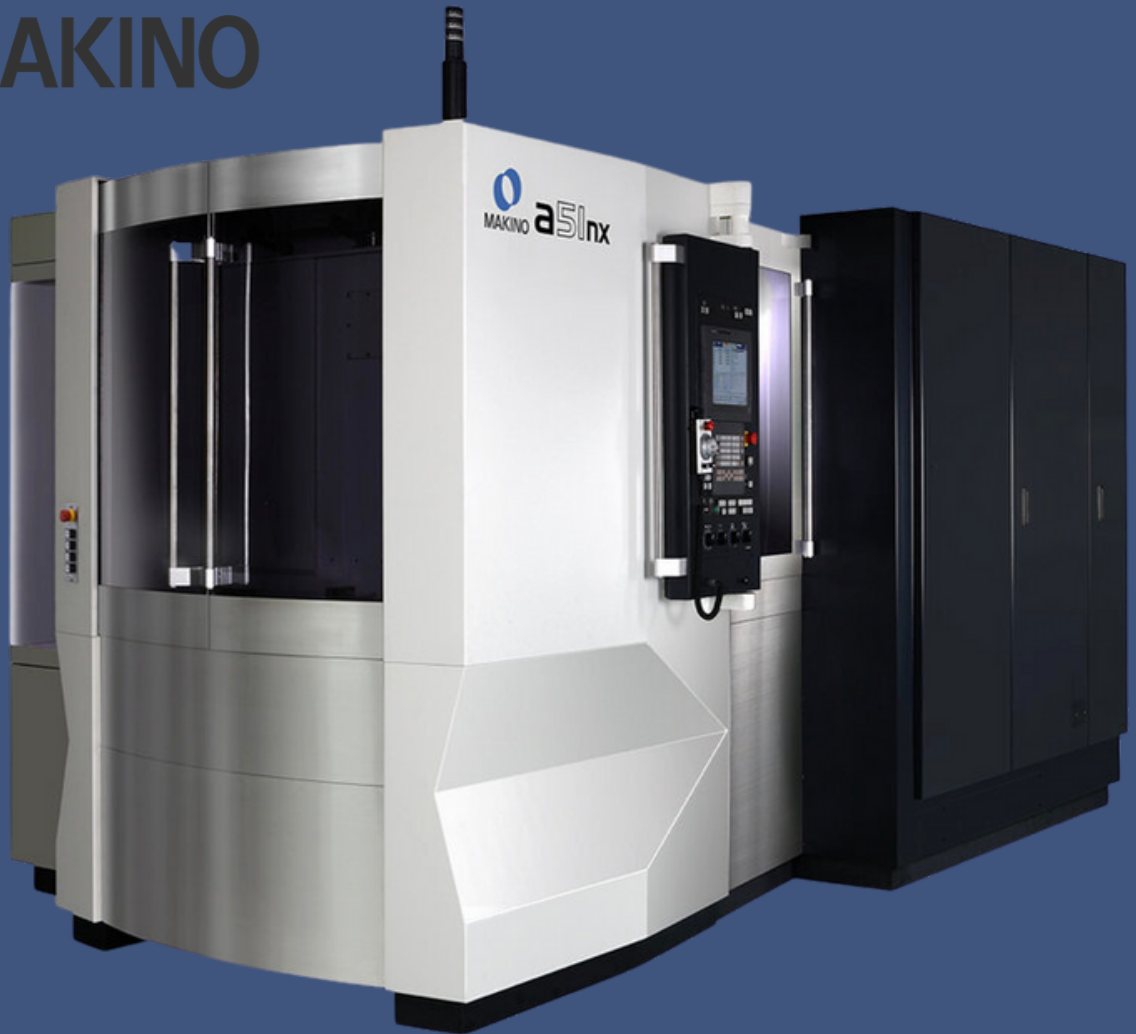
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HMC MACHINING CELLS

Makino a51nx Horizontal Machining Centers



MAKINO



The Makino a51nx represents best-in-class 400mm horizontal machining center that builds on the highly successful a51 platform with key high performance machining technologies that take productivity, accuracy and machine reliability to the next level.

- 1000 psi high pressure coolant
- Renishaw probing and laser tool setter
- Makino SGI for superior surface finish
- 60 tool magazine with integrated detection
- Lang Technovation Modular Pallets for rapid reconfiguration with minimal downtime



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VMC MACHINING CELLS

Okuma MA- 550VB 4-Axis Vertical Machining Centers



Our MA-550V harnesses the full potential of power and speed. Designed with a dual-way system, this vertical machining center combines the heavy-duty cutting power of box ways with the high-speed capability of the linear guide.

This unique approach creates a versatile machine able to accommodate multiple cutting and finishing needs on a single machine. Extreme power must be balanced by control. We modified the box ways on the MA-550V with an internal coolant system to eliminate overheating. A geared headstock provides maximum torque and horsepower throughout the entire RPM range for heavy machining.

- 32 Tool, CAT50 magazine, delivering 828 ft > lbs. of available torque
- 300 psi medium pressure coolant system
- Hydraulic fixture interface
- Renishaw Probe and auto gauging system
- Caron Engineering TMAC adaptive control
- Integrated Fanuc LR mate installed in machine enclosure



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VMC MACHINING CELLS

Okuma MA- 550VB 4-Axis Vertical Machining Centers

OKUMA



Our LB3000 EX II is built on Okuma's Thermo-Friendly Concept to ensure minimal thermal growth. The slanted box bed construction translates to unsurpassed quality and rigidity. Equipped with Okuma's high-power, high-torque PREX motor, this machine delivers high-quality machining from heavy- to high-speed cutting. The open-architecture OSP-P control makes this machine not only easy to operate, but also to integrate with other peripheral equipment.

- 1000 psi high pressure coolant
- Capto Tooling System for maximum reconfiguration with minimal downtime
- Live axial and radial tooling for milling operations
- LNS Servo Bar feeders for scalable automation and lights-out manufacturing



5-AXIS VMC MACHINING

Brother TC-S2DN-0 5-Axis Vertical Machining Centers

brother



Instead of using a generic CNC control, with only VMC capabilities, Brother invented and patented the technology for “synchronized tapping” and still holds this patent.

Brother’s patented design monitors the feed of the Z-axis, while making constant adjustments to the spindle RPM to stay synchronized.

The result is better tap life and the ability to tap the smallest of holes up to 8,000 RPM 32 Tool, CAT50 magazine, delivering 828 ft > lbs. of available torque

- 300 psi medium pressure coolant system
- Hydraulic fixture interface
- Renishaw Probe and auto gauging system
- Caron Engineering TMAC adaptive control
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ROBOTICS

Fanuc LR Mate 200i & M20iA Robots

FANUC



As early adopters of Fanuc Robotic systems, Detroit Robotics perform all integrations in-house. We are only one of a handful of machine shops to integrate robotics in-house.

This competence led to innovations such as integrating probes to gripper fingers on Fanuc arms to perform dynamic in-process quality inspections.

As well as ensuring rigorous process controls this also creates a wealth of useable quality data for customized reporting to meet the most exacting requirements.



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ROBOTICS

Schunk Gripping & Handling Systems



Schunk grippers are known for their precision, longevity, and robustness. They are synonymous with process stability and efficiency in assembly and handling.

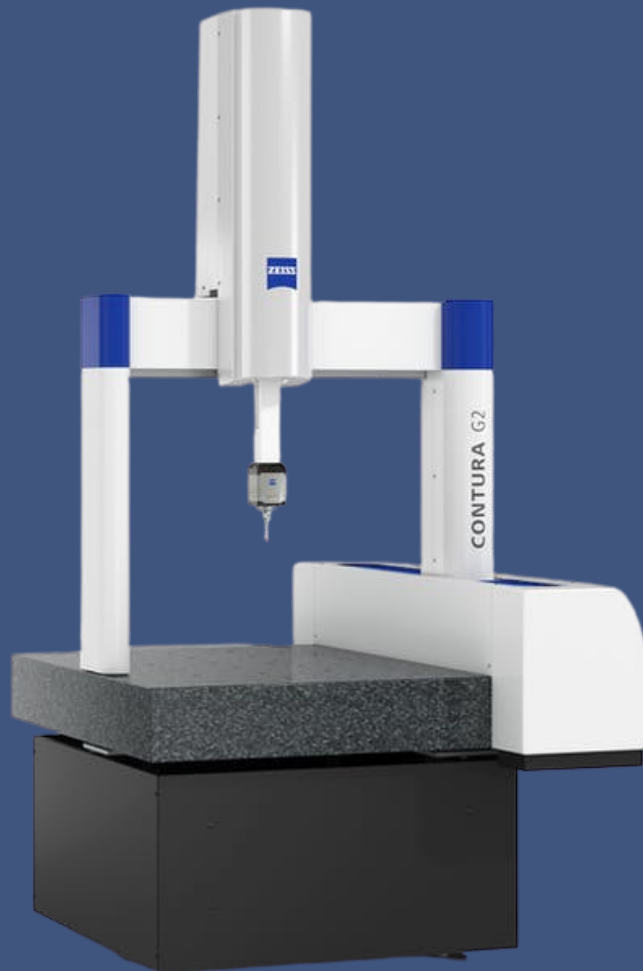
One highlight is the PGN-plus gripper series. The patented multi-tooth guidance allows the distribution of power and torque to various guiding surfaces. This increases the strength of the guidances and makes workpiece handling more precise and reliable.

In addition, the lubrication pockets in the new PGN-plus design provide permanent lubrication.



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QUALITY & METROLOGY ZEISS CONTURA CMM SYSTEMS



Carat guideways are used on Zeiss Contura for high rigidity, low thermal expansion and minimal moving weights. Air bearings in all three axes ensure consistent stability even at high travel speeds and acceleration.

The floating glass ceramic scales on Zeiss Contura's are practically expansion free and therefore do not require any additional temperature sensors or mathematical compensation.



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QUALITY & METROLOGY

Keyence IM-7000 Series Instant Measurement System

KEYENCE



“Place and press” non-contact metrology combines accuracy and speed.

No time consuming positioning work or datum setup required Measures up to 99 dimensions on up to 100 parts at the push of a button.

Automatically saves measurement data and creates inspection reports Automatic focal adjustment prevents inconsistent values



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ADDITIVE MANUFACTURING Stratasys Fortus Industrial 3D Printers



Fortus 3D printing systems build parts in the materials you're familiar with, but with the advanced complexity and high requirements needed for today's applications.

Fortus printing systems make it easy to produce complex parts more efficiently and effectively.

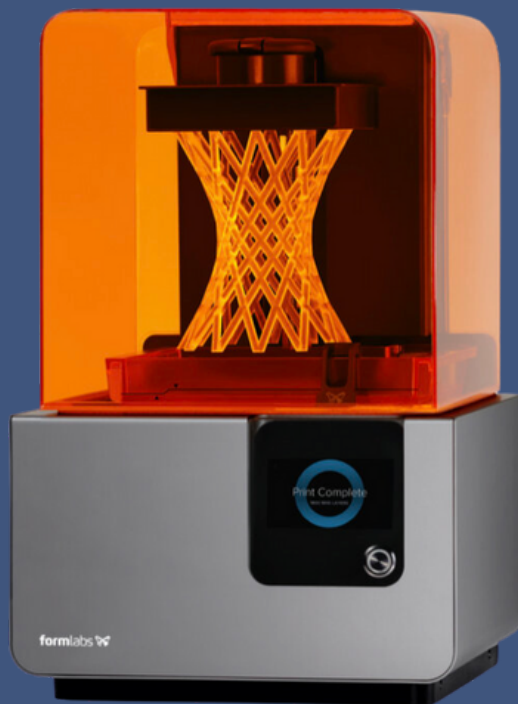
We use the Fortus system primarily to produce workholdings for our quality department. These can be easily duplicated and shipped to customer QS to ensure symmetry in the quality process.

Additionally, this system provides an effective and quick rapid prototyping module for form-fit-function tests.



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ADDITIVE MANUFACTURING Formlabs Form 3D Printers



The Formlabs Form 2 is a workhorse that delivers great results in a compact package.

An excellent machine for small batch prototyping. What makes this SLA 3D printer interesting is the consistent quality.

While FFF printers need a constant balancing of parameters, temperatures, filaments, and extruders, the Formlabs Form 2 just delivers.



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PRECISION TOOLS

Haimer Shrink Fit Clamping Systems



HAIMER®
Quality Wins.

Shrink fit chucks grip the cutting tool 360° around the shank on multiple planes, delivering very high gripping torque that prevents chatter during roughing or finishing operations.

Haimer systems achieve the highest balance accuracy standards (G2.5@ 25,000 RPM). Since shrink fit holders have no moving parts, they offer the best balance repeatability of any tool holding system on the market.

Nothing beats the tool change time of our shrink fit chucks when combined with our Power Clamp shrink fit machines. Tool changes can be done in less than 5 seconds.



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PRECISION TOOLS Renishaw Machine Probes

RENISHAW 
apply innovation™



Probing is an established best practice for maximising the efficiency, quality, capability and accuracy of machine tools.

Standard routines built into modern CNC controls simplify the integration of probing cycles into machining operations and offline tools. These routines, combined with a CAD interface, make the simulation of measurement functions easy.

Renishaw probes deliver significant cost savings, and improvements in quality, for all applications using machine tools throughout many industries.



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PRECISION TOOLS

Blum Workpiece Touch Probes

BLUM

focus on productivity



Blum workpiece touch probes are used for fast and automatic workpiece measurement and workpiece zero point measurement in machine tools.

Specially designed for the harsh conditions in these machines, the probe systems are an effective solution for improving workpiece accuracy and productivity.



PRECISION TOOLS Lang Workholdings



Round, rectangular or square in shape, for single or multiple clamping, two different stud sizes and spacings (52 mm and 96 mm), Quick-Point provides a solution for every application. It can be used universally in vertical and horizontal machining centers, on 3- and 5-axis tables and 4th axis rotary or trunnion systems.

The attachment of the zero-point plate to the machine table or faceplate is done easily through prefabricated hole patterns for common t-slot distances, bore patterns and bolt circles or individual, customized mounting options.

- Best accessibility and process reliability for 5-sided machining
- Highest holding power at low actuation forces through form-closure clamping
- Easy reproduction of clamping situation without using end stops
- Great handling characteristics due to low weight
- Integrated zero-point adaptation



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PRECISION TOOLS OSG Drilling Solutions



Machined parts from difficult-to-machine materials with complex geometries demand a specialist tooling solution.

OSG is the leading manufacturer of taps, end mills, drills, and indexable cutting tools.

OSG's extensive line of high technology cutting tools features exclusive metallurgy, cutting geometries and proprietary surface treatments to help increase productivity, reliability and tool life.

OSG drills are used in numerous precision industries including aerospace and medical manufacturing.



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SOFTWARE & SIMULATION Siemens NX Simulation & PLM Software

SIEMENS

Ingenuity for life



Siemens NX software is a flexible and powerful integrated solution that delivers the next generation of design, simulation, and manufacturing solutions.

Supporting every aspect of product development, from concept design through engineering and manufacturing,

NX provides an integrated toolset that coordinates disciplines, preserves data integrity and design intent, and streamlines the entire process



SOFTWARE & SIMULATION

Ziess Realtime Process Controls



Ziess PiWeb

Zeiss PiWeb software ensures all our quality and process data is analyzed in real time, evaluated and graphically represented. The results of the measurements are directly converted into correction values for production. This saves time and reduces the possible risk of errors.

PiWeb produces a wealth of useable data that we harness for enhanced quality reporting and process optimization.

Ziess Calypso

Zeiss Calypso features a lot of new functions to enhance precision. For example, we can save time during the automatic measurement run, compare two measurement plans and significantly reduce the number of stylus system change-outs for pallet measurements.



SOFTWARE & SIMULATION

Vericut Simulation Software



Vericut is a 3D solids-based software program that interactively simulates the material removal process of an NC program. The program depicts multi-axis milling/drilling as well as multi-axis turning and combination mill/turn machining. Inefficient motion or programming errors that could potentially ruin a part, damage the fixture, or break the cutting tool can be corrected before the program is run on a CNC machine tool.

Vericut is equipped with NC program optimization capabilities. Based on initial programmed feed rates, Vericut automatically determines the optimum safe feed rate for each cut. Cycle time can be reduced significantly. Optimized feed rates also result in longer cutting tool life, fewer broken cutting tools and scrapped parts, better quality parts due to minimized cutter deflection, and a better finish on part surfaces and edges due to constant tool pressure.

Vericut shows material removal at the workpiece level, but can also simulate entire machine tools as they appear on a shop floor.



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SOFTWARE & SIMULATION

SolidWorks 2020



An industry standard and fixture with some cool recent upgrades.

SolidWorks 2020 delivers improved performance and streamlined workflows.

New detailing mode handles large, complex drawings while still being able to add and edit drawing annotations.

Envelope Publisher speeds up design by including components from a top-level assembly as envelopes in a subassembly. This helps us run simulations faster with a hybrid mesh that contains both draft and high-quality elements.



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SOFTWARE & SIMULATION CAMWorks CNC Software



CAMWorks is an intuitive, feature-based CAM software that helps to increase productivity using best-in-class technologies and adaptable automation tools to maximize CNC machining efficiency.

The new 'Machine to the Mean' capabilities in CAMWorks eliminates long-standing issues surrounding differences between design practices required to tolerance parts based on fit, form and function vs. the need to machine geometry based on mean dimensions and tolerances.



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SOFTWARE & SIMULATION

Fanuc Roboguide Simulation



Roboguide is the leading of offline programming product on the market for Fanuc robots.

The program allows us to create, program and simulate a robotic workcell in 3-D without the physical need and expense of a prototype workcell setup.

Roboguide reduces risk by enabling visualization of single and multi-robot workcell layouts before actual installation.