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## EQUIPMENT & FACILITIES

42,416 Sq. Ft. Manufacturing Area Serviced by (10) Bridge Cranes with Max. 10 Ton Lifting Capacity

### Computer Numerically Controlled Milling Equipment

- 1 DMG Model DMF 500 Vertical Linear Traveling column machine with 5 axis capability and 120 position tool changer. Equipped with laser tool measurement system (length and diameter) Longitudinal travel (X) 196.8"; Cross travel (Y) 36.2"; Vertical travel (Z) 32.3". Spindle speed up to 18,000 RPM. Heidenhain iTNC 530 Control. (2006)
- 1 Kuraki KBT-13EA 6 axis CNC Horizontal Boring Mill with Fanuc control and 60 position tool changer. Longitudinal travel (X) 118"; Vertical travel (Y) 90.5"; Column travel (Z) 51"; Spindle travel (W) 27.5"; 4<sup>th</sup> axis in the X-Y plane; Rotary index table 70.5" x 86.5"; Table load capacity 33,000 pounds. Positioning accuracy  $\pm .0004$ . Inch/metric. Machine is equipped with a 48" dia. rotary table which provides the 6<sup>th</sup> axis. (2003)
- 1 Kuraki KBT-13PDX-A 4 axis CNC Horizontal Boring Mill with Fanuc 15M control and 40 position tool changer. Longitudinal travel (X) 118"; Vertical travel (Y) 90.5"; Column travel (Z) 51"; Spindle travel (W) 27.5". Positioning accuracy  $\pm .0004$ . Machine is equipped with a 40" dia. rotary table which provides the 4<sup>th</sup> axis machining capability. Inch/metric. (1994)
- 1 - **New** Kuraki KBH-16 6 axis CNC Horizontal Boring Mill with Fanuc control and 90 position tool changer. Longitudinal travel (X) 78"; Vertical travel (Y) 59"; Column travel (Z) 51"; Spindle travel (W) 15"; 4<sup>th</sup> axis rotation in the X-Y plane; Rotary index table 55" x 63"; Table load capacity 14,000 pounds. Positioning accuracy  $\pm .0004$ . Inch/metric. Spindle speed max. 12,000 RPM. (2008)
- 1 Kuraki KBT-11WDX 6 axis CNC Horizontal Boring Mill with Fanuc control and 40 position tool changer. Longitudinal travel (X) 78"; Vertical travel (Y) 59"; Column travel (Z) 57"; Spindle travel (W) 19"; 4<sup>th</sup> axis rotation in the X-Y plane; Rotary index table 55" x 63"; Table load capacity 14,000 pounds. Positioning accuracy  $\pm .0004$ . Inch/metric. (1997)
- 4 Kuraki KBM-11A 4 axis CNC Horizontal Boring and Machining Center with Fanuc control and 30 position tool changer. Longitudinal travel (X) 59"; Vertical travel (Y) 48"; Column travel (Z) 27"; Spindle travel (W) 12"; 4<sup>th</sup> axis rotation in the X-Y plane; Rotary index table 37" x 41"; Table load capacity 11,000 pounds. Positioning accuracy  $\pm .0004$ . Inch/metric. (1998) (1999) (2001) (2002)
- 1 Okamoto HMC-3000 4 axis CNC Horizontal Machining Center with 40 position tool changer. Longitudinal travel (X) 120"; Vertical travel (Y) 60"; Cross travel of column (Z) 30". Machine is equipped with a 32" dia. rotary table which provides the 4<sup>th</sup> axis machining capability. Inch/metric. (1983) (Rebuilt 2005)
- 1 Matsuura MC 1800HP 4 axis CNC Horizontal Machining Center with 50 position tool changer. Longitudinal travel (X) 70"; Vertical travel (Y) 40"; Cross travel (Z) 36". Machine is equipped with a 25" dia. rotary table which provides the 4<sup>th</sup> axis machining capability. Inch/metric. (1989)
- 1 Matsuura 1500 4 axis Horizontal Machining Center with 30 position tool changer. Longitudinal travel (X) 60"; Vertical travel (Y) 40"; Cross travel (Z) 30" with Fanuc 11 M control. Machine is equipped with a 16" dia. rotary table which provides the 4<sup>th</sup> axis machining capability. Inch/metric. (1987)
- 5 Cincinnati Milacron Horizontal 3 axis Cintimatic Model 5H Machining Center with 850 MC control. Vertical travel (Y) 40"; Longitudinal travel (X) 100"; Spindle travel (Z) 7.5" plus an additional 13" manually. 10,000 lb. workload capacity. Factory rebuilt. Inch/metric. (1988 - 2002)
- 1 Makino A55E 4 axis Horizontal Machining Center with pallet changer. Vertical travel (Y) 22"; Longitudinal travel (X) 22"; Cross travel (Z) 23 1/2". Spindle Speed 15,000. Inch/metric. (2001)

- 2 Matsuura MC-1000V 4 axis Vertical Machining Center with 30 position tool changer. Longitudinal travel (X) 40"; Cross travel (Y) 20"; Vertical travel (Z) 22". One machine is equipped with a 16" dia. rotary table which provides the 4<sup>th</sup> axis machining capability. Inch/metric. (1983) (1985)
- 5 Matsuura MC-800VG 4 axis Vertical Machining Center with 30 position tool changer. Longitudinal travel (X) 31.5"; Cross travel (Y) 20"; Vertical travel (Z) 22". Machine is equipped with a 16" dia. rotary table which provides the 4<sup>th</sup> axis machining capability. Inch/metric. (1997) (2000) (2001) (2002)
- 1 Matsuura MC-760VX 3 axis Vertical Machining Center with 30 position tool changer. Longitudinal travel (X) 30"; Cross travel (Y) 17"; Vertical travel (Z) 19". Inch/metric. (1995)
- 1 Matsuura MC-600V 3 axis Vertical Twin Spindle Machining Center with 20 Position tool changer. Longitudinal travel (X) 25"; Cross travel (Y) 16"; Vertical travel (Z) 18" with Yasnac-MX-3 Control. Equipped with (2) 7" HAAS Indexers. Inch/metric. (1989)
- 1 Takisawa MAC-V2 Vertical Machining Center with 18 position tool changer. Longitudinal travel (X) 20"; Cross travel (Y) 16"; Vertical travel (Z) 14". Machine is equipped with a 10" dia. rotary table which provides the 4<sup>th</sup> axis machining capability. Inch/metric. (1984)
- 1 Bridgeport Series II 3 axis Combination CNC and manual Vertical Milling Machine with EZ-TRAK DX Control. Longitudinal travel (X) 32"; Cross travel (Y) 14.5"; Vertical travel (Z) 17". Inch/metric. (1997)
- 2 DMG 50 T CNC Milling Center with a universal swivel rotary table for 5 sided machining in a single setup. Longitudinal travel (X) 19.69"; Cross travel (Y) 15.75"; Vertical travel (Z) 15.75". Position accuracy .0002, repeatability .0001, angular rotary accuracy .001/degree. Inch/metric. (2000) (2002)
- 2 DMG Model DMU 60 T 5 axis Milling Center. Longitudinal travel (X) 24.8"; Cross travel (Y) 22"; Vertical travel (Z) 22". 12,000 & 18,000 RPM Spindles. Position accuracy .0002, repeatability .0001. 23" dia. rotary table. (2006)
- 1 DMG Model DMU 60 P 4 axis CNC Milling Center. Longitudinal travel (X) 23.6"; Cross travel (Y) 27"; Vertical travel (Z) 23.6". 12,000 RPM Spindle. Position accuracy .0002, repeatability .0001. 25" dia. rotary table. (2000)

### Computer Numerically Controlled Turning Equipment

- 1 Mori-Seiki NL 2500 SY/1250 CNC **4 AXIS** Lathe with 14" dia. x 53" long turning capacity. 3.1" bar capacity thru Spindle with Y axis, live milling capability (12 positions) and a sub spindle for secondary operations. Roundness tolerance .00002". (2006)
- 1 Dianichi Model M112 x 3000 Heavy Duty CNC Lathe with Fanuc 3TF conversational control. 45" max. turning dia. x 120" distance between centers. (1985)
- 2 Methods Slant 3 Turning Center with Fanuc 11T CNC control. 15.74" max. turning dia. x 28.9" distance between center. Inch/metric (1985) (1990)
- 1 Hardinge CHNC Chucker and Bar Machine with Siemens 810T control. 1.62" dia. bar feed capacity. (1986)
- 1 Proto TRAX Lathe. Combination Manual and CNC 18" max. turning dia. x 40" between centers. (2007)

### EDM Equipment

- 1 Charmilles Technologies ROBOFIL 640cc Submerged Wire Electrical Discharge Machine with maximum workpiece of 51.2" x 39.4" x 19.7"; X-Y travel 31.5" x 21.7"; Z travel 19.7"; Maximum Taper Angle  $\pm$  30 degrees; Table load capacity 6,614 pounds. Accuracy overall .00018"; Repeatability .00007" Inch/metric. (2006)
- 1 Charmilles Technologies ROBOFIL 440cc Submerged Wire Electrical Discharge Machine with maximum workpiece of 47.24" x 27.56" x 15.75"; X-Y travel 21.65" x 13.77"; Programmable Z travel up to 15.75"; Maximum Taper Angle 30 degrees; Table load capacity 3,307 pounds. Accuracy  $\pm$  .0001. Inch/metric. (2003)
- 1 Charmilles Technologies ROBOFIL 310 Wire Electrical Discharge Machine; X-Y travel 15.75" x 9.85"; U-V travel 15.75" x 9.85"; Programmable Z travel up to 15.75"; Maximum Taper Angle 30 degrees; Table load capacity 2,200 pounds. Accuracy  $\pm$ .0001. Inch/metric. (1997)
- 1 Charmilles Technologies ROBOFORM 40 CNC Diesinking Electrical Discharge Machine with 6 position tool changer. Longitudinal travel (X) 19.7"; Cross travel (Y) 15.7"; Vertical travel (Z) 17.7". Inch/metric. (1997)

## **Programming Equipment**

- 4 Unigraphics CAM Systems - with translators for Pro E, STEP, and Parasolids.
- 4 DP Technology Esprit CAD/CAM Systems
- 1 CAD/CAM Integration DNC System

## **Equipment Other than CNC**

- 3 LeBlond Sliding Bed Gap Lathe. 62" dia. swing x 156" between centers. 9" hole thru spindle with metric threading and taper attachment. Also has hydraulic tracing capability. (1982) (1987) (2008 rebuild)
- 1 LeBlond Engine Lathe. 24" swing x 72" between centers. (1980)
- 2 LeBlond Engine Lathes. 15" swing x 54" between centers. Servo Shift. (1986)
- 2 Hardinge Tool Room Lathes Model HL VH. 12" swing x 30" between centers. Threading and taper attachments. Inch/metric. (1997)
- 4 Bridgeport Vertical Milling Machines with 48" tables, power feed and 12" cross travel. Equipped with digital readout systems accurate to .002 inches. Inch/metric. (1985-1998)
- 1 Atlas 4BVS40 Vertical Bed type Milling Machine with Ball Screw and Digital Readout system to  $\pm 0.0005$ . Longitudinal travel (X) 28"; Cross travel (Y) 15"; Vertical travel (Z) 18". Inch/metric. (1997)
- 1 Okamoto Surface Grinder Model ACC-12-24ST. 12" x 24" capacity. (1995)
- 1 DoAll Vertical Band Saw. 26" throat with Hydraulic Table feed. (1971)
- 1 Marvel Vertical Band Saw, 60 degree mitering left and right; 18" x 22" capacity. (2006)
- 1 Peerless Model #1400 Cut-off Saw with bar feed. (1979)
- 1 Wellsaw Horizontal Band Saw Model 1000W. 10" x 18" capacity. (1976)
- 1 Chamberlain Vacu-blast Machine Model 200-P for part cleaning and finishing. (2005)
- 1 Sunnen Honing Machine Model MBB-1660K for holes ranging from .060" to 6.5" diameter. (1978)

## **Welding & Fabricating Equipment (4320 Sq. Ft. Welding Shop)**

Weld personnel qualified to MIL-STD-1595, AMS-STD-1595, AWS D17.1, MIL-STD-2219, ASME IX, and Level II Visual Inspection.

Weld personnel qualified to MIL-STD-248, S9074-AQ-GIB-010/248, ASME IX and SNT-TC-1A, MIL-STD-271, VT Level II.

Weld procedures qualified for production work to: MIL-STD-2219A, AWS D17.1, S9074-AR-GIB-010/278.

- 1 Adira Hydraulic Shear 1/4" x 10 Feet. (2003)
- 1 Chicago 3' Box and Pan Brake. (1972)
- 1 Roundo Plate Bending Rolls 3/8" x 6 Feet. (2003)
- 1 Haegar Press HP-6B 6 Ton. (1988)
- 1 Miller Dynasty 700 TIG Welder.
- 1 Miller Dynasty 300 DX TIG Welder.
- 2 Miller Aerowave 375 TIG Welders.
- 1 each Linde and Miller MIG Gun Welders.
- 1 Thermal Arc PAK45 Plasma Cutting System capacity to 3" thick in Aluminum, Mild Steel, Stainless Steel. (1988)
- 1 Devorak Iron Worker Machine Model 1528 1/4" x 12" steel. (1978)
- 1 Scotchman Iron Worker Model 6509-2417 3/8" x 24" steel. (1988)
- 1 Blue M Stress Relieving Oven 24" x 24" x 24". Calibration maintained. (1976)
- 1 Grieve Oven 36" x 48" x 60". Stainless Steel. Calibration maintained. (1980)
- 1 Nissan Ego Electric Lift Truck. 3 ton. (1990)

## Painting

- 1700 sq. ft. Paint Room -DeVilbiss Paint Booth:L-26',W-14',H-9'(1985)
- Mil-Spec and Industrial -Iridite System per Mil-C-5541 Class 1A and
- Polyurethane, epoxy, alkyd and lacquers Class III (33" long x 36" wide x 48" deep)

## Inspection Equipment (1,080 sq. ft. humidity and temperature controlled inspection room)

- 1 Mitutoyo Bright Apex 916 CNC Coordinate Measuring Machine complete with temperature compensation, six position tool changer. Software: GEOMeasure 6000 provides advanced measuring capabilities, CADMeasure provides CAD functionality by interfacing with AutoCAD, SCANMeasure allows curves and surfaces to be measured and analyzed, STATMeasure allows advanced statistical analysis of gathered data.Measuring capabilities of 36" X axis x 63" Y axis x 20" Z axis. (2000)
- 1 Mitutoyo CHN 1612-30 Coordinate Measuring Machine. Software: GEOMeasure 6000, CADMeasure, SCANMeasure, STATMeasure. Measuring capabilities of 120" X axis x 48" Y axis x 64" Z axis. (1993)
- 1 Mitutoyo B241 Coordinate Measuring Machine. Measuring capabilities of 28" X axis x 40" Y axis x 24" Z axis. (1983)
- 1 Mitutoyo BH305 Coordinate Measuring Machine. Measuring capabilities of 13" X axis x 20" Y axis x 12" Z axis. (1993)
- 1 Scherr-Tumico 1600 Comparator, 12" x 7" Stage Travel, .00005" Resolution, 16" Screen, Includes Quadra Check 221 DRO with Edge Sensing, 2 Axis Motor Drive, Joy Stick and Fine Position Jog Knobs. (2002)
- 1 Pentium Personal Computer (calibration scheduling/records).
- 1 Granite Surface Plate 60" x 120".
- 1 Granite Surface Plate 36" x 48"
- 1 Misawa Seiki Hardness Machine.
- 1 Varian Helium Sensitive Leak Detector Model 938-41.
- 1 Gould Surfanalyzer Model 21-1350-00
- Pratt & Whitney gage block and other certified measuring equipment.

### Certified Non-Destructive Testing:

- Liquid Dye Penetrant to ASTM e 1417
- Personnel certified to NAS 410, MIL-STD-271, Level II

Inspection equipment and procedures comply with the Aerospace Standard AS 9100

## DELIVERY EQUIPMENT

- 1 E-250 Super Cargo Van
- 1 F-Super Duty Stake Body Truck - Bed - 7'-6" X 14 Ft. Long
- 1 E-Super Duty Cube Van - Inside Dimensions - 7'-6" X 16'-7" X 6'-9" High