

ADVANCED MACHINING CENTRE.

ENGINEERED FROM CONCEPT
TO COMPLEX COMPONENT



LIBERTY

ADVANCED MACHINING CENTRE - LIBERTY Speciality Steels

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MEMBER OF



LIBERTY Speciality Steels has established an on-site state of the art machining centre.

This complements our steel offering and adds value by moving downstream.

We have the ability to deliver projects from initial concept right through to finished components serving sectors as diverse as Aerospace, Automotive, Green Energy, Oil & Gas, Yellow Goods, Construction, Industrial Machinery and General Engineering.

SCOPE

Capability

The current manufacturing capability covers:

- Horizontal turning capability is 480mm in diameter x 2m in length
- Vertical turning capability is 920mm in diameter x 800mm in length
- Horizontal and vertical milling up to 3m long, 800mm wide and 720mm high
- Internal and external cylinder grinding up to 1.6m long
- Latest in on board, CMM and comparator checking
- Leading edge tool holding and work holding

Certification

Fully certified to meet aerospace customer requirements.

Materials

We have the ability to source and manufacture a wide range of materials from our own manufacturing capability and through our own in-house service centres.

Typical materials sourced and manufactured include carbon, alloy, tool and stainless steels, nickel alloys and titanium alloys.

Approvals

AS 9100 Rev D ISO 9001 ISO 14001

THE HEART OF THE FACTORY

Mazak I-400ST (Multi-tasking mill/turn)

With 12” main chuck and a 10” second spindle plus lower turret the I-400ST features a large machining area and high accuracy performance, long strokes for large workpiece capacity and unsurpassed versatility thanks to B-Axis and C-Axis contouring, full simultaneous 5-Axis operation.

Chuck size (Main / Second)	12” / 10”
Max. machining diameter (Upper turret)	650mm (25.9”)
Max. machining diameter (Lower turret)	420mm (16.5”)
Maximum machining length *1	1519mm (59.8”)
Travel (X / Y / Z)	615 / 250 / 1585mm (24.2”/9.8”/62.4”)
Travel (W / B)	1539mm (60.6”) / -30° to 210°
Max. spindle speed	4,000rpm (main), 3,000rpm (second), 12,000rpm (milling)



2 MILLING

Mazak VTC800/30SR (5 - axis milling)

The VTC800/30SR allows for multiple – face milling and 5 – axis simultaneous machining thanks to the 110° swinging 18,000rpm spindle.

Table Size	3500 x 820mm (137.8" x 32.3")
Travel (X / Y / Z)	3000 / 800 / 720mm (118.1" / 31.5" / 28.3")
Travel (B / C)	-110° to 110° / 360
Max. spindle speed	18,000rpm



Fanuc Robodrill (5-axis milling)

The Robodrill a-DIA series is a high performance, compact axis/vertical machining centre capable of machining operations like face milling, end milling and drilling.

Table size	850mm x 410mm (33.5" x 16.1")
Travel (X / Y / Z)	700 / 400 / 330mm (27.6" / 15.7" / 13.0")
Maximum load of table	300kg (660lbs)
Max. spindle speed	10,000rpm



TURNING

Mazak Quick-Turn 250MB

Chuck size main spindle	10"
Maximum swing	695mm (27.3")
Maximum machining diameter	380mm (15")
Maximum turning length	512mm (20.1")
Rotating speed maximum	4,000 min ⁻¹
Motor output (30 minute rating)	26.0 kW
Rotating speed maximum	6,000 min ⁻¹
Number of tools	12 (all 12 can be driven)
Mill spindle motor output (10 minute rating)	5.5 kW
Travel (X / Z)	234mm / 625mm (9.2" / 24.6")



RoboJob Turn-Assist 180 with hydro-feed

20kg payload
Workpiece size from
23mm – 180mm Diameter

Mazak Quick-Turn-350MB

Fed by RoboJob Fanuc dual Pallet Load/ Pallet Unload payload 165kg

Chuck size main spindle	12"
Maximum swing	720mm (28.3")
Maximum machining diameter	420mm (16.5")
Maximum turning length	1234mm (48.6")
Rotating speed maximum	3,300 min ⁻¹
Number of tools	12 (all 12 can be driven)
Travel (X / Z)	240mm / 1314mm (9.4" / 51.7")



Mazak Quick-Turn 450M

Chuck size main spindle	18"
Maximum swing	845mm (33.3")
Maximum machining diameter	580mm (22.8")
Maximum turning length	2029mm (79.9")
Rotating speed maximum	2,000 min ⁻¹
Motor output (30 minute rating)	37.0 kW
Number of tools	12 (all 12 can be driven)
Mill spindle motor output (10 minute rating)	7.5 kW
Travel (X / Z)	350mm / 2,120mm (13.8" / 83.5")



Mazak Mega Turn 900M

Chuck size main spindle	36"
Maximum swing	1000mm (39.4")
Maximum machining diameter	920mm (36.22")
Maximum machining height	800mm (31.5")
Maximum machining weight	3,000kg (6614lb)
Rotating speed maximum	4,000 min ⁻¹
Number of tools	12 (all 12 can be driven)
Travel (X / Z)	470mm / 876mm (18.5" / 34.5")



Doosan Puma 400LB

Chuck size	15"
Turning diameter	550mm
Max. Swing	770mm (30.3")
Maximum turning length	2093mm (82.4")
Max. Bar Working Capacity	117mm
Max. Spindle Rotation Speed	2,000rpm
Travel (X / Z)	363mm / 2154mm (14.3" / 84.8")



Doosan Puma 240

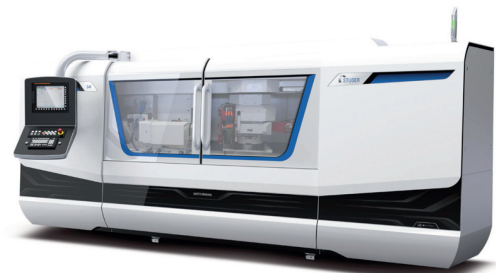
Chuck size	8"
Turning diameter	350mm
Maximum swing	560mm (22")
Maximum turning length	560mm (22")
Max. spindle speed	3,600rpm
Travel (X / Z)	242mm / 580mm (9.5" / 22.8")



PRECISION GRINDING

Studer S41

Distance between centres	1600mm (63")
Centre Height	225mm (8.9")
Max. workpiece weight between centres	250kg (550lbs)
Max. travel (X / Y)	350mm (13.8") / 1750mm (68.9")
Speed (X / Y)	0.001 – 20,000mm/min (0.000,04 – 787inch/min)
Resolution (X / Y)	0.0001mm (0.000,000,4")
Swivelling range	-40° to +225°
Repetition accuracy	< 1"
Swivelling time for	180° < 3 sec
Resolution	0.00005o



4 INSPECTION ROOM

Our dedicated temperature controlled inspection room has the following facilities:

Nikon CMM frame with Renishaw REVO Renscan5 head

Frame	2 Nikon LK-V 20.12.10 Bridge Type
Head	5-Axis



Inspection Envelope

Length	1000mm (39.4")
Width	800mm (31.5")
Height	500mm (19.6")
Accuracy	MPE: 2.9µm + L/375

Baty R400 Shadowgraph

Measuring range	300mm x 150mm (12" x 6")
Surface Illumination	0.5 mm resolution
	Yes

Keyence IM-7010

Field of view		Wide-field measurement mode : 200 mm x 200 mm 7.87" x 7.87" (4x R50) High-precision measurement mode : 125 x 125 mm 4.92" x 4.92"
Minimum display unit		0.1 µm
Repetition accuracy	W/o stage movement	Wide-field measurement mode: ±1 µm High-precision measurement mode: ±0.5 µm
	With stage movement	Wide-field measurement mode: ±2 µm High-precision measurement mode: ±1.5 µm
Measurement accuracy (±2σ)	W/o binding	Wide-field measurement mode: ±5 µm *1 High-precision measurement mode: ±2 µm *2
	With binding	Wide-field measurement mode: ± (7+0.02 L) µm *3 High-precision measurement mode: ± (4+0.02L) µm *4



CNC SOFTWARE

To support machine tools the AMC has invested in software which includes:



Solidworks: 3D design software



Vericut: Tool path verification and the material removal process simulation, detecting errors in CNC programs.



Edgecam: CNC programming and toolpath generation software, full 5-axis capability

Other facilities

- Oven and Cryogenic assembly
- Nikken off-line tool presetter, tooling ID chip system
- Dot matrix part marking
- Ultrasonic part cleaning facility
- Rösler Rumbler