Light/medium CNC machining

CNC production cell:

Cincinnati Hawk 150
(including Hydrafeed Auto Bar feeder)
- Total swing: Ø520
- Max turning dia: Ø210
- Max bar feed capacity: Ø51 x 1000
- Distance between centres: 425
- With live tooling

Cincinnati Hawk 250
(including Hydrafeed Auto Bar feeder)
- Total swing: Ø530
- Max turning dia: Ø354
- Max bar feed capacity: Ø77 x 1000
- Distance between centres: 670
- With live tooling

Cincinnati Hawk 300
(including Hydrafeed Auto Bar feeder)
- Total swing: Ø530
- Max turning dia: Ø354
- Max bar feed capacity: Ø80 x 1000
- Distance between centres: 950

Cincinnati Arrow Vertical
Machining Centre
- Table size: 950 x 520
- Working area: 762 x 460 x 460
- DIN40 taper
- Single drive 4th axis with tailstock

Medium machining CNC Cell:

Toshiba BMC100 Twin Pallet Horizontal Machining Centre
- Table size: 1000 x 1000
- Working area: 1600 x 1000 x 1120
- BT50 taper

XYZ VM5000 CNC Milling Machine
- Bed size: 1930 x 355
- Working area 1500 x 580 x 625
- ISO40 taper

XYZ VL425-2M CNC Lathe
- Maximum turning dia: Ø480
- Max turning dia over saddle: Ø257
- Distance between centres: 2000

DSG type 21 CNC Lathe
- Max turning dia: Ø600
- Max turning dia over saddle: Ø380
- Distance between centres: 2500
- C axis live tooling capability

Turbine blade manufacturing:

No1 Matsuura MC1500VX Vertical Machining Centre
- Table size: 1700 x 610
- Working area: 1524 x 610 x 610
- BT50 taper
- Single drive 4th axis with tailstock

No2 Matsuura MC1500VX Vertical Machining Centre
- Table size: 1700 x 610
- Working area: 1524 x 610 x 610
- BT50 taper
- Dual drive 4th axis

Huron CNC Milling Centre
- Table size: 2000 x 460
- Working area: 1800 x 460 x 300
- ISO50 taper
- Single drive 4th axis with tailstock

Heavy CNC capability

Union PCR150 11 axis CNC Horizontal Floor Borer
- Table size: 16000 x 5000
- Total working area: 14000 x 4000 x 4000
- 40 position auto tool changer
- 70 tonne rotary table: 4000 x 3000
- Cytec 360° angle milling head
- 24 position tool changer for cytec head
- DeAndrea facing head

Safop 5 axis CNC Turning Centre
- Max turning dia: Ø2000
- Distance between centres: 12000
- 2 steadys up to: Ø650
- Total weight with steadys: 60 tonne
- Total weight without steadys: 30 tonne
- Deep hole ejector drilling facility

Bennet CNC Vertical Borer
- Max swing: Ø2133
- Max turning dia: Ø2032
- Max height under rail: 1156
- Max weight: 6 tonne

CMM Capability
(Including mobile faro arm CMM facility)
Brown & Sharp Co ordinate Measuring Machines
- x = 1.2m y = 2.2m z = 1m

High tolerance CMM

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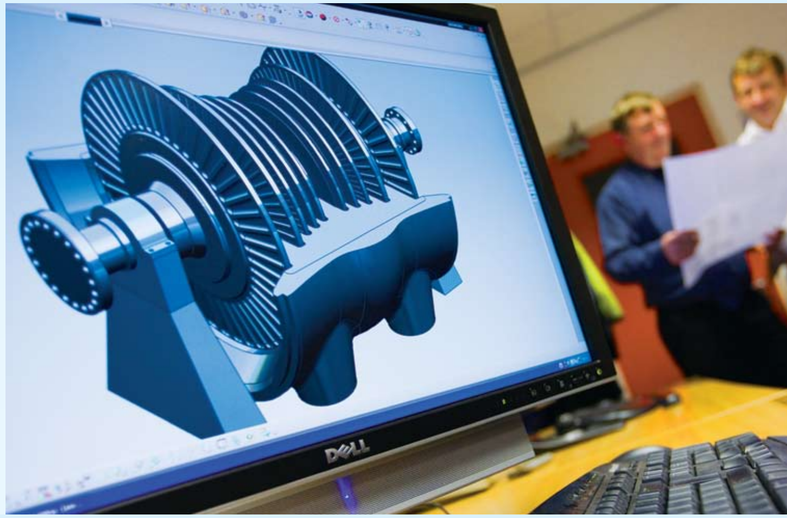


CNC Engineering

Engineering excellence you can trust

RWE
The energy to lead

RWE Power International's CNC engineering facility covers the whole range of CNC services from small component machining through to very large multiaxis machining up to 90 tonnes.

We have a proven track record for quality, gained in the power, steel, chemical and other industries, where accuracy is of paramount importance. Our experienced teams are skilled in the machining of a wide range of equipment from simple castings to complex steam turbines.

Our seven days a week operation ensures that your requirements are met with a minimum of downtime and loss of production. We can react to emergency situations by working 24 hours as required. Our facilities are located at our workshops which are easily accessed via the motorway network at Ferrybridge, West Yorkshire.

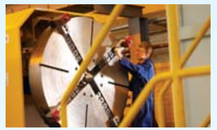
Our CNC services are backed up by our engineers, who have over 20,000 man years of engineering experience.

Programming the CNC machine

Machining a 90 tonne component on the CNC Union Borer

Our comprehensive range of workshop machine tools is capable of handling components as a one off or a batch and our significant investment in the latest technology means we can manufacture components to the highest standards and exacting customer requirements. Our skilled operators pride themselves in attention to detail, ensuring that the work is right first time.

Safop Leonard 70–2500 5 axis turning centre



Chuck setting on CNC lathe

CNC re-engineering

Re-engineering enables components to be engineered and manufactured where production drawings are not available.

To re-engineer a component our engineers would follow the process set out below:

Stage 1

Using the latest Co-ordinate Measuring Machine (CMM) technology, the profile of the component is scanned and the information is used to create an electronic 3D model. This enables the most intricate of profiles to be reproduced.

The material is analysed to identify the correct material grade and composition. The hardness is also checked. Depending on the component, a 2D drawing is then prepared, together with a report to state the correct material for the application. Our comprehensive engineering support can suggest alternative materials where the original is obsolete or superior grades are available.

Stage 2

Using the latest Unigraphics and CGtech (Varicut) software, our CNC production team prepare a CNC part programme and start the machining process. Our software enables virtual machining to be carried out and the finished product to be compared to the original 3D model of the sample, virtually eradicating the likelihood of error in the actual machining process.

Stage 3

The CNC programme is posted to the machine tools and the machining process is carried out to produce a finished component. We have invested significantly in the latest 4 and 5 axis CNC machine tools which offer the latest in machining technology. Our modern tooling solutions have embraced such concepts as high speed metal removal. We can offer simultaneous 3 and 4 axis machining which enables almost any shape to be reproduced accurately and consistently.

Stage 4

The finished component is measured and profiles scanned on the CMM. A new 3D model is produced and compared to the original model from the sample. This effectively closes the loop, giving almost 100% successful reproduction first time.

CNC capacity

Our CNC capacity covers the whole range of components from small fasteners to very large steam turbine components.

Heavy machines

Following our major investment in CNC plant, TSG Ferrybridge have superb capabilities in heavy machining. We have over 30 years' experience of machining in heavy industry and our workforce are highly skilled and experienced.

Our Union CNC Floor Borer is the largest machine of its type in the UK. The 70 tonne rotary table has an infinitely variable rotation of 360 degrees and also advances and retracts allowing oversized components to be rotated without interference from the machine structure.

The facing head is fully programmable and enables static bores to be CNC machined up to 1,400mm diameter.

The 150mm diameter spindle can be advanced 1,000mm and also has the capability for the ram to advance a further 800mm. With the rotating table having a retract and advance facility, large and deep bores can be machined.

The total working area of 14,000mm x 4,200mm operates to tight tolerances. Each section can be screened off to allow setting of components while machining is carried out in the adjacent bay.

Our Safop 5 axis turning centre has a unique capability for machining deep grooves between discs on applications such as turbine rotors. It has three detachable working heads which offer CNC turning with automatic tool change and 3 axis milling head. Our recent investment programme included upgrades to our CNC vertical borer and lathes.

Medium machines

We have the capability to carry out 3 and 4 axis simultaneous machining which is ideal when 3D profiles are required. The capability has been developed to manufacture high integrity turbine blades and hydro guide vanes.

Our Toshiba horizontal machining centre offers the latest in twin pallet capability for batches or single components. It is ideally suited to machining castings such as gear cases and pump casings. The XYZ CNC lathe and milling machines' capabilities include spindles and shaft machining and our Matsuura vertical machining centres are of robust design and are ideal for high volume metal removal. Infinitely variable 4th axis manipulation enables slender sections to be machined using 3 and 4 axis simultaneous machining without axis lag or distortion. They are suitable for complex geometries such as turbine blades.

Light machines

Our light machines offer bar feeding up to 90mm diameter and to enhance production all bar feeder units have a multifeeder capability.

Conventional machining

Developed to provide an alternative solution to the manufacture of High Temperature Fasteners, our CNC light machining facility includes the latest in automated technology. We can bar feed up to 90mm and have incorporated live tooling heads on many of our CNC turning machines. All our CNC milling has 4th axis capability and is backed up by powerful CAM software.

In support of this CNC capability, our workshops have an extensive conventional machining capability which includes turning, milling and boring up to 90 tonnes. Our facilities also include deep hole boring and bore honing capabilities for rotor shafts.

In addition to our workshop activities we also have an extensive in-house engineering support, which includes our NDE capability.