

Equipment List and Capabilities

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Palletech Manufacturing Cell - High Speed Machining

| EQUIPMENT | MAXIMUM WORK SIZE | SPECIAL FEATURES |
|--|---------------------------|---|
| (2) Mazak FH5800 Palletech System | X-28", Y-24", Z-36" | (2) 120 Tool ATC (240 Total) NC Rotary Axis 25000 RPM 18 Pallets (1) Load Stations Fusion 640 Cell Controller |
| (2) Mazak FH680 Palletech System | X-41", Y-32", Z-32" | (2) 120 Tool ATC (240 Total) NC Rotary Axis 15000 RPM 12 Pallets (2) Load Stations Level "A" Cell Controller |
| (1) Mazak FH880 Palletech System | X-51", Y-43", Z-39" | 120 Tool ATC NC Rotary Axis 15000 RPM 6 Pallets (1) Load Station |
| (1) Mazak FH880 | X-51.2", Y-43.3", Z-39.4" | Twin pallet, 237 tool ATC |
| (1) Mazak HV800 (5 axis) (articulated head) Palletech System | X-49.2", Y-39.4", Z-39.4" | Twin pallet, 120 tool ATC 12 Pallets (1) load Station Level "C" Cell Controller |

Horizontal 4 Axis Machining Center

| EQUIPMENT | MAXIMUM WORK SIZE | SPECIAL FEATURES |
|--------------------|---------------------|--|
| LeBlond Makino A55 | X-22", Y-22", Z-22" | 40 Tool ATC-2 pallets 360,000 Position Rotary Axis 12,000 RPM & 940 IPM Feed |

Vertical 4 Axis Machining Center

| EQUIPMENT | MAXIMUM WORK SIZE | SPECIAL FEATURES |
|----------------------------------|---------------------------|---|
| (1) Mazak AJV 35/120 (4-axis) | X-118", Y-32", Z-20" | (40 Tool ATC - 128" Table NC Rotary Axis |
| (1) Sunstrand Omni Mill (5-axis) | X-72.0", Y-55.3", Z-54.0" | 60 Tool Magazine |

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CNC Vertical Turning Center

| EQUIPMENT | MAXIMUM WORK SIZE | SPECIAL FEATURES |
|-------------------------------|-------------------|-------------------------------------|
| (1) Okuma Howa 2SP-V80 | 32" diameter | Twin spindle, Twin Turret, 24 tools |
| (1) Giddings & Lewis VTC 2500 | 106.3" diameter | Production Ready Sept 2009 |
| (1) Giddings & Lewis VTC 2500 | 106.3" diameter | Production Ready June 2010 |

Turning Systems

| EQUIPMENT | MAXIMUM WORK SIZE | SPECIAL FEATURES |
|--|-------------------|--|
| Toshulin 3-Axis CNC Vertical Lathe With Live Spindle | - | Twin spindle, Twin Turret, 24 tools |
| TOS-SKS-20 | D-80", L-78.7" | 80 HP - 15 Tool Magazine 3rd Feed Axis (C-Axis) |

CNC Vertical Lathes

| EQUIPMENT | MAXIMUM WORK SIZE | SPECIAL FEATURES |
|---------------------------|-------------------|---------------------------|
| (2) Bullard VTL | D-92", L-80" | 75 HP - 5 Position Turret |
| (5) Olympia VBM | D-80", L-50" | 75 HP - 12 Tool Magazine |
| (7) Olympia VBM | D-66", L-50" | 75 HP - 12 Tool Magazine |
| (1) Gray VTL - Ringmaster | D-48", L-72" | 75 HP - 5 Position Turret |
| (1) Titan VTL | D-120", L-62" | 50 HP - 5 Position Turret |
| (1) Gray VTL | D-144", L-72" | 100 HP - 12 Tool Magazine |
| (2) Toshiba TUE-15 | D-71", L-59" | 40 HP - 12 Tool Magazine |

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CNC Horizontal Lathes

| EQUIPMENT | MAXIMUM WORK SIZE | SPECIAL FEATURES |
|------------------------------|-------------------|------------------|
| Heyligenstaedt NDKB 1000/111 | D-78", L-177" | 100 HP |
| Dainichi W16 200 X 500 | D-74", L-197" | 75 HP |
| Dainichi H160 | D-63", L-156" | 50 HP |
| Poreba CNC TRB 135 | D-53", L-157" | 50 HP |
| SFM CNC 79240 | D-78", L-240" | 40/50 HP |

CNC Horizontal Boring

| EQUIPMENT | MAXIMUM WORK SIZE | SPECIAL FEATURES |
|-----------------------------|--------------------------------|---|
| (4) Toshiba BP1300R22 Load | X-140", Y-90", Z-92", W-28" | Rotary Milling Axis 44,000 lbs Max Table |
| (1) Toshiba BTU-14 (5 axis) | X-78", Y52", Z78" | Rotary Milling Axis - Tilting Head 150° - 14,500 lbs Max Table Load, 38 Tool Magazine |
| (1) Toshiba BP150R22 | X-160", Y-100", Z-60", W-28" | Rotary Milling Axis, 60 Tool changer, 44,000 lbs - Max Table Load |
| (1) Toshiba BTD13FR22 Load | X-118", Y-102", Z-63", W-27.5" | Rotary Milling Axis, 60 Tool Changer |
| (2) Olympia 120 x 80 | X-120", Y-80", Z-39", W-28" | Rotary Milling Axis 33,000 lbs Max Table |
| (1) Toshiba BP150R22 | X-160", Y-100", Z-84", W-28" | Rotary Milling Axis, 60 Tool changer, 44,000 lbs - Max Table Load |

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Deep Hole Drilling

| EQUIPMENT | MAXIMUM WORK SIZE | SPECIAL FEATURES |
|--------------|-------------------------------|-------------------------------|
| Techni Drill | Z-47" - 17" B.C. to 60" B. C. | 3" Max Hole Dia 60" Dia Table |

Miscellaneous Equipment

| EQUIPMENT | MAXIMUM WORK SIZE | SPECIAL FEATURES |
|----------------------|--|------------------|
| TIG and MIG Welding | - | - |
| Two-Axis Manipulator | 90" diameter x 60" deep x 48" travel | - |
| Auto Lift ERA300 | 30,000 lb Capacity with 96" Pallet Forks | - |

Coordinate Measuring Machines

| EQUIPMENT | MAXIMUM WORK SIZE | SPECIAL FEATURES |
|--|--|---|
| Sheffield Cordax – Horizon Model 30.15.9 DCC | X-120", Y-60", Z-56" Rotary Table | MeasureMax Software |
| Sheffield Apollo Cordax - Model RS-30 DCC | X-40", Y-30", Z-25" | MeasureMax Software |
| Sheffield Apollo Cordax Model RS150DCC | X-48", Y-80", Z-40" | MeasureMax Software |
| Sheffield Apollo Cordax Model RS280DCC | X-55", Y-106", Z-43" | MeasureMax Software |
| Jones and Lamson Optical Comparator | X-30" with 30" Screen & Digital Readouts | CMM Model EPIC 230 |
| DEA DELTA 4508 | X-100", Y-200", Z-72" | Reinshaw Probe and Head pc-dmis cad++ Software |

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