



ADVANCED MACHINING

5 - A X I S • M I L L I N G • T U R N I N G • E D M

AS9100D ISO 9001:2015

215 Forbes Avenue Salisbury, NC 28147

Phone: (704) 633-8157

Fax: (704) 633-8168

www.advancedmachiningcnc.com

Keith Felts – kfelts@admcnc.com

DUNS: 185766516 CAGE: 4N6S5

Process Capabilities:

- **CNC Milling** – 3 to 5 axis with automatic pallet changing
- **High Speed CNC Milling** - 42,000 RPM with 1.0g acceleration
- **CNC Turning & Mill/Turn multitasking**
- **Wire EDM** – work pieces up to 16.7" thick
- **Sinker EDM** – 4-axis CNC
- **Precision Surface Grinding**
- **CNC Coordinate Measuring Machines** – complex inspection & reporting
- **AS9100D/ISO 9001:2015 registered**

Products & Services:

- **Dies** - stamping, forming, compacting, extrusion, fine blanking
- **Mold Cavities and Cores** - plastic, die-cast, compression, injection
- **Prototype Components** – defense, aerospace, medical, and energy
- **Production Manufacturing** – automated machining with pallet changing
- **Exotic materials** – ceramics, carbide, refractory metals, nickel alloys
- **EDM electrodes** - graphite, copper, copper-tungsten
- **Inspection Services** - Zeiss CMM, Calypso, FAI, PPAP
- **Hard Die Milling** – hardened material up to HRC 65
- **Reverse Engineering** – CAD models created from sample parts



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CAD/CAM Systems & Shop Management

Mastercam 2019

- 3D Solid modeling with toolpaths for 5-Axis milling, turning and EDM.
- Import of IGES, DXF, Parasolids, VDA, STEP, DWG and SAT.

SpaceClaim 2019

- 3D Direct modeling
- Photorealistic rendering

CAMplete

- 5-Axis simulation / verification and post processing.

ShopTech E2 Shop Management System

- Estimating, Scheduling, Quality, Document Control, and Accounting

Wire EDM Systems

+GF AgieCharmilles Progress VP3

- Automatic wire threading
- +/- 30 degree taper cutting
- Fine Wire capability to 0.002" diameter
- Fine Finish capability to 4 Ra
- 20" x 14" x 16.7" thickness capability

+GF AgieCharmilles Classic 3 HS

- Automatic wire threading
- +/- 30 degree taper cutting
- 20" x 14" x 16.7" thickness capability

+GF AgieCharmilles Classic 3 V

- Automatic wire threading
- +/- 30 degree taper cutting
- 20" x 14" x 16.7" thickness capability

CNC Sinker EDM Systems

+GF AgieCharmilles Advance 3

- 4-axis CNC with automatic electrode changer
- 8 microinch surface finish
- 37.8" x 25.6" x 10" workpiece (2200 lbs.)

+GF AgieCharmilles Advance 4

- 4-axis CNC with automatic electrode changer
- 8 microinch surface finish
- 43.3" x 29.5" x 14.5" workpiece (4400 lbs.)

+GF AgieCharmilles Drill20

- CNC High Speed EDM Drill
- Hole diameters 0.3mm to 3.0mm

CNC Milling Systems

Mikron HSM-400U - 5-Axis Machining Center

- Laser tool measurement
- 18 hp 42,000 RPM Spindle w/ HSK 40E taper
- Probing System
- 18-Station Robot Pallet Changer for unattended machining
- True simultaneous 5-Axis capability
- 19.7" x 9.5" Working Area

Mikron UCP-600 VARIO - 5-Axis Machining Center

- Laser tool measurement
- Probing System
- Thru Spindle Coolant (Hi-Pressure)
- 30 hp 20,000 RPM Spindle w/ HSK 63A taper
- 7-Station Robot Pallet Changer for unattended machining
- True simultaneous 5-Axis capability
- 23.6" x 17.7" Working Area

Mikron HEM-500U – 5-Axis Machining Center

- Tool measurement
- Probing System
- Thru Spindle Coolant (Hi-Pressure)
- 20 hp 12,000 RPM Spindle
- 3+2 capable with 440 lb work piece
- 20" x 18" x 16" Working Volume

Mikron VCP-600

- Laser tool measurement
- 18 hp 42,000 RPM Spindle w/ HSK 40E Taper
- Graphite Dust Extraction System
- 23.6" x 17.7" Working Area



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Mikron VCP-1000

- Laser tool measurement
- 30 hp 20,000 RPM Spindle w/ HSK 63A taper
- Probing System
- 40" x 25.5" Working Area
- Fixed Table w/ max. work piece weight of 3500 lbs.

Haas VM-3 Machining Center

- 40 station tool changer
- 12,000 RPM direct drive spindle w/ 30 hp
- Probing System with Tool Length Measurement
- 40" x 26" Working Area
- 210mm Rotary Table (4th Axis)

CNC Turning

DMG Mori NLX 2500/700 SY

- Dual Spindle, Y-axis multitasking lathe
- 10,000 RPM milling tools
- 3.1" thru bore
- Automatic Bar Feeder

Okuma 1060 Big Bore Turning Center

- 25 HP 10" diameter chuck
- 12 station turret
- Programmable tail stock

Grinding

Supertec STP-1428ADCII Automatic Surface Grinder

- 12" x 24" grinding area
- 3 HP spindle with 12" dia. x 1 ¼" wheel
- 0.00008" down feed resolution



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Inspection Systems

Zeiss Contura - Aktiv

- Measuring range 39.4" x 47.3" x 23.7"
- VAST XTR Probe with active scanning
- Scanning Speed 5"/second
- Automatic probe changing
- Temperature controlled environment

Zeiss Eclipse 550 ST CMM

- Zeiss ST 3D dynamic touch probe (with fully automatic probe changing)
- 0.00008" linear accuracy, 0.00022" volumetric accuracy
- 20" x 21.5" x 20" work envelope
- Temperature controlled environment

Deltronic Optical Comparator

- 14" Screen
- 25x Magnification
- Heidenhain glass scales
- Quadra Chek 200 Digital Measurement System

Traceable Standards

- Gage Blocks and Surface Plates calibrated and traceable

Software

- Inspection Xpert
 - Bubbled drawings
 - Excel format characteristic lists
 - AS9102 forms
 - PPAP documentation
 - Automated import of CMM data
- Zeiss ERS + MiniTab
 - SPC – statistical data collection and reporting
 - Gage R&R