

## Precision Machining Capability

- **SNK HPS 120B 5 axis Fanuc 15i-MA**

Capacity: A axis +/- 90° , C axis +/- 270° 3150mm, 1320mm, 762mm
- **SNK HPS 120B 5 axis twin pallet Fanuc 15i-MA**

Capacity: A axis +/- 90° , C axis +/-270° 3150mm, 1320mm, 762mm
- **Cincinnati Milacron 5 axis vertical centre with Acramatic 950 control & auto tool change**

Capacity : x = 120" y = 30" z = 24" 3050mm, 760mm, 610mm

A axis +/- 25° B axis +/- 28°
- **Mazak Vortex 5 axis 815/120 Fanuc 15iMA – 2 off**

Capacity: x = 120" y = 32" z = 24" 3048mm, 810mm, 610mm

A & B axis +/- 30°
- **Mazatech Horizontal H500/50N 4 axis with Mazatrol M32 Plus Control**

Twin 500m Pallets 6000 rpm

Capacity x = 28.35" y = 25.59" z = 25.59" 720mm, 650mm, 650mm
- **Mazak FH8800 4 axis Horizontal centre with Fusion 640 Control**

Twin Pallet 32"(800mm) sq

Capacity x = 51.18" y = 43.3" z = 39.37" 1300mm, 1100mm, 1000mm
- **Yamazaki H630 4 axis horizontal centre with Mazatrol M32 control**

Six pallet 25"(635mm) sq

Capacity x = 39" y = 31" z = 30" 990mm, 785mm, 760mm
- **Matsuura RA1GII 3 axis twin pallet 15,000rpm with J6300 control system**

Capacity x = 20" y = 16" z = 18" 510mm, 400mm, 460mm

Two machines available
- **Cincinnati Lancer 1500 3 axis vertical centre with Acramatic A2100E control**

Capacity x = 60" y = 30" z = 30.5" 1524m, 760mm, 770mm
- **Cincinnati Lancer 2000 3 axis Vertical Centre with Acramatic A2100E Control**

Capacity: x = 80" y = 30" z = 30.5" 2032mm, 760mm 770mm



- **Hüller Hille NBH350 4 axis Horizontal Machining Centre with Siemens 840D Control**  
Capacity: x = 102" y = 63" z = 55" 2600mm, 1600mm, 1400mm
- **Mori Seiki SL7 lathe**  
Capacity 30"(760mm) dia. x 61"(1.55m) between centres
- **Mori Seiki SL4 lathe**  
Capacity: 21"(530mm) dia. x 30"(760mm) between centres
- **Mazak Super Quick Turn 18m with Mazatrol T Plus Driven Tools & C axis**  
Capacity: 21"(300mm) dia. x 20"(507mm) between centres

### **Conventional Machining Capability**

- **Zayer 66MB universal milling machines**  
Two off, each with 3 axis digital readout control. Capacity: 80" x 27" worktable 230mm, 685mm
- **Bridgeport ID universal milling machines**  
Four off, each with digital readout. Capacity: 42"(1065m) x 9"(230mm) worktable
- **Dixi Jig Borer**  
Two off, capacity: 40"(1000mm) x 40"(1000mm) x 40"(1000mm)
- **Colchester centre lathe**  
Capacity: 14"(355mm) dia. x 48"(1220m) between centres
- **Colchester centre lathe**  
Capacity: 12"(305mm) dia. x 36"(915mm) between centres
- **Hartex external grinder**  
Capacity: 10"(255mm) dia. x 36"(915mm) between centres
- **Jones & Shipman universal grinder**  
Capacity: 10"(255mm) dia. x 18"(457mm) between centres
- **Myford universal grinder**  
Capacity: 6"(150mm) dia. x 18"(455mm) between centres



- **Magerle surface grinder**  
Capacity: 14"(355mm) x 14"(355mm) x 36"(915mm)
- **Jones & Shipman tool cutter grinders (Three off)**
- **Gate 6'(1.83m) radial drill**
- **Graffenstaden Miller**



## Composites Capability

<b>Automated Ply Profiling:</b>	CNC controlled conveyor cutting bed.	3.5m, 1.8m (Cutting area)
<b>Clean Area, Room 1:</b>	7125 sq ft	662 sq m
	Positive pressure controlled.	
	Temperature/Humidity controlled.	
	Particle count monitored.	
<b>Room 2:</b>	3700 sq ft	342 sq m
	Positive pressure controlled.	
	Temperature/Humidity controlled.	
	Particle count monitored.	
<b>Wet lay-up area:</b>	700sq ft	65 sq m
<b>Autoclave 1:</b>	83”Dia x 204”	2.1m, 5.2m
	Cure up to 200C	
	Pressure 100PSI	
<b>Autoclave 2:</b>	99 Dia x 240	2.5m, 6.2m
	Cure up to 260C	
	Pressure 145PSI	
	Nitrogen purge equipped.	
<b>Oven:</b>	117” x 118” x 100”	2.97m, 2.99m 2.5m
	Cure up to 200C	
<b>Trim/Finishing Area:</b>	5500sq ft	512 sq m
<b>Machining:</b>	CMS ARES 4826	
	5 Axis, twin shuttle table, carbon shielded router.	
	(x = 4.8m; y = 2.6m; z = 1.2m)	
<b>C Scan (Due early 2011)</b>	3500mm x 2000mm scan area	
	Multiaxial combined Jet probe system	



**Materials:**

Use of Out of Autoclave materials.

Dry or pre-preg forms of:

Glass fibre

Carbon fibre: Unidirectional tape

Woven fabric

Kevlar fabrics

Hybrids

Alumesh

**Resins:**

Epoxy

Phenolic

Bismaleimide

Polyester

Film adhesives

**Cores:**

Honeycombs: Nomex

Aluminium

**Foams:**

Rohacell

PVC

Polyurethane

**Cold Storage:**

Long term storage of pre-preg materials with temperature records

**Bonded storage:**

For control of details and materials

**Tooling:**

Metallic

Composite

Wooden

To match part manufacture requirements



***Metal-to-metal bonding:***

**Redux 775 bonding:**

Skin to skin structural applications

Skin to stringer applications

**Structural Bonding:**

Skin to skin,

Skin to honeycomb

Aircraft primary structure

**Hysol bonding:**

Airframe structure

**Nacelle bonding:**

Use of reticulating film adhesives for acoustic application

**Sheet detail:**

Produced in house

**Specialist pre-bond treatments:**

For all applications produced in-house



## **Sheet Detail Fabrication Capability**

Draw benches, 30ft, manufacturing various stringer sections.

Hufford Stretch Form 8ft A5.

Router Bed: 10.6m, 1m, 3 heads.

Rubber Press: 500mm, 700mm, 450T.

Solution treatment oven approved to BEAP 9006 and BS2M54 1 m<sup>3</sup> basket 460°C to 550°C.

Age treatment oven 600mm, 600mm, 9m long; 120°C to 200°C approved to BEAP 9006 and BS2M54.

CNC LVD Brake Press 3m long, 100 ton.

Various hand-folders, flattening rolls fly presses etc.

Guillotines: 2m, 2.5mm thick and 2.5m, 4mm thick.

Bronx flattening rolls 1.2m wide.

Light Angle Rolls.

CNC 3-axis Router 3 mtrs, 1.25 mtrs.

## Surface Treatments Capability

### Wet Processes

Process	Maximum Component Size (m)
Alocrom 1200	1.02, 0.70, 0.94
Cadmium plate	1.69, 0.78, 0.79
Cadmium Barrel	0.49, 0.49, 0.89
Chromic acid anodising	4.1, 0.83, 1.00
Chromic/ sulphuric pickling	4.1, 1.00, 1.31
Degrease	4.1, 1.00, 1.31
Nickel Strike	0.85, 0.48, 0.81
Phosphate	0.36, 0.36, 0.82
Stainless steel passivation	0.31, 0.31, 0.81
Zinc plating	0.85, 0.41, 0.83
Titanium pickling	0.5, 0.5, 0.91

### Paint and Coatings

*Paint line: spray-bake system (components up to 11m)*

Dry lubricant	Flexible permeable finish
Epoxide primer	Stoving finish
Bond primer	Textured finish
Spray paint (air drying system)	

### ***Metal spraying:***

Zinc and aluminium spray

<b>Heat Treatment:</b>	Maximum Component Size
Stress relieving	0.56m, 0.56m, 0.56m
De-embrittlement	



**Surface Preparation:**

**Maximum Component Size**

Abrasive blasting (Vacublast):

4.3m, 2.44m, 2.44m

Glass bead blasting

0.4m, 0.4m, 0.4m

**Testing and Inspection**

Non-destructive testing

Grain flow testing

Conductivity testing

Etch inspection

Tensile testing

Dye penetrant inspection

Hardness testing

Magnetic particle inspection

Composite testing