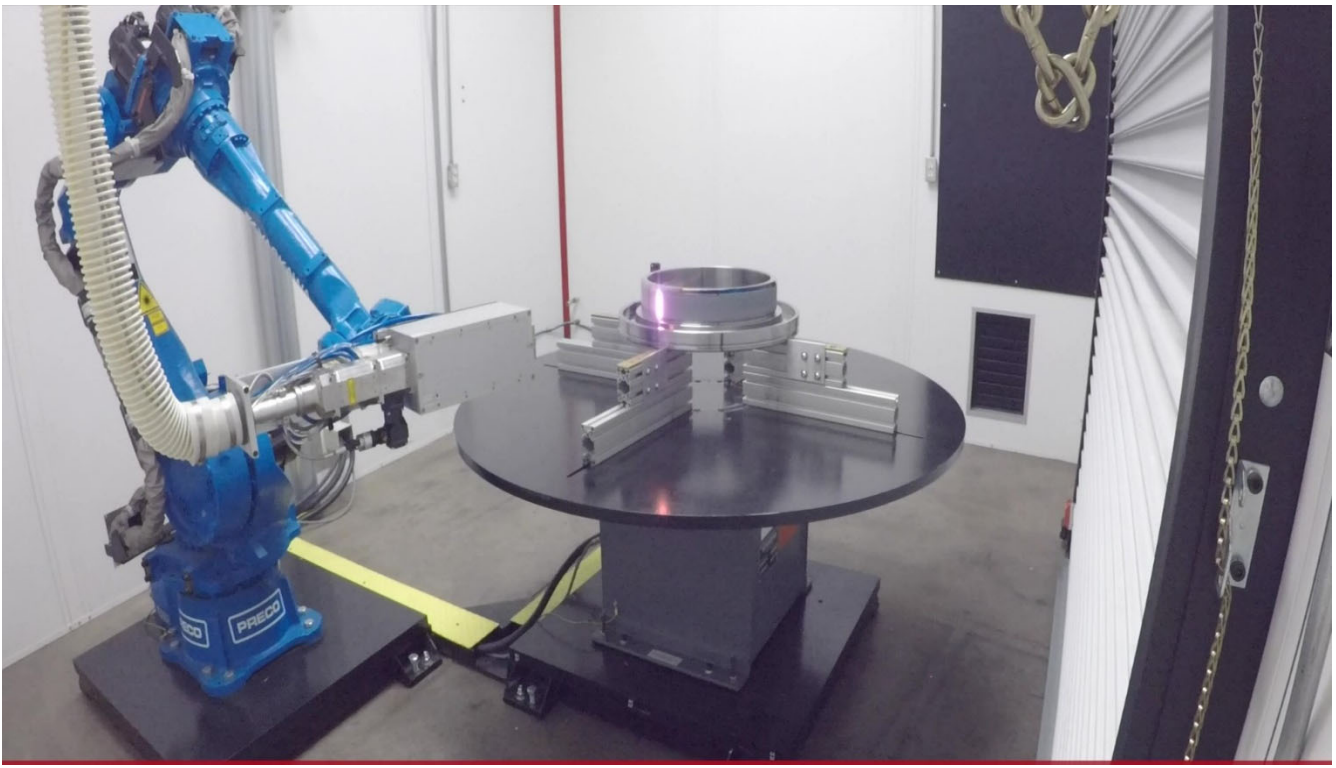


EQUIPMENT LIST

**NEW - IN HOUSE HEAT TREATING !**

Laser Heat Treating for Surface Hardening



Typical hardness 58 / 62 Rc

Depth to .060 / .080

Accuracy and flexible to parts shape

Repeatable and little distortion

No tooling / short run

Up to 48" diameter

# 5 / 6 Axis CNC Machining Centers

## CTX beta 1250 TC Turn & Mill 6 Axis 2 spindle complete machining

6-sided complete machining by main spindle  
Counter spindles up to 2.6 in bar capacity  
with a 48 station Auto Tool Changer, Blum LMT laser tool probe,  
Heidenhain iTNC 640HSCI control  
Max. turning diameter 19.7 in.  
Max. turning length 47.2 in.

## DMU 125 monoBLOCK® 5-Axis Machining Center : with a 60 station ATC using HSK 63 Tool holders,

Blum LMT laser tool probe, 15,000 rpm Spindle, and with Heidenhain iTNC 640HSCI control

55" (1400 mm) Diameter x 23" (590 mm) High Rotary Table / Swivel range  $\pm 120^\circ$

Travel: X, 53" (1200 mm)    Y, 50" (1040 mm)    Z, 36" (650 mm)

## DMU 85 monoBLOCK® 5-Axis Machining Center : with a 60 station ATC using HSK 63 Tool holders,

Blum LMT laser tool probe, 15,000 rpm Spindle, and with Heidenhain iTNC 640HSCI control

41" (1040 mm) Diameter x 23" (590 mm) High Rotary Table / Swivel range  $\pm 120^\circ$

Travel: X, 37" (940 mm)    Y, 34" (865 mm)    Z, 25" (650 mm)

## DMU 65 monoBLOCK® 5-Axis Machining Center : with a 60 station ATC using HSK 63 Tool holders,

Blum LMT laser tool probe, 18,000 rpm Spindle, and with Heidenhain Control

33" (840 mm) Diameter x 20" (500 mm) High Rotary Table / Swivel range  $\pm 120^\circ$

Travel: X, 29" (735 mm)    Y, 26" (660 mm)    Z, 22" (560 mm)

# CNC Vertical Turning

[Hankook VTC 200E](#): Vertical Boring Mill with live milling  
100" Ø Swing x 60" high; 24 tool ATC

(2) [Hankook VTC 160E](#): Vertical Boring Mill with live milling  
80"Ø Swing x 54" high; 24 tool ATC

[Hankook VTC 140](#): Vertical Boring Mill with live milling  
63"Ø Swing x 36" high; 24 tool ATC

[Hankook VTC 100](#): Vertical Boring Mill with live milling  
50" Ø Swing x 32" high; 24 tool ATC

# CNC Horizontal Turning

## Doosan/Daewoo Puma 700 Lathe:

32"Ø Swing x 63"

## (3) Doosan/Daewoo Puma 400 Lathe:

Two turning center work-cell / one stand alone

22"Ø Swing x 38"

## (2) Doosan/Daewoo Puma 300B Lathe:

Two turning center work-cell

16"Ø Swing x 25"

## Doosan/Puma 4100B Lathe:

22"Ø Swing x 42"

## Doosan/Daewoo Puma 300MC Lathe:

Turning Center with live tooling

14"Ø Swing x 23"

## Doosan /Puma TT 2500SY Lathe:

Twin spindles, twin turrets with live tooling, 10" chuck, 3" diameter bar feeder and parts catcher

13"Ø Swing x 20"

## Doosan/Daewoo Puma 240C Lathe:

3" diameter bar feeder and parts catcher

10"Ø Swing x 17"

## (2) Doosan/Daewoo Puma 200 series Lathes

Two turning center work-cell

10"Ø Swing x 18"

## Doosan PUMA TW2100M-GL Lathe:

Twin spindles w/ 2 8.5" 3 jaw chucks, C axis live milling, and robotic gantry loading

10"Ø Swing x 12"

## Puma GT3100LM Lathe:

Turning Center with live tooling w/ 14.8" Ø Swing x 53

# CNC Horizontal Machining Centers

**Toyota FH-450S HMC:** with a 120 station ATC; *12 Pallet Flexible Manufacturing System*; 15,000 RPM CAT-40 spindle; full 4<sup>th</sup> axis ;  
Part probing; Tool Breakage Detection System

Travel X, 23.62" (600 mm) Y, 23.62" (600 mm) Z, 23.62" (600 mm)

**Makino A-92 HMC:** with 92 station CAT-50 ATC; pallet changer; 10,000 RPM spindle; full 4<sup>th</sup> axis; part probing.

Travel X, 60" (1520 mm) Y, 50" (1250 mm) Z, 53" (1350 mm)

**Makino A-82M HMC:** with a 60 ATC; pallet changer; high-torque CAT-50 spindle; full 4<sup>th</sup> axis; part probing.

Travel X, 43" (1100 mm) Y, 33" (840 mm) Z, 40" (1020 mm)

**Makino A-82 HMC:** with a 60 ATC; pallet changer; 10,000 RPM CAT-50 spindle; full 4<sup>th</sup> axis; part probing.

Travel X, 43" (1100 mm) Y, 33" (840 mm) Z, 40" (1020 mm)

**MAKINO A81NX HMC:** with a 60 station ATC; pallet changer; 10,000 RPM CAT-50 spindle; full 4<sup>th</sup> axis; PQI Renishaw probing system

Travel X, 35" (900 mm) Y, 35" (900 mm) Z, 40" (1020 mm)

**(2) Makino A-51 HMC:** with a 60 station ATC; pallet changer; 14,000 RPM CAT-40 spindle; full 4<sup>th</sup> axis; part probing.

Travel X, 22" (560 mm) Y, 22" (560 mm) Z, 23" (600 mm)

# CNC Vertical Machining Centers

[DMG-MORI DMC 850 V with Heidenhain control](#): with a 30 station ATC

Travel X, 34" (850 mm)                      Y, 21" (530 mm)                      Z, 20" (510 mm)

[DMG-MORI DMC 1450 V with Heidenhain control](#): with a 30 station ATC

Travel X, 57" (1450 mm)      Y, 28" (712 mm)                      Z, 22" (560 mm)

[Toyoda BM 1600 VMC](#): with a 30 station ATC

Travel X, 26" (660 mm)                      Y, 52" (1320 mm)                      Z, 26" (660 mm)

[Doosan VC 510](#): with a 30 station ATC and pallet changer

Travel X, 30" (762 mm)                      Y, 20" (516 mm)                      Z, 22" (1259 mm)

## Supporting Equipment

(2) [KASTOwin A 4.6](#) fully-automated bandsaws, 18" capacity

[Zoller Venturion 450/ 6](#) presetting and measuring machine. Digital and vision tool settings with wireless transfer of data to machine controls.

[Zoller Smile 600 Tool Setter](#): digital and vision tool settings with wireless transfer of data to machine controls.

- PowerShrink enables us to preset and shrink our tools to nominal lengths in record time.
- We benefit by getting highly accurate concentricity, longer tool life, extended reach , increased spindle time and reduced tooling costs.

# Quality

**Hexagon GLOBAL S** coordinate measuring machine (CMM) : 40" x 60" x 50" with motorized head, scanning probe and automatic styli changing feature. Fully programmable from solid models.

**Romer Arm**: a portable CMM with 9 foot reach. Works with solid models and provides automated data collection.

**Faro Arm**; a portable CMM with 4 foot reach. Works with solid models and provides automated data collection.

**Mitutoyo 201J** Profilometer

**Krautkramer MIC-10** ultrasonic contact impedance hardness tester

**Optima Plus** Master Height Gauge: 24"

Mechanical Gauging to 100"

## CAD/CAM & Technology

Model-based definition

- Solidworks
- Espirit

Accepted drawing file formats include Solidworks, Iges, Parasolid, Inventer, Catia, and ProE  
CIMCO CNC/DNC editing and data transfer software

Wireless Ethernet LAN connections to all CNC equipment