

Engineering Capability Statement



***TOTAL ENGINEERING SOLUTIONS, FOR
INSTALLATION, CONSTRUCTION,
AND MAINTENANCE***

COMPANY OVERVIEW

MCA Engineering are specialised providers of total engineering solutions for the mining, industrial and construction sectors.

Building out of a combined six decades of engineering experience from founding directors Paul Barwick and Andrew Pascoe, MCA has established a team of some 180 dedicated, professional experts becoming one of the most sought after heavy industry contractors in Australia.

We offer access to key personnel across engineering, fabrication, construction, and procurement supported by a talented team that ensures every project is delivered to schedule, within budget, and to our client's complete satisfaction.



MCA has the scalable resources to operate nationwide, with offices located in New South Wales, Queensland, and South Australia. We confidently take any project, getting the right people on the ground to deliver each and every job with the same innovation and excellence in engineering and construction that's come to be expected from MCA.



ENGINEERING EXPERTISE

MCA's Engineering Department is staffed by a wide range of highly experienced Engineers, both Mechanical, Structural and Designers. We deliver Engineering solutions across Design, Drafting and Project Management.

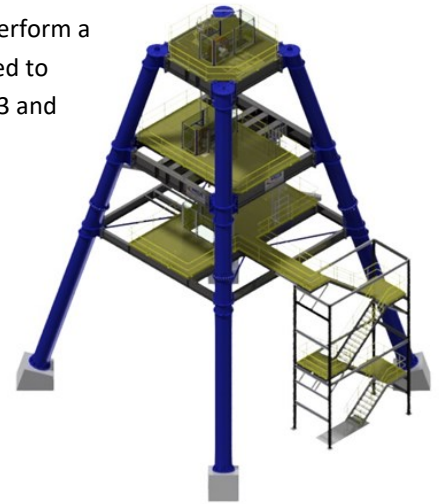
MCA's engineering team provides technical assistance and cost estimation for, but not limited to, civil, structural, and mechanical scopes of work – from concept, pre-feasibility through to project approval. We offer end-to-end project management and provide detailed engineering design and drafting to meet Australian standards.

We have experience in delivery of shaft equipment including headframe design and supply, winders, conveyances, emergency egress equipment, personnel baskets, work platforms, shaft charring beams, winders sheaths and rope connections.

MAJOR PROJECTS

2400 Class Construction Headframe

The 2400 Class Construction headframe has been specially designed and engineered to perform a large variety of shaft work. The headframe and the 1200 class winding systems is designed to meet all relevant Australian standards and NSW TRG/MDG guidelines, particularly MDG33 and MGD2005.



Hydraulic Winder and Winches

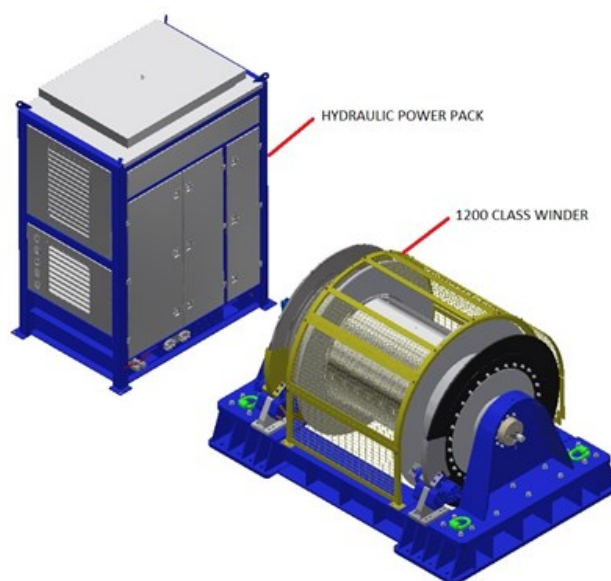
MCA have designed and engineered various Winders and Winches ranging up to 25 tonne line pull capacity to service mine shaft demands. The winders have been in use for in cage winding, stage winding, shaft rope replacements.

Cage Winder

Designed for safe shaft access. Together with the Headframe and Stage, operates as a fully integrated system, preventing any risk of falls. Gates on the Headframe, Stage and Cage are interlocked to ensure access is only available when vague is docked at relevant locations and system is in a “ready to operate” condition. The Cage Winder incorporates a customisable shell design that allows for different rope sizes to be interchanged as required for the project.

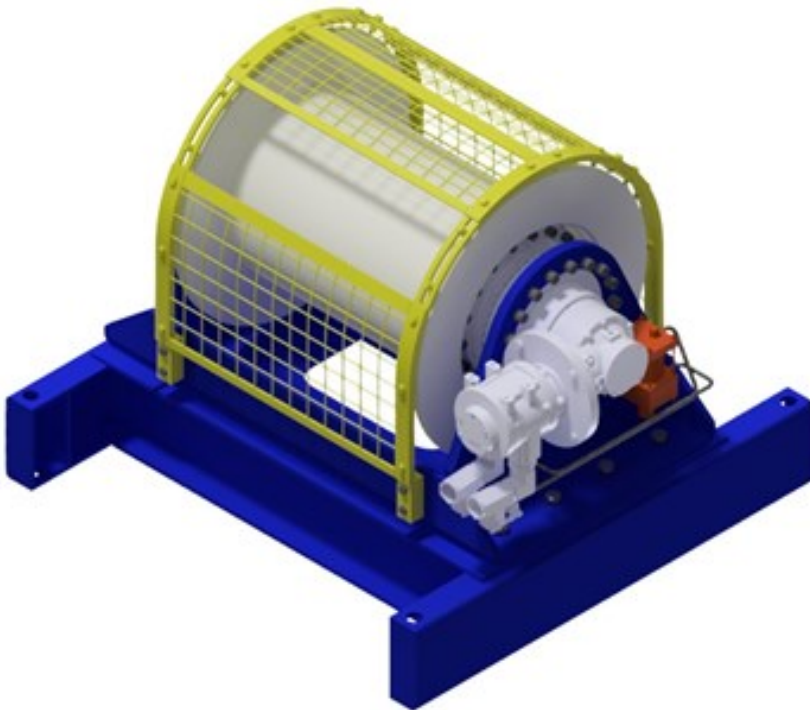
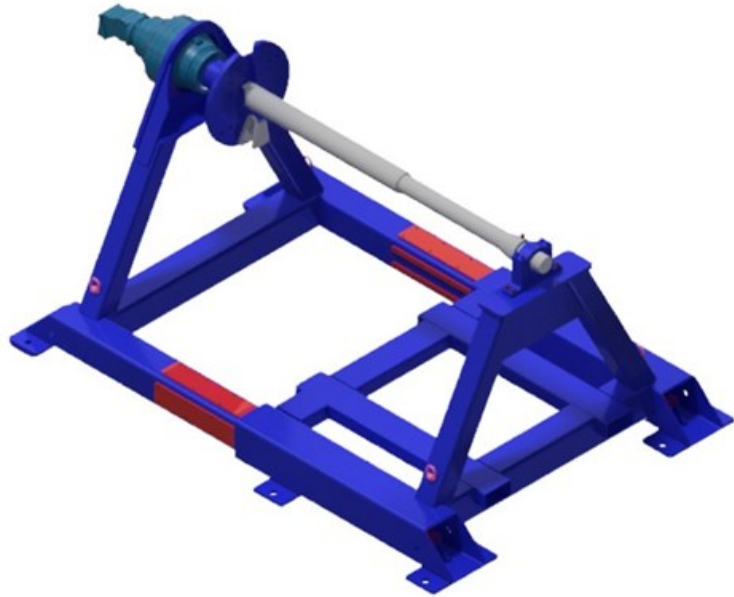
Stage Winder

The Stage Winder is designed to be used with a movable work platform (Conveyance Stage).



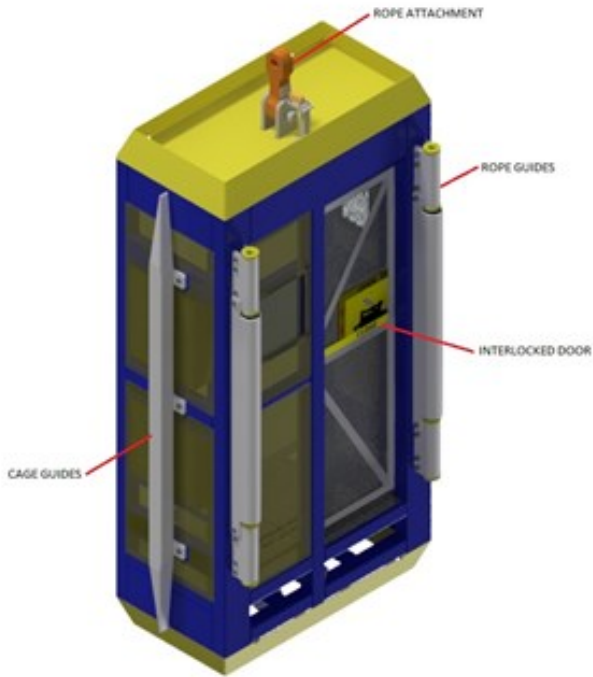
Reeler

To compliment the winders and winches, MCA Engineering have designed and engineered a number of the rope reeler. These can be integrated with the winders during rope replacement jobs has been designed to assist in rope changes.



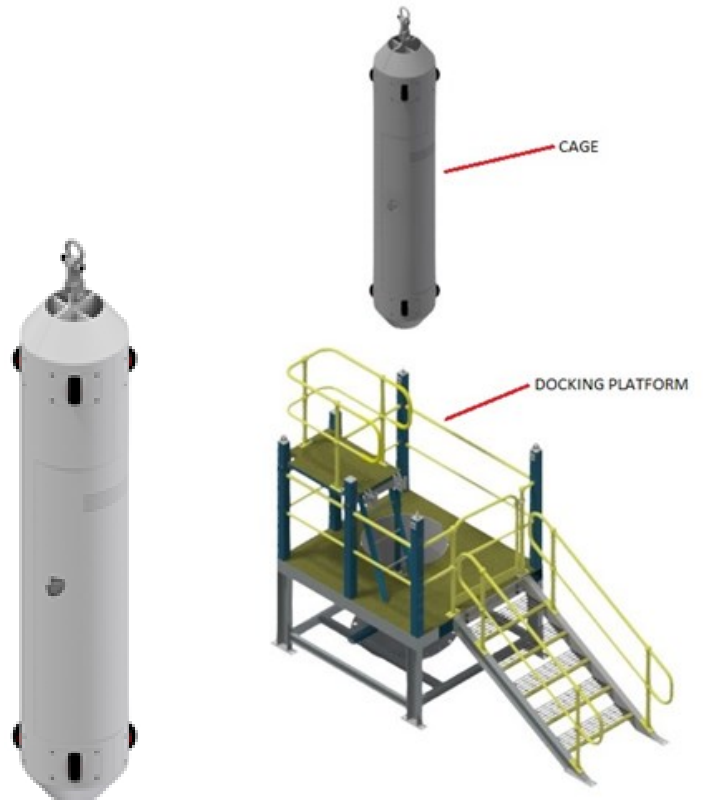
Cages

Cages are designed to be both person riding and material delivery systems.



Single Man Bore Hole Rescue Cage

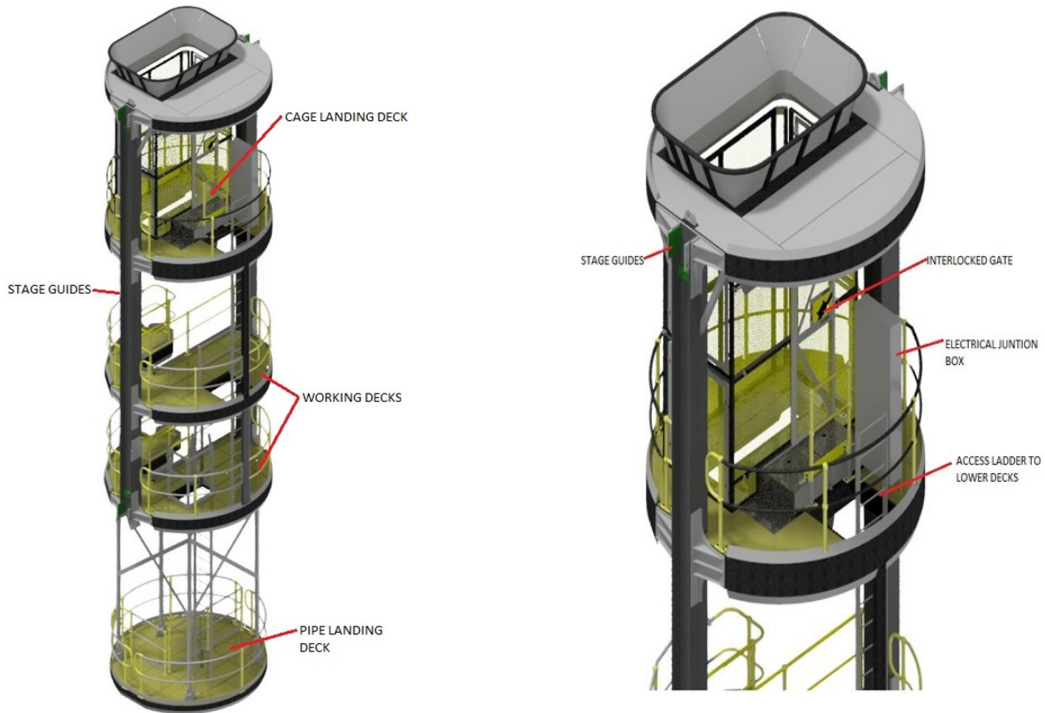
This has been designed to be used in a $\varnothing 780\text{mm}$ bore hole.
This included both underground and surface docking stations.



Stages

The stage is a movable work platform. It can vary with multiple decks, diameter and uses. We have developed a series of stages used for both installations and shaft sinking.

An Installation Stage can be used to install infrastructure in the shaft.



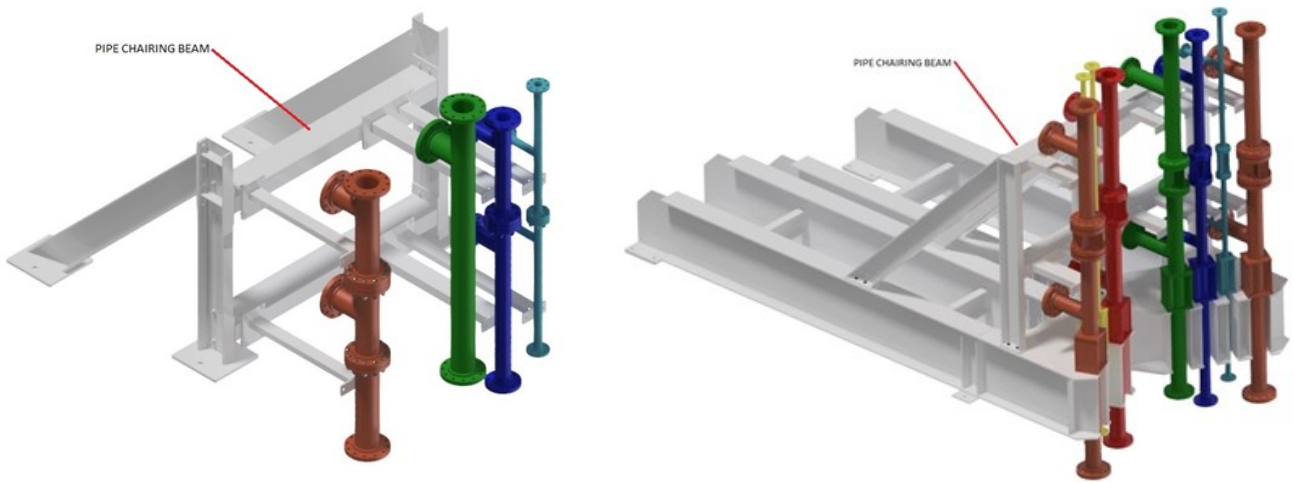
Shaft Sinking Stage

The stage is used to drill blast holes and muck out waste material.

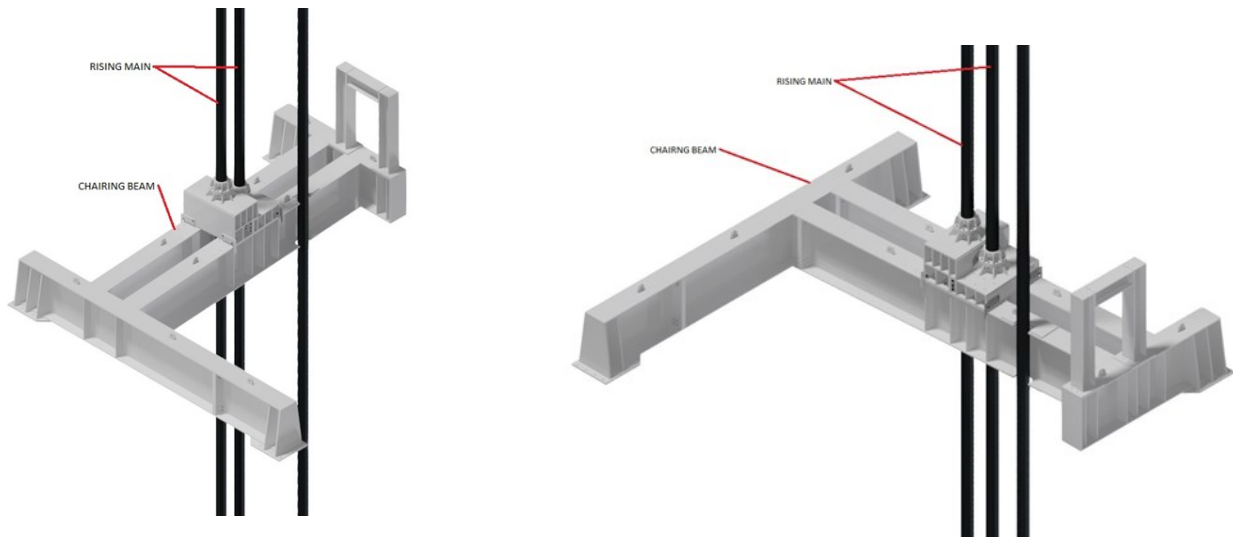


Chairing Beams

Chairing beams have been designed to complete temporary shaft maintenance works or installed permanently to support infrastructure in a shaft. A range of chairing beams have been designed by MCA Engineering with a sample of the designs shown below

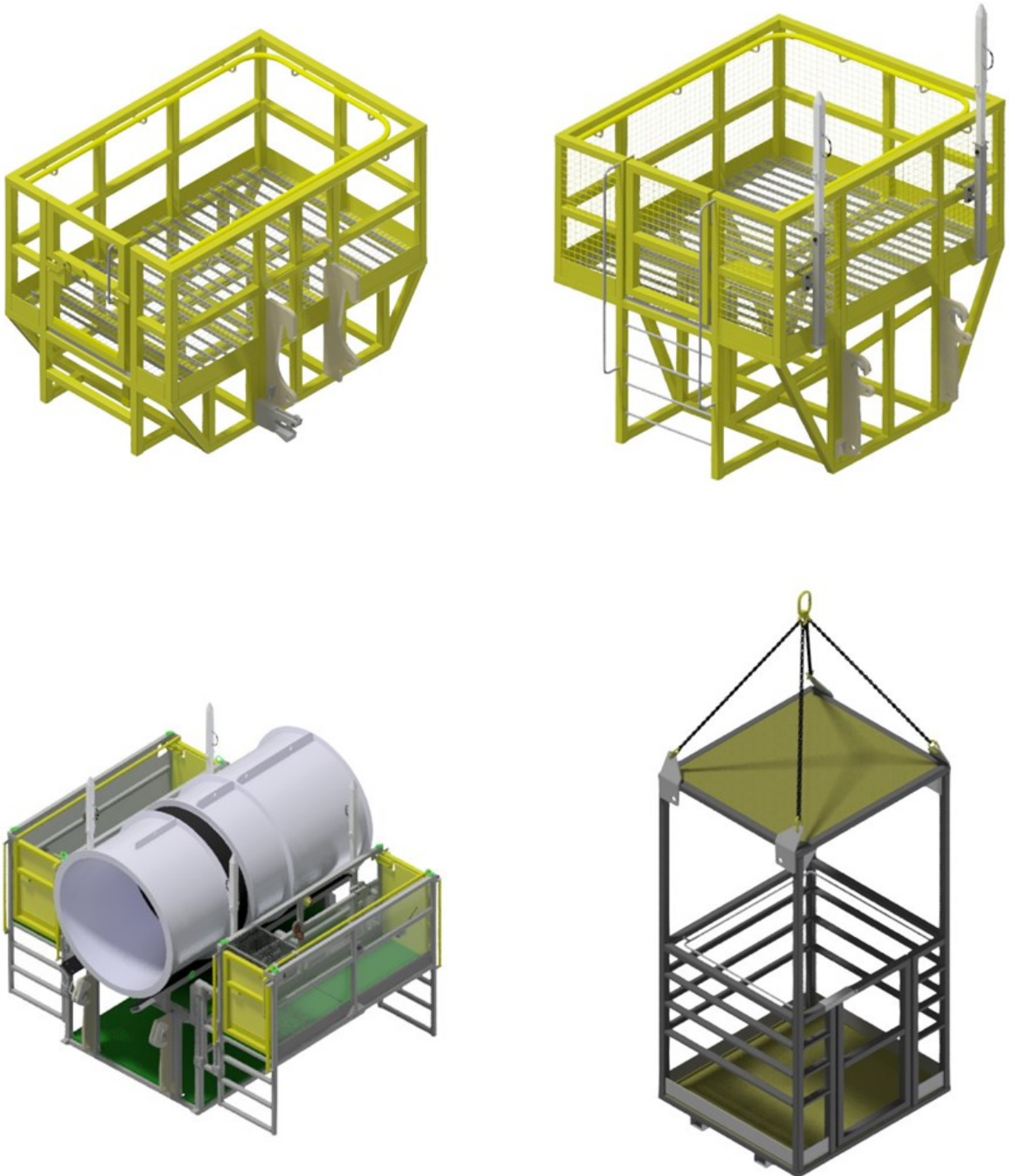


Rising Main and Slick Line Chairing Beams.



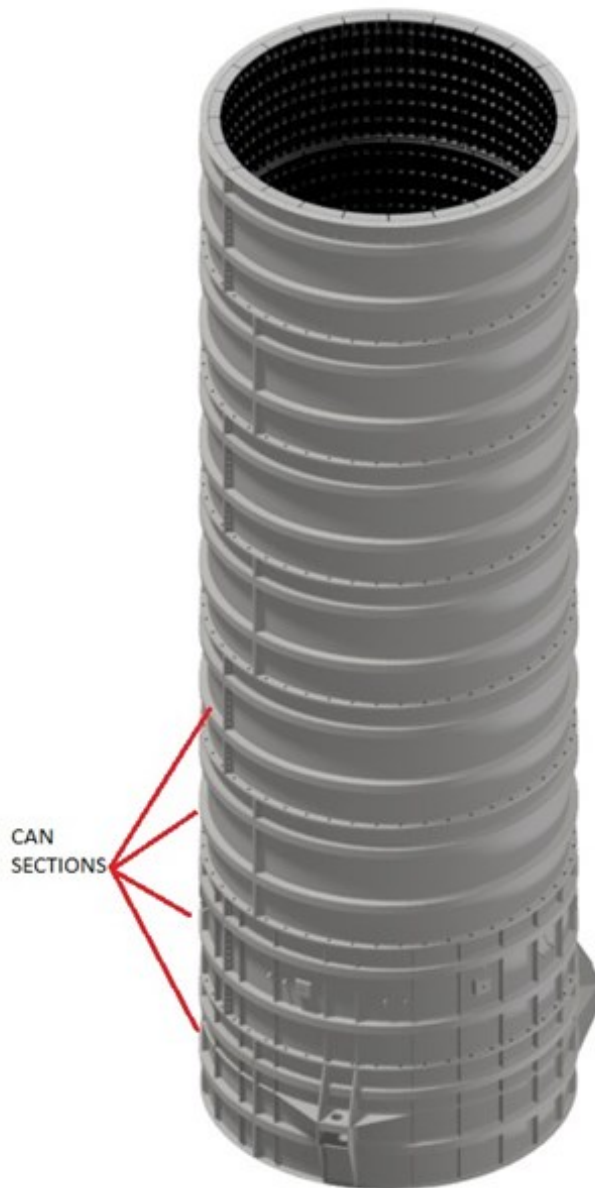
Personnel Baskets

MCA Engineering have designed and engineered a series of personnel baskets (working platforms) for both Caterpillar and Volvo front end loaders. Including both pipe installation and suspended baskets .



Shaft Ore Pass

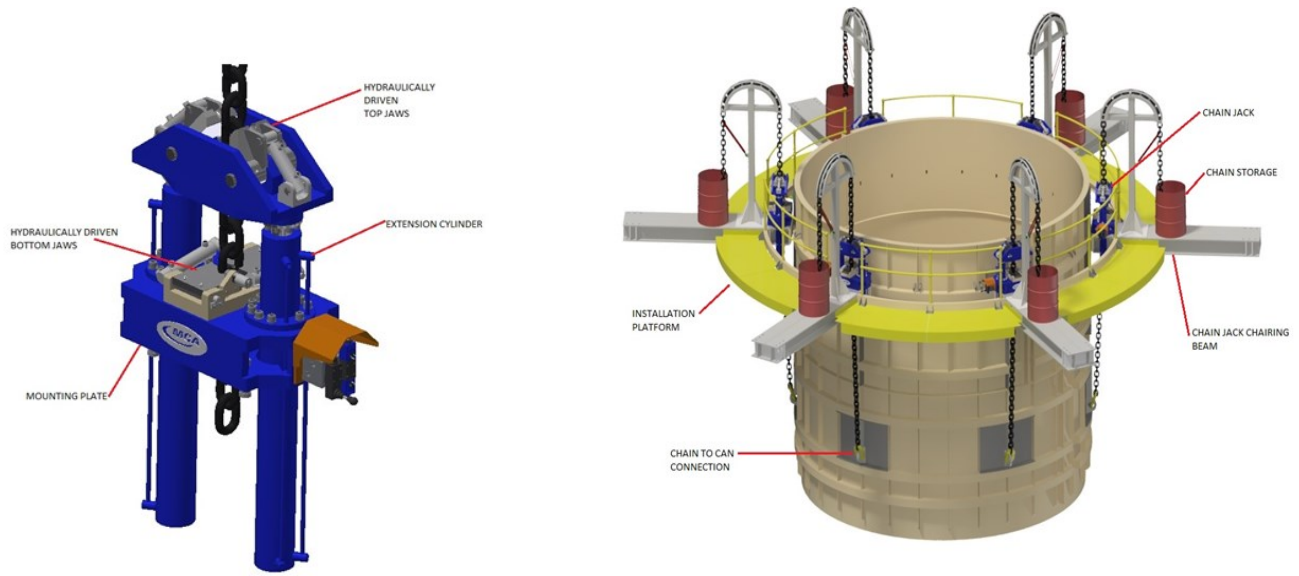
MCA Engineering have designed and engineered a series of ore pass shaft liners. These are used to reduce wear by using replaceable wear plates and rail mats. The lining of shafts consists of a series of cans bolted together one on top of the other and wear plates installed.



MCA Engineering has designed a number of installations utilising Chain and Strand Jack assemblies to assist with the installation or maintenance of mine shafts. Chains jacks have also been designed for mooring line installations in off-shore oil industry

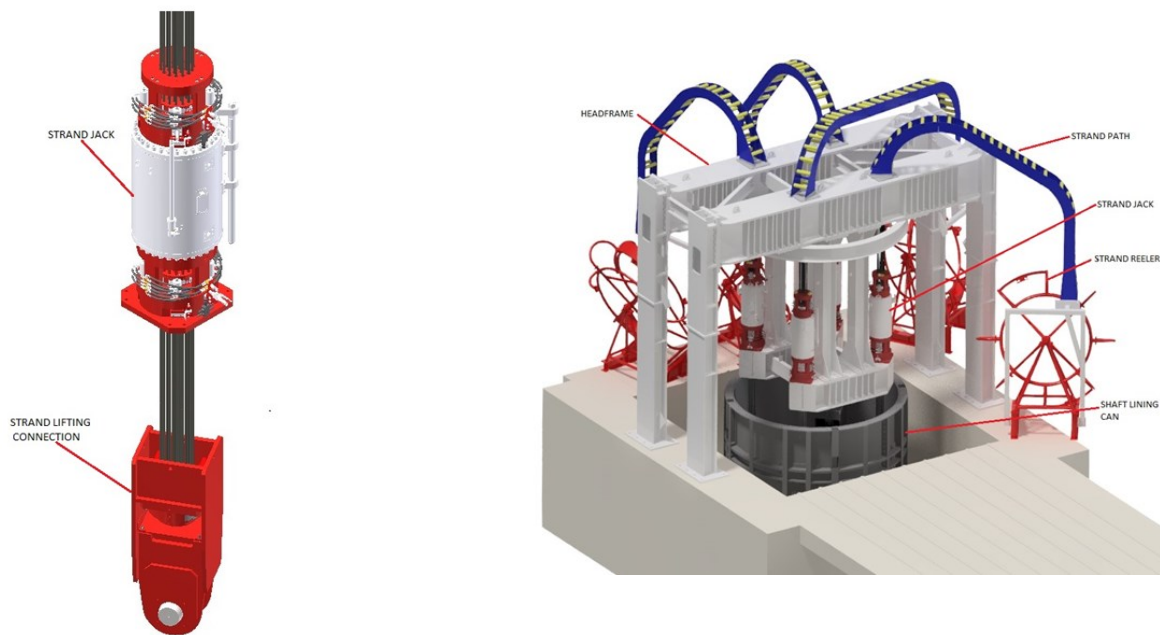
Chain Jacks

Use a hydraulic system to raise and lower a feed chain. Allowing the cans top to be lowered down the shaft.



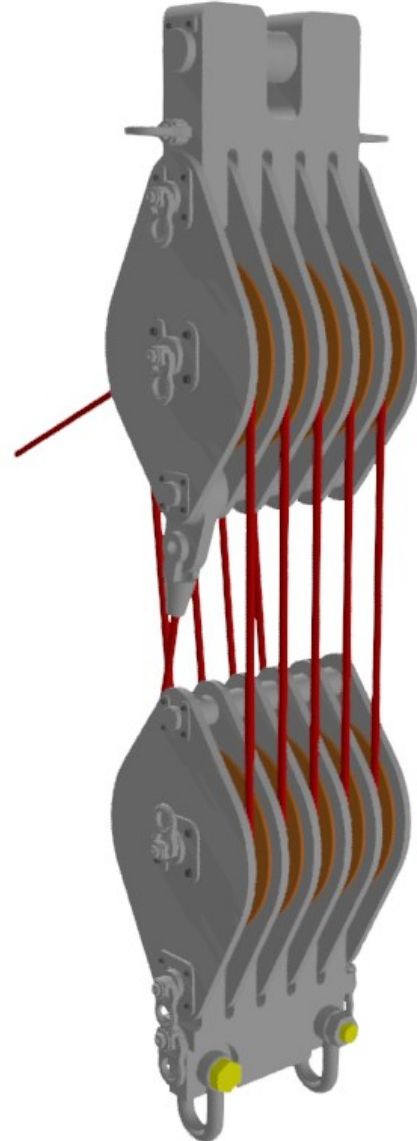
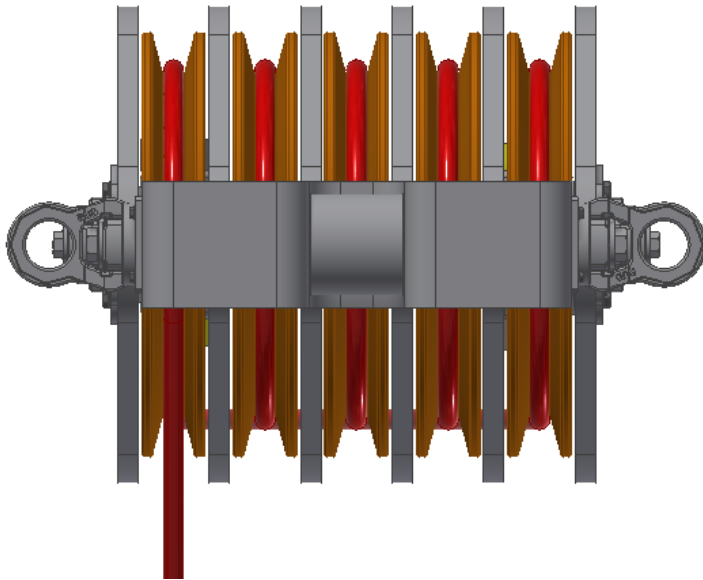
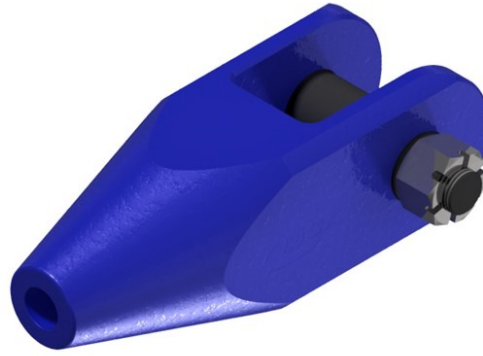
Strand Jacks

Strand Jacks have been utilised in the design for lifting of shaft stages during the sinking of shafts.



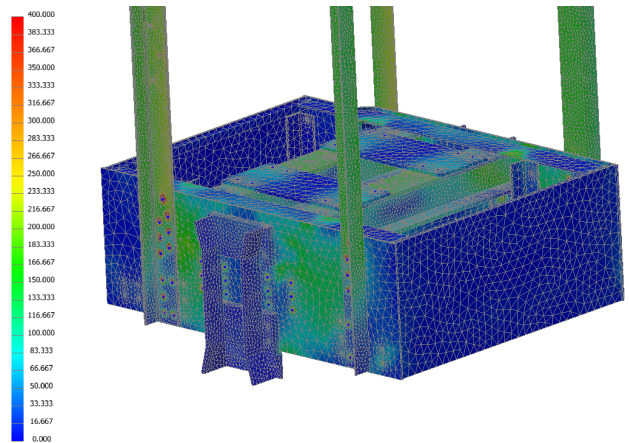
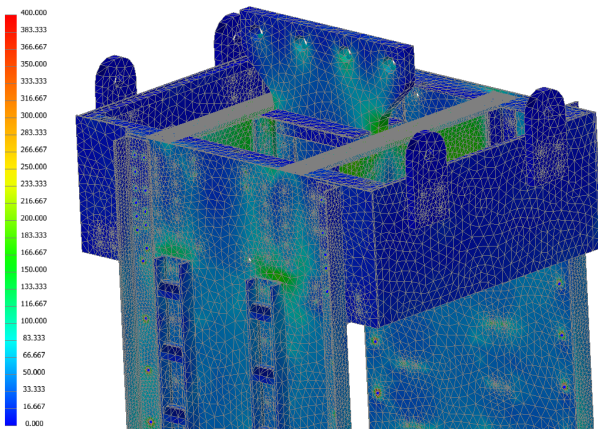
Rope Connections and sheaves

MCA Engineering have designed and engineered a series of rope sockets. The rope sockets have been designed, manufactured and tested to the requirements of AS3637 Type A components.



ENGINEERING TOOLS

Engineering software is used as part of the design process to assist the design strength of structural frames and mechanical equipment to the compliance of Australian Standards. At MCA we have access to a number of software packages to assist with all stages of the design process from 3D modelling , drawings, structural and mechanical analysis. In addition to bespoke equipment design our engineering team can provide design verification and modifications of existing onsite installations



Bolted End Plate

Connection / Design codes: 132 | AS4100

Title: [Empty]

Supporting member / Streng: 216 (410 U... | Normal

Supported member / Streng: 272 (360 U... | Normal

Connection type: Bolted End Plate

Stiffen web if necessary

Stiffen flange if necessary

Stiffen end plate

Load cases (Blank = All)

Minimum actions: Use minimum design actions

End Plate

Plate: 180x25, CUSTOM

Size (LxWxT) (mm): 570 | 180 | 25

Strength / Fy (MPa): Normal | 250

Flange Welds

Flange welds: Fillet | W6

Category / Strength: SP | High

Web Welds

Web welds: Fillet | W6

Category / Strength: SP | High

Bolts

Bolts: M20

Procedure / Threads: Bearing | Include

Strength / Bolt side: High | Default

Top bolts (out/in): 2 | 2

Bot bolts (out/in): 2 | 2

Pitch (out/in) (Sp Lip): 0

Gauge (in) (mm): 120

Vert edge dist (out) (mm): 30

Dist to flange (out/in) (mm): 65 | 65

Web stiffeners

Top stiffener: Included

Top stiffener plate: 70x5, CUSTOM

Plate length (mm): Full | 0

Auto check

Technical drawing details:

- 870x180x25 mm PLATE (fy = 250 MPa, fu = 410 MPa)
- 300x70x2 mm STIFFENER TOP
- 300x70x2 mm STIFFENER BOT
- 270x80x10 mm PLANGE DOUBLER PLATE
- 6 mm CFW SP WEB WELDS
- 6 mm CFW SP FLANGE WELDS
- 6 mm CFW SP TOP STR WELDS
- 6 mm CFW SP BOT STR WELDS
- M20 8.8 HV 8 BOLTS

Critical load case = 4, Utilisation ratio = 0.94

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