**Advanced Machining**

5-Axis • Milling • Turning • EDM

AS9100D  ISO 9001:2015

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**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
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

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**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

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**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
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 Tuning

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-1428ADC11 Automatic Surface Grinder
- 12" x 24" grinding area
- 3 HP spindle with 12" dia. x 1 ¼" wheel
- 0.00008" down feed resolution
**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