HOISTING

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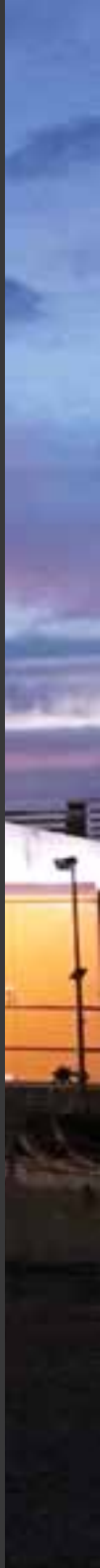
MCA ENGINEERING



Construction Headframe and Winding System

MCA's Construction Headframe and Winding System presents the latest innovation in rope winding equipment for mining and construction industries. Providing customisable equipment with superior capabilities, MCA caters to a project's specific needs and demands.

Shaft Refurbishment

MCA has conducted multiple shaft refurbishment projects across Australia. The system allows for full shaft strip and reline, removal of existing steelwork, and complete fit-out of haulage furniture. The system can also be installed underground for refurbishment or construction of sub-shaft infrastructure.

Shaft Sinking and Construction

The 24000 Class Construction Headframe has been specifically designed to allow adequate clearance for kibble tipping and materials lowering. The system is capable of lowering pipe bundles and electrical cabling to depths of over 1000m.

Egress System

As an option for mine egress, MCA's system has a haulage capacity of up to a 40-man conveyance. The system can be powered exclusively from 2 x 500kVA generators, reducing requirements for site power and infrastructure, while minimising impact on existing mine power systems. The system can be established over existing ventilation shafts, with no in shaft infrastructure required.

Men and Materials Hoisting

The 24000 Class Construction Headframe and 1200 Class Winders can be utilised in conjunction with existing infrastructure and equipment, such as haulage shafts, to increase production and efficiency. Personnel transport times can be significantly improved, and decline congestion reduced.

Regulatory Compliance

Reviewed mechanically and electrically by independent industry experts, the Construction Headframe and Winding System offers a safety paramount design that incorporates industry best practice.

MCA's system has been built to meet the design requirements of NSW Guidelines, particularly MDG33 and MDG2005, as well as relevant Australian standards. These guidelines are considered the highest standard for Australian designs, if not the world. MCA has adopted these standards, with the perspective they are not a hurdle to jump, but rather a minimum benchmark from which we can improve further. MCA continues to review our system design to ensure continual improvements in safety, efficiency and reliability.

Since the early concept stage, it has been the priority of the MCA Design Team to ensure all areas are engineered to meet legislative requirements. Consequently, MCA has efficiently and successfully had the system independently verified and the design registered for use in NSW Mines.

Due to current registration, we can rapidly mobilise to site and have the system approved for use in NSW mines. Delivering at this high standard, MCA can satisfy any requirements of mines outside of this jurisdiction.

24000 Class Construction Headframe

The 24000 Class Construction Headframe has been especially designed to perform a large variety of shaft work. The system incorporates a 15m x 15m square layout of the support footings, allowing a significant span to avoid existing or future infrastructure required around the shaft collar. The steel foundation option allows for a rapid set up and demobilisation.

1200 Class Cage Winder

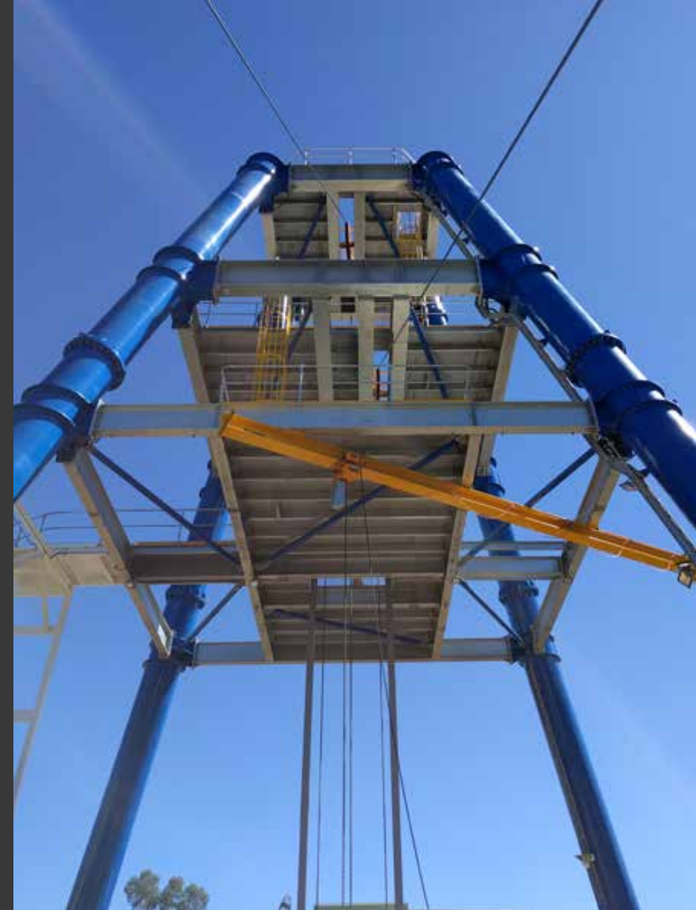
Safe access throughout the depth of the shaft is available via the 1200 Class Cage Winder. Together with the Headframe and Stage, it operates as a fully integrated system, preventing any risk of falls. Gates on the Headframe and Stage are interlocked to ensure access is only available when the cage is docked at the relevant location and the system is in a “ready to operate” condition. This also applies to the doors on the man riding conveyance, which will only allow operation when in a safe location. The 1200 Class Cage Winder incorporates a customisable shell design that allows for different rope sizes to be interchanged as required for the project.

1200 Class Stage Winder

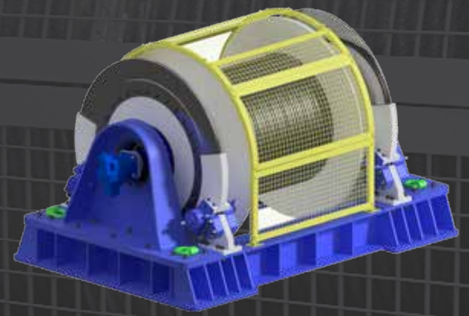
In shaft work is completed via the utilisation of the stage; a movable work platform operated via the 1200 Class Stage Winder. Stage construction is fully customisable to suit the conditions and requirements of any job, with alterations including the number of and spacing between working decks, and stage diameter. Stage designs also incorporate equipment allowing highly efficient and safe projects, such as a hydraulic actuated davit arm crane, which can be used to position services against the shaft wall during installation.

The system utilises a SIL 3 Capable ABB AC500-S PLC platform, providing system control and safety monitoring. All safety devices have been designed to meet or exceed the requirements of MDG2005 and have been independently certified as meeting relevant functional safety requirements, for example SIL 2. The system layout and associated programming is fully customised for each installation and is tailored specific to the project, such as additional gate monitoring and pipe handling modes.

All hydraulic and electrical control equipment is housed in a standalone Hydraulic Power Unit (HPU). The compact design of the HPU allows for a minimal footprint. Units may also be arranged at varying distances to the Winder locations, improving maintenance safety and site layout.

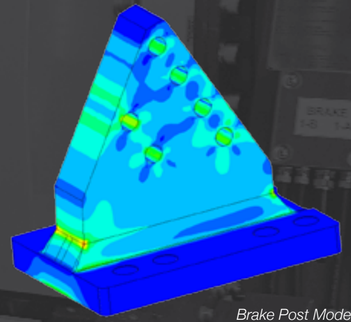


The MCA Design Team has significant experience with winding systems and have the expertise to complete drafting and engineering for all relevant aspects, as well as any site-specific requirements throughout the project duration. All design work is completed using strict engineering practices, relevant Australian standards and winder specific guidelines. The designs are stringently checked in-house, before being independently verified, as well as proof testing when possible.

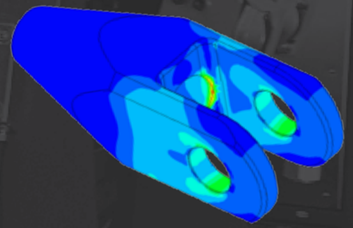


Winder Model

Description	Cage Winder	Stage Winder
Max Speed	3.4m/s	0.3m/s (0.6m/s drum speed)
Max Payload (End of Rope – 1000m shaft)	6.5T	16.8T (Double Down Arrangement)
Brake Capacity (Per path)	290%	222%



Brake Post Model



Socket Model

Each Winder includes 2 stainless steel brake discs mounted directly to the drum, each with 2 calipers per path, developing a capacity of more than 200% of the maximum rated load. MCA has a custom design, compact braking manifold, complete with dual return lines for each caliper. Information and feedback is constantly monitored to identify any changes in operation, allowing for advanced identification of faults prior to problems developing. All brakes are fail safe (spring applied, hydraulic release) and will stop the Winder in the result of lost pressure or power.

Site specific arrangements can be accommodated for short or long term hire options.

Contact us today to discuss your specific requirements.

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