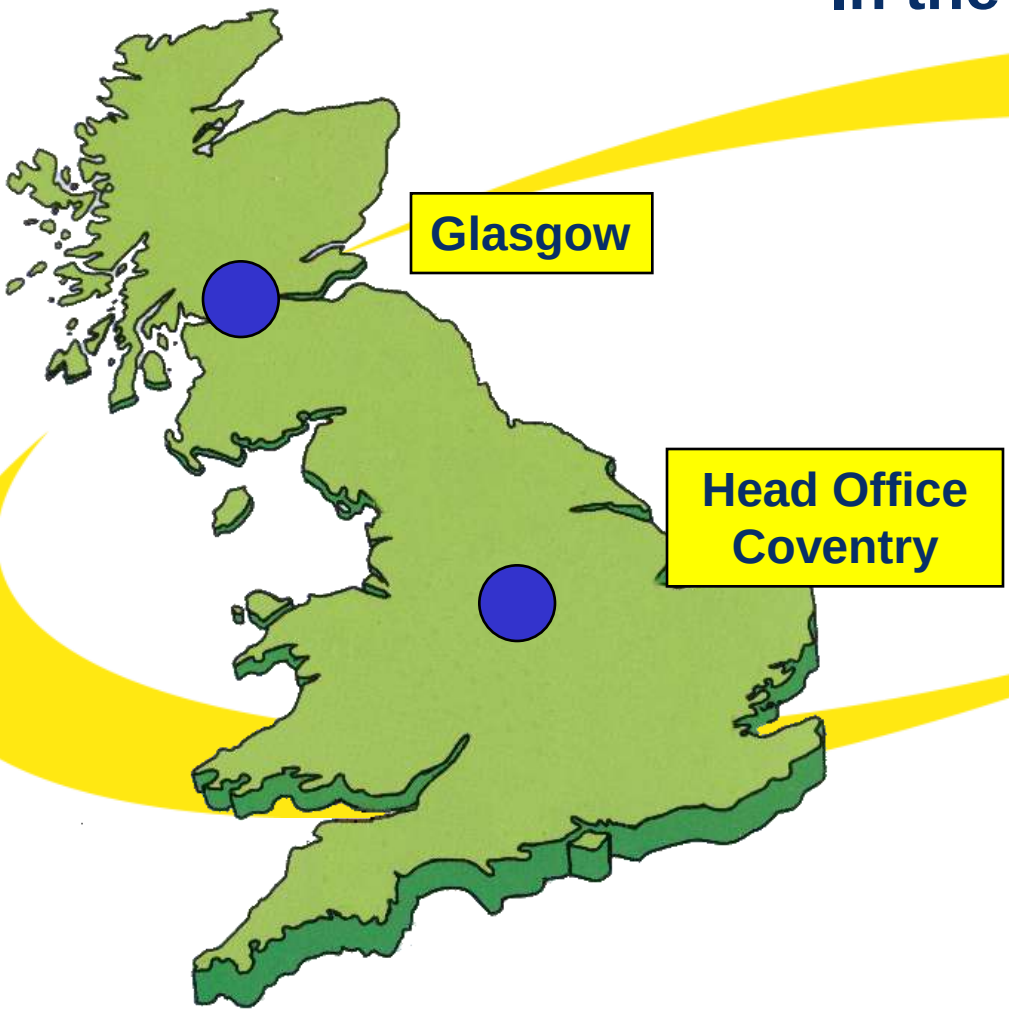
www.metalock.co.uk

Metalock Engineering Business Centres

In the United Kingdom



Working Worldwide
From the UK


Working
Worldwide
From the UK

Vision

Our concept is to supply customers with specialist ‘on-site’ engineering skills and services which reduces the need for companies to build their own engineering resources.
We help minimise production losses by effectively controlling maintenance and responding to breakdown situations.

24 hours a day

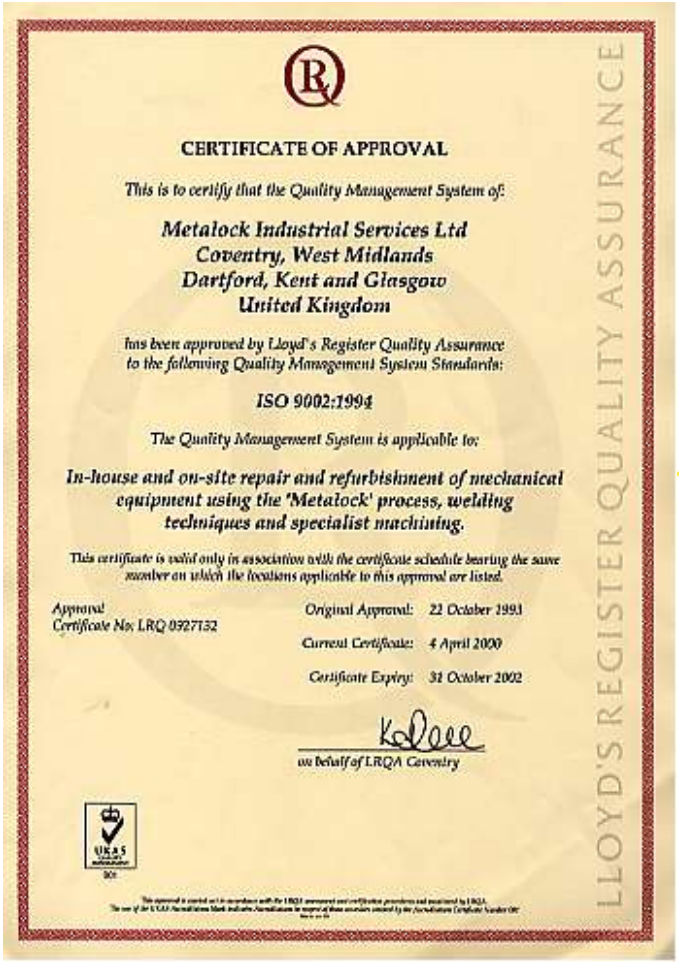
The UK team is fully versed in both emergency and planned maintenance situations.
On call 24 hours a day, all year round, we travel the World, performing engineering tasks for a wide ranging customer base.

Resources

The field engineers and technicians are backed by centres for engineering and trouble-shooting, which are based in well equipped workshops, covering the following disciplines:

- Precision machining on-site
- Precision machining in workshops
- Metalocking repairs to cast-iron, steel and alloy materials
- Welding and heat treatment on-site and in-house

Quality - ISO 9002



CERTIFICATE OF APPROVAL

This is to certify that the Quality Management System of:

Metalock Industrial Services Ltd
Coventry, West Midlands
Dartford, Kent and Glasgow
United Kingdom

has been approved by Lloyd's Register Quality Assurance to the following Quality Management System Standards:

ISO 9002:1994

The Quality Management System is applicable to:

In-house and on-site repair and refurbishment of mechanical equipment using the 'Metalock' process, welding techniques and specialist machining.

This certificate is valid only in association with the certificate schedule bearing the same number on which the locations applicable to this approval are listed.

Approval Certificate No: LRQ 0927132

Original Approval: 22 October 1993
Current Certificate: 4 April 2000
Certificate Expiry: 31 October 2002

on behalf of LRQA Coventry

LLOYD'S REGISTER QUALITY ASSURANCE

All our work is based on the ISO 9000 standard.

Health and Safety

POLICY STATEMENT

The Company comply worldwide with all Health and Safety legal requirements.

The Industries we serve

- Marine
- Steel and Aluminium
- Mineral Processing and Cement
- Power Generation
- Offshore
- Pressing and Forging
- Pulp and Paper
- Petro Chemical
- Bridges / Heritage
- Railways
- General Engineering

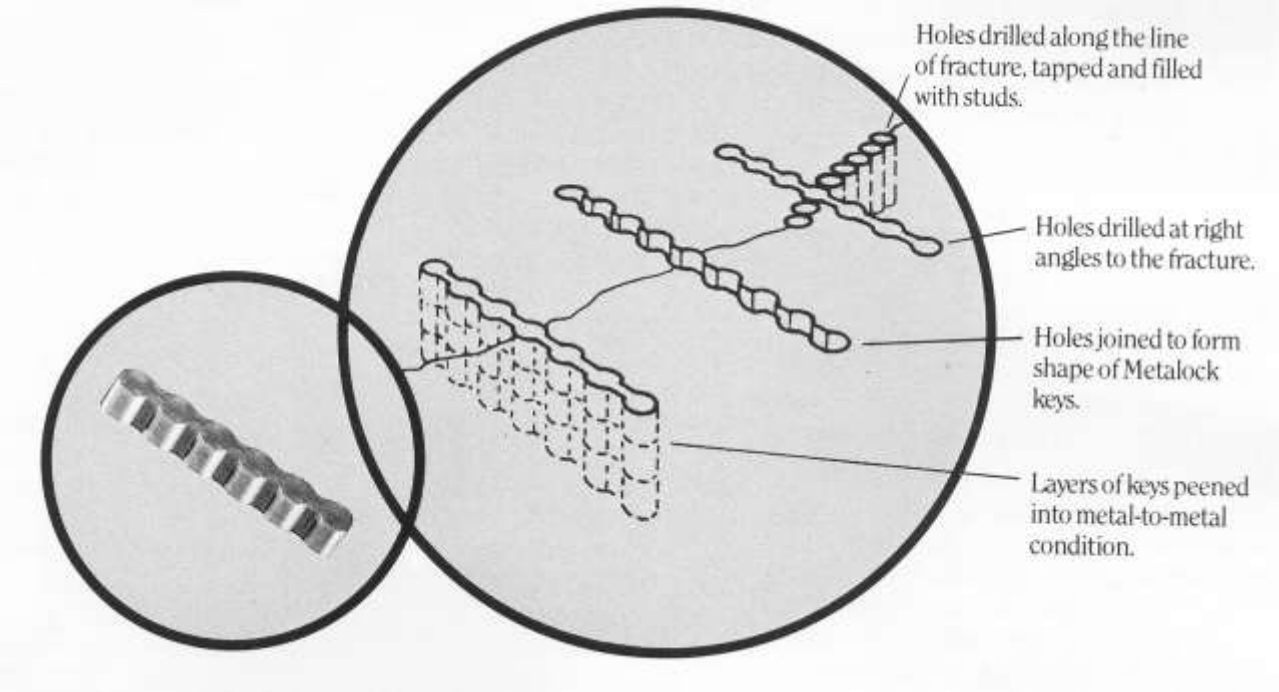
Workshops

CNC computerised machining centre for turning of piston crowns.

Design, development and manufacturing of special purpose production equipment to customers requirements.
All to CE marking directives (R&D).

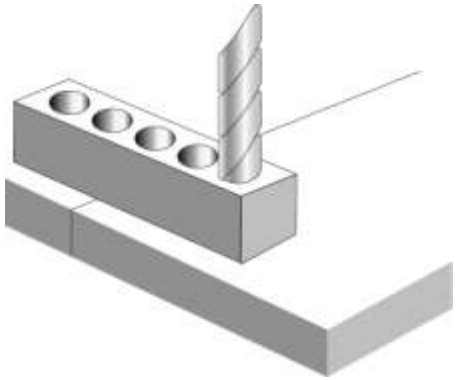
The Metalock process was first developed during the 1930's in the oil-fields of Texas

The open flame of welding presenting serious problems. The Metalock method, being completely cold, eliminated any danger in this connection

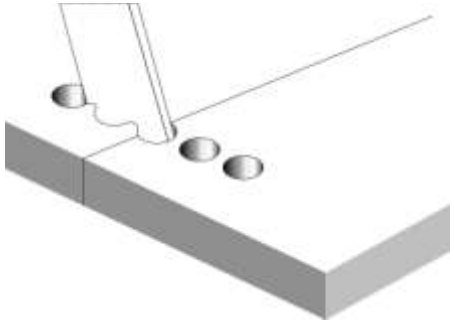


The Metalock process is based on sound engineering principles which have been accepted for more than a century.

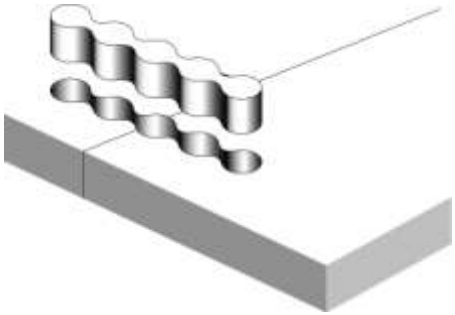
The Metalock Process



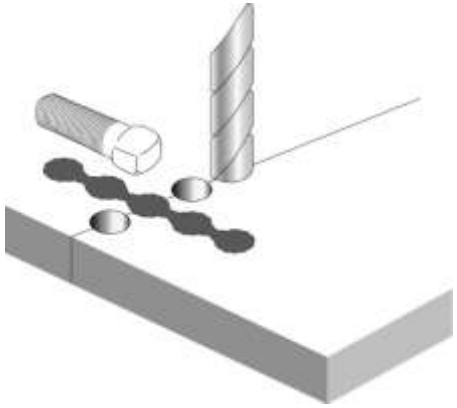
1. Using a drill jig, rows of blind holes are drilled perpendicular to the direction of the crack, each row to act as a key.



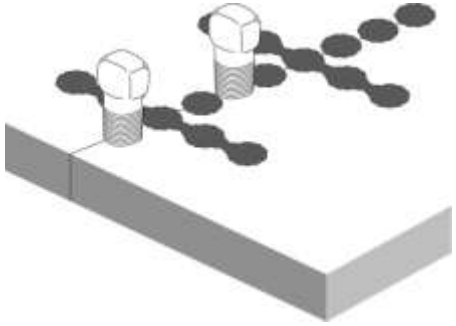
2. The intermediate partitions are removed with pneumatic chisel.



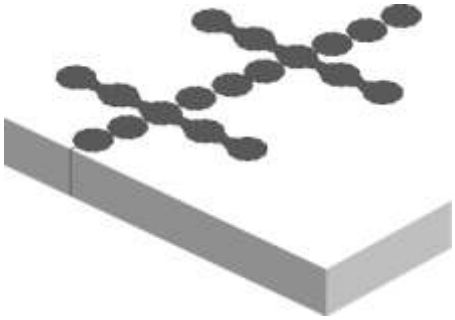
3. Metalock keys are driven into the openings and caulked.



4. Holes for Metalock screws are drilled along the crack between the keys.



5. The screws are fitted to ensure they overlap, effecting a seal along the fracture.



6. Finally, the entire installation is caulked to ensure stability and pressure tightness.

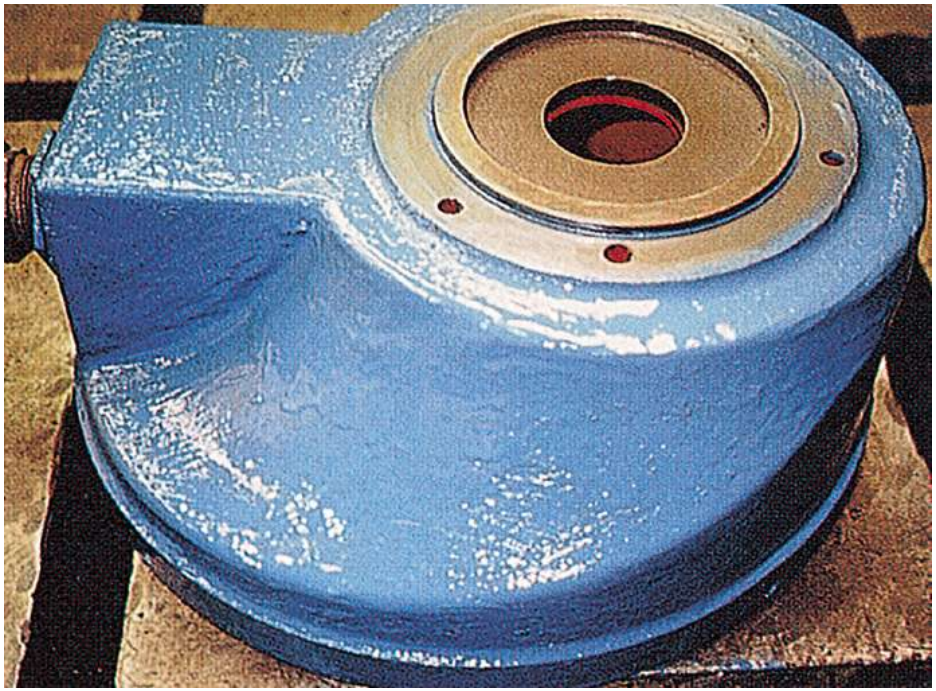
Advantages of the Metalock repair

Some of the advantages of the repair by the Metalock method are:

- Work can be, and usually is, done on site, with usually a very great saving in time and dismantling.
- Maintains alignment and original surfaces.
- Dampens and absorbs compression stresses and spreads tensile strains.
- Provides a good expansion joint on such jobs as cylinder liners.
- Distributes the load away from fatigue points.
- Maintains relieved condition of inherent internal stresses where these were the cause of the fracture, or partial cause.
- Provides a low co-efficient of expansion in the relation to the repaired metal.
- The repair being completely cold does not require the application of heat which could, and often does, introduce fresh stresses.

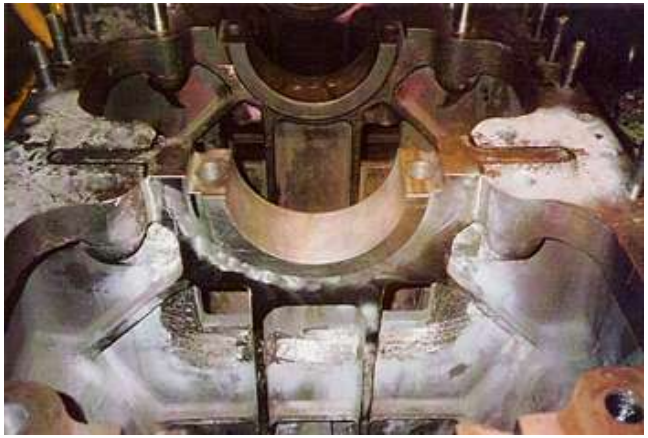
Metalock Casting Repairs

Metalock repair of an end cover of shaft bearing assembly.



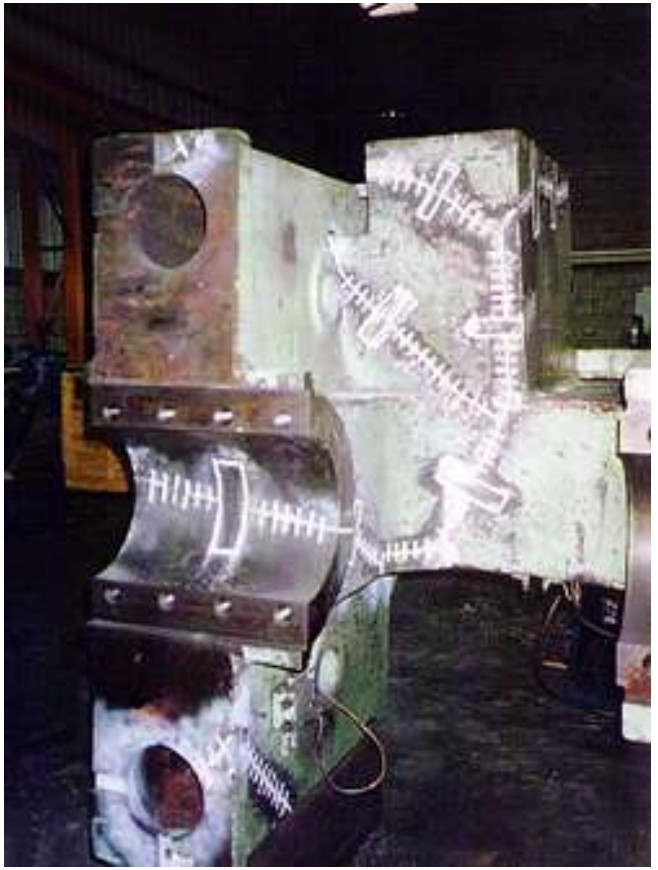
Metalock Casting Repairs

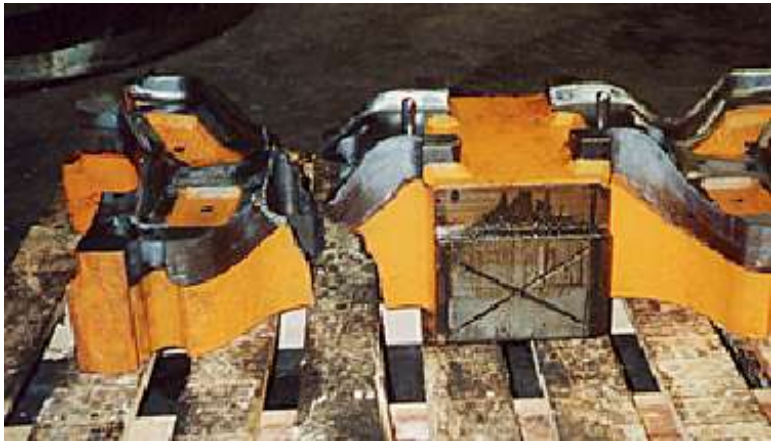
Replacement by Metalocking & subsequent machining of a main bearing pocket of a large marine diesel engine on board ship



Metalock Casting Repairs

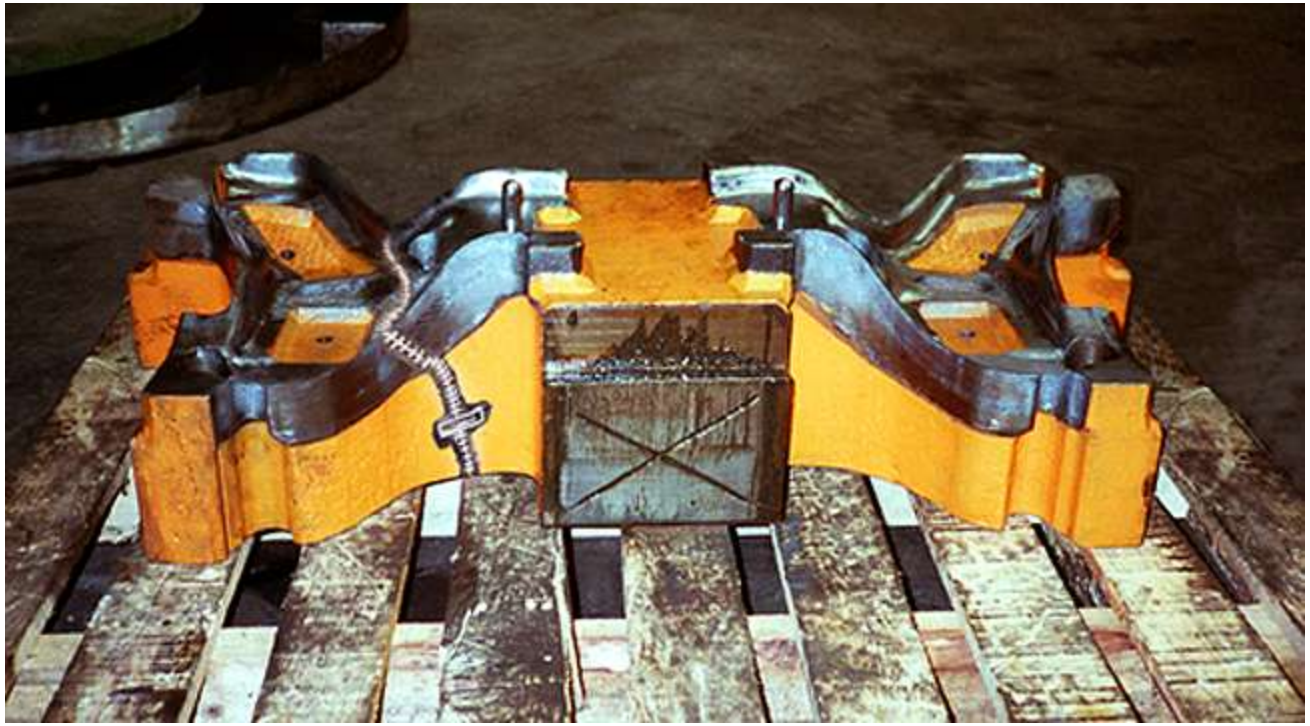
Repairs to a 650 ton press crown



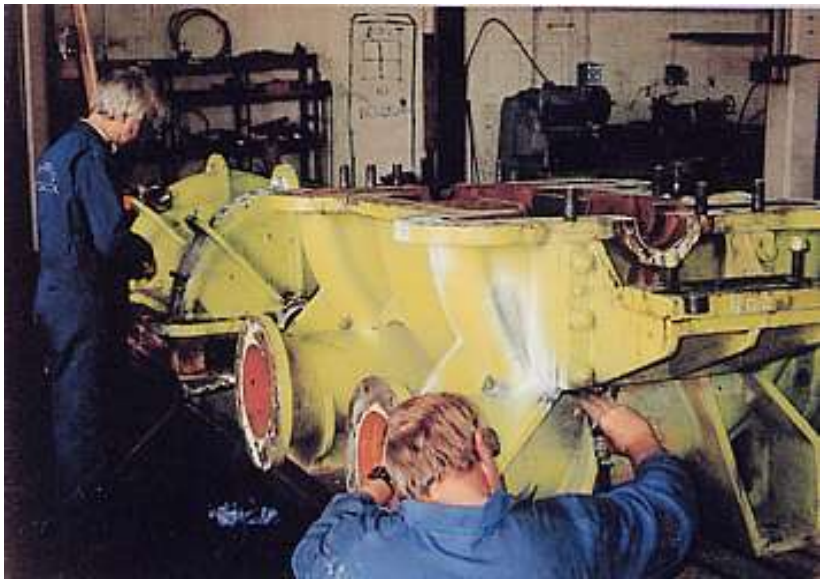


Metalock Casting Repairs

Metalock repair to fractured press tool



Metalock Casting Repairs



Repairs to pump casing that has been severely damaged by frost

Metalock Casting Repairs

Main engine entablature damage following con rod failure

Metalock Casting Repairs

Repairs to a badly broken gearbox cover

Metalock Casting Repairs

Cracked columns on Charing Cross Rail Bridge. Fractures extended top to bottom for 10 metres

Metalock repair to severe cracking in 48 inch diameter cast-iron water main

Metalock Casting Repairs

Spandril and railing repairs to Madeira Drive - Brighton

Cracked architectural flagpole

Marine

- Crankpin Journal Machining.
- Main Bearing Journal Machining
- Line Boring Engines.
- Optical/Laser Alignment.
- Line Boring Stern Tube/'A' Brackets & Rudder Bores.
- Upper & Lower Cylinder Liner Landing Sleeving.
- Replacing Broken Flywheel Gear Teeth.
- Coupling Hole Machining.
- Broken Stud Removal & Rethreading Holes.
- Machine Mounting Pads for Engines, Gearboxes, Pumps, Armaments.
- Metalock Repairs to Engine & Associated Components.
- Fusion Welding of Diesel Engine Cylinder Heads.
- Reconditioning Pistons, Valves & Seats.
- N.D.T. and Hardness Testing.

Marine

Turning a crankpin journal of a main diesel engine.

On board machining of a 730mm diameter crankpin journal

In-Situ boring of an 'A' bracket of a large cable laying vessel

Marine

Before

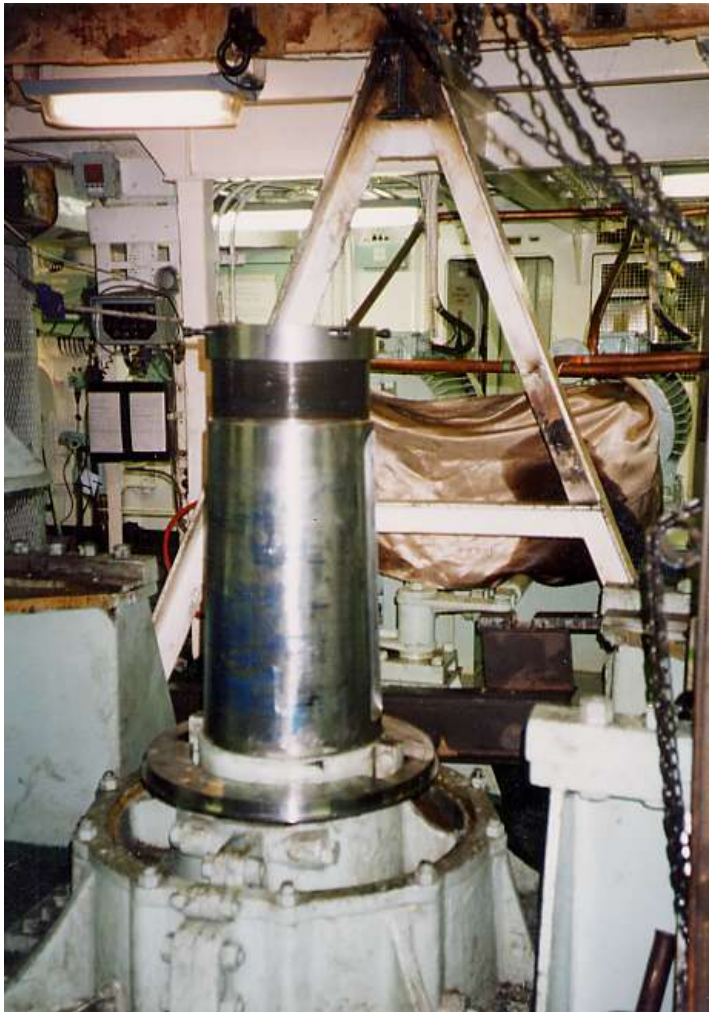
Welding repairs to marine cylinder heads

After

Marine

Upper liner landing refurbishment

Marine



RFA Fort Austin Taper Grinding Rudder Stock

Marine

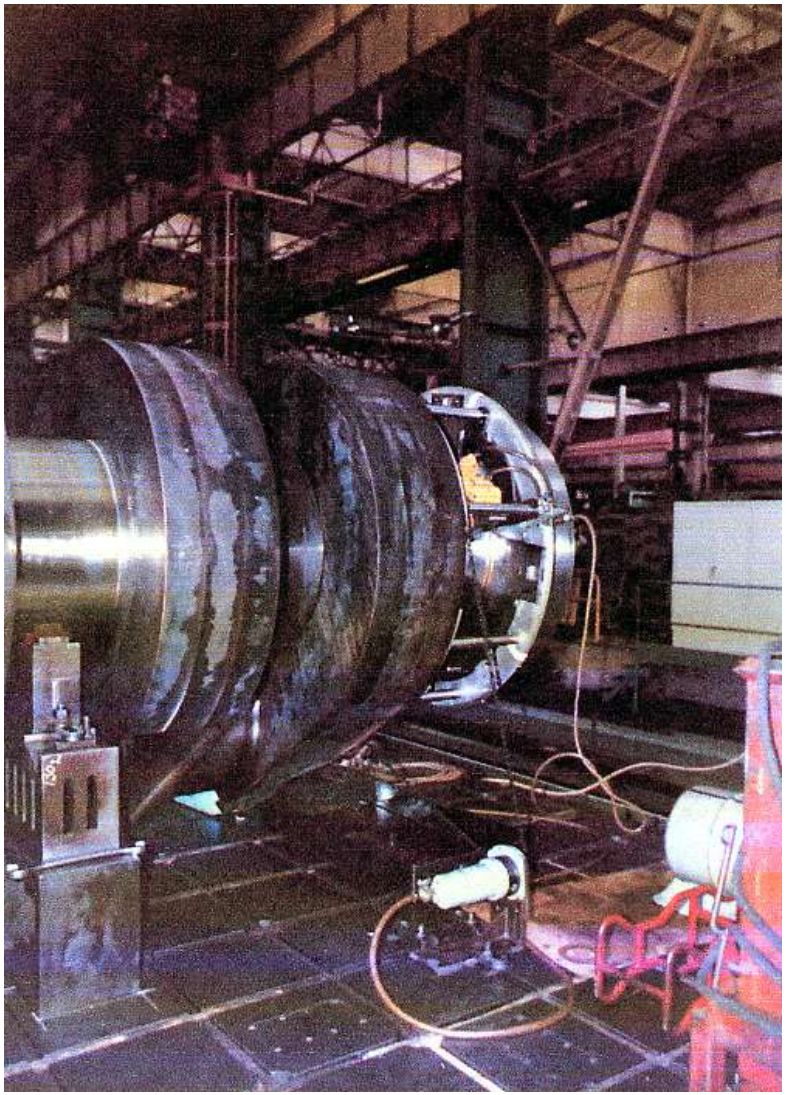
RFA Fort Austin Taper Grinding Rudder Stock

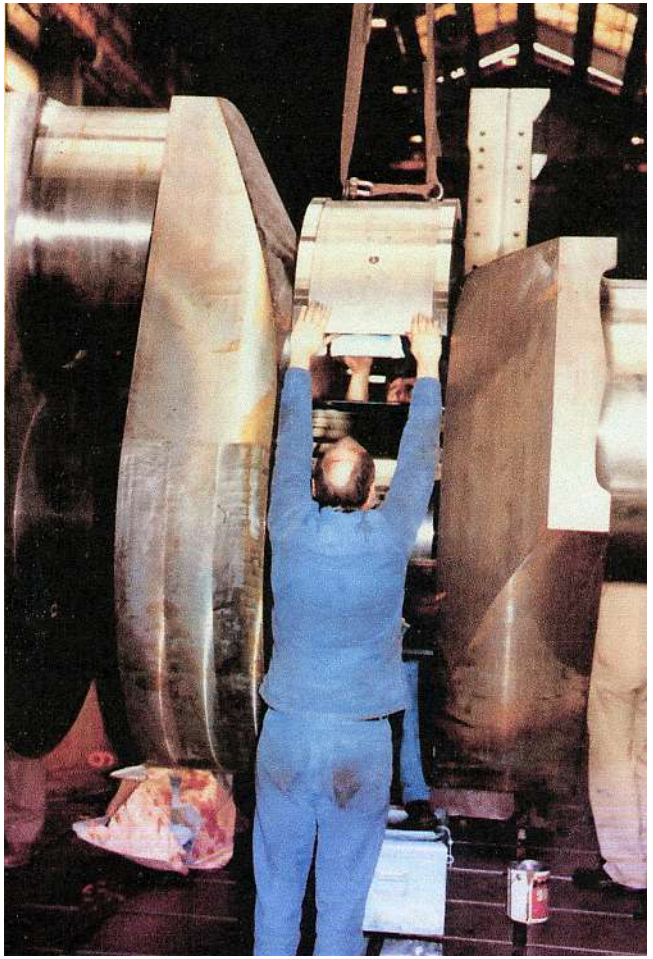
Marine

Line boring engine bearing pockets

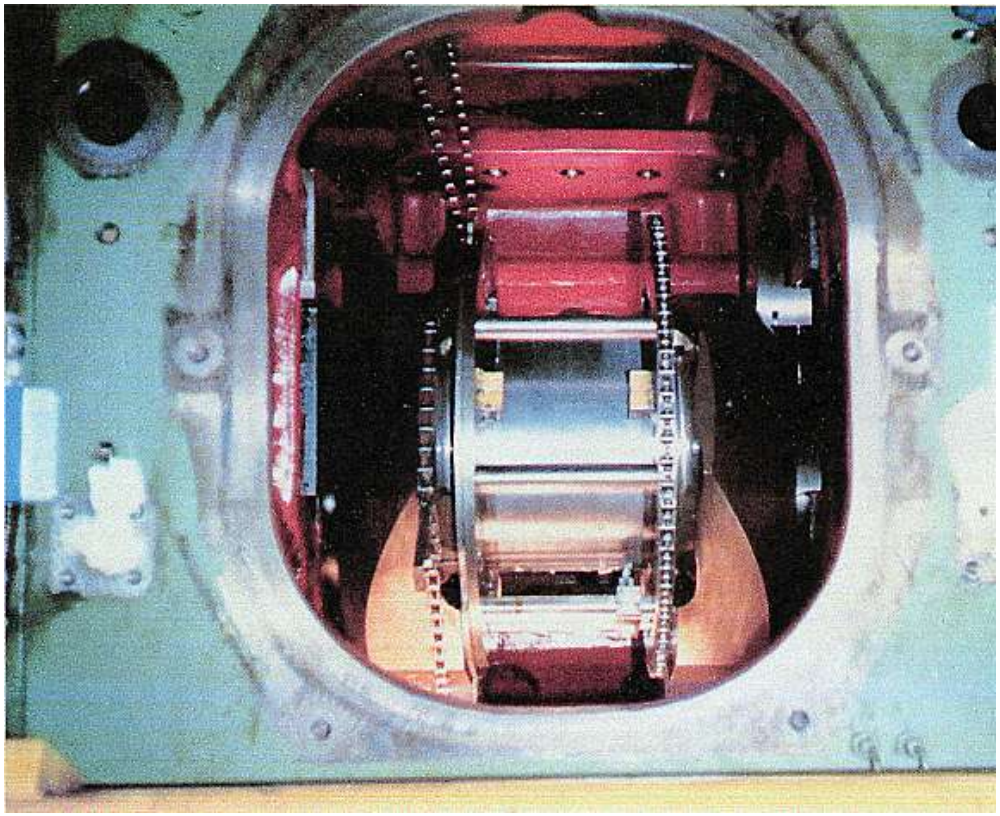
Marine

1metre diameter crankpin machining

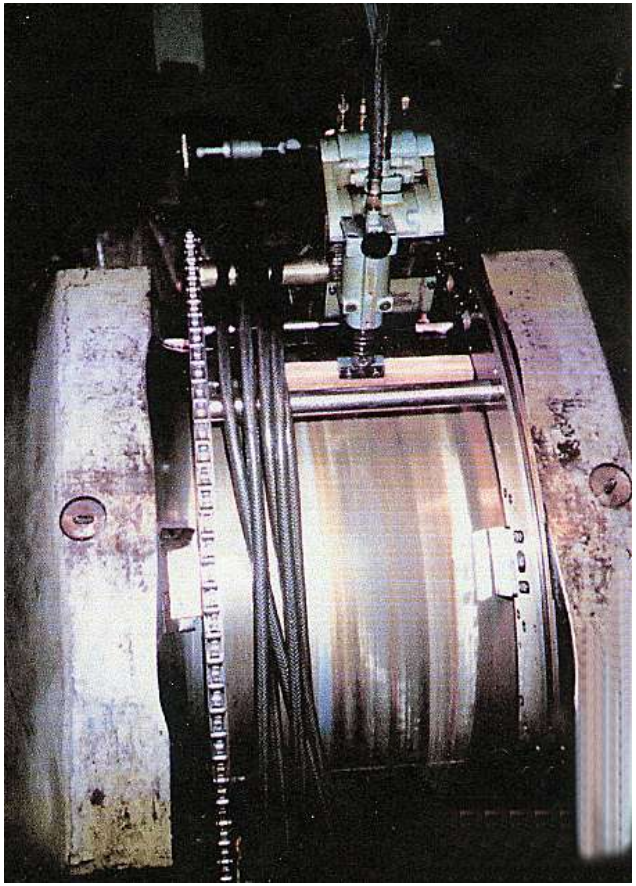




Marine



Machining



Superfinishing

Marine

Section of engine casing removed to gain access to machine the crank

Offshore

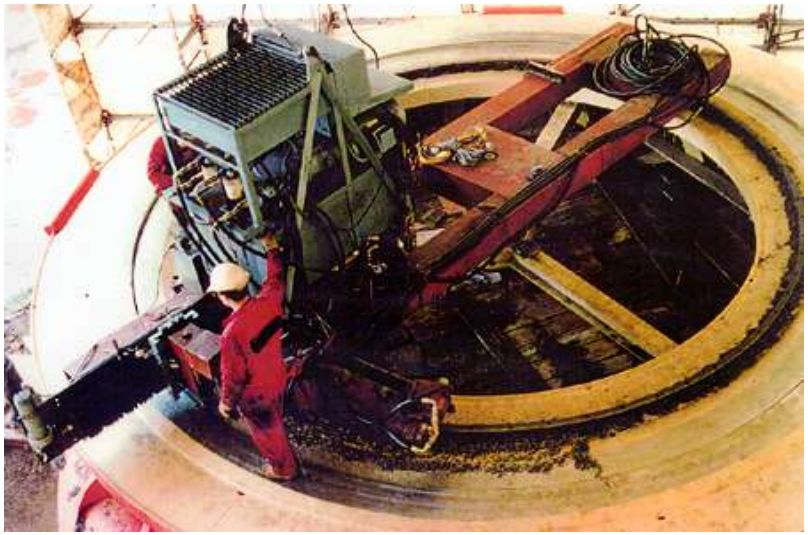
- Turntable Machining for Large Bearing & Slewing Devices up to 30 Metres Diameter
- Orbital Machining of Jacket Lifting Trunnions
- FPSO Turret Mooring Component Machining
- Anchor Pile Drive Head and Follower Machining
- Optical/Laser Alignment
- Diesel Generator Repairs (See Marine)
- Compressor Casing Machining
- Skid Pad Milling
- Metalock Repairs to Fractured & Broken Castings

Offshore

Turret equipped FPSO vessel

22 m diameter FPSO turret machining in progress. Developed in our R&D Centre.

Offshore



In-situ machining Ø7000mm Turret

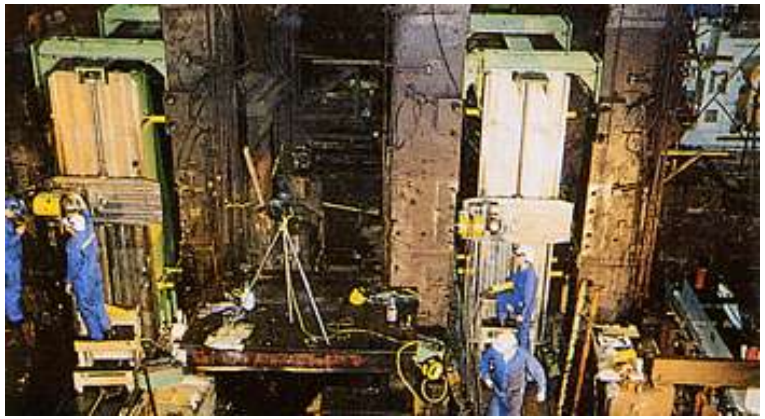
Machining of a Ø26000mm Crane Slew ring surface. 6000kg of material removed during this contract

Steel & Aluminium Metal Production

- Mill Housing Machining - Windows & Bases for Oversize Wearplates.
- Modification of Housings for Roll Bending / Shifting.
- Line Boring of Mill Gearboxes, Screwdown Bores, Crop Shears etc.
- B.O.S. Vessel Trunnions & Flange Joint Faces.
- Refurbishing of Main & Auxiliary B.O.S. Plant Ladle Trunnions by Machining & Sleeving.
- Orbital Machining & Grinding of Shaft Journals.
- Drilling, Tapping & Screwcutting of Large Holes.
- Metalock Repairs to Fractured & Broken Castings.

Steel & Aluminium Metal Production

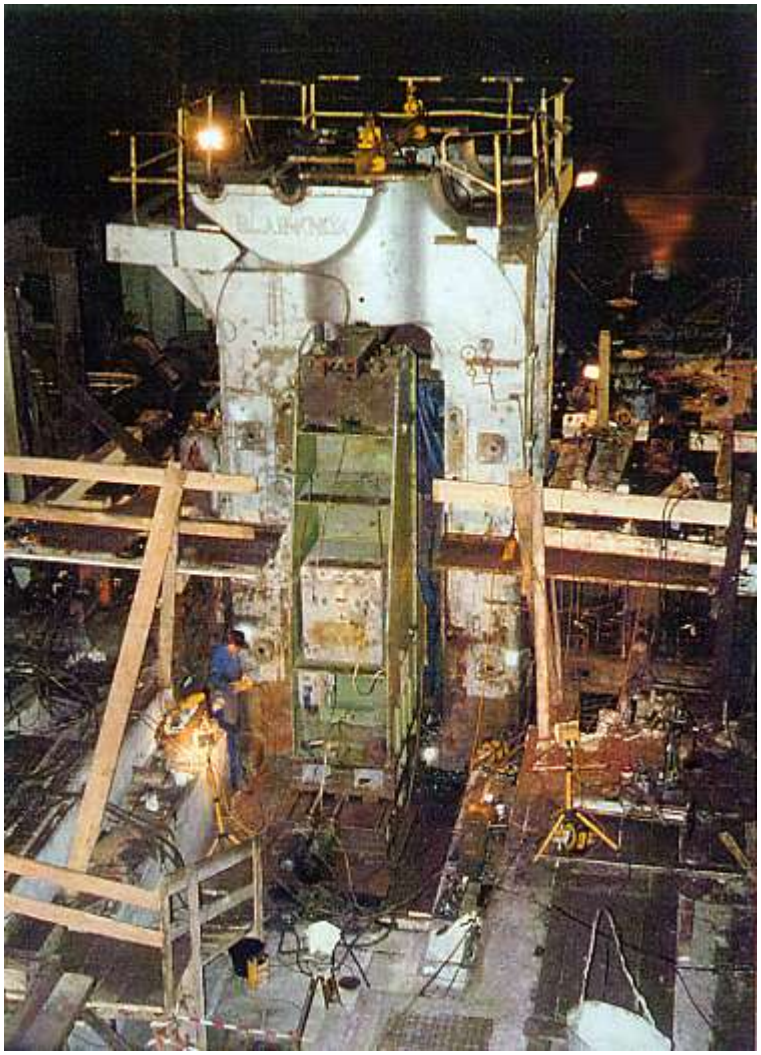
Specifically designed Mill Stand Base Milling Machine. Operator & drive side bases are machined simultaneously



Machining of Mill Housing windows for roll bending /shifting modification. 2 machines used in parallel

8000mm dia. Flange and seal groove machine of a BOS vessel horizontal joint

Steel & Aluminium Metal Production



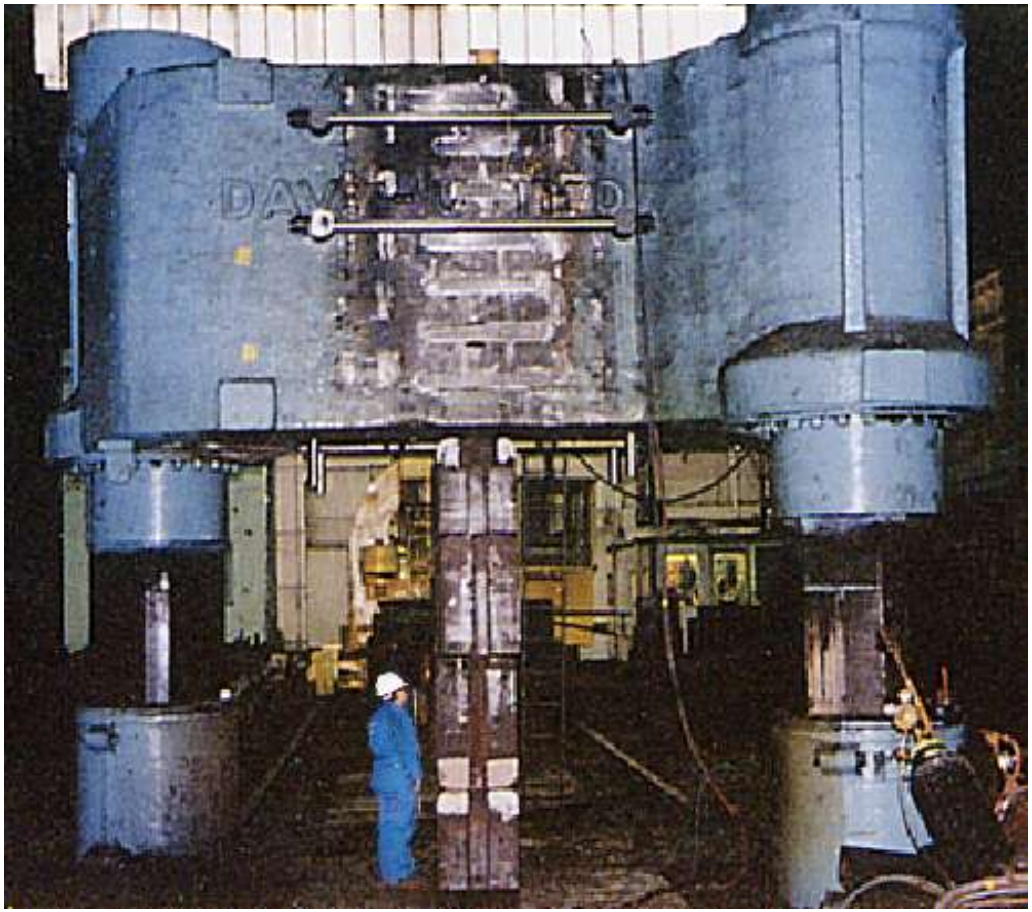
Mill housing machining for roll bending and automatic roll change equipment

Closer view of the machining in progress

Pressing & Forging

- Milling & Grinding of Press Beds
- Line Boring of Crown Housings
- Orbital Machining of Crank & Associated Drive Shaft Journals
- In-Situ Drive Shaft Keyway Machining
- Drilling and Tapping, Screwcutting Large Holes
- T-Slot Machining to Press Rams
- Metalock Repairs to Press Frames & Crowns
- Metalock Repairs to Rams & Press Tools
- Metalock Repairs to Guillotines
- Welding Repairs to Press & Forging Frames

Pressing & Forging



Combined machining and metalock repair to a 3000 ton forging press

Precision grinding of a 2000mm x 1500mm wide die location bed of a canning press

Pressing & Forging

Live boring of cylinder housing of forging press

1000 ton forging press. Milling of vertical columns to remove wear

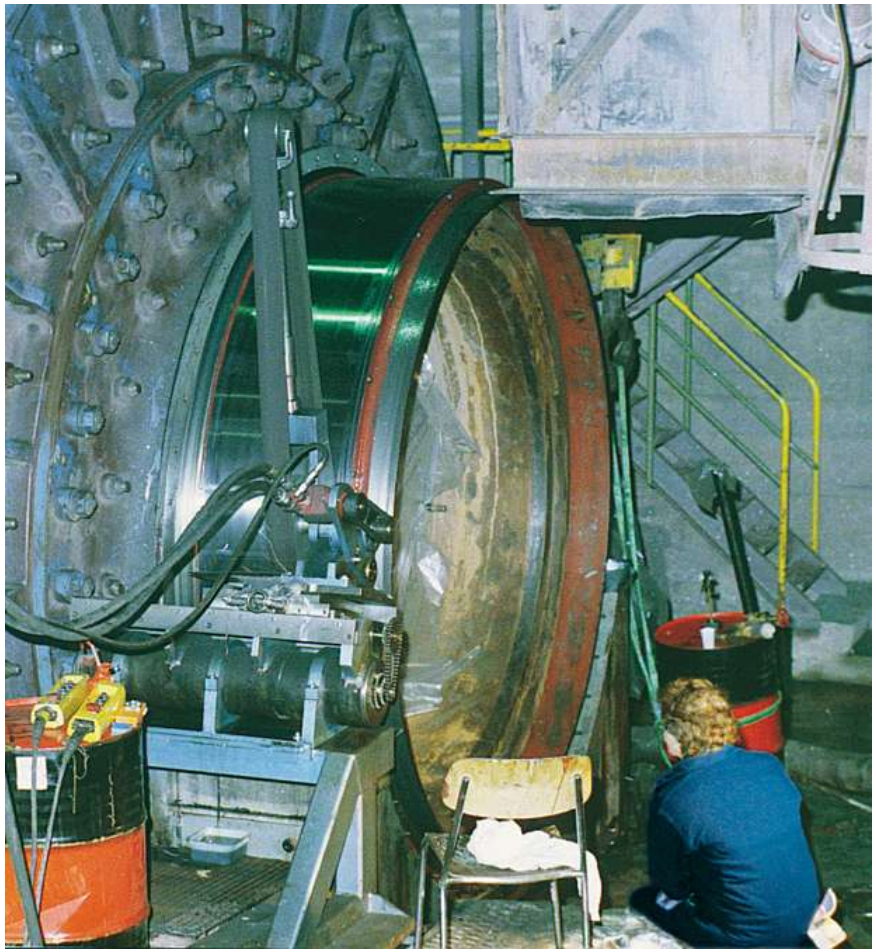
Pressing & Forging

Machining of base plates of automotive press tool

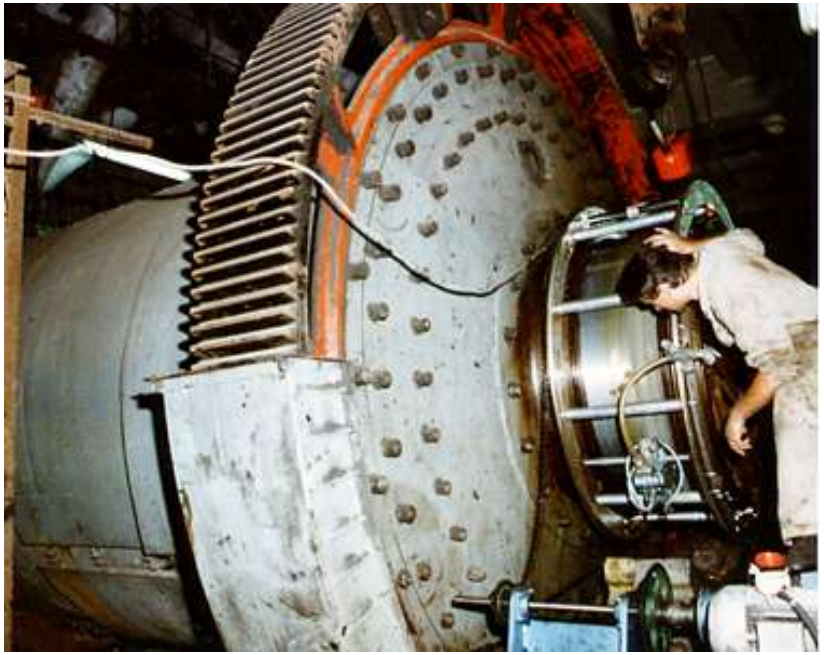
Mineral Processing & Cement

- In-Situ Grinding of Tyres/Support Rollers of Kilns, Dryers & Calenders etc.
- Orbital Machining & Grinding of Shaft Journals to Crushers, Ballmills & Drive Equipment
- Bedplate Milling
- Line Boring of Gearboxes
- Flange Machining
- Girthwheel/Crusher Geartooth Replacement
- Metalock Repairs to Fractured & Broken Castings
- Welding Repairs to Kiln Tyres, Support Rollers & Associated Plant

Mineral Processing & Cement



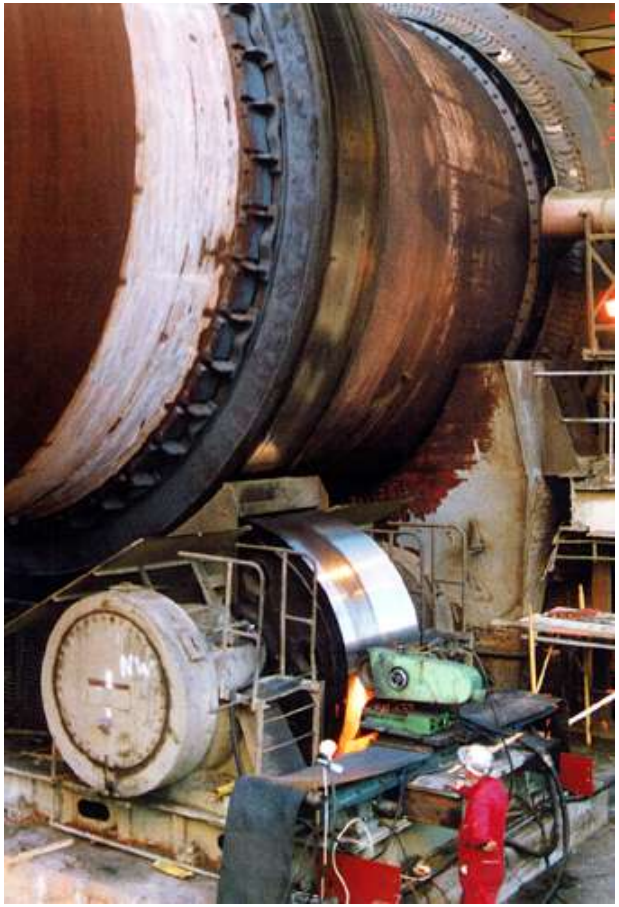
Grinding of a hydrostatic bearing on a crusher drum



Orbital machining of a Ø900 Cement crusher journal

Mineral Processing & Cement

In-situ grinding of a Ø6000 Cement Kiln

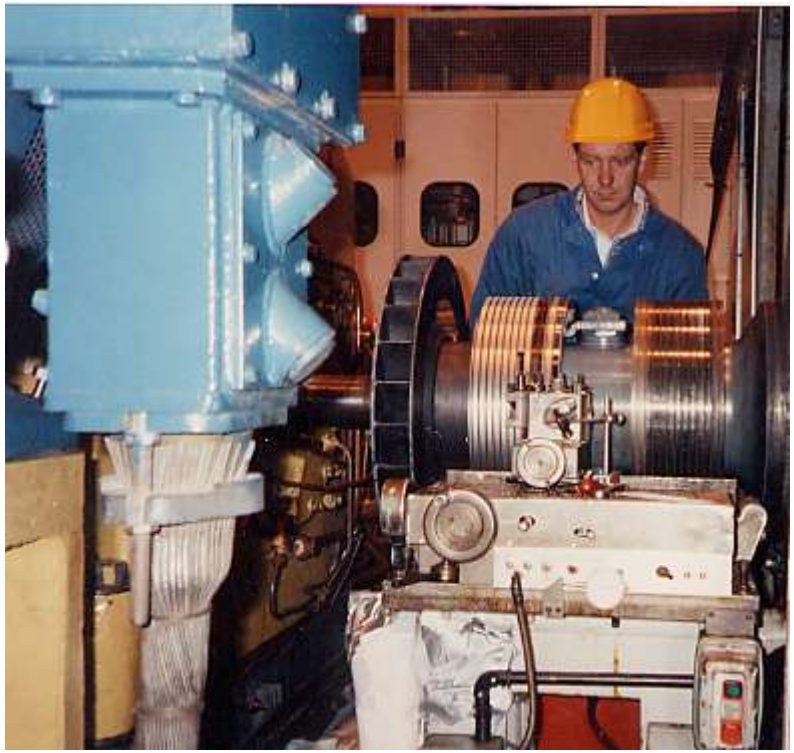


Grinding of a Ø2000 support roller

Power Generation

- Line Boring Turbine Casings for Diaphragms, Glands & Seals
- Machining of Steam Inlet & Outlet Flanges
- Machining of Turbine Casing Horizontal & Vertical Join Faces
- Coupling Hole Machining
- Drilling, Tapping & Doweling of Turbine Parts
- Tip Grinding of Rotary and Fixed Blading
- Casing Stud Removal
- H.P/IF. In-Situ Valve Machining Work
- I.D./F.D. Fan Journal Orbital Machining
- Turbine Rotor Journal Orbital Machining
- Elliptical Manway Door Machining
- Remote Controlled Machining in Nuclear Power Stations
- Metalock Repairs to Fractured & Broken Castings
- Girthring Repairs

Power Generation



Slip Ring machining at Wylfa Power Station

Line boring labyrinth seal groove to a steam turbine casing

Power Generation

Replacement of section of Double Helical Gear Segment (3 teeth) to Rotary Pulveriser

Line boring to four stages of 45mw Turbine Casing for replacement blading

Pulp & Paper

- In-Situ Grinding of Drying Cylinders
- In-Situ Grinding & Superfinishing of Yankee Dryer Cylinders
- Grinding of Hydrostatic Debarking Drum Tyres & Thrust Faces
- Sleeving of Damaged Drying Cylinder Journals
- Calendar Roll & Frame Machining
- Line Boring & Milling Printing Machine Frames
- Metalocking of Fractured Drying Cylinders
- Thermal Spraying of Cylinders

Pulp & Paper

In-Situ grinding of a 1500mm diameter drying cylinder

On site grinding of Yankee drying cylinder

Petro-chemicals

- Heat Exchanger Tube Plate Machining
- Heat Exchanger Tube expanding, Weld Preparing
- Compressor Casing Machining - Line Boring
- Flange Machining up to 6000 mm
- Glass Flaking Pump Casings
- Line Boring of Pump Casings
- Kiln Tyre and Support Roller Grinding
- Large Drilling & Tapping Work up to 150 mm
- Metalock Repairs to Fractured & Broken Castings

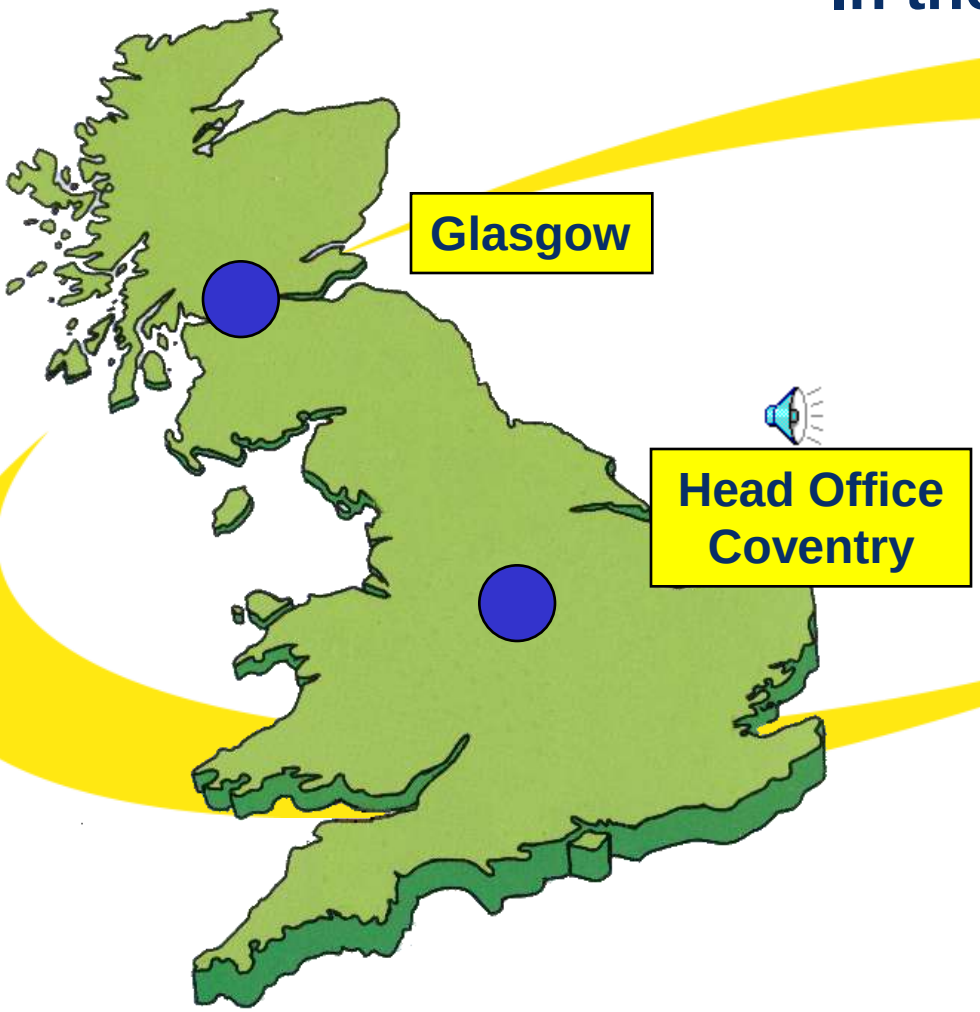
Petro-chemicals

On-site machining of the flange on a heat exchanger.

Weld preparation of heat exchanger tube sheet prior to welding

Metalock Engineering Business Centres

In the United Kingdom



Working Worldwide From the UK