

# THE AUSTRALIAN MINING REVIEW

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## BREAKING NEW GROUND



In a first, Roy Hill achieved over 63mt of iron ore shipments last year despite the challenges of Cyclone Ilsa, inflation and regulatory approvals.

The *Australian Mining Review* speaks with Roy Hill chief executive Gerhard Veldsman about how the mine is faring, including its latest technological development called RoyBot.

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**CONTACT US**

P (08) 6314 0301  
F (08) 9481 7322  
134A Charles Street, West Perth, WA 6005  
PO Box 8023, Perth BC, WA 6849

Email the editor at  
[editorial@australianminingreview.com.au](mailto:editorial@australianminingreview.com.au)

**GENERAL MANAGER**

Trevor Pickett  
0429 916 282  
[trevor@australianminingreview.com.au](mailto:trevor@australianminingreview.com.au)

**GROUP MANAGING EDITOR**

Kathleen Southway  
[kathleen@australianminingreview.com.au](mailto:kathleen@australianminingreview.com.au)

**ACCOUNTS MANAGER**

Teresa Sabatino  
[accounts@australianminingreview.com.au](mailto:accounts@australianminingreview.com.au)

**JOURNALISTS**

Ashleigh Dorrell,  
Kate Dzienis, Steve Holland

**RESEARCH**

Jason Strydom, Wayne Dyson

**NATIONAL SALES MANAGER**

Quentin Roberts  
[quentin@australianminingreview.com.au](mailto:quentin@australianminingreview.com.au)

**SALES EXECUTIVES**

San Ienco, Chris Ritson,  
Gary Holland, Donna Orton,  
Brad Hollow, Cal Christelow

**SENIOR GRAPHIC DESIGNER &  
PRODUCTION MANAGER**

Rebecca Johnson

**DIGITAL MARKETING MANAGER**

Sal Jumat  
[sal@australianminingreview.com.au](mailto:sal@australianminingreview.com.au)

**PRINTER**

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A steelworker at work.

# RIO TINTO, BHP & BLUESCOPE

## PUSH AHEAD WITH PLANS TO REDUCE STEELMAKING EMISSIONS

Plans are underway to develop Australia's first ironmaking electric smelting furnace (ESF) pilot plant in an effort to accelerate the decarbonisation of steelmaking.

Rio Tinto (ASX: RIO), BHP (ASX: BHP) and BlueScope (ASX: BSL) said they will work together to realise the plan which could reduce CO<sub>2</sub> emission intensity by more than 80% compared with the current industry average for the conventional blast furnace steel route.

Australia's two largest iron ore producers and its biggest steelmaker plan to consolidate the work each party has completed to date.

This will involve leveraging both BHP's and Rio Tinto's knowledge of Pilbara iron ores as well BlueScope's unique operating experience in ESF technology.

Rio Tinto Iron Ore chief executive Simon Trott says "the carbon intensity of iron and steelmaking requires profound change to meet the needs of our planet and our climate objectives".

"We must find better ways to enable these materials to be made more sustainably through leveraging technology," he said.

The collaboration provides a platform to develop and potentially invest in a pilot facility and aims to demonstrate that production of molten iron from Pilbara ores is feasible using renewable power when combined with Direct Reduced Iron (DRI) process technology.

If successful, it could help open a potential pathway to near-zero greenhouse gas emission-intensity operations for steelmakers that rely on Australian iron ore to meet global steel demand, according to the trio.

Incoming BHP Western Australia Iron Ore asset president Tim Day says "we are thrilled to partner with Rio Tinto and BlueScope to progress what we see as a potential breakthrough in reducing carbon emissions from steel production".

"Collaborations like this are so important for the success of these technologies and build on our work on blast furnace abatement projects, and our ongoing research and development projects with leading steelmakers, research institutes and technology providers around the world," he said.

"Combining our expertise, we hope to help fast track near-zero emission-intensity pathways for steelmakers using Pilbara ores."

"Technology pathways compatible with renewable energy and scalable to the order of hundreds of millions of tonnes of steel production would be a major step forward in setting up Pilbara ores, and the world, for a low greenhouse gas emission future."

The parties will assess several locations in Australia for the proposed pilot facility, and will consider factors like supporting infrastructure, available workforce, access to target industry and supply chain partners, and suitability for operational trials.

The pre-feasibility study work program is expected to conclude this year. If approved, the pilot facility could be commissioned as early as 2027.

BlueScope chief executive Australia Tania Archibald says "we have a clear vision for BlueScope in Australia as a vibrant, modern and sustainable manufacturer with a clear role to play in enabling Australia's energy transition".

"Building a pathway to low emission-intensity iron and steelmaking in Australia is a key priority for our business," she said.

"We're excited to be partnering with Rio Tinto and BHP to explore the decarbonisation of the ironmaking process, and leverage the natural advantages of Australia - namely our iron ore resources and the abundant potential for renewable energy.

"We believe DRI is the most prospective technology to decarbonise our Australian business, and the development of ESF technology is key to unlocking Australia's unique advantages in this decarbonisation journey - and, more importantly, has the potential for wider adaptation across the global steel industry.

"We believe that this collaboration where we can contribute BlueScope's unique experience in operating an ESF will be key to cracking the code for Pilbara ores in low emission-intensity ironmaking."

A pilot facility would be intended to test and optimise production of iron from the ESF, a type of furnace being developed by

leading steel producers and technology companies targeting low CO<sub>2</sub> emission-intensity steel.

The ESF is capable of producing iron suitable for the basic oxygen steelmaking process.

Iron ore is first converted to direct reduced iron (DRI) before being charged into the ESF.

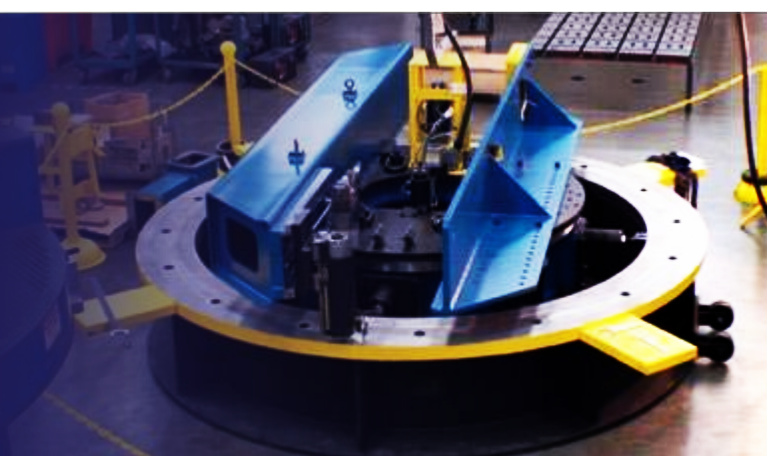
Together, the DRI-ESF equipment can replace the blast furnace, eliminating the need for metallurgical coal.

Estimates show that reductions of more than 80% in CO<sub>2</sub> emission intensity are potentially achievable processing Pilbara iron ores through a DRI-ESF pathway, compared with the current industry average for the conventional blast furnace steel route.

Other lower CO<sub>2</sub> emission-intensity production routes, such as electric arc furnaces, require scrap steel and DRI produced from high grade iron ores.

The ESF allows for greater flexibility in input raw materials, addressing one of the key barriers to wider adoption of low carbon emissions technology.

The ESF also has the potential to be integrated into a steel plant's existing downstream production units. **AMR**



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# PILBARA MINERALS

## EXPANDS OFFTAKE AGREEMENT WITH CHENGXIN LITHIUM GROUP

**P**ilbara Minerals (ASX: PLS) announced it had amended an offtake agreement with Chengxin Lithium Group which extends and expands the supply of spodumene concentrate to the lithium chemical converter.

Under the new terms of the agreement, Pilbara Minerals will supply an additional 60kt of spodumene concentrate to Chengxin in 2024, taking the total supply for the year to 85kt.

Additionally, Pilbara Minerals will supply 150kt of spodumene concentrate to Chengxin in 2025 and in 2026 Pilbara Minerals will supply 150kt of spodumene concentrate to Chengxin.

The pricing is consistent with the previous agreement and all spodumene concen-

trate volumes will be sold based on the prevailing market price, according to Pilbara Minerals.

Pilbara Minerals' managing director and chief executive Dale Henderson commented on this.

"We are very pleased to be extending and expanding our relationship with Chengxin, a leading lithium chemical producer and supplier to customers such as BYD, LG Chemical, SK On, CATL and Hyundai," he said.

"This amendment highlights the demand for Pilbara Minerals' product and is a continuation of our strategy to expand our partnership with leading global lithium producers in the medium term while we progress the development of our long-

term downstream partnership strategy."

Listed on the Shenzhen Stock Exchange, Chengxin is a global integrated lithium chemicals producer with operations across China, Indonesia, Argentina and Zimbabwe.

Chengxin chairman Zhou Yi also commented on the agreement.

"Both Pilbara Minerals and Chengxin are committed to the energy transition and are focused on extending our respective positions as high quality, low-cost producers in the growing lithium battery materials market," he said.

"We are pleased to be extending our agreement with Pilbara Minerals, a recognised leader in the mining and development

of lithium assets. This agreement further deepens our valued partnership with Pilbara Minerals and we look forward to supporting our global customers through the continued provision of high quality and cost-competitive lithium materials."

The increased supply to Chengxin is separate to Pilbara Minerals' strategic partnership process with Chengxin which continues in parallel with the new agreement and remains on track to conclude in the March Quarter of 2024, according to Pilbara Minerals. **AMR**

## COPPER PRODUCTION BEGINS AT HILLGROVE'S KANMANTOO MINE

Primary ventilation and secondary egress were established at the Kanmantoo underground copper mine in late 2023, followed by stoping and the growth of stockpiles. In early 2024, the processing plant was recommissioned and copper production commenced.



**H**illgrove Resources (ASX: HGO) has produced its first copper concentrate from the Kanmantoo underground mine following successful commissioning of the processing facility within the targeted timeframe of Q1 CY24.

The project is located about 55km from

Adelaide, South Australia, with the company operating a series of open pits from 2010-2020, producing about 137kt of copper and 55koz of gold.

After successful studies, underground development works commenced in mid-2023 with a single decline towards the base of one of their pits.

Hillgrove chief executive and managing director Lachlan Wallace says first copper production from the Kanmantoo underground operation and the transition to cashflow generation is a watershed moment for the company.

"Over the next few months, the mine output and copper production are expected to ramp up as the planned additional work areas are established underground," he said.

"Completing this transition from explorer to producer makes Hillgrove Resources one of only a few copper producers on the ASX, and doing so in eight months highlights the company's capability to deliver on stated objectives.

"Operations will be bedded down at Kanmantoo as we ramp up to steady stage

production, and our attention will turn to growing the business by converting future exploration and development opportunities.

Mr Wallace says the project is well positioned to take advantage of the anticipated growth in demand for copper as the world continues to decarbonise through electrification.

"To leverage our position as a copper producer in the future, we are actively seeking to grow both the mine life and the annual copper production profile through exploration, starting with our substantial 60-100mt exploration target within close proximity to the underutilised processing plant, including the recently discovered Kanmantoo Deeps target." **AMR**

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The AutoStore™ system (resembling a Rubik's cube) is also one of the most sustainable warehouse automation systems today, with its robots using power regeneration technology to reduce energy consumption, while typically consuming less power than a toaster.



WesTrac warehouse operations manager Natalia Trewin (left) with another WesTrac staff member at the Tomago warehouse and a robot called Pickachu. Some of the other 24 robots are called Wall-E, Bumblebee and Pickerella.

## DEMATIC POWERS WESTRAC TOMAGO SPARE PARTS WAREHOUSE

**W**esTrac has successfully implemented a Dematic Automated Piece Picking System at its Tomago warehouse in NSW.

As one of the world's largest authorised Caterpillar® equipment dealers, this new picking system along with its Autostore™ system (resembling a large Rubik's cube) supports the mining and construction industries in WA, NSW and the Australian Capital Territory (ACT)

WesTrac warehouse operations manager Natalia Trewin says its Tomago warehouse is the central distribution centre for 17 regional branches, as well as the seven main workshops on site.

"The Tomago facility is a high-volume operation, storing 80,000 SKUs and we pick 40,000 lines a week here," she said.

The previous WesTrac warehouse was constructed a decade ago. It was operated manually and, over time, WesTrac had seen a 30% increase in inventory and customer base growth, resulting in a surge in orders to fulfil.

"We needed to maximise the use of our

existing floor space and to diversify our storage solutions, so we looked at what we could do to manage more inventory within our existing space," Ms Trewin said.

The system features an AutoStore automated storage and goods-to-person (GTP) picking system run by the Dematic Software, with one picker achieving the work of four to five manual pickers.

The AutoStore system is also one of the most sustainable warehouse automation systems today, with its robots using power regeneration technology to reduce energy consumption, while typically consuming less power than a toaster.

Featuring 15,350 segmented bins, 24 robots, four inbound conveyor ports for replenishing products into the system and six GTP workstations, Autostore optimises space efficiency and accelerate parts distribution for WesTrac.

"We're already exceeding our initial throughput targets, which were to be picking over 500 lines per hour or 30% more with our existing headcount," Ms Trewin said.

"Previously, with the same amount of people, we were only able to pick 300 lines.

"The speed and density of the solution means that we can get urgent orders out to customers within five to 10 minutes if needed.

"Our customers rely on us to ensure they can keep doing the work that they need to do, so it's really important that we're able to step up our service."

Dematic business development manager Seth van Dijk explains the system.

"When customers place their orders, the WesTrac warehouse management system (WMS) software sends those orders to the Dematic warehouse control system (WCS) software," he said.

"The WCS then directs the robots for maximum efficiency to retrieve all the items needed to fulfil those orders, and the robot delivers those items to the GTP workstations.

"Screens at the workstations instruct WesTrac operators which items to place into the order totes.

"Operators place completed totes on the conveyor, which brings them to a sorter.

"At the end of the sorter, orders are packed and dispatched for delivery."

From a storage density perspective, the Dematic solution has significantly increased WesTrac's available space by 1,000 square meters.

The AutoStore system's uniquely scalable solution means the grid can be easily expanded with minimal interruption and progressively filled with bins as storage demand grows.

"One of the great features of AutoStore is that we're able to expand the system without interrupting operations," Ms Trewin said.

"It's very easy to put more robots on the grid to, for example, have more throughput over a weekend.

"Additionally, the system is designed for us to add more grid and totes so we can grow storage." **AMR**

## STAGE 2 MINING TO COMMENCE AT JEFFREYS FIND GOLD MINE TOLL MILL CONTRACT FOR MINIMUM 300KT ORE

**A**uric Mining (ASX: AWJ) will commence stage two of mining the Jeffreys Find gold mine near Norseman, WA, in early March, with first parcel of ore expected in mid-April this year.

BML Ventures Pty Ltd of Kalgoorlie, Auric's joint venture partners, has executed a contract with FMR Investments Pty Ltd to toll mill a minimum of 300,000t of ore at the Greenfields mill in Coolgardie this year.

Auric Mining managing director Mark English commented on this.

"Last year our partners extracted 175,000t of ore from Jeffreys Find gold mine and we achieved a great result for the joint venture with almost \$10m total surplus cash generated," he said.

"With a contract to process a minimum of 300,000t in 2024 at the Greenfields Mill, it should be a very lucrative year for Auric.

"We are delighted that mining will recommence shortly.

"There will be multiple processing campaigns throughout the year for stage two of the project with BML Ventures Pty Ltd contracted to put the first parcel through the mill in April 2024.

"Stage one of the project produced 9,741oz of gold which averaged 1.86g/t.

"Jeffreys Find is straight forward mining

and we know what to expect.

"Our confidence is high that stage two will produce substantially more ounces compared to 2023."

Equipment will be mobilised to site this week, with Auric Mining expecting first cash in Q4 CY24 and further cash in Q1 CY25.

The project is due to conclude early next year. **AMR**

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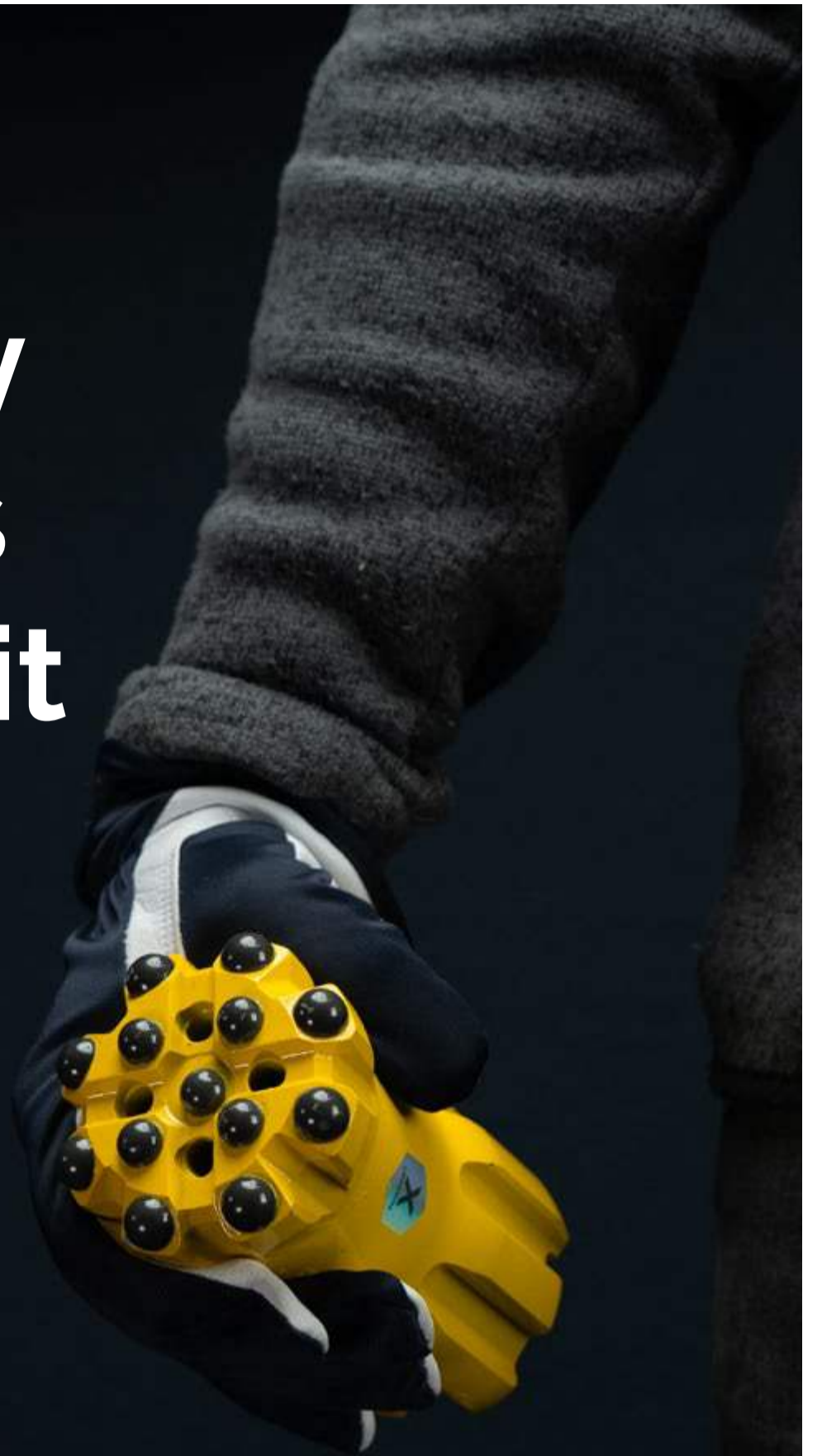
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# STATE-OF-THE-ART PILOT PROCESSING PLANT FOR CRITICAL MINERALS IN MACKAY, QUEENSLAND

Rapidly growing global demand for a wide range of minerals essential to new technologies like renewable energy, is creating new opportunities for companies to develop new value streams based on different critical minerals.

The concept design for a pilot critical minerals processing plant, FlexiLab, has been unveiled in Mackay, Queensland.

Unveiling the concept at the Resources Centre of Excellence, Queensland Resources and Critical Minerals Minister Scott Stewart says FlexiLab will provide a dedicated facility for industry to test processing and recovery of minerals not normally produced.

"Mackay is a key player in Queensland's critical minerals sector," he said.

"Investments in initiatives like FlexiLab, will help to ensure a strong resources future for the community and for Queensland for decades to come.

"As we continue to face the global demand for critical minerals, FlexiLab will play a pivotal role in shaping the future of mineral processing.

"This state-of-the-art facility, designed with a vision for innovation and collaboration, is set to redefine the landscape of mineral processing and accelerate growth in the critical minerals sector.

The facility is supported by \$5.7m in funding from the Queensland Government.

"This common-user facility is an investment not just in infrastructure, but in Queensland's economic resilience and future prosperity," Minister Stewart said.

"Queensland's critical minerals are needed

to build our future energy supplies and this facility is a step towards ensuring the entire minerals lifecycle from pit to product stays within Queensland."

Resources Centre of Excellence chief executive Steven Boxall says it is important to understand the opportunities and technologies required to successfully transform end-of-life and closed mine sites through economic rehabilitation.

"The Queensland Government and the visionary nature of the Queensland Resource Industry Development Plan has specifically funded this project and for that we are extremely grateful," he said.

"We look forward to continuing the

partnership with a burgeoning critical mineral industry in the Bowen Basin."

Designed as a common-user facility, FlexiLab is poised to become a hub for helping prove the commercial viability of processing critical minerals such as cobalt, nickel, zinc, vanadium, molybdenum, silica, alumina and rare earth elements.

The Resources Centre of Excellence opened in mid-2020 and provides training options for students and apprentices as well as supporting companies to develop new products and research.

FlexiLab will complement the Queensland Resources Common User Facility, which is being built in Townsville. **AMR**

## WA PRODUCERS THROWN LIFELINE AS NICKEL IS INCLUDED IN CRITICAL MINERALS LIST



The WA Government is throwing a lifeline to the State's nickel producers by offering a 50% royalty rebate from Q2 CY24 for 18 months, in response to current global market challenges.

The Nickel Financial Assistance Program will provide a rebate if the average price of nickel in concentrate is below \$31,000/t (US\$20,000/t) for a given quarter.

The rebate will then be repayable by the companies in equal quarterly instalments over the following 24 months.

WA Premier Roger Cook says the nickel industry supports nearly 10,000 jobs and generated more than \$5b in sales in FY23.

"It is also an essential component of the State's vision of becoming a global hub for the downstream processing of battery metals," he said.

"Protecting local jobs is a key priority for my Government, and we recognise retaining our value-add, critical minerals sector is a key part of our plan to diversify WA, and set it up for future success.

"This is highlighted by our current work to refresh and update the Government's Future Battery and Critical Minerals Industries Strategy, which was established in 2019.

"Our Nickel Financial Assistance Program will support nickel producers in their hour of need, providing temporary assistance to help with the structural changes to the nickel industry."

WA Treasurer Rita Saffioti says the relief is consistent with previous royalty assistance programs to assist lithium producers and junior iron ore producers to adjust to changing market conditions.

WA Mines and Petroleum Minister David Michael says the State's nickel miners are competing internationally with mining jurisdictions that have significantly lower environmental, social and governance standards.

A surge in lower cost supply from other countries coming onstream has prompted mine and processing plant suspensions in WA, significantly impacting local and regional jobs.

### Nickel on Critical Minerals List

Federal Resources Minister Madeleine King placed nickel on the Critical Minerals List at the end of last week, giving nickel companies opportunity to access billions of dollars in Federal funding.

Since the List was updated on 16 December 2023, six operating nickel facilities have either announced reduction in operations or gone into care and maintenance.

Minister King says the nickel industry faces substantial structural challenges that cannot be addressed overnight.

"The international nickel price is forecast to stay relatively low through 2024, and likely for several years to come until the surplus of nickel in the market is corrected," she said.

"In the meantime, this puts further Australian nickel operations at risk.

"Given impacts to our domestic capacity and noting the broader market developments presently unfolding in the nickel sector, I am fully convinced that we must be proactive in addressing the

recent developments, including by adding nickel to the Critical Minerals List."

Australia offers more sustainable and ethical critical minerals on a global scale due to the high environmental, social and governance (ASG) standards in this country.

Minister King says she is progressing important discussions with international counterparts in US, Canada and EU to ensure the high standards applied in Australian mining and production of nickel and other critical minerals are reflected in future pricing on international markets.

The Minister has the discretion to review the Critical Minerals List at any time, and to make interim amendments if there are significant changes to technology, trade, domestic capacity or geopolitical developments.

The decision to place nickel on the list allows companies to have access to financing under the \$4b Critical Minerals Facility and critical minerals-related grant programs such as the International Partnerships Program (\$40m). **AMR**



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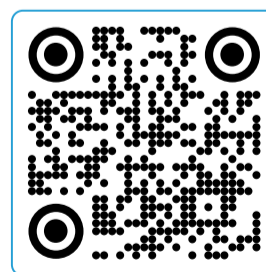
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## CELEBRATES 40 YEARS OF SAFE SHIP LOADING AT NQXT

Abbot Point Operations (APO) is celebrating four decades of safe and responsible operations at the North Queensland Export Terminal, Australia's most northern deepwater export port.

It was this week in 1984 when the Fukuka Maru arrived at the Terminal, located north of Bowen in Queensland, to load 60,000t of coking coal from the Collinsville mine, destined for Hong Kong.

Yesterday the BBG Liuzhou was the 6,902nd ship to safely berth at the Terminal and load high-quality coal from Bowen or Galilee basin mines for export to the world.



APO HSEC manager Kate Mee and NQXT general manager Mark Smith hand special anniversary gifts to mariners.

Abbot Point Operations general manager Port Operations Allan Brown says the milestone was a credit to the hundreds of local workers who had maintained the Terminal for more than a generation.

"Our people are our business, and they are the foundation of 40 years of dedicated best practice in operating and maintaining this critical piece of national infrastructure," he said.

"From the production crew to the pilots, the tradespeople to the train drivers, and the engineers to the enviros, each member of our dedicated team has played a vital role in shaping the success story of the North Queensland Export Terminal.

"We're proud of our role in helping transport high-quality Queensland metallurgical and thermal coal to the world where it advances development and provides affordable and reliable energy that lifts people out of poverty.

"And as Bowen locals we are equally proud of our efforts to 'Grow Local' and provide jobs, training, and corporate giving that

contribute to the economic and social fabric of our community.

"It's been wonderful to come together as a team to celebrate this milestone, reflect on the journey so far, as well as chart a course for the next 40 years."

APO manages world-class water monitoring, marine sediment, air quality, pests and weeds, and workplace safety programs at the Terminal.

The business also partners with North Queensland Bulk Ports and First Nations traditional owner business, Juru Enterprises Limited, to deliver initiatives like the Collaborative Turtle Monitoring Program.

The business has a more than 30-year training tradition in educating apprentices to maintain a future workforce, as well as build skills locally, and APO's Community Support Program provides more than \$300,000 a year in donations and partnerships to eligible community groups, organisations, and initiatives in the Whitsunday Regional Council communities of Bowen and Collinsville.



APO general manager port operations Allan Brown and NQXT general manager Mark Smith cut the cake.

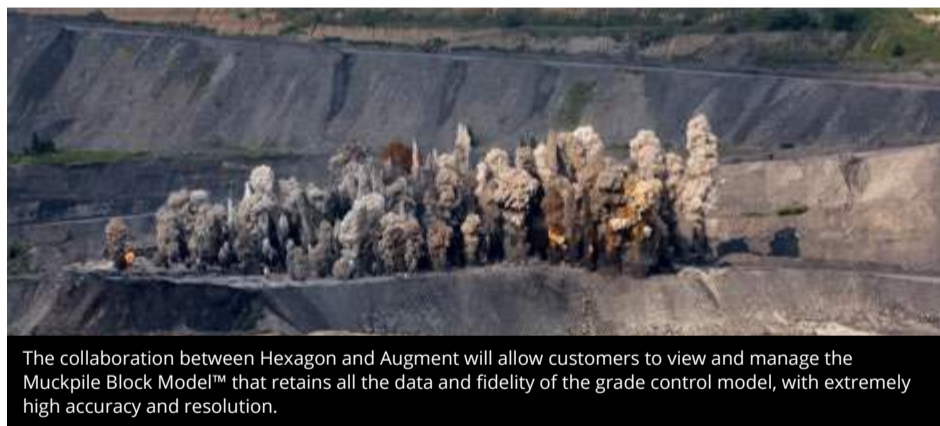
The North Queensland Export Terminal (NQXT), then called the Abbot Point Coal Terminal, opened in 1984 with an annual export capacity of 6.5mtpa. The Terminal was built in partnership between Mount Isa Mines and the Harbours Corporation of Queensland to open export access for coal producers in the Bowen Basin.

Today, the NQXT has a nameplate capacity of 50mtpa following upgrades over the years, and services mines in both the Bowen and Galilee basins.

Bravus took stewardship of NQXT in 2011 after acquiring a 99-year lease over the Terminal and its supporting infrastructure from the Queensland Government for \$1.8b.

In 2016, the Queensland Government declared the Port of Abbot Point, which the Terminal is located within, a Strategic Port, noting its role as an essential element of national and state transport networks and supply chains.

The same year, Bravus acquired APO and the operating rights for the Terminal. **AMR**



The collaboration between Hexagon and Augment will allow customers to view and manage the Muckpile Block Model™ that retains all the data and fidelity of the grade control model, with extremely high accuracy and resolution.

Swedish-based Hexagon is partnering with WA's Augment Technologies to help mines maximise ore yield and optimise operational efficiencies by accurately accounting for blast movement.

The partnership will harness a blend of block model data, artificial intelligence, movement models and measured 3D movement data to create blast movement solutions for mine sites.

Hexagon's Mining Resource Optimisation division vice president James Dampney says the implications for the industry are profound.

"Ore loss, dilution and misclassification cost mines millions of wasted dollars a year," he said.

"Our partnership with Augment Technologies will help mines to optimise digging locations and downstream handling of ore,

resulting in valuable processing efficiency and reductions in energy consumption.

"Customers will save training time and operation time by remaining in the same software used to model their ore.

"The incorporation of an industry-first block model manager provides auditability and traceability to reduce errors while managers and corporate stakeholders will see time-stamped changes of the block model."

Augment Technologies co-founder and chairman Greg Hardwich says the partnership is setting a new industry standard in minimising ore loss and dilution due to blast movement, bringing enormous efficiency to mining processes.

"We're very excited to be working with global autonomous technology leader Hexagon to inject our AI-powered capability to create a Muckpile Block Model™,

transforming the way blast movements are modelled and measured to create significant value for our customers," he said.

"Through this partnership, Hexagon's customers will have the opportunity to realise demonstrable reductions in ore dilution, allowing miners to return more consistent grades, and higher tonnages of ore for processing."

Hexagon's industry-leading solutions include Hexagon MinePlan Block Model Manager, which enables users to simultaneously and effectively design, populate, manage and share block models while centrally managing the massive amount of sample points, variables and outputs associated with orebody data.

Augment Technologies leverages a physics engine powered by an AI algorithm to create a Muckpile Block Model™ that is continuously improved through a machine-learning process.

The process utilises vast amounts of blasting data to ensure that the model's controlling parameters and simulated physics are as accurate as possible.

The collaboration between Hexagon and Augment will allow customers to view and manage the Muckpile Block Model™ that retains all the data and fidelity of the grade control model, with extremely high accuracy and resolution.

Users will have the option of incorporating Hexagon's Blast Movement Monitors as an additional measure for blast movement and for training the AI model, with complete transparency into all the data inputs and output.

They can also combine operational data with insights from the Hexagon Block Model Manager API to help optimise upstream and downstream processes, all within a trusted, industry-proven geological modelling software platform. **AMR**

## HEXAGON PARTNERS WITH AI SPECIALISTS ON MINE BLAST MOVEMENT



# Mitigate psychosocial risks, protect your people and your operation, with proven solutions

Proven mental health interventions underpinned by the Care4Me Platform can help you care for your people and better manage psychosocial risk.

**FACT:** Mental health and psychosocial hazard management, including preventative and early intervention is logistically difficult for mining operators. Onerous legal responsibilities and prosecutorial implications apply for company officers, executives. This problem is exacerbated by the remoteness of Operations, low rates of workers tending to seek help due to fears of stigmatisation or loss of income. Promoting help-seeking behaviour is paramount.

**FACT:** The most empowering insights for individuals come from awareness and understanding of whether they have a mental health condition, the severity, getting knowledge about their condition, relevant treatment and where to seek professional clinical support. Recent WHS Regulations for the control of psychosocial risk are now in place making it illegal to ignore these risks in the workplace.

## WE ENCOURAGE HELP SEEKING SUPPORT TO:

Empower individuals using Care4Me mobile app to anonymously self-check, self-educate, get help, anytime, anywhere, for the 75% majority of mental health conditions relating to anxiety, depression, and stress with mild-to-moderate severity.

Develop knowledge, skills, self-advocacy capabilities, and resilience with powerful Care4Me self-management tools.

Initiate ISO4503 Audits and Psychosocial Risk Reduction strategies, Integrated workplace mental health Training that increases skills and capacity levels of worker-to-worker support and management and co-workers to help those 'at risk.'

Co-designing integrated workplace mental health strategies in Delivering Safe Production & Services™.

There is no 'one size fits all' solution for workplace mental health and psychosocial risk reduction. The amount of information and resources can be overwhelming, it is hard to know what is relevant and what to trust to meet your legislated requirements. Your people make critical decisions, explore, mine and deliver essential products. The ability of Mining Officers, leaders, and managers to exercise their due diligence ultimately rests not only on the knowledge and capabilities of people, but also the developed understanding of psychosocial risk, systems and processes to meet legal obligations.

## OUR PRODUCTS AND SERVICES:

- ✓ Implementation and support of Care4Me Online Digital Platform and the Care4Me mobile app.
- ✓ Measure everything, collecting and applying large scale data to continuously fine tune approaches and solutions.
- ✓ Integrate Care4Me real-time analytics with your organisational global data and reporting systems.
- ✓ Access Workplace Mental Health and Wellness Strategies.
- ✓ Create tailored solutions for Execs, Senior Leaders to understand and respond to their legal obligations
- ✓ Train Peer-Support Workers, Contractors, Supervisors and Managers focused on workplace mental Health support.

Delivering Safe Production & Services™ partners with Eagle Health Global to strengthen organisational, team and individual mental health resilience underpinned by Care4Me Online Digital Platform. Care4Me technologies enable more effective and consistent collaboration around workplace mental health to reduce the stigma associated with mental illness and assist with the management of psychosocial risk reduction for all.

Stephen.Dowling@DeliveringSafeServices.com.au | +61 419 517 346 | 1300 495 855  
Ken.Swan@EagleHealthGlobal.com | +61 476 249 972 | 1300 495 855



[www.EagleHealthGlobal.com](http://www.EagleHealthGlobal.com)



DELIVERING  
**SAFE**  
PRODUCTION  
& SERVICES™

# ASRA ADDS HIGHLY PROSPECTIVE LITHIUM GROUND TO WA GOLDFIELDS' SOUTHERN HUB



**A**sra Minerals Limited (ASX: ASR) has entered an option agreement to purchase up to 80% of two additional exploration licences (E63/2224 and E63/2225) at the Lake Johnston pegmatite field in WA's southern Goldfields.

This move aggregates a large exploration portfolio for the company within the highly prospective southern Goldfields lithium-bearing pegmatite district between Early Grey and Bald Hill.

Asra managing director Rob Longley says recent lithium bearing pegmatite discoveries and investment by Rio Tinto into the Lake Johnston area validates the district's enormous critical mineral potential and its vastly underexplored status.

"The long term outlook for lithium is strong and new discoveries in Tier 1 jurisdictions like WA are vital to support the growing demand for critical minerals

and decarbonisation efforts, globally," he said.

"Recent funding by the Government to assist in early stage critical mineral exploration companies to grow end-to-end supply chains with Australia's international partners is further evidence of the global efforts to encourage exploration and discoveries.

"Asra's Southern Hub will be expanded

as prospective ground becomes available to explore and improve our chances of discovery in the highly enriched and easily accessible southern Yilgarn area of WA.

"We are excited to partner up with the respected geoscientists at Warea to explore two additional ELs that adjoin our current holding at Lake Johnston." **AMR**



The South Australian outback, near Olympic Dam.

**B**HP (ASX:BHP) has significantly bolstered its Oak Dam operations, one of the most significant copper discoveries in recent history, with 12 rigs presently on site and the majority of its 150-person drilling camp now occupied.

The miner has established an integrated copper province in the South Australia's far north by combining the Prominent Hill and Carrapateena mines with its existing Olympic Dam mine, smelter and refinery, and the Oak Dam exploration prospect.

The so-called "OD Deeps" program has identified extremely high grades of copper deep underneath the Olympic Dam ore body, in some instances of more than 2%, according to the miner.

BHP asset president copper South Australia Anna Wiley says encouraging exploration data at Oak Dam is coupled with promising returns from a significant exploration drilling program beneath BHP's existing mine at Olympic Dam.

"BHP has created an integrated copper province that we hope will bring the scale required to economically and sustainably

produce and process more copper here in SA and deliver it to global customers," she said.

"Our South Australian operations are performing well and we've had further exploration success.

Australia is home to 13% of the world's copper resources – second only to Chile – and South Australia hosts almost 70% of that resource." **AMR**

# CLASSIC EXPANSION AT FORRESTANIA GOLD PROJECT



**C**lassic Minerals Limited (ASX: CLZ) has lodged a mining lease application (MLA 77/1310) over the Lady Ada and Lady Magdalene project areas in the Forrestania gold project tenements.

The company purchased the tenements from Reed Exploration Pty Ltd, a wholly owned subsidiary of Redivium Limited (ASX: RIL) in October last year.

The MLA totals 1803.81ha and is strategically located, partially covering the area between E77/2239 and E77/2220 and fully encompassing P77/4291 and P77/4290.

On approval of this MLA, Classic Minerals will be able to mine all the gold resources at Lady Ada and Lady Magdalene, which currently has a combined indicated and

inferred estimate of 311,050oz of gold, subject to all regulatory compliances.

The company envisages that ore from these gold deposits will be processed at the Kat Gap processing plant, with the recently announced funding allowing for eventual upgrade of the plant and both gravity and chemical extraction possibilities.

The proposed mining operation site layout includes an open pit, stockpile for hard cap material, stockpile for topsoil, waste rock dump, camps 1 and 2, workshop, office and administration building, run-of-mine (ROM) 1 for high-grade ore and ROM 2 for low-grade ore. **AMR**



# ONE FOOT AHEAD WITH FREIGHT FORWARDING

**W**ith offices and warehouses based in Perth and Brisbane, Prime Global Logistics is well placed to service the entire Australian mining supply chain.

Prime Global Logistics is one of Australia's fastest growing logistic providers, with expertise that centres on offering clients a 'Can-do' attitude when it comes to the import and transportation of over-sized mining parts to remote and regional mine sites.

Recent large-scale logistical projects within the sector have included end-to-end logistical solutions from pick up at the overseas manufacturer and the subsequent overseas transportation and freight forwarding into Australia and over-sized road

transportation of mine site kiln shells, slew rings, mill shells and frames. All safely delivered on-time and on-budget to regional destinations across Australia.

The freight forwarding services offered by Prime Global Logistics are specific to the exacting requirements of each project and the services focus on client-collaboration to ensure the re-risking of long lead times and overall mitigation of mine down time.

Mining sector logistics services include:

- Logistic strategies and planning consultation
- In-gauge and out-of-gauge transport
- Over-sized sea and road logistics
- Freight forwarding consulting and management
- Wharf-side discharge management

- Laydown and material control at our Perth and Brisbane warehouses.

Listening to clients and remaining accountable, through ownership of a solution, is at the core of everything Prime Global Logistics do. By focusing on becoming part of the client's team, Prime Global Logistics know it is vital to find cost-effective logistics and shipping solutions to move equipment and supplies as efficiently and economically as possible. Whilst never compromising on safety and remaining focussed on meeting urgent deadlines.

With an extensive overseas network and offices in Vietnam, Prime Global Logistics provide its client with global reach with a local touch. Their proven strategic logistical solutions applied to individual

projects means they have extensive and practical experience and knowledge to tackle the movement of any over-sized part, from anywhere in the world.

### Socially Responsible Logistical Solutions

Prime Global Logistics is a company committed to making a difference in the community. They believe in making a positive impact through the ongoing support of the Perron Institute, the Perth Children's Hospital Foundation, The Spear Foundation and community sporting clubs through profit sharing and fundraising initiatives throughout the year. **AMR**

Go to [www.primeglobal.com.au](http://www.primeglobal.com.au) for more information

## Delivering Safe, Innovative and Socially Responsible Logistical Solutions





(L-R) Local Dingo resident Anne Capewell and Magnetic South communications manager Sharni Mancell with the new defibrillator which has been installed outside the Dingo library.

## MAGNETIC SOUTH DONATES DEFIB TO DINGO, QUEENSLAND



Magnetic South communications manager Sharni Mancell.

Residents of Dingo, in central Queensland, are better protected in the case of an emergency thanks to the donation of a defibrillator by Magnetic South, which has been installed outside the township's library.

The donation was made as part of the launch of Magnetic South's pre-construction Community Benefit Fund, which is now open and taking applications.

Magnetic South communications manager Sharni Mancell says the Fund is designed to provide residents from the Dingo district with an opportunity to apply for grants of up to \$2,000 to support programs and events that help create a strong, vibrant and healthy community.

"Our priority is to support applications that will facilitate events, experiences and opportunities that would otherwise have been unavailable," she said.

"Whether you're seeking funding for footy jerseys, new water taps at the school, or things like the purchase of the new defibrillator, then we want to hear from you."

Local Dingo resident Anne Capewell welcomed the availability of funding from Magnetic South and encouraged interested residents to apply.

"We're thrilled to have facilitated the purchase of the defibrillator which is the first item donated by the Fund," she said.

"Being such a small community, it is hard to get funding and we usually have to do a lot of fundraising to secure items like this, so to be able to apply for funding from Magnetic South is fantastic and it's going to be beneficial for everyone.

"It means we now have defibrillators located on both sides of the highway which gives me great peace of mind if there's an emergency.

"The closest ambulance service is in Duaringa which is about 20 minutes away or Blackwater which is half an hour away and that is just too long to wait."

Residents have four opportunities each year to apply for funding.

Applications must address the Magnetic South focus areas and be received by the closing date for each round.

All applications undergo an assessment process conducted by Magnetic South's

Community Benefit Fund Advisory Committee, which includes representatives from a cross section of the local community.

Applications for the first round of funding are open until 15 March 2024.

**For more information on the Community Benefit Fund and how to apply, visit [www.magneticsouth.com.au](http://www.magneticsouth.com.au)**

AMR

## 4000 LTI-FREE DAYS FOR WHITEHAVEN'S GUNNEDAH CHPP

Whitehaven Coal's (ASX: WHC) Gunnedah coal handling and preparation plant (CHPP) recently achieved 4000 Lost Time Incident (LTI) free days, equivalent to about 11 years without a Lost Time Incident.

Production superintendent Derek Welsh says this achievement is a testament to the strong leadership and safety processes that have been diligently maintained within the CHPP.

"I strongly believe that this achievement is the result of a work culture based on hard work and commitment to teamwork, strong inter-team support, personal ownership of systems and continuous improvement," he said.

"The team's commitment to safety remains unwavering, even in the face of various challenges, including handling different

coal types, increased production operations, and ongoing maintenance work that requires extended hours."

"Operators at the CHPP do not take shortcuts and they understand that safety is paramount."

CHPP conducts regular safety reviews and inspections, and the team is focused on continuing their impressive streak.

Whitehaven's commitment to Zero Harm remains at the forefront of all of its operations.

The mining company's total recordable injury frequency rate (TRIFR) for employees and contractors improved by 13% and its near miss frequency rate declined 22% on the prior year, according to its 2023 Sustainability Report. **AMR**





The New IMS-BP1200-48TB Track Blender, with four five-meter-long feed hoppers holding 12m<sup>3</sup> each with separate feed hopper conveyors with attached belt scales and fully automate with a PLC control and recording system that can be operated with an iPad from a loader or site office. Powered by a Cat C7 Generator that can be connected to mains power, driving Nord Electric motors with variable speed and feed hooper stop/start sensors with remote. The genset can also drive a 24-meter radial conveyor. The BP1200-48TB can produce up to 1000 tonnes per hour.



The BP1200-48TB can also work in conjunction with the IMS modular electric pugmill on skids producing up to 500 TPH of water or powder blended material and stockpiled with an IMS 24-meter radial conveyor with auto radial return.

IMS – PM1200-20TB Track Pugmill with two separate five-meter-long feed hoppers holding 10m<sup>3</sup> each which can be extended to 12m<sup>3</sup>, the feed hoppers have the option of fitting vibrating hydraulic tipping grids. Both feed hoppers have front of hopper adjustable flow gates, variable speed, and belt scales with the option of being fully automated. There is the option of adding two powder hoppers and two liquids.



**John Andersen +61(0)424 181 056 | Chris Wong +61(0)424 180 860**

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# DRIVING SUCCESS WITH NEW TRAINEES BEHIND THE WHEEL

A new generation of MinRes trainees will be in the driver's seat for career growth having recently graduated from our specialised MC Driving Training Program.

The three-month program upskills people with an existing multi combination (MC) truck license with the skills and knowledge to drive our 330-tonne quad road trains, each with a gross vehicle mass of 425 tonnes.

The program is tailored to each individual's experience, with training including vehicle pre-start inspections, daily safety checks, driving on the haul road, operating the side tipper trailers, radio communications and much more.

MinRes general manager for port and logistics Jason Holmes says MinRes is embarking on a period of transformational

growth, with the training program introduced to meet the huge demand for heavy haulage truck drivers.

"The program is a fantastic initiative to uptrain people who have little to no experience in mining, with MinRes looking to fill more than 100 positions across our sites," he said.

"The trainees are partnered up with experienced drivers to learn the ins and outs of operating quad road trains.

"With a starting salary of six figures during the hands-on training period, trainees can progress to a fully fledged MC driver pay within six months – offering a unique opportunity to transition to a rewarding FIFO career with long-term prospects."

Graduate trainee Jessica Wilson-Smith successfully completed the program and



Graduate trainee Jessica Wilson-Smith.

is now based at MinRes' Koolyanobbing iron ore mine site, driving Kenworth C509 and T909 trucks with up to five trailers.

"I spent six years in the New Zealand Army as a combat driver and wanted to transition to the mining industry," she said.

"I'd applied for a lot of jobs but they all wanted the same thing – experience.

"MinRes offered a training program that didn't require much mining or MC experience, which is great because it allows people to get their foot in the door and start a new career."

Jessica encourages those with a MC driver's license to consider applying for the program.

"If you want to get into the mining industry as a MC driver, go for it – you've got nothing to lose and everything to gain," she said.

"You'll find yourself working with a great bunch of people who have great work ethic, with plenty of laughs along the way."

To date, 40 trainees have taken part in the program, with graduates working at MinRes and CSI Mining Services mine sites across WA. **AMR**

Fortescue GIFT launch event. Standing far left are Fortescue Metals chief executive Dino Otranto, Professor Chris Rawson and Pilbara Kimberley University Centres chief executive Susan Grylls.



## FORTESCUE'S ENGINEERING GIFT TO FIRST NATIONS AUSTRALIANS

Fortescue, in collaboration with Curtin University and the Pilbara Kimberley University Centres, has launched a pilot program providing its First Nations employees with an opportunity to pursue higher education in engineering.

The Graduate in Fortescue Together (GIFT) program allows participants to undertake a Curtin University Undergraduate Certificate in Engineering, fully funded by Fortescue, at the Pilbara University Centres in Port Hedland.

The course will cover four key units delivered by Curtin University staff in a tailored and innovative hybrid mode: Engineering Foundations, Sustainability and Renewable Energy, Fundamentals of Programming, and Resources, Processes, and Materials Engineering.

It involves both in-person and online components.

Fortescue Metals chief executive officer Dino Otranto congratulates the inaugural cohort of 12 Fortescue employees.

"The GIFT program is so impressive because it's a remarkable opportunity to get a foot into the world of engineering with the full support and funding of Fortescue," he said.

"This program will drive long-lasting positive change and opportunity for our First Nations team members, while creating exciting new career pathways as we continue to upskill our people."

Curtin University vice-chancellor Professor Harlene Hayne says Curtin is proud to

collaborate on the GIFT program and help create meaningful opportunities for First Nations individuals in the field of engineering.

"This program exemplifies the positive impact that partnerships between Curtin and industry leaders like Fortescue can have on our communities," Professor Hayne said.

Pilbara Kimberley University Centres chief executive Susan Grylls congratulates the students for taking the first step in their learning journey.

"We're thrilled to be a part of the GIFT program, contributing to the creation of exciting new career pathways for First Nations talent in engineering," she said.

"The GIFT program is a vital step towards empowering First Nations talent in the Pilbara region.

"By providing an accessible and tailored educational experience, we aim to support students in building successful careers in engineering." **AMR**

### Statistics:

As at 31 December 2023, Fortescue had 1,369 First Nations employees working across the company representing 10% of the company's Australian workforce.

The inaugural GIFT cohort comprises 12 Fortescue teammates, with an equal gender split and ages ranging from 28 to 49.

# ELEVATE MINING EFFICIENCY

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# LIGHTING THE PATH TO INNOVATION:

## SAY GOODBYE TO THE GLARE WITH NORDIC LIGHTS PHENOM OPTICS!

In the heart of Australia's Mining Industry, a beacon of innovation has emerged – the Nordic Lights Phenom Optics. Bid farewell to blinding lights and welcome a new era of safety and efficiency that transforms the way you work. NAPA Mining National Sales Manager, Julian Ortmann highlights their reliability and durability, stating, "They're built to withstand tough conditions and provide excellent illumination for a range of tasks, from automotive repair to mining operations. We're excited to bring these high-quality lights to our customers in Australia."



### **Illuminating Efficiency: Unveiling the Nordic Lights Phenom Optics**

In the realm of mining operations, safety and efficiency are non-negotiable. The Nordic Lights PRO 415 Phenom Optics stands as a testament to these principles, designed with a singular mission – to eliminate glare and usher in a brighter, safer work environment. Whether you operate larger machines, medium-sized vehicles, or UTEs, these lights offer a unique solution to the age-old glare predicament that has plagued mining operations.

#### **For Larger Machines: Navigating with Confidence**

Climbing into large mining machines in the dark can be a treacherous task. The Phenom Optics, armed with patented No-Glare technology, reduces the risk of accidents during machine access, ensuring safety takes precedence.

#### **For Medium-sized Machines: Precision Illumination for Seamless Operations**

Install the Phenom Optics on the back of an excavator to eliminate blinding lights in rearview mirrors. Mounted on a wheel loader, it ensures operators and other vehicles can circulate without being dazzled, a common issue with standard work lights.

#### **On UTEs: Transforming the Night**

Mounted on the roof of UTEs, the Phenom Optics illuminates the bucket on the back of the vehicle without causing glare. During reversals, the light pattern illuminates the side and back of the vehicle, empowering operators to move



« No-Glare Phenom Optics

Standard Work Lights »

confidently and reducing the risk of accidents.

#### **Unleashing a Safer, More Efficient Workday**

Imagine a workday where climbing large mining machines in the dark is worry-free, reversing trucks is done without being blinded, and operating wheel loaders is clear and precise. With Nordic Lights No-Glare Light, efficiency and safety become the cornerstones of your workday.

#### **NAPA: Your Exclusive Gateway to Innovation**

Invest in Nordic Lights No-Glare Light today and experience a brighter, safer, and more productive work environment. Say goodbye to frustrating glare and increase visibility at your job site. NAPA, a trusted name with over 90 years of expertise, is proud to be the exclusive distributor of Phenom Optics lights in Australia.

With dedicated mining locations around Australia, NAPA brings innovative solutions and cutting-edge technology to your mining operation. At NAPA, safety and efficiency go hand in hand. **AMR**



For more information head to [www.napaparts.com.au/mining/](http://www.napaparts.com.au/mining/)

# SAFETY AND RELIABILITY

## HIGH-PERFORMANCE PARTS FOR THE MOST DEMANDING ENVIRONMENTS

Specialising in premium engineered underground and surface parts suitable for use with major brands MASPRO ensures superior performance and endurance even in the harshest of mining conditions. Tapping into extensive mechanical and engineering knowledge MASPRO gets to the core of your equipment failures by working with reliability engineers to improve existing parts.

At MASPRO parts are re-designed and manufactured in Australia to meet local specifications. With OEM parts produced globally there isn't the same opportunity to make modifications to local applications or conditions.

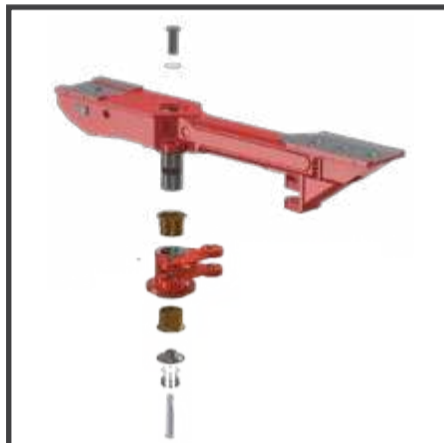
MASPRO is 100% focused on manufacturing quality parts that are micron perfect, certified and built to last. With a culture of innovation, they have continually tested and trailed different means of manufacturing to meet demand, ultimately investing in cutting-edge technology, highly skilled people and rigorous quality processes.

With a reputation for high level engineering, ease of ordering, responsive delivery and the best quality products MASPRO parts are optimised for safety and reliability which helps you maximise uptime, increase equipment utilisation, and boost productivity on site.

### UNDERGROUND PARTS SPOTLIGHT



**DPU/Boom Head Assemblies**  
Compatible with: TB60/SB60 Booms



**Feed Cradle Assemblies**  
Compatible with: TB60/SB60 Booms



**Front Centraliser Assemblies**  
Compatible with: TF Feed/TFX Feed



**Pito Assemblies**  
Compatible with: TF Feed/TFX Feed

### SURFACE PARTS SPOTLIGHT



**Rotation Units**  
Compatible with: D65/L8/L8-30/SIMBA



**Breakout Table**  
Compatible with: D65/L8/L8-30/SIMBA



**Breakout Cylinder**  
Compatible with: D65/L8-30/T45



**Breakout Jaws**  
Compatible with: D65/L8-30

### CYLINDERS SPOTLIGHT



**Zoom Cylinder**  
Compatible with: TB60/SB60 Booms



**DPU Cylinders**  
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# COPPER

## FEEL OF THIS



Olympic Dam in South Australia is a multi-mineral orebody producing copper, gold, silver and uranium.

Following the acquisition of OZ Minerals, BHP (ASX: BHP) is without doubt the largest copper producer of Australia and confirms itself as one of the top two copper producers in the world.

Operationally, BHP had a solid first half year (ended 31 December 2023). WA iron ore production was up 5% quarter-on-quarter, while first half copper production rose 7%, reflecting a record half at Spence and ongoing strong performance and additional tonnes at Copper South Australia.

BHP chief executive Mike Henry says the copper side of the business is going strong.

“At our WA Iron Ore operations, we remain the lowest cost major producer globally and in copper we set new production records at our operations in South Australia and Chile,” he said.

“In South Australia, our consolidated copper province has performed strongly and we are pursuing future growth options.”

BHP successfully integrated its copper SA

business and significant exploration drilling beneath Olympic Dam identified attractive copper mineralisation above 1% grade along a 2km strike, with areas above 2%.

Overall, total copper production increased by 7% to 894kt; copper guidance for FY24 remains unchanged at between 1,720 and 1,910 kt.

So what does this all mean?

### South Australia On Top

It means that in BHP’s December 2023 quarter and half-year reporting, South Australia has come out on top as a strong part of BHP’s future.

Olympic Dam, the world’s fourth largest copper mine, is located 560km north of Adelaide and is part of BHP’s Minerals Australia operation, made up of underground and surface operations, operating a full integrated processing facility from ore to metal.

BHP took ownership of the mine in 2005, and it has almost 700km of underground

roads and tunnels. With a rich history of copper mining dating back to the mid 1800s, South Australia thrives on the industry and was once known as ‘Copper Kingdom’. Now, Olympic Dam is known to be the biggest mine in the State.

There is a strong future in copper mining given SA’s track record in exploration and development, and what’s even better is that BHP has embraced renewable energy on the forefront with a wind farm and battery system to supply BHP’s Olympic Dam mine with baseload renewable energy under a new deal struck with French company Neoen.

### OZ Minerals Acquisition

With copper on the cards, BHP last year purchased 100% of OZ Minerals, strengthening its portfolio in copper (and nickel) and making sure it was moving forward within its strategy to meet the increasing demand for minerals needed for in the energy space.

At the time of the acquisition’s completion in May 2023, BHP Chief Operating Officer Edgar Basto said the deal would bring to-

gether quality resources, talented teams and innovative thinking.

“South Australia has the potential to be a major supplier of copper to meet the world’s increasing demand for copper,” he said, further deepening the importance of the state’s copper resource and its supply to the world.

### Olympic Dam

Olympic Dam is a large iron oxide copper-gold deposit with estimated reserves of 2.95bt of ore grading 1.2% copper, 0.04% uranium, 0.5g/t of gold and 6g/t of silver. And 65km south-east of it lies the smaller but still quite impressive Oak Dam, with higher initial copper grades of up to 6%.

According to the company’s operational review for the half year ended December 31, 2023 BHP has undertaken about 62km of exploratory drilling beneath Olympic Dam, which has shown extensive mineralisation continuity, with attractive copper grades of above 1% along more than 2km in strike and more than 1km in depth.





## OLYMPIC DAM IS THE WORLD'S FOURTH LARGEST COPPER MINE.

In 2020-21, geologists reviewed mineralisation potential known as the Olympic Dam Deeps (ODD) and as of September 9, 2023 all holes completed to target depth intersected mineralisation and outlined mineralisation extending more than 2km along the strike and more than 1km in depth. The iron oxide copper-gold mineralisation style of the ODD appears similar to the main body of Olympic Dam.

At Olympic Dam, the best copper intersection was 126 meters at 4.1% in a hole where 580 meters of mineralisation was intersected.

So now the question is, how much money will BHP invest further into its South Australian copper areas?

As of 2022, Olympic Dam had a life of 57 years.

### Working Together

In December 2023, BHP's Copper SA business signed two contracts worth a combined \$156m over five years with Indigenous-owned businesses Intract Australia,

Zancott Knight and Platinum Civil Constructions.

Intract, who has 50% Indigenous employment at BHP's Olympic Dam, has been awarded a contract worth \$96m over five years for industrial cleaning at the site.

This is the largest ever standalone contract BHP has signed with a Traditional Owner or Indigenous-owned business in Australia.

Zancott Knight, an Arabana-owned business, together with Platinum Civil Construction, an Indigenous-owned business with 65% female employment, have been jointly awarded the ad-hoc civil contract for \$60m.

Seamer Civil and Ngurra, two Arabana businesses, are also included as subcontractors.

This forms part of the commitment BHP made in its sixth Reconciliation Action Plan, which was released in June 2023, to achieve \$1.5b of spend for procurement from Aboriginal and Torres Strait Islander

and Traditional Owned Businesses by mid-2027 across Australia.

This milestone marks further opportunities to provide meaningful employment, create career pathways and execute development and training for Indigenous people.

Working with local contractors and communities supports incredible benefits, including sustaining remote communities, helping staff manage a healthy work-life balance, and ensuring the company is running a successful operation.

### Breaking ground At Port Augusta, SA

BHP has forged a powerful partnership with the South Australian Government's Technical College at Port Augusta.

SA Premier Peter Malinauskas detailed this while visiting the site of the new technical college, with construction beginning in the coming months by Sarah Construction.

Premier Malinauskas says he wants to create pathways for Port Augusta students.

"Partnerships through major employers like BHP is the way to secure it," he said.

The Port Augusta Technical College is one of two regional facilities amongst five technical colleges as part of a \$208m SA Government plan to provide an alternative senior secondary option that equips students with the workplace skills needed in areas of high demand. BHP asset president of copper in South Australia Anna Wiley says an expanded technical skills base will be important for South Australia's economic progress.

"The Port Augusta Technical College will help young people in the Upper Spencer Gulf get the training they need to pursue rewarding careers," she said.

"BHP is pleased to support what is a terrific example of positive collaboration between government, industry, and education providers to deliver broader benefits to the Upper Spencer Gulf community."

The Technical College will open in 2025.  
**AMR**



# SUPPORTING YOUR JOURNEY TO NET ZERO WATER, WASTE & ENERGY

**R**icardo is a global strategic engineering and environmental consulting company which delivers innovative and cross-sector sustainable solutions that help our clients to create a safe and sustainable world.

We operate in 23 countries including Australia, where our expert teams have presence in every state and are renowned for their trusted advice to clients across: mining and resources, water, environment, air quality, rail and mass transport, infrastructure, waste management, power, agribusiness and land development.

Our Australian mining expertise in water, environment, waste, utilities and infrastructure combines with our global mining decarbonisation expertise to deliver sustainability-focussed outcomes for the Australian mining industry.

In the last decade we have delivered more than 200 projects in the mining industry across Western Australia, South Australia, NSW and Queensland, leveraging our Australian mining expertise in water, environment, waste, utilities and infrastructure together with our global mining decarbonisation expertise.

Ricardo provides extensive support to the Australian copper sector. This article highlights these services and our work across iron ore, steel making coal, nickel and other critical minerals.

## WHY RICARDO FOR AUSTRALIAN MINING?

Ricardo understands the specific and complex sustainability challenges faced by the Australian mining industry, including:

- **Environmental stewardship** - water resources, air, soil, ecology and biodiversity before, during and after mining, including environment-related cultural and heritage values
- **Collaboration** - to address the cumulative environmental impacts on catchments resulting from multiple operations and project developments
- **Social values and licence to operate** in regional areas
- **Decarbonisation** - requiring sustainable mining of strategic and critical minerals
- **Net zero targets** - decarbonisation of operations and supply chains

Ricardo understands the specific site conditions, engagement and collaboration required with state governments, local communities and traditional landowners for starting greenfield projects. We recognise the differences in maintaining production in both open pit and underground operations, expanding and sustaining brown-field operations that often include more than just mining but require sustainable solutions to utilities, air, road and rail and maritime transport, concentrating, smelting and refining, and successful planning and execution at closure.

Our experts provide practical insights on government policy, cumulative impact management frameworks and strategic infrastructure networks that support regional development and the mining industry. Our initiatives foster enhanced collaboration between the mining and agriculture sectors; facilitate resource sharing, diversification of pastoral activities, and garnering increased stakeholder support at the regional level.

With our in-depth understanding of regulatory landscapes and operational contexts we bring invaluable strategic and technical expertise to mine closure processes, creating new opportunities for the Australian industry and ensuring smoother transitions for post-mining operations.

Our efforts significantly raise awareness of both the challenges and opportunities inherent in rehabilitation endeavours, benefiting local communities and safeguarding the social license of mining entities.

We use our deep expertise in Australia to create opportunities for the mining industry and supporting sectors: to achieve global decarbonisation and net zero targets. This includes the development and integration of hydrogen and battery technologies, EV expertise, Australian policy, economics and infrastructure advisory, rail, transport and logistics, water stewardship, circular economy and environmental expertise.

## AUSTRALIAN EXAMPLES

### Water Infrastructure Advisory

Ricardo developed a pre-feasibility water balance and applied the insights to prepare safe, effective, practical, economic and sustainable water supplies, surface water management plans and dewatering infrastructure designs for a large greenfield open cut nickel mine in a remote location. This met the needs of the mine plan and supported the investment decision.

Ricardo regularly manages business cases, planning, engineering, studies and project manages or provides operational advice for water infrastructure to protect and enhance value in mining operations. We work to optimise borefields, pipelines, pumps, treatment, storages and dams to protect the quality of drinking water for public health, reduce water supply risk to numerous mining operations, and manage surplus water risk from surface water flows and dewatering.

### Water Stewardship Targets

Ricardo developed context-based public water targets for an Australian miner with multiple commodities and assets to create long term organisation and shareholder benefits and drive improved industry performance. This required a collaborative and staged approach to define the objectives and viable strategies. From this we

developed practical implementation plans to meet existing commitments, increase scientific knowledge to improve planning and decision making, mitigate material water risks, contribute to solving shared catchment challenges, realise social value and meet stakeholder expectations.

**Catchment Management Plans**

Ricardo uses scientific-based approaches to develop catchment management plans across operational portfolios. We defined a scope of works based on the identified ecohydrological receptor values to be protected and the potential impacts of the mining operations in the catchments. The resulting plan defined the roles and responsibilities for water, and the timeframes for recommended actions to protect receptors. It documented the client's influence on broader cumulative impacts, key gaps in risk, knowledge gaps and the paths to improvement, and identified and addressed the inherent uncertainties and variabilities driving the water resources and catchment management.

**Landfill Diversion**

Ricardo has used a data-driven approach for an Australian miner to improve the understanding of its waste streams, and then develop a practical strategy that considered its remote location, circular economy principles to set achievable landfill diversion targets. The completed options identification and assessment process recommended a prioritised suite of investments required for its mining operations and camps to achieve these targets.

**Mine Closure**

We led and facilitated discussions with industry and government stakeholders about the key water-related challenges and opportunities in the upper

Macquarie/Lithgow region's towns from coal fired power station and mine closure over the next 10-20 years. Water is central to the prosperity, transition and economic future of the region. The New South Wales Government used the project findings to inform its future work program.

**Water pricing for mine closure**

We provided strategic and economic advice to an Australian state government in relation to the economic and commercial aspects of water supply options to fill large mine voids after closing open pit coal mines. This included existing mine water abstraction licences and the pricing and commercial elements associated with providing mine owners with ongoing options and rights to supply water from multiple sources.

**INTERNATIONAL EXAMPLES**

**Sustainable Mining Investment**

Ricardo provided its Australian mining expertise to the European Bank for Reconstruction and Development after we completed a cost benefit analysis of a new open cut and underground copper and gold mine in Greece. This considered Scope 1-3 greenhouse gas emissions and carbon lock-in. Practical green alternatives for this site included power purchase agreements, underground electrification, batteries and biofuels. The assessment supported the attractiveness of capital funding for sustainable investments.

**Decarbonisation in Mining**

Ricardo used data driven, scenario-based modelling and mining expertise to define and assess alternatives and select a 2050 net-zero road map for Ferrexpo in Ukraine. This lowers the carbon footprint of their steel value chain by over 20%.

**OUR SERVICES FOR THE AUSTRALIAN MINING SECTOR**

**Decarbonisation:** Improve your decision making with our services and insights in:

- Strategy and roadmaps
- Policy and economics
- Sustainable procurement and supply chain management
- Utility / Non-Process infrastructure planning and engineering

**Clean Energy Technologies:** Access the most current solutions available in:

- Renewable energy generation
- Heat systems
- Hydrogen, electric and battery applications in transport
- Rail, heavy road transport, maritime
- Automotive and light vehicles

**Environmental Stewardship** Achieve your ESG objectives with our services and insights in:

- ESG reporting and Compliance
- Sustainability
- Air quality
- Catchment management and water stewardship
- Land management, ecological biodiversity conservation

**Circular Economy:** Increase the

circularity of your mining operation with our services in:

- Life cycle assessments
- Sustainable procurement
- Condition-based asset management
- Innovative re-use of waste as resources
- Improving segregation of recyclables

**Investment Advisory:** Improve your decision making, planning and delivery with our services in:

- Technical, economic, and executive advisory of green investment alternatives
- Strategies, pathways, analysis and planning
- Feasibility assessments and studies; engineering, risk and benefit management; business cases.
- Client-side program and project management and owners engineering
- Utility / non-process infrastructure asset management, operations and maintenance advisory

**Community and Stakeholder Engagement** backed by technical and scientific expertise.

**Mobility Decarbonisation**

From supporting Toyota in its development of a Hydrogen Hilux to adoption of 'Net-Zero Rail' solutions, Ricardo has supported mining, government and OEMs globally in the adoption of sustainable transport and mining solutions including hydrogen, electric and batteries.

We recently assessed the costs for infrastructure to transition heavy goods vehicles to zero emissions for the UK committee on climate change using data analytics and modelling. This compared hydrogen refuelling, electric road systems (ERS) and rapid charging and combinations.

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For more case studies and information about Ricardo's mining services, please visit [www.ricardogroup.com/mining](http://www.ricardogroup.com/mining). Follow Ricardo on LinkedIn at [www.linkedin.com/company/ricardo-plc/](http://www.linkedin.com/company/ricardo-plc/). Please reach out to find out how Ricardo can support you at [mining@ricardo.com](mailto:mining@ricardo.com).



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Inside Mipac's Perth office.

# COPPER BOOM, EMISSIONS BUST:

## MIPAC'S SUSTAINABLE SOLUTION

**T**he urgency of increasing the supply of copper in response to escalating global demand cannot be overstated.

This critical mineral is fundamental to the clean energy transition and an essential element of green technologies. However, demand is far outstripping supply – to the point that there are concerns the world's climate goals may not be met if this widening gap is left unaddressed.

The reasons for the growing demand/supply gap are multifaceted: new mines are delayed, existing ones disrupted or downright cancelled. The December 2023 announcement from First Quantum Minerals confirming the shutdown of their Cobre Panama operations is a clear example. And whilst these delays

and disruptions are grounded on valid concerns that demand attention and solutions, the need to produce large amounts of copper remains critical.

"Copper is arguably the most important mineral we need to secure a greener future," says Steven Cohen, Sales and Marketing Manager at engineering company, Mipac.

"At Mipac, we're really proud to have a long history of successful projects within the copper industry both domestically and internationally. The most recent example of this is our role as Main Automation Contractor for BHP's West Musgrave project in Western Australia."

This project, which is set to be one of



**STEVEN COHEN**  
MIPAC SALES AND MARKETING MANAGER

Australia's largest, lowest cost and lowest emissions copper nickel projects, is set to produce 13.5 Mt/y, with average production over its 24-year life cycle yielding circa 35,000 t/y of copper.

"We began working on the West Musgrave project in December 2020," explains Virgilio Bay, Mipac Senior Project Manager.

"As part of the project's pre-feasibility stage, OZ Minerals [former owner] identified an opportunity to merge the site's digital technologies – information technology (IT) and operational technology (OT) – to develop a fully integrated 'digital' mine."

"We initially created a high-level control system architecture design and OT/control network design criteria for the site, and have since been involved in the vendor selection, early works, early detail and now main automation contractor (MAC) stages of the project," said Bay.

"Mipac was chosen as the MAC for this project because of our history in developing highly integrated OT systems for complex operations all around the world," explained Cohen.

Acting as MAC, Mipac is responsible for delivering a complete integrated process control system across the process and non-process areas of the West Musgrave plant. This plantwide control system will monitor, control and manage plant operations, ensure plant and asset safety and support BHP in achieving their business objectives.

Once completed, the site will have fully integrated operational processes and systems, enabling more efficient and dynamic energy management as well as integrated operations, reducing its green footprint as well as the requirement for personnel to be on site.



**VIRGILIO BAY**  
MIPAC SENIOR PROJECT MANAGER

This work is expected to take two years and engage up to sixteen staff.

### Main Automation Contracting

As a main automation contractor, Mipac takes full responsibility for all automation-related aspects of a project. This includes detailed design, engineering, supplying, and managing all project components and facilities, from instrumentation to safety instrumented systems.

Collaborating directly with the end-user, Mipac will construct the most suitable project organisation, eliminating the need to manage multiple automation suppliers and therefore ensuring cost savings, risk mitigation and shorter deliver times.

Adopting a MAC approach can result in cost savings of up to 30% compared to traditional approaches. Additional benefits include:

- 20-25% reduction in the direct cost of a process control system
- Project risk reduction through standardisation of design and reduction in project interfaces.
- Compliance of the system with customer requirements
- Improved quality of solutions
- Decreased total ownership costs thanks to decreased operating costs
- Reduction in operations and maintenance costs due to consistent automation standards and configuration.
- Standardisation of OT hardware and software across the site further reduces operational costs due to a reduction in the required spare parts inventory.

To find out more, visit:  
[www.mipac.com.au/services/main-automation-contracting/](http://www.mipac.com.au/services/main-automation-contracting/)

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## MIPAC'S TRACK RECORD OF SUCCESS IN THE COPPER INDUSTRY

For more than 26 years, Mipac's expert engineering team has been working with Australian copper producers across the mining value chain to increase production, reduce costs and minimise variability. Sites include:

- Mount Isa Mines
- Telfer Mine
- Mount Carlton
- Prominent Hill
- West Musgrave
- Olympic Dam
- Northparkes
- CSA Mine
- Ernest Henry



Copper mining and concentrates production is a complex process requiring a symphony of operations using specialised automation and control techniques across the mining value chain.

For the past three decades Mipac's expert engineering team have been working with Australian copper producers to increase production rates, reduce costs and minimise variability.

If you're facing a complex problem in your copper operation, let Mipac be your trusted partner in finding the best solution.

#### Check out our local Australian/Pacific copper case studies.

- Mount Isa Mines
- Telfer Mine
- Mount Carlton
- Prominent Hill
- Ok Tedi
- West Musgrave
- Olympic Dam
- Northparkes
- CSA Mine
- Ernest Herny

**730** projects delivered

**125** clients globally

**55** countries

**26** years in business

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# Australia's leading automation experts in copper production

# BHP

## West Musgrave

## Main Automation Contractor



# WEG Motors

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With more than 40,000 employees worldwide, WEG not only provides machines that work harder, better and longer, but also manufactures a full range of electrical and mechanical drives which are supported by its global presence. This assures fast and effective engineering and sales support wherever your location may be.

In Australia, WEG has a network of state offices and inventory warehouses in Perth, Brisbane, Sydney, and Melbourne which provide local support to service providers, distributors, and local equipment manufacturers.

The WEG 'mining motor' was first created in 1985 after an extensive review of electric motor specifications from major mining companies and industrial sites throughout Australia.

With high torque performance and fully featured mechanical components, the mining motor platform quickly established an identity and reputation as a high quality, tough, reliable product.

Over the 38 years and as Australian industry standards have changed, the product has continued to evolve to meet industry demands and remains the benchmark for electric motors in technological features, efficiency, performance, reliability, and consistency.

Known for high quality motors, WEG also understands that correct machine starting,



and protection adds to effective plant reliability, efficiency, and cost reductions. Therefore, WEG manufactures a full range of low and medium voltage starters and variable speed drives designed for peak motor performance.

WEG's solutions are designed to allow your plant to be an effective, safe, and reliable facility with operational stability and the highest possible production levels.

Sustainability has also been an integrated part of WEG's philosophy since its foundation. That is why awareness of environment protection has been a major concern in the company for the correct use of natural resources and the application of efficient energy solutions.

It is understood internationally that the effective use of electric power significantly reduces environmental impacts with further cost savings and improved living standards.

This is the path followed by WEG's continuous investments in technological innovation as well as development of premium efficiency electric motors and electronic products which are suitable to operate under increased performance, high productivity, low power consumption, and reduced operational costs providing outstanding benefits to its customers and to the environment.

Along its successful history, energy has been the company's focus while manufacturing reliable and highly efficient products that contribute to a global sustainable development. We can't predict the future, but we can see it coming...

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M Mining Line Motors



Solutions for Mining



W51HD Motor



W60 Induction Motor



Motion Fleet Management



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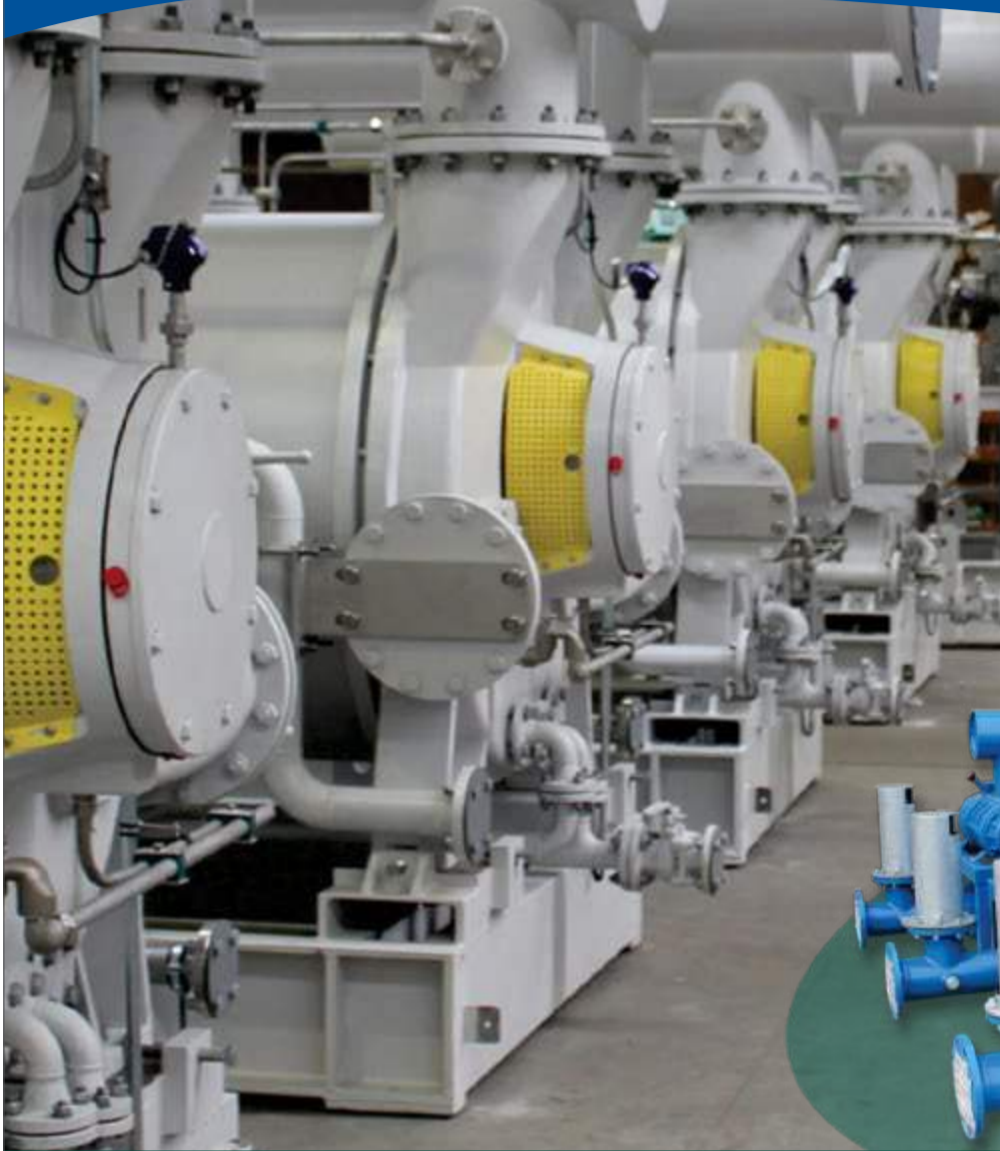
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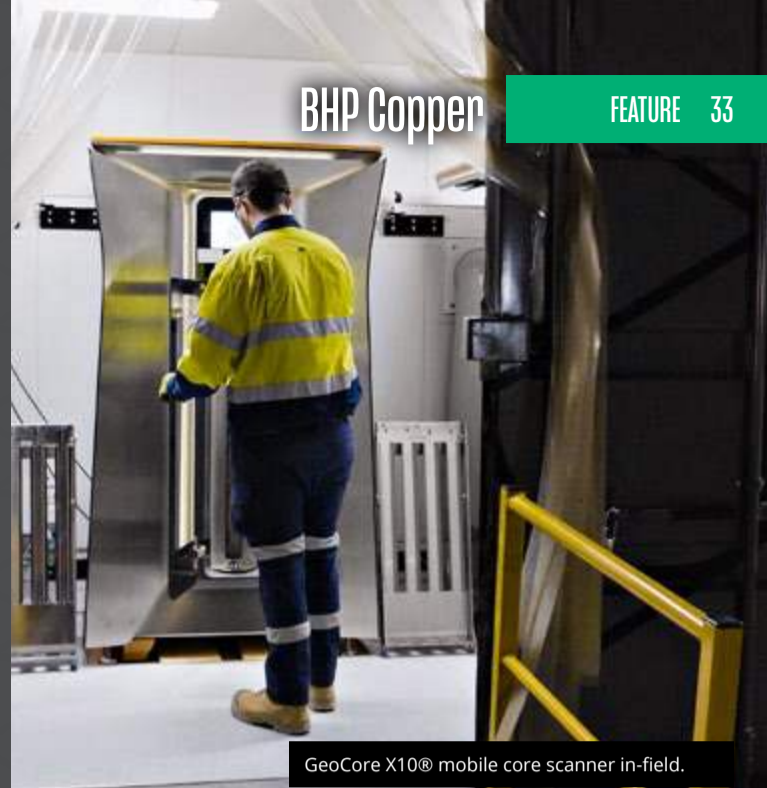
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# GEOTECHNICAL AND STRUCTURAL INFORMATION FOR MORE INFORMED DECISION MAKING



GeoCore X10® mobile core scanner in-field.

**D**iminishing exploration returns, escalating operational costs and stringent ESG demands paint a challenging landscape for mining operations worldwide.

Technology such as Orexplore's Geocore GX10® core scanner and Orexplore's Insight® 3D modelling software can help relieve these pressures by delivering real-time, comprehensive insights from the field, empowering mining operators to make informed decisions and unlock new value.

#### Greater Orebody Knowledge

Embedded in clients' core farms and used before traditional logging and laboratory analysis, the Geocore GX10® uses CT scanning and XRF technology to examine the entire drill core, inside and out, to create digital twin core models. These digital models support a suite of

solutions that are available on-site within hours of scanning the core, providing quick and comprehensive calibrated data, in comparison to the slower, more costly, and less comprehensive traditional methods of testing.

#### Geotechnical and Structural Solutions

The technology's ability to 'see through' drill cores offers a new approach to understanding rock mass characterisation, facilitating the development of unique geotechnical software solutions such as Rock Quality Designation (RQD) and fracture analysis. Understanding geological structures, like fractures, faults and shear zones is essential for targeted exploration and choosing the best mining method for a deposit. These structures can direct the flow of fluids carrying ores, leading to the accumulation of valuable minerals as well as potentially harmful substances like sulphides. Identifying

these structures is crucial for designing and executing effective mining operations.

Orexplore's advancements in Geochemistry models that deliver elemental concentrations co-located with downhole mineralogy and lithology, are rapidly advancing. In conjunction with new geotech and structural analysis tools, the technology now provides unique insights into ore body knowledge (OBK), such as structural controls on mineralisation. This enhances resource understanding and improves exploration targeting.

#### Unlocking New Geotechnical and Structural Knowledge For BHP

Working with BHP in the South Australian Copper province, Orexplore is demonstrating the potential of this technology to unlock new geotechnical and structural understanding. These solutions are helping the company to

reduce future mine design and operational risks through improved data quality and a more comprehensive understanding of rock characterisation, paving the way for a safer, more sustainable, and profitable operation.

Orexplore's technology platform is delivering new insight to mining operations by delivering fast, on-site ore body knowledge through co-located geochemistry, mineralogy, and now, geotechnical and structural information. These solutions link subject matter experts (SMEs) instantly, regardless of location, empowering mining operators to make well-informed decisions that enhance operational efficiency, sustainability and profitability. **AMR**

For more information, visit us online at [www.orexplore.com](http://www.orexplore.com)



**OREXPLORE**  
TECHNOLOGIES

## FAST TRACK YOUR GEOTECHNICAL ANALYSIS WITH OREXPLORE

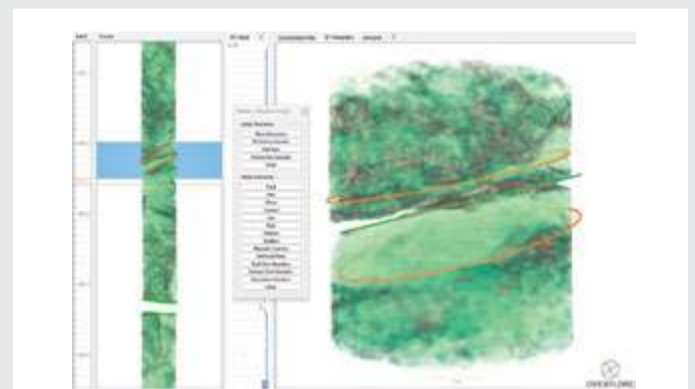
Imagine having access to consistent high quality geotechnical datasets like Rock Quality Designation (RQD) and fracture analysis just hours after completing your drilling. What if you could view and interact with a 3D digital model of your drill core, inside and out, allowing for in-depth analysis of your deposit's structural features at multiple scales?

Orexplore's Geotech solution has made this a reality for companies like BHP, enabling geologists and mining professional to make quicker, more accurate and informed decisions to:

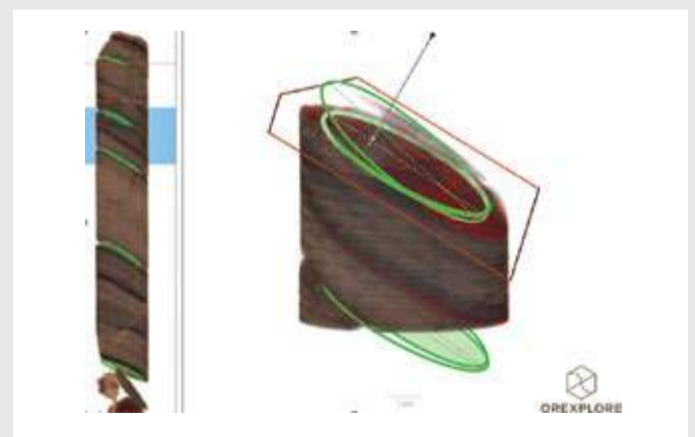
- Maximise drilling efficiency and reduce costs
- Design drill and blast patterns for optimal fragmentation and minimal waste
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Vein orientation and upper and lower vein boundaries.



Automatically nested structures and associated mineralisation.

# ELPHINSTONE RELEASES NEW E15 SERIES

## Underground Mining Support Vehicles

Elphinstone is excited to introduce the new E15 model to the Elphinstone Underground Hard Rock Support Vehicle range.

"The low-profile E15 is a welcome addition to the existing range of E10 support vehicles (formerly WR810), with both base platforms sharing a high level of interchangeability of parts and components, equals reduced part stocking and simplified maintenance and operation processes", says Global Sales & Marketing Manager, Tim Mitchell.

The significance of the E15 model number is the letter 'E' represents Elphinstone, and the numeral '15' indicates the nominal capacity in metric tonnes (depending on the configuration).

The first machines to be released include the E15 Agitator 7m<sup>3</sup> (pictured), E15 Delivery (nominal 15 tonne capacity and 8.8tm crane), E15 Flat Deck (nominal 16 tonne capacity), E15 Water Tank (nominal 13,000L capacity), and E15 Fuel & Lube (Diesel, Lubricants, Grease, Coolant, DEF, Water & Air). Additional models will be released in the future.

Headlining the E15 series is the Agitator 7m<sup>3</sup>, built to thrive in harsh underground hard rock mining conditions, providing outstanding ride and handling with excellent manoeuvrability and turning circle.

At 2.4m high, the front-mounted operator cabin features 3-person seating, climate-controlled air conditioning, ergonomic central driving position with a clear 180-degree view, and dial controller for the retarder, speed and implement controls. Operator comfort and convenience is further enhanced with an air-cooled compartment

for lunch box storage, cupholders and smartphone charging ports.

The combination of the A-frame front axle suspension, oscillating hitch and air-suspended seats, deliver a high level of machine comfort to the operator and passengers. The oscillating hitch ensures 4-wheel ground contact and reduced wear on the hitch and steering components. Nitrogen charged hydraulic suspension cylinders and A-frame provide superior front axle ride quality over rough terrain.

Common to both the E15 and E10 range, the engine front frame can accommodate optional Cat C7.1 Tier 3 or Tier 4 Final engine arrangements featuring Caterpillar's breakthrough ACERT™ Technology to meet exhaust emission reduction standards.

The engine's efficient fuel delivery combined with air management and electronic control lead to high productivity and exceptional service life. An optional full-flow DPF may be fitted in place of the standard muffler and catalytic converter on Tier 3 models.

All engine and machine isolation functions are conveniently located on one panel accessible from ground level on the left-hand side. All service points such as tanks, filters, lubrication points and compartment drains are conveniently located at ground level for servicing.

The monitoring system and alarm strategy provides a 3-tier warning and shutdown functionality alerting the operator of any abnormalities and automatically limits the machine's functions. Onboard advanced machine diagnostics provide the operator and maintenance staff valuable information

which simplifies machine servicing.

All the application modules pin and or bolt to the common rear frame, including the 7m<sup>3</sup> agitator bowl. With 16.00R20 tyres, heavy-duty axles and different weight distribution, the machine has greater carrying capacity.

An optional feature of the E15 are the front and rear hydraulic jacks. The front jacks operate with a "park" function to enable the operator to safely exit the cabin with the engine operating. The rear jacks are used to level or lift the machine for discharge. All jacks can lift the machine off the ground for changing tyres.

Fitted as standard to the rear frame is a high-capacity electromagnetic retarder which provides superior braking performance on grade, and diagnostic capabilities with alarm and fault conditions reported back to the 12-inch touch screen operator display.

The integrated Retarder Control System (iRCS) combines both the control and power functions into a single unit. The innovative electronic design significantly reduces the retarder's energy consumption, preserving electric circuits.

The E15 also features 'speed control' whereby the operator can set the maximum speed on grade and the machine uses the retarder and the inertia of the powertrain to maintain the speed. When on flat ground the operator can accelerate over the maximum set speed, but when the accelerator pedal is released, the machine speed will revert back to the original maximum speed setting.

Downtime during service and maintenance is reduced markedly on the E15 due to clever engineering and design features, incorporated with service personnel in mind.

Quick change air filters and 500-hour oil service intervals reduce downtime and keep machines in operation longer for greater productivity. A centralised onboard service centre includes fast fill, evacuation, and fluid sample points for analysis.

The 24 V electrical system features colour-coded wiring circuits with individual circuit breakers. The wiring is sealed to prevent dirt and moisture and enveloped in fire-resistant material. The onboard diagnostic system checks all critical machine functions for faults, with all data recorded for analysis.

Operator safety is a high priority in mining machine operations. Integrated into the E15 and E10 operator station is an ISO 3471:2008 standard ROPS and ISO 3449:2005 standard FOPS that offers protection to the operator.

Other safety features include fuel water separators made of non-flammable material, firewalls and heatshields, machine interlocks, centralised isolation points (engine disconnect switch, starter isolation switch, jump-start receptacle and fire system activation, if fitted), and an optional integrated fire suppression system.

As an authorised Caterpillar OEM, all machine sales, technical assistance and access to spare parts are available and supported through Elphinstone and the global Cat® dealer network.

## New Elphinstone E15 Agitator

# E15 | OUTSTANDING RIDE AND MANOEUVRABILITY.



Scan the QR code to learn more or visit [elphinstone.com](http://elphinstone.com)

Built to thrive in the harsh underground environment, the new E15 provides outstanding ride and handling with excellent manoeuvrability and turning circle. Features include:

- Front-mounted operator cabin featuring 3-person seating, climate-controlled air conditioning, and centre driving position with a clear 180-degree view.
- Common engine front frame, including the engine and transmission shared with the E10 (formerly WR810).
- Standard rear frame for multiple applications supported by 16.00R20 tyres and heavy-duty axles.
- Optional C7.1 Tier 3 or Tier 4 Final engine arrangements.
- Standard A-frame front suspension with nitrogen-filled suspension cylinders.
- Electronic speed control for maximum speed setting on grade.
- Electromagnetic retarder (high-capacity) for superior braking performance.
- Optional front and rear hydraulic jacks providing level and lift capability for discharge and tyre change.
- Air-cooled compartment for lunch box storage, cupholders and smart phone charging ports.

**ELPHINSTONE**

t +61 3 6442 7777  
e [sales@elphinstone.com](mailto:sales@elphinstone.com)  
w [elphinstone.com](http://elphinstone.com)

# REAZ CONTINUES TO EXPAND OPERATIONS ACROSS AUSTRALIA

Electrical engineering solutions provider REAZ Australia continues to see increased demand across Australia with its range of products and services proving to be particularly popular in the mining sector.

The company now has teams operating in Queensland, New South Wales, Western Australia, South Australia and the Northern Territory.

REAZ offers a plethora of IECEx certified explosive proof equipment ranging from lights, warning systems and air conditioning to isolators, junction boxes and safety

IS barriers, ensuring the safety of personnel and equipment within a hazardous area of any kind.

Reaz director Andrew Zupo said: "We are the sole distributors of Wolong & INVT, Lanbao, who are world leaders in low voltage motors, drives & sensors, which are becoming more widely used in mining and water applications."

"We are also seeing our range of Low Harmonic VSD's gaining popularity because of their energy saving capabilities."

REAZ, which started in 2008 as a single man operation in Victoria, has since grown into a highly successful business, now comprising of a team of sales staff and highly trained engineers working across the country.

REAZ Australia, which offers a wide array of electrical and mechanical engineering products including motors, drives, IECEx

hazardous area EX equipment and sensors suitable for a wide range of applications within the commercial, manufacturing and mining sectors, continues to expand its product range.

The company also carries out extensive testing and evaluation of products prior to their introduction to REAZ products portfolio.

"We stock and supply an extensive range of LV and MV motors, drives, soft starters, switchgear, LV and MV supply transformers, PM Motors and Drives, Safety Light Curtains and Scanners - machine safety devices, Switchboards, as well as PLC and HMI equipment," Mr Zupo said.

"REAZ values building strong relationships with its manufacturers and vendors ensuring that REAZ can provide the highest degree of support to its customers.

"We are also capable of providing our engineering and programming services and our team of trained engineers are always fit for the task.

"We are your complete Automation Warehouse and Support."



For more information visit [reaz.com.au](http://reaz.com.au), email [sales@reaz.com.au](mailto:sales@reaz.com.au) or call 03 7067 9077 or 0423 933 339

AMR



## “WE CARE FOR YOUR BUSINESS”



Our aim is to empower our drive and automation customers towards globally recognised superior products and to be an organisation that reflects quality and reliability.

Integrated to our business philosophy of 'Caring For Your Business', we complement our product offering with industrial sensors, hazardous area certified range, RFID, vision, network solutions, turnkey engineering and a level of services customers demand.



# reaz

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 P: 03 7067 9077 | M: 0423 933 339  
[reaz.com.au](http://reaz.com.au)

# EFFECTIVE PROTECTION FOR STEEL AND CONCRETE COMPONENTS

Steuler's rubber linings provide effective protection for steel and concrete components against chemicals, mechanical attack and organic contaminants.

Depending on the medium and temperature, Steuler uses materials based on natural rubber, halobutyl rubbers, chloroprene and styrene-butadiene rubbers.

Steuler's rubber linings are used at temperatures up to about 120°C. A unique feature is its KERABUTYL HT, which extends the application range of rubber linings up to 150°C.

Rubber linings offer:

- high chemical resistance to a wide range of different media;
- high flexibility, which allows use even with movement in the substrate;
- high resistance to abrasive loads;
- high resistance against diffusion.

As a full-service supplier, Steuler offers the optimum quality for every application, every timeframe and every installation situation.

Steuler has extensive internal tests to assess their rubber lining's chemical resistance and many years of experience in application and external tests, such as technical approvals or confirmation of suitability in the potable water sector.

## ON-SITE RUBBER LININGS

Steuler's on-site rubber lining systems are

the means of choice when the application of rubbing lining is required directly on-site at the construction site or at our customer's plant.

They are used, for example, when vessels are too large and heavy for transport or vulcanisation would be technically impossible or too time-consuming.

For large or built-in vessels, Steuler draws on a range of rubber linings that can be vulcanised on-site without the need for an autoclave.

These rubber linings achieve similar properties to autoclave vulcanised materials without the need to transport the vessels to be lined.

If on-site vulcanisation is not possible, self-vulcanising grades that vulcanise even at ambient temperature can be used.

Alternatively, pre-vulcanised grades can be used, which are ready for use just a few hours after bonding.

The focus is on easy transport of the sheets

already vulcanised at the workshop, extremely safe processing with Steuler's new KERATEX adhesive, as well as fast commissioning.

## WORKSHOP RUBBER LININGS

For transportable components such as smaller tanks, pipelines and filter plates or mobile units such as transport vessels and ISO tank containers, rubber lining at the workshop is an option.

Thanks to the use of unvulcanised and thus easy-to-process rubber sheets, even highly complex components such as filter plates or fans can be lined without any problems.

The final vulcanisation in the autoclave leads to optimum adhesion in the seams and between rubber and steel.

Steuler's materials for workshop rubber linings are optimised for easy application in combination with maximum chemical and thermal resistance:

From conductive hard rubber linings with

high tolerance to organic contaminants even at temperatures above 100°C to soft rubber linings for the alternating transport of a wide variety of media such as waste acids, mixed acids, chlorine bleaching lyes and rubber linings for pipes subject to high abrasive loads.

In Steuler's portfolio, clients can find the right system for every application.

## REPAIR SYSTEMS

Even the best rubber lining can be damaged at some point.

Minor damage caused, for example, during the cleaning of vessels or the installation and removal of scaffolding or built-in parts can be quickly and easily repaired with the help of our repair mortars in order to maintain operations.

Depending on chemical and thermal load, these mortars can serve as a permanent repair or at least provide corrosion protection until the next scheduled period of downtime and repair with the original material. **AMR**

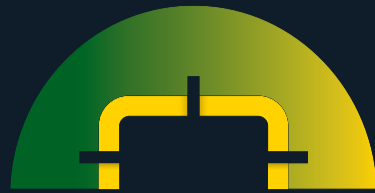
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**STEULER** | Linings



**JETCRETE**

# Complete support from the ground up

**As Australia's leading ground support specialist to the mining industry, Jetcrete uses the latest techniques and specially adapted placement materials to provide a shotcreting service for clients across the country.**

With more than 40 years in the industry, Jetcrete has extensive experience in all aspects of concrete spraying. We are capable of providing a complete service for all stages of underground shotcreting service including onsite concrete, shotcrete and CAF manufacture, delivery and application.

Jetcrete is also capable of delivering specialist ground support services including shaft lining, cable bolting and resin injection.

Find out more about our services and careers, visit:

[jetcrete.com.au](https://jetcrete.com.au)

A black and white photograph of three miners in a tunnel. They are wearing hard hats and dark clothing. The tunnel is lined with curved metal ribs. The lighting is dramatic, with the miners silhouetted against the tunnel walls.

# FITZROY MINING

## PRESSES AHEAD WITH EXPANSION PLANS





**F**itzroy Mining Operations' Carborough Downs project continues to expand as the miner presses ahead with its Ironbark No. 1 expansion.

Fitzroy Mining holds world-class metallurgical coal assets in the Bowen Basin in eastern Queensland, a region which occupies Australia's largest coal reserves.

The Carborough Downs expansion kicked off last year following an extension of the Queensland-based company's mining lease into the Carborough South Region.

The Carborough Downs project, an underground long-wall and bord-and-pillar operation, about 25km east of Moranbah, was resurrected after Fitzroy Mining acquired the mine from Brazilian miner Vale in 2016, which planned to close the mine in 2017.

At the time, Fitzroy Mining identified that the life of the Carborough Downs mine could be extended by at least 10 years. The Queensland miner also identified the other assets purchased from Vale, Ironbark No. 1 (formerly called Ellensfield) and Broadlea, could both be extended for similar timeframes.

Speaking to the Australian Mining Review,

Fitzroy Mining said an extension of the mining lease into the Carborough South area was also achieved through acquisition of exploration ground from the former Millennium mine.

From its portfolio of exploration tenements, the company recommenced work on the underground Ellensfield project where Vale had conducted extensive exploration including 3D seismic, an EIS, and extensive technical studies.

The mine was subsequently renamed Ironbark No. 1, and after the completion of a feasibility study and the securing of a mining lease in 2018, construction at the site began in January 2022.

Fitzroy Mining celebrated its first coal production from Ironbark No. 1 in January 2023, achieving the milestone on time and within budget.

A few weeks later at Ironbark, trucks were being loaded full of steelmaking coal before being transported and washed at the Fitzroy Mining Operation's Coal Handling Preparation Plant.

The coal was sent to Dalrymple Bay Coal Terminal, about 350km from Ironbark, for the first shipment to customers around the world.

Fitzroy Mining's Ironbark No.1 operation continues to grow and now features a new office fitout complete with bathhouses, a large training room, and an outdoor muster area, finalised in December 2023.

And the company has a series of other projects in the pipeline.

With more than 100,000ha of tenements, Fitzroy's portfolio represents a regionally significant position in the central Bowen Basin and is the subject of ongoing exploration and assessments.

The 12 Mile Project in the pipeline for the company, which represents an opportunity to develop a large-scale open pit (Rangals Measures) and underground operation (Moranbah Measures).

The project is in the early stages and sits amongst a suite of other world-class metallurgical coal mines representing future growth opportunities for the company. Ethical business practices and an adventurous 'think outside of the box' approach sits at the heart of its business ethos, according to the company, and it is unafraid to challenge industry norms to drive success and become an industry leader.

A testament to this is the company's mature age apprenticeship program, which

gives mature age employees the opportunity to gain a Certificate III in Electrotechnology or Engineering (Mechanical Diesel Fitting).

The initiative was developed to give broad exposure to all areas of underground operations and consists of a six-month cycle per area to give employees enough time to understand core elements and gather experience in each area.

The company was also an Innovation Finalist at the 2022 Queensland Mining Industry Health & Safety Conference for its Gracey Spray devices, a first for the coal mining industry. The Gracey Spray is a purpose-build engineering solution that has been designed and implemented at the coal face to prevent ignition events. These devices are fully automated, transferable to other equipment and low cost.

With numerous organic growth opportunities within its portfolio, the company seeks to be an employer of choice and a trusted coal producer earmarked by consistently high-quality assurance. **AMR**





# TAILORED END-TO-END MINING SERVICES BY KING KONSTRUCT

**E**stablished in Mackay, Qld in 2015, King Konstruct has committed itself to becoming a trusted and leading partner within Australia's mining sector. Drawing from robust commercial and construction industry principles, King Konstruct has successfully adapted these to address the unique demands of mining, demonstrating the company's dedication to excellence and innovation.

The team at King Konstruct has the skills, experience and knowledge to deliver projects across multiple disciplines and to tailor each project under the diverse needs of the mining industry. Providing practical and cost effective solutions for every clients' requirements, King Konstruct has a detailed understanding of what is needed to establish, operate and deliver projects in remote locations.

Offering an extensive range of services, the team at King Konstruct are efficient in supplying to you the right tools, equipment and specialised support. The company's extensive array of services are customised to ensure the clients' assets are operational and reliable, offering tailored end-to-end mining and civil services across the resources and energy sectors – further enhanced by King Konstruct's guiding principle of "Success Through Our Clients' Success".

- **Construction & Maintenance:** Critical infrastructure construction and maintenance services.
- **Water & Dust Management Solutions:** Strategies for environmental compliance and safety.

- **Plumbing Services:** Vital installations and maintenance of water services.
- **Environmental/Pump Technicians:** Specialising in waste management, pump operations, environmental support and dewater services, showcasing a comprehensive approach to managing site water and environmental challenges.
- **Site Rehabilitation:** Committing to the restoration of mining sites to their natural states post-extraction.
- **Scaffolding & Civil Works:** Providing structural support and engineering solutions.
- **Watercart & Vacuum Services, Hydrovac Operations:** Efficient solutions for water supply, drill rig support, dust suppression and waste management.
- **Mine Site Cleaning Services:** Ensuring operational environments are clean and safe.

As well as all the above, King Konstruct can provide your mining company with dedicated underground support services. Having built a reputation of delivering projects safely, on time and on budget, King Konstruct has demonstrated its adaptability and expertise through the highest of standards with proactive management and value added solutions.

- **Underground Concreting:** Supporting underground operations with durable concreting.
- **UG Compliance Assistance:** Enhancing safety with CABA systems and signage.
- **Longwall Support:** Service grouting



and stowage management to optimise operations.

King Konstruct knows how to best reduce its clients' exposure to risk, and sets its benchmarks carefully with transparent management to maximise operational efficiencies.

In addition to the team's in-depth expertise across a wide spectrum of applied services, King Konstruct also offers a range of individualised skill sets to optimise the development and production of your mine site. Providing long-term and short-term solutions, this covers the ability to provide:

- **Qualified Trainers and Assessors:** Elevating team skills for operational excellence.
- **Site Supervisors and Project Management:** Expert oversight for all projects.
- **Safety and Compliance:** Upholding the highest workplace safety and regulatory standards.
- **Human Resources:** Full support in workforce management and HR consulting.

King Konstruct is committed to fostering



lasting relationships within the mining industry, promoting a culture of safety and excellence, and contributing to the sector's sustainability and success. The company's logo is a symbol of strength, resilience and unity that is brought to every project, emphasising the team's aim to be more than just a service provider.

As a trusted industry partner, King Konstruct aims to provide unparalleled solutions and steadfast support, ensuring a secure and thriving environment for its team and clients.

King Konstruct is a Moranbah local business and continuously supports its local community through not-for-profit charity events. As the company continues its journey of growth and innovation, King Konstruct remains dedicated to reinforcing its reputation as a reliable and exceptional partner, prepared to meet the evolving needs of Australia's mining sector with comprehensive, environmentally conscious solutions. **AM**

FOR MORE INFORMATION  
[www.kingkonstruct.com.au](http://www.kingkonstruct.com.au)



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## RELIABLE CUSTOMISED SOLUTIONS WITH ATTENTION TO DETAIL

**SPECIALISING IN SERVICES TO MINING COMPANIES LOOKING FOR A SOLUTIONS-BASED PROVIDER**

Tailored to the diverse needs of mining:

- ✓ Construction & maintenance
- ✓ Water & dust management
- ✓ Plumbing services
- ✓ Environmental/pump technicians
- ✓ Site rehabilitation
- ✓ Scaffolding services
- ✓ Civil works
- ✓ Watercart & vacuum services
- ✓ Hydrovac operations
- ✓ Mine site cleaning

Dedicated underground support with concreting, UG compliance assistance & longwall support.

*\*King Konstruct is a local Moranbah business, supporting the community through not-for-profit charity events*

E: [admin@kingkonstruct.com.au](mailto:admin@kingkonstruct.com.au) | M: 0409 410 800



# PURSuing EXCELLENCE

## WITH ABM CONTRACTORS

**A**ustralian company ABM Contractors is a family owned and operated mining contractor based in the Central Queensland town of Emerald.

Established in 2000, ABM Contractors has gained a reputation among the mining fraternity for tackling tough jobs headfirst both on time and on budget.

The veteran company provides clients with access to development driveage services, secondary support, VCD installations, fault driveage, equipment hire, equipment repair and major conveyor installations and recovery services.

ABM's highly experienced team also specialise in fall recovery, drifts and declines, and drill and blast services which have positioned the company as an ideal partner to many operators within the mineral resources sector.

Since the acquisition of the Carborough Downs mine in Moranbah, the partnership between ABM and Fitzroy Coal Management has gone from strength to strength. ABM were engaged to source and supply

coal driveage personnel to help ramp up coal cutting operations when Fitzroy first took over the mine.

"Our team commenced work at Carborough Downs in January 2017 and we remain one of the major contractors at the operation to this day," said Jamie Abraham, Director of ABM Contractors.

"During our time at Carborough Downs, we are providing supplementary labour to outbye services and development, as well conveyor installations.

"This long-standing partnership has led to other opportunities including work on the drift development at the new Ironbark No. 1 coal mine. Work started back in January 2022 and is now complete, however we are still onsite at Ironbark supporting the coal driveage operations."

A key ingredient of ABM Contractors' successful partnership with Fitzroy Coal Management is the open lines of communication between the two companies and a common goal of wanting to be part of helping Fitzroy become a leading coal pro-

ducer in the Australian market.

Modern mining operators were committed to improving host communities and embracing environmental sustainability goals, meaning it was critical for them to partner with service providers that shared a similar vision.

ABM Contractors is a firm believer in supporting local communities in which it operates. The company proudly support local sporting and charity events with one such sponsorship paying for the new playground at the Moranbah Golf Club.

ABM's strong track record has pushed the company to expand their services into the New South Wales Illawarra and Hunter Valley regions, and the opening of a new workshop to better accommodate their growing equipment hire and equipment repair services business.

The newly formed company within the ABM group of companies, 'ABM Ground-Con', which specialises in shotcrete and ground consolidation services, is now in full swing. One Midjet shotcrete machine

is currently working in a client mine, with a second machine about to be deployed to ABM's headquarters in Emerald ready for hire.

Jamie says ABM Contractors has always been at the forefront of timesaving and cost-effective services, and the team takes great pride in completing tasks without incident or impact on day-to-day operations.

"Having worked general services contracts for many years, we have a solid understanding of the challenges and needs of mining operations, and the standards to which work must be completed," he said.

"Our professional reputation rests upon successful project completion and consistent predictable results. Our capabilities and experience in performing a number of disciplines that modern mining projects demand, comes from the depth and enthusiasm of our people. In short, our people are our business."

For more information, visit  
[www.abmcontractors.com.au](http://www.abmcontractors.com.au)

AMR





**Rather than emulate** those that have come before us, ABM Contractors will **surpass expectations** and guarantee our clients a service of the **highest standard.**

**Jamie Abraham,**  
Managing Director ABM Contractors



### About us:

The ABM way is grounded in respect for diversity and commitment to creating exceptional opportunities, regardless of the size or pedigree of competitors.

We offer a distinct and unique portfolio of experiences that enable us to not only differentiate but surpass competitors in quality, innovation, and value in a fiercely competitive market.

### Our services:

- ➔ General Services
- ➔ Fault Driveage
- ➔ Ventilation Services
- ➔ Ground Support
- ➔ Equipment Hire, Sales & Repairs
- ➔ Coal Development
- ➔ Conveyor Installation
- ➔ Longwall Support
- ➔ Mining Consumables

### CONTACT US TODAY

**T** (07) 4982 2174  
**E** [admin@abmcontractors.com.au](mailto:admin@abmcontractors.com.au)  
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# CSF INDUSTRIES

## LEADING THE WAY WITH CUTTING EDGE DESIGN AND FABRICATION TECHNIQUES

Leading the way with cutting edge automation and fabrication techniques, CSF Industries have been at the forefront of some of Australia's large-scale infrastructure projects.

CSF was engaged by Fitzroy Resources to fabricate, paint and transport 400t of structural and mechanical steel for the **4800TPH Fixed Yard Stacking Conveyor System** for the Iron Bark mine expansion.

CSF worked closely with the design teams consisting of lead designer DP Engineering and design drafting company Telford Engineering Solutions to deliver a fast-tracked supply solution for this time critical project.

CSF was involved in the early stages of the design to provide preliminary costings along with reviewing the structure to ensure cost effective fabrication solutions were implemented.

Our total scope of supply consisted of the following:

- Gantry Conveyors
- Conveyor Support Trestles
- Column Mast and bracing structures
- Gravity take-up towers
- Lube take-up and rails
- CSF drive station
- Secondary steelworks (access platforms, walkways, handrails, grating etc)

### Achievements and Challenges

The volume and complexity of work to be completed in a compressed time frame was a significant challenge for the project team.

All works needed to be coordinated and phased in accordance with the tight erection schedule and communication was critical to ensure that this project was delivered on schedule and within budget while maintaining the appropriate levels of quality.

A project of this size and complexity required significant planning, organisation and communication with the client to ensure the best possible outcome in the fastest possible timeframe.

The logistics was a key component of this project as numerous items were oversized and required police escorts to site. Our sister transport company, Intrans Logistics, planned and executed this seamlessly throughout the project.

### About CSF Industries

Established in 1979 as Cairns Steel Fabricators, the company now boasts fully integrated divisions offering design & construction, steel fabrication, roofing and cladding, coating and finishes, engineering, lifting and transport and logistics.

10 years after its foundation, CSF established their own crane company Century Crane and were now able to deliver bigger

and better projects with more efficiency and value.

CSF then expanded even further with the creation of the CSF Roofing, CSF Developments, Intrans Logistics and the acquisition of Thomas Steel Fabrications in Townsville.

They are now one of the largest fabrication companies in Regional Australia.

As the only single source construction, fabrication, coating, roofing, transportation and installation company in Far North Queensland, CSF Industries holds a unique position in Northern Australia's construction and fabrication industry.

**For more information visit**  
[www.csfindustries.com.au](http://www.csfindustries.com.au) or  
call 07 4035 1506.

AMR



**Servicing the Construction Industry Since 1979**



**Through embracing automation and innovation, we will create significant employment and reshore manufacturing back to regional Australia.**

Our mission is to create icons and structures throughout Australia for the enjoyment of future generations. Our people make it happen.

CSF Industries is built on organic growth, a firm business foundation and a continued commitment to adding value at all times.

**Workshops in Townsville & Cairns.**

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Townsville



Cairns

# EMPOWERING THE INDUSTRY: AJP INDUSTRIAL SUPPLIES



In the dynamic landscape of industrial operations, having a reliable and comprehensive supplier is not just advantageous – it's essential. At AJP Industrial Supplies, we stand as your unwavering partner, offering a diverse array of products and services tailored to meet your every need. With a rich history dating back to our inception as Alljack & Paint Pty Ltd in 2008, we have evolved into a cornerstone of the industry, proudly serving the Mackay and Coalfields Region, as well as businesses across the nation.

### The AJP Difference

At AJP Industrial Supplies, we specialise in providing comprehensive solutions for industrial needs.

As a family-owned and operated business, we take pride in our commitment to excellence and personalized service. From Personal Protective Equipment (PPE) and Safety Workwear to Sand Blast and Painting Equipment, Automotive Refinish, Air Equipment, Tools, and Equipment Repair, we cover a wide spectrum of products and services.

Whether you operate in the mining sector, construction industry, or automotive field, we cater to your requirements with precision and efficiency. Our experienced team is dedicated to ensuring your safety, maximising your productivity, and minimising downtime, all while offering transparent advice and unbeatable value for money.

### Trusted Nationwide

With a large nationwide client base, AJP Industrial Supplies has earned a reputation for reliability and excellence. Our commitment to quality and safety is unparalleled, and our strong relationships with leading suppliers across Australia ensure that you

receive nothing but the best. From mining giants to small-scale operators, we have the expertise and resources to cater to businesses of all sizes.

### Commitment to Service

At the core of our ethos lies a dedication to understanding your priorities and exceeding your expectations. Our experienced sales teams in Mackay and Townsville, supported by knowledgeable operators, are always at your disposal, providing prompt and insightful assistance whenever required. We believe in fostering transparent and honest relationships with our clients, offering clear advice and unbeatable value for money.

### Your Partner in Progress

In an ever-evolving industry landscape, adaptability is key. At AJP Industrial Supplies, we pride ourselves on our ability to evolve alongside our clients, constantly seeking innovative solutions to meet their evolving needs.

By taking a personalised, hands-on approach, we strive to understand your business inside-out, ensuring that our products and services align with your long-term goals.



Join the ranks of hundreds of satisfied businesses across Australia who have entrusted their supply needs to AJP Industrial Supplies. Experience the difference of working with a partner who not only meets your expectations but exceeds them at every turn.

Contact us today, and let us empower your industry together. **AMR**



## WE ARE YOUR INDUSTRY SUPPLY SOLUTION:

A FAMILY-OWNED BUSINESS COMMITTED TO  
EXCELLENCE AND PERSONAL SERVICE



### SPECIALISING IN:

- PPE & Safety Workwear
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# ROY HILL BREAKING NEW GROUND

By Kate Dzienis

Roy Hill's port reclaimer up close and personal.

Late last year in 2023, Gina Rinehart's Roy Hill mine in the Pilbara region of Western Australia announced it had paid down a \$10b debt, declaring a maiden dividend of \$475m five years after making its first iron ore shipment out of Port Hedland.

All in all, Roy Hill had a stellar year, securing itself as a world-class integrated iron ore mine, rail and port operation.

Currently delivering 60mtpa of iron ore to international markets, it's one of the country's single largest iron ore mines, providing employment to over 2,800 people plus contract suppliers and service providers.

## Moves Of Success

Roy Hill executive chair and director Gina Rinehart broke ground on a \$420m renovation project at Roy Hill's headquarters in West Perth in late November 2023, with plans for a new office building to host up to 600 staff and feature a roof garden and solar panels.

News was that the building will be pink themed in honour of Rinehart's commitment to ongoing breast cancer research and inspired by the Sturt desert pea.

The building was previously owned by oil and gas giant ConocoPhillips.

"The ground-breaking project will bring Roy Hill closer to its parent company Hancock Prospecting and major shareholders Marubeni and POSCO, creating a landmark building in the heart of west Perth's mining and resources precinct with the building's exterior using the desert sturt pea as inspiration," the company said.

## Donation to Council

MAR2024 AMR

In mid-February 2024, Rinehart's Hancock Prospecting and Roy Hill donated a steel sculpture to Cottesloe Council, valued at \$60,000, by artist James Rogers titled Sandbar.

The artwork was exhibited at the 2023 Sculpture By The Sea, and was made of painted steel representing the movement of sand under water.

It was recommended by council that they accept the donation.

## Debut Of A Locomotive

Earlier in February 2024, Wabtec and its launch customer Roy Hill celebrated the

debut of the FLXdrive battery locomotive, the world's first 100% battery-powered, heavy-haul locomotive for mainline service.

The ceremony unveiled the unique, striking, pink-coloured locomotive at Wabtec's design and development centre in Pennsylvania, USA in front of employees, customer executives and other officials.

Roy Hill's FLXdrive battery-electric locomotive will feature an energy capacity of 7MWh.

Based on the route and company's rail operations, the FLXdrive is anticipated to

provide a double-digit percentage reduction in fuel costs and emissions per train.

Hancock Prospecting Group Operations chief executive Gerhard Veldsman says "the foresight of our executive chairman Gina Rinehart AO has been instrumental in establishing an environment in which we can successfully leverage the ingenuity of our people alongside key partners like Wabtec to transform our rail and mining operations through next-generation technologies".

Currently, Roy Hill uses four Wabtec ES44ACi Evolution Series diesel-electric locomotives to pull trains that are typically 2,700m carrying more than 33,000 tonnes of iron ore.

The addition of the FLXdrive will form a hybrid locomotive 'consist' with Wabtec diesel-electric locomotives.

The FLXdrive manages the overall train energy flow and distribution through its state-of-the-art energy management software.

It is also designed with a unique battery thermal management system using liquid cooling to withstand the Pilbara heat, where ambient temperatures can exceed 55°C.

As previously mentioned, Roy Hill's iconic pink livery symbolises the company's commitment to assisting research and those suffering from breast cancer.

To commemorate the FLXdrive's premiere, Roy Hill, and Breast Cancer Awareness Month, Wabtec donated nearly \$80,000 to Linked By Pink, a non-profit organisation consisting of Erie area survivors diagnosed



A brief meeting between workers.



Roy Hill workers at the port site.



A pink coloured mine truck with an excavator on site at Roy Hill.





## Q&A WITH ROY HILL CHIEF EXECUTIVE GERHARD VELDSMAN

**AMR:** Regarding Roy Hill's results for FY23, your October announcement revealed that Roy Hill is the largest revenue and profit earner for its majority owner Hancock Prospecting. How does this result reflect on the future of Roy Hill and confidence within the company?

**GV:** Roy Hill is a landmark mining project and one of national significance, underscored by the fact we are in the top ten biggest corporate taxpayers in Australia. Through tax and royalty payments, Roy Hill continues to deliver enormous benefits to the broader community, including contributing to nation-building infrastructure and funding of essential services like policing, health, emergency services, and defence, including for our veterans. The visionary and dedicated leadership of our executive chairman Gina Rinehart AO since day one has been truly inspiring and with the commitment of the Roy Hill Board, we have confidence in continuing to deliver for the benefit of our owners, staff and Australia. Morale in our company is high and, in comparison to other mining companies in WA, our turnover of staff is low.

**AMR:** With the strong financial performance attributed to record iron ore shipments of 63.3mt, as mentioned in your October announcement, can we delve into how this was achieved?

**GV:** Our success is testament to the hard work and dedication of our people. It starts with our planning teams and is executed by our frontline workforce. FY23 didn't come without challenges, including the onset of Cyclone Ilsa in April, a high inflationary environment impacting the Australian economy and an increasingly difficult regulatory approvals process. That continues through to today.

Achieving over 63mt for the first time is testament to the commitment of all our people. Roy Hill was originally designed as a 55mt a year operation. Through the ingenuity of our people and some impressive work across a number of years we've been able to identify efficiencies and remove bottlenecks. As a highly integrated business, change has ripple effects, however, through strong collaboration and planning it ensured unintended consequences were few, and when encountered, were able to be overcome. In addition to our operational focus, Roy Hill also continued to significantly invest in its infrastructure and our capital program saw the completion of the fourth run-of-mine (ROM) pad and installation of a fifth crusher at the mine. Roy Hill has also successfully undertaken productivity improvements to further enhance our competitiveness on the global stage. However, there are only so many leavers a business can pull and governments must take responsibility for their part in reducing the burden of tape and tax, and should not introduce policies that are bad for businesses and investment. Governments need to ensure an environment that will attract ongoing investment into Australia – or Australian living standards will fall. We must never lose sight of the fact that, as Mrs Rinehart says, "when mining does well, Australia does well" and as she's added more recently, "when mining doesn't do well, nor will Australians". And for this, high-cost Australia must be able to remain cost competitive internationally.

**AMR:** Do you have any updates for AMR on how operations are coming along (January 2024), and any updates on all iron ore processing i.e. figures, etc?

**GV:** In November we achieved an incredible milestone of passing our 400th million shipped tonne.

**AMR:** We would love to hear about how the Smart Mine Program is helping push mining into a high-tech industry and how excited Roy Hill is with all this technology.

**GV:** Over the years Roy Hill has been recognised for its development of technologies that result in higher quality product, less waste, improved efficiencies and a safer workplace. And as we look towards the future, we continue to leverage innovation, including exploring the use of artificial intelligence opportunities to improve our business. Last year, we became the first mining company to develop an in-house AI language model, which we call RoyBot. Employees can ask questions through a simple user interface and RoyBot is able to leverage the many data streams available across our integrated systems to find answers. It is an exciting development and AI is a tool that has been strongly advocated and supported by Mrs Rinehart. We've also successfully developed machine learning models that act like a crystal ball, predicting wear on conveyer belts and pump failure time, and we're spreading to other maintenance items too. This will reduce our unplanned maintenance costs and keep our operations running smoothly. We've also found AI very helpful for our safety reports, giving information more quickly. Our outstanding technical achievements were recognised at the 2023 Australian Mining Prospect Awards where we won the Australian Mine of the Year award – a fantastic acknowledgment of the great work done by our people. **AMR**



A bird's eye view of the port.

with breast cancer before the age of 45.

### Graduate Program

The future just got a whole lot brighter at Roy Hill with the launch of the company's graduate program for 2024 late February 2024.

A cohort of 16 individuals were welcomed to start their career opportunities where innovation, collaboration and personal growth are considered part of the daily routine.

Roy Hill's program is designed to be a career-defining experience that combines on-the-job learning with mentorship, training and a supportive community.

### Up For An Award

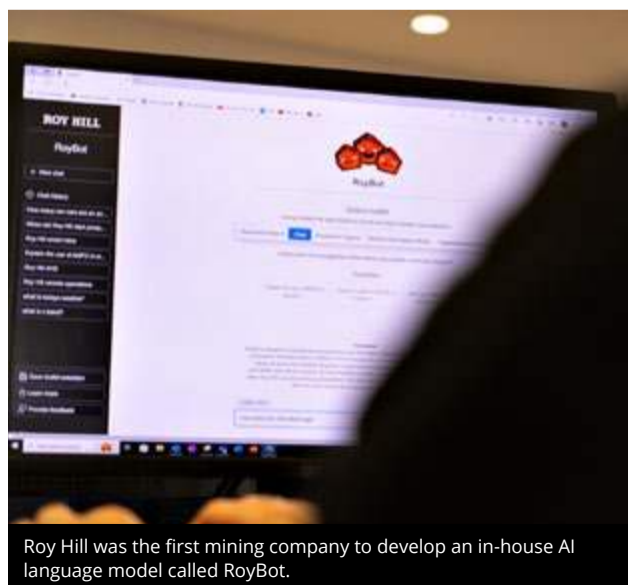
Roy Hill general manager of integrated remote operations Lily Meneghal has been named as a finalist for the Chamber of Minerals and Energy Women in Resources Awards in the Outstanding Woman in Resources category.

Beginning with computer programming, Meneghal transitioned to operational roles, making a mark with innovative projects.

At Roy Hill, she orchestrated the successful relocation of the Automated Haulage System Control Operations, showcasing her leadership in managing complex transitions.



Roy Hill's technical achievements were recognised at the 2023 Australian Mining Prospect Awards where they won the Australian Mine of the Year award.



Roy Hill was the first mining company to develop an in-house AI language model called RoyBot.

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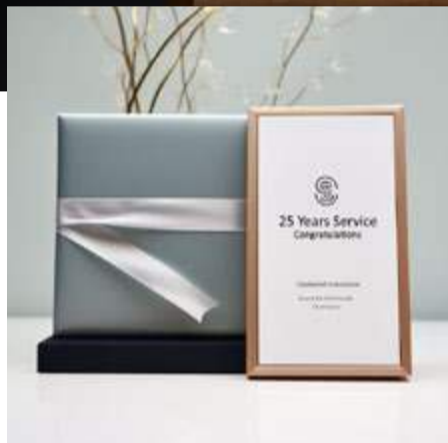
**H**.W. Holdsworth Recognition and Rewards provides long service recognition and values recognition programs to corporate Australia and beyond.

All people appreciate and value being recognised, and recognition is one of the most powerful tools in your workplace.

Retention is one of the biggest issues facing businesses today. The return on investment of employee engagement is significant. Simple things make all the difference to staff retention, which is why employee length of service programs are now standard practice in leading organisations.

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Established in 1884, H.W. Holdsworth has branched into Recognition and Rewards and has a long history of success in helping companies effectively develop and implement their employee recognition programs.



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## We specialise in:

### 1. Long service recognition and milestone award programs including gifts and personalised mementos

a. Celebrate long service milestones and career achievements with an in-hand gift of your employee's choice, personalised engraved memento, certificate, lapel pin or plaque. Beautifully presented for a sense of occasion, customised with your organisation's branding. We can take care of congratulatory letters, invitations and reminders - never miss another milestone!

b. Our range of quality brand name gifts is extensive and includes watches, diamond jewellery, gold jewellery, clocks, tableware, glassware, pens, kitchen appliances, homeware, audio-visual, electronic equipment, travel goods, sporting goods, power tools, optical products such as cameras, handy cams, binoculars and telescopes.

c. Customise your program according to your budget or recognition criteria.

### 2. Peer to peer social recognition/employee recognition software



a. Our cloud-based employee recognition software, HWH Engage, adds the spark of peer to peer social recognition to your employee engagement strategy. Build a culture of appreciation by strengthening connections no matter where your employees are.

b. With our employee recognition software, you can set up a perk or points-based system. Give your employees access to redeem from a huge range of gifts that employees can choose to commemorate their achievements with. "Accounting research shows non-cash rewards have greater impact. In mental accounting, non-cash rewards can go into the fun bucket".

c. Rewards in our software are only limited by your creativity and can be tied in with whatever goal you are working towards, adding another layer of meaning to the recognition.

d. Access reports and charts exploring how engaged your employees are. Easily view information on how your recognition budget is being spent or what ROI you're earning.

d. Access reports and charts exploring how engaged your employees are. Easily view information on how your recognition budget is being spent or what ROI you're earning.

### 3. Custom recognition website builds

a. Build your own service or values recognition program from the ground up. Our experienced team can help your ideas take flight to build a program uniquely suited to your organisation's needs.

b. Our websites are securely hosted on Australian-based servers, so your data is safe with us.

### 4. Staff benefit programs - The Staff Shop

a. Add value to your staff benefit program with The Staff Shop, a complimentary service we offer to our clients. The Staff Shop



provides employees with an exclusive online retail experience that carries on the traditions of founder HW Holdsworth: affordability, quality and prestige with friendly service.

### 5. Product & Gift Fulfillment

a. We offer fulfillment services for your internal competitions, loyalty programs, or perks and rewards programs, and can provide thousands of different products across numerous brands. Leverage our supplier network to your advantage. **AMR**



## Join Australia's leading organisations in recognising your employees with us:

"We celebrated Baz's 5 year anniversary with the team with a breakfast BBQ, I presented Baz with his 5 year service certificate and he went online and chose the Gasmate portable BBQ, he thought it was a great gift!"

Manager, Industrial Waste Services - Surat Basin

"I love dealing with you and your team. Always on the ball and you always deliver."

Executive Assistant, NewsCorp Australia

"I have just learnt of your efforts to deliver a bike to one of our employees in Taiwan. What a fantastic story and what amazing service."

Human Resources, Crown Melbourne Limited

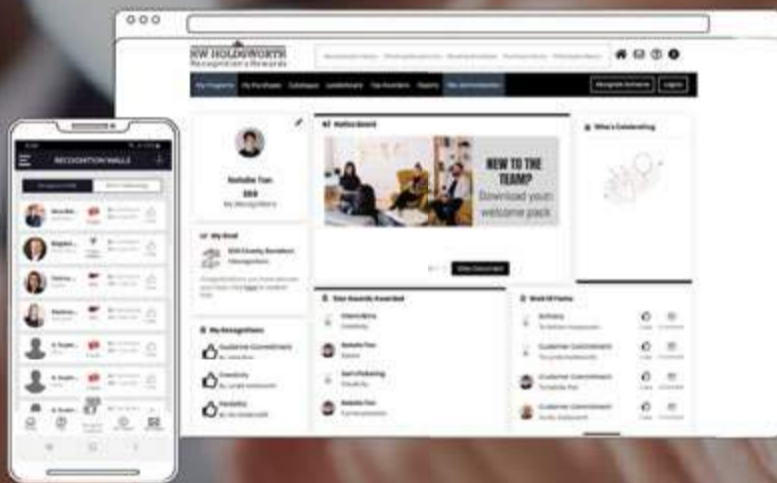
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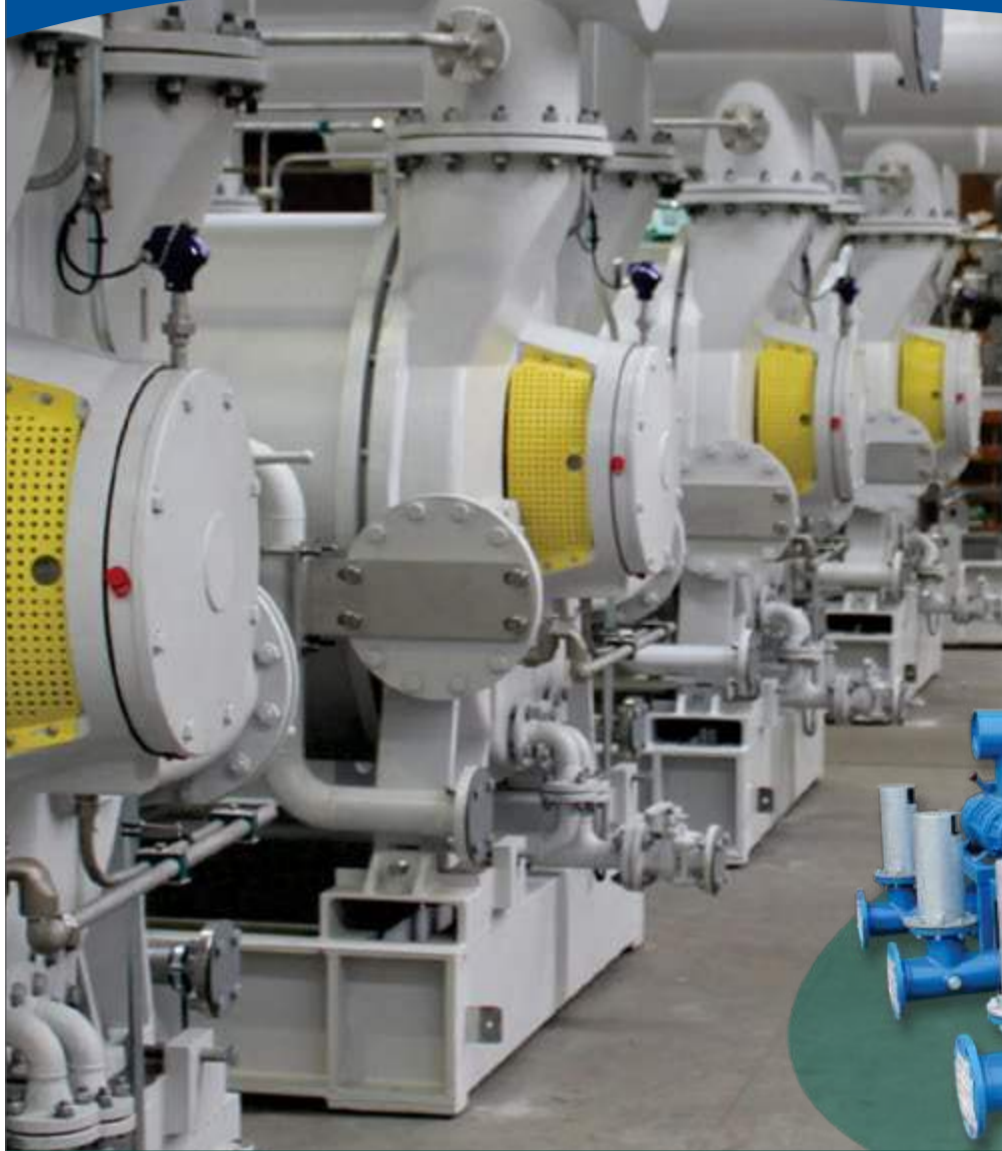
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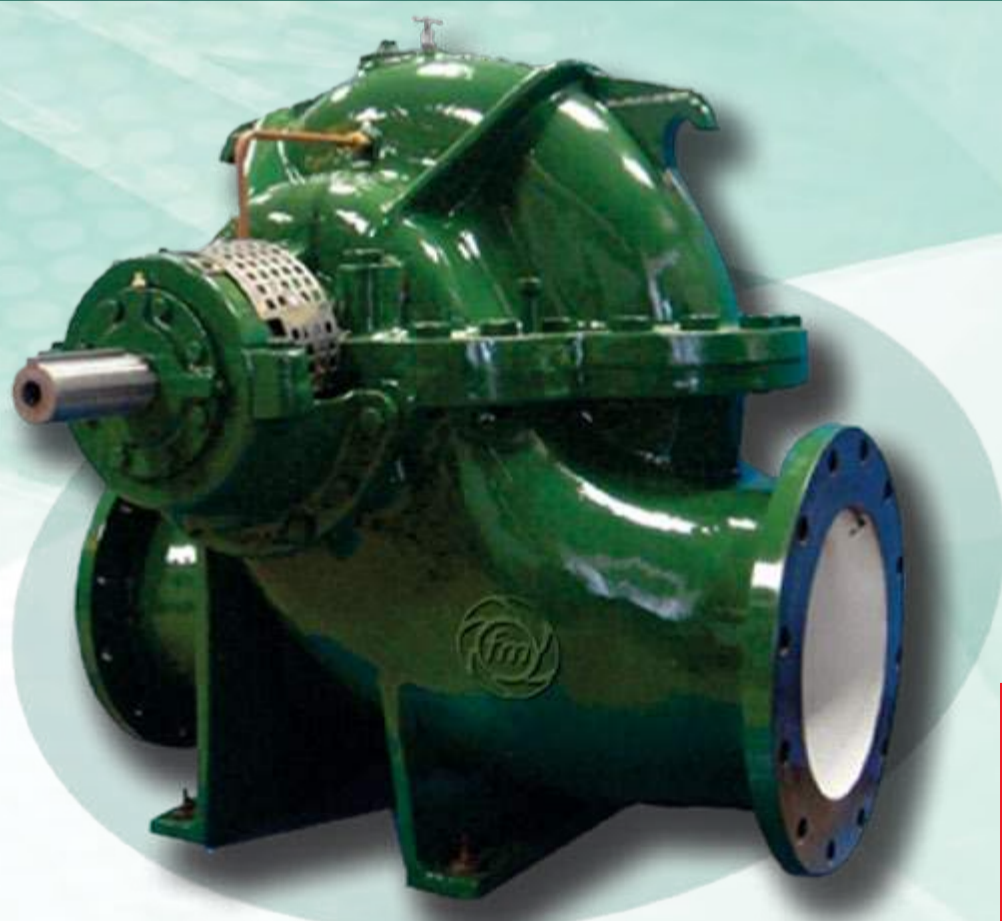
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# OLI VIBRATORS:

## FEEL THE FORCE

Roy Hill

FEATURE 51

**O**li Vibrators has emerged as a stalwart in the mining industry across Australia, revolutionising operations with its unmatched reliability, European-built quality, and unparalleled price-to-performance ratio.

Situated in Melbourne, Oli Vibrators proudly services the entirety of Australia and New Zealand, offering a comprehensive solution to the dynamic needs of the mining sector.

### DURABILITY IN MINING

At the core of Oli Vibrators' success lies its commitment to engineering excellence and adherence to the highest standards of quality.

European-built to exacting specifications, Oli Vibrators embody durability, resilience, and precision, making them indispensable assets in the demanding environments synonymous with the mining industry.

What sets Oli Vibrators apart is not just its superior craftsmanship but also its unwavering dedication to customer satisfaction.

### OLI = TOP PERFORMANCE

Design engineers across the region consistently choose Oli Vibrators for their projects, recognising the brand's unwavering reliability and unparalleled performance.

The company's products stand as testaments to innovation and efficiency, ensuring seamless operations even in the most hazardous and extreme conditions.

Moreover, Oli Vibrators' commitment to accessibility ensures that its products are readily available to meet the evolving needs of the mining industry.



### ROBUST DISTRIBUTION IN AUS & NZ

With a robust distribution network spanning Australia and New Zealand, customers can rely on timely access to essential equipment and exceptional customer service.

The company combines the quality of Italian know-how with a global strategy, allowing it to become one of the main sector players in the international field thanks to the contribution of an international network of business subsidiaries spanning all five continents.



Built with premium materials and heavy-duty bearings, Oli Vibrators withstand the rigours of the mining environment, delivering optimal performance and longevity.

Their resilience and durability make them the preferred choice for mining operations seeking equipment capable of enduring the harshest conditions without compromise.

### EXCELLENCE IN CUSTOMER SATISFACTION

In conclusion, Oli Vibrators has established itself as a cornerstone of the mining industry in Australia and New Zealand, offering reliability, quality, and performance that are second to none.

With its unwavering commitment to excellence and customer satisfaction, Oli Vibrators continues to set the benchmark for vibratory equipment in the mining sector, empowering operations with the tools they need to thrive in challenging environments. **AMR**

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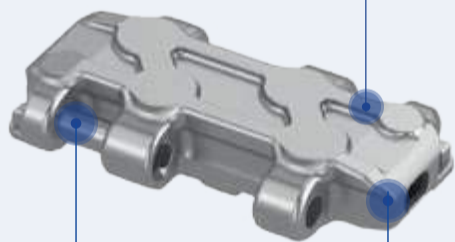
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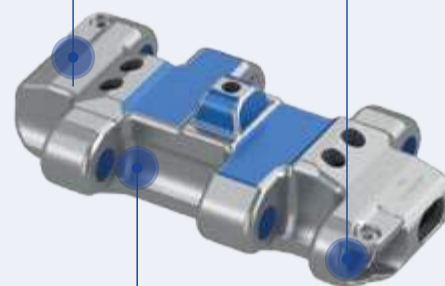


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# PRESSURE LAYFLAT HOSE ASSEMBLIES

Layflat hose assemblies offer a lightweight and superior alternative to heavy rubber suction hoses. They are highly suitable for mine dewatering since they are easy to handle and provide a safe solution. Crusader Hose offers tested and certified hose assemblies for easy installation and relocation.



Layflat hose with coupling securely attached.

**M**any mines are now recognising the advantages of using layflat hose pipelines for their dewatering projects. There is also a growing realisation of the benefits of using layflat hose assemblies for smaller-scaled projects. This is because layflat hose is flexible, portable, and adaptable.

Crusader Hose provides hose assemblies with secure and reliable fittings, making them the obvious choice for many projects.

#### ISO Certified

Crusader Hose has been manufacturing layflat hose for more than 38 years and is proud to be an Australian company with an ISO 9001:2023-certified quality management system. They specialise in building hose assemblies that can be used for a wide range of applications.

Whether you need to connect them to your poly pipeline or use them with your pumps and water transfer equipment which require frequent movement, their flexible and light-weight hose assemblies are the perfect solution.

#### Flexibility

One of the advantages of layflat hose as-

semblies over rubber suction hose is their flexibility. Easy to deploy, flexible hose assemblies are easy to connect from a pump to a fixed poly line.

The hose can be manually repositioned if the pump needs to be moved a bit. It is not heavy and can be easily laid out or around any terrain.

#### Adaptability

Layflat hose is ideal for various site conditions due to its manoeuvrability, bend radius and ability to make a complete U-turn within 2m without kinking.

#### High-pressure capable

Hose assemblies for water delivery are available in a variety of different pressure ratings up to 9000kPa. The pressure hose can be fitted with a selection of couplings or flanges. The secure and reliable complet-



Flange couplings can be fitted on site.

ed assembly can handle the demands of trouble-free pumping with a high safety factor.

#### Fittings

Crusader Hose offers four different types of fitting systems: wire whipped, swaged, Band-it clamps and Boa™ clamps.

A popular fitting method used by mines is the Boa clamp. The Boa clamp allows the operator to cut the layflat hose back and refit on site. It is secure and reliable as it has a location ring to ensure correct placement. Made of three segments, the Boa clamp has a highly technical design, which bolts together easily with its unique mating profiles.

It is important to note that not all fittings can withstand the pressure of 9000 kPa. Therefore, it is advisable to check beforehand if you need to pump at such high pressures. Crusader Hose has a team of experienced professionals who

can provide you with useful advice to ensure that you get the best assembly possible.

#### Robust

The extruded PU exterior of the hose assemblies will guarantee robust performance in diverse environments. Although no hose is indestructible, these assemblies will last many years under normal use. Care must be taken in situations when sharp rocks are present.

#### Portable and Reusable

Easily wound up for delivery and/or storage, layflat hose is compact and easy to lift onto the back of a ute and transport around a mine. The assemblies are reusable, making layflat hose a sustainable solution.

#### Test tag & certification

Crusader Hose offers test tag and certification service on all hose assemblies.

Testing your layflat hose assembly ensures its integrity. It helps validate performance, ensuring the hose meets its specifications. Testing provides peace of mind, and the certificate backs this up. **AMR**



# AMW2024 AT DARLING HARBOUR!

## REGISTER NOW!

**AMW2024 is on at Sydney ICC Darling Harbour 17-19 April, 2024!**

Australian Manufacturing Week (AMW2024) is run by the Australian Manufacturing Technology Institute Limited (AMTIL) with the NSW Government as the Major Sponsor.

This huge event will occupy more than 6,560 square metres of exhibition space at the Sydney ICC at Darling Harbour. More than 215 organisations have already taken stands to showcase the latest manufacturing technologies, processes, and support services.

**Don't miss out!**

There will be seven Zones on the show floor of Australian Manufacturing Week, each showcasing its own areas of expertise. These include:

The **Austech Machine Tools Zone**, specifically targeting the metalworking, machine tool and ancillary market in the global manufacturing space. The Austech Machine Tool Zone is proudly sponsored by finlease.

The **Additive Manufacturing Zone**, showcasing various techniques within Additive Manufacturing include Stereolithography, Selective Laser Sintering, Material Extrusion, Sheet lamination, Binder jetting, Cold Spray processing, Material jetting, Direct-Energy-Deposition, and many more of the most advanced technologies within this sector.

The **Australian Manufacturers Pavilion** showcases the capabilities of Australia's precision engineering and advanced manufacturing industry. The Australian Manufacturers Pavilion is where AMW2024 celebrates the very best in Australian manufacturing.

The **Manufacturing Solutions Zone** offers a concentration of optimised solutions to the most common challenges experienced by manufacturers. From materials handling and warehousing to integrated manufacturing and safety solutions. The Manufacturing Solutions Zone incorporates everything from equipment for ma-

terials handling and logistics, to safety and software products. This Zone is proudly sponsored by The Execution Factor.

The **Robotics & Automation Zone** will feature the latest state-of-the-art equipment and processes for the optimisation of manufacturing operations. There will be Industrial robotics, Automated Solutions, Instrumentation Control Systems, Measurement, Pneumatics, IOT Solutions, Industry 4.0 and Digitalisation.

The **Weld and Air Solutions Zone** will highlight advanced welding processes and provide high-quality interactive experiences that demonstrate the latest developments and applications in the welding sector. Welding is critical in metal fabrication and manufacturing. In fact, it is used in creating more than half of all of products manufactured in Australia today.

And the **Plastic Technology Zone**, which is your opportunity to see and feel the latest in plastics machinery, mould-making technologies, recycling materials, and the many plastics manufacturing processes. Plastic technology is a specialised branch of study which includes the study of diverse types of chemicals that exhibits plasticity.

Now is the time to register for your attendance at AMW2024. This is THE show not to miss. **AMR**

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# WA WATER BORES ARE THE EXPERTS

**W**A Water Bores is Western Australia's newest specialist in water well drilling based out of Geraldton, servicing the resources sector across the state and offering the very best in project management.

Utilising modern equipment and technology, WA Water Bores provides a quality assured process to deliver end-to-end solutions and all the reliability you would come to expect from a professional business.

With more than 15 years' experience in the industry and an intimate knowledge of various drilling applications, WA Water Bores founder James Harrington and his team of specialists have the expertise and knowledge to offer cutting edge drilling innovation to clients not only in WA but across the whole of Australia.

#### A TEAM OF EXPERTS

With WA Water Bores' commitment to undertaking significant drilling projects and providing a detailed consultation process prior to work commencing, James has put together the most experienced and skilled

team who are all fully dedicated to implementing the highest standard of performance.

The combination of full industry experience and a complete range of deep well drilling equipment means the team at WA Water Bores has a track record of being one of the best in the business. Each team member is skilled in water well drilling with quality workmanship practices, an accurate knowledge of geology and ground water development, and each is dependable and reliable in providing positive results every time, on time.

Completing a large number of projects across WA since its inception in July 2022, you will not find a better partner for your project – because no matter the size, scale or complexity of the job, the team at WA Water Bores will finish on time and within your set budget – with no compromise to quality of work.

#### SERVICES

Delivering unparalleled quality and service, WA Water Bores specialises in all aspects of water well drilling, including but

not limited to: Mud Rotary and Rotary Air Hammer Drilling, Complete Bore Field Installations, Water Exploration Drilling, Mine Site Water Supply and Dewatering, TSF Recovery Bores, Water Monitoring Bores, Piezo Installations, Breakthrough Holes for Underground Dewatering, TSF Geotechnical Holes and Water Injection Bores, plus so much more.

WA Water Bores are also experts in Angled Paste Holes, achievable with James' years of experience in producing outstanding results and taking the guesswork out of a challenging operation or project.

With all these services on offer, WA Water Bores' equipment is maintained to the highest standard. The company's fleet consists of 4 drill rigs and a large range of ancillary equipment to back up its operations.

There is also a custom built Air-Core system specifically designed for the exploration of Palaeochannel sands.

#### AN EFFICIENT SYSTEM

Thanks to WA Water Bores setting itself

up with a fully automated IMS system, the team can concentrate on getting your water well drilling project finished efficiently rather than having to focus on managing paperwork to get all drilling and reporting processes complete.

All safety and training systems are set up in a cloud-based software system with input data uploaded via smartphones or tablet devices, whilst documents, policies, management plans, procedures, reports and registers are held and integrated into the software system.

#### EXCELLENCE IN DELIVERY

WA Water Bores has developed its business to provide first class drilling solutions with a pursuit for excellence in its delivery.

Offering exceptional value in the water well drilling industry, James and his experienced field crew at WA Water Bores works with you and your requirements for purpose built drilling to ensure the completion of projects on time and on budget.

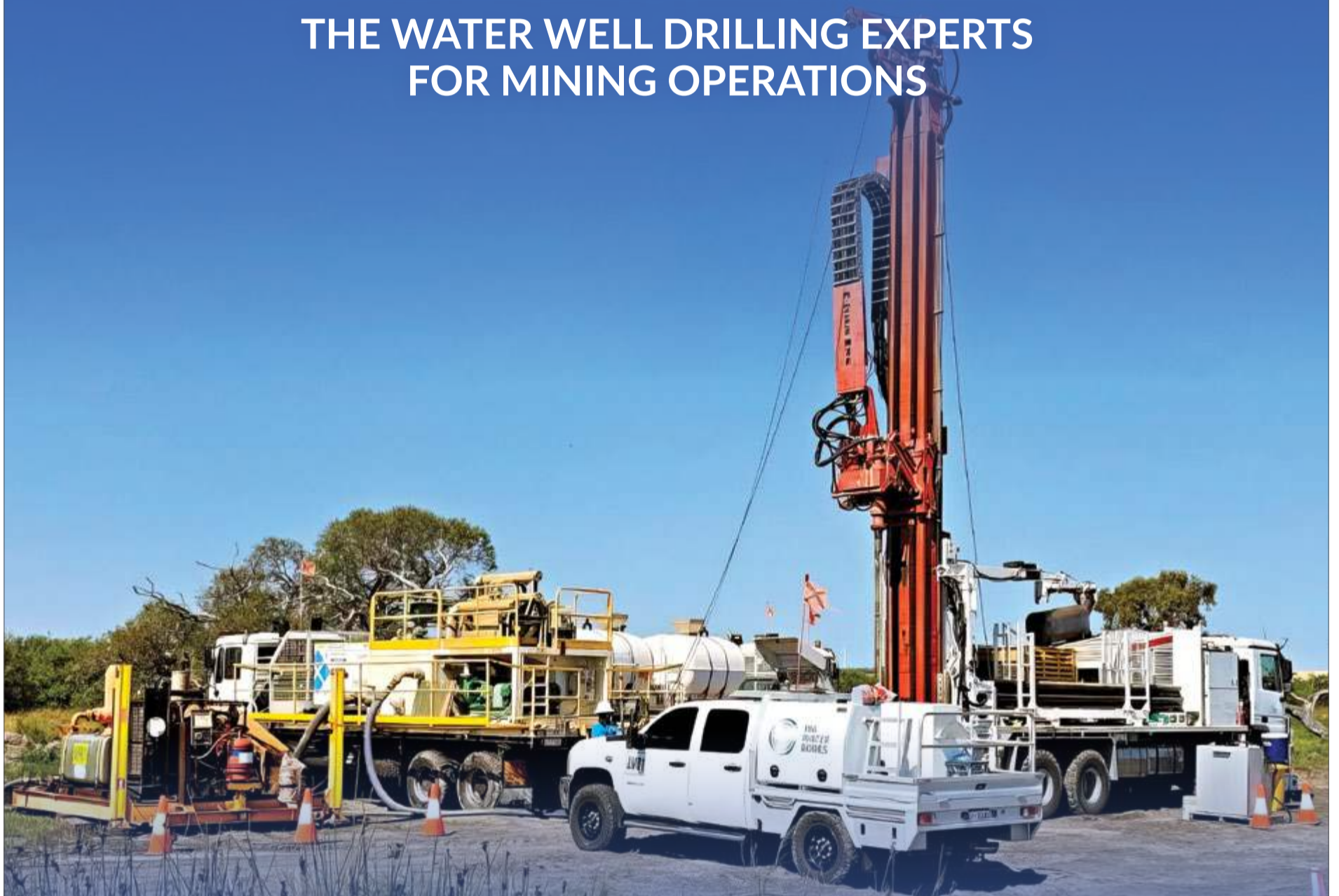
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Vitrinite's Vulcan Mine Complex Contains Premium Hard Coking Coal.



# VULCAN RAMPS UP COAL PRODUCTION WITH LOADRITE

The Vulcan Mine is a new player in the Bowen Basin coal industry, located on the Collinsville Shelf in Western Australia. Developed by Vitrinite in just three years, the opencast mine boasts over 55 km of confirmed surface hard coking coal. The mine is characterized by benign regional structures with minor local deformation, making it an attractive site for premium hard coking coal. The three target seams feature high-quality coal with crucible swelling numbers of 7.5-9, low volume volatile matter 21-26%, Romax of 1.30-1.45, and high fluidity. The mine is conveniently located near rail, water, power, and general services in the nearby towns of Dysart and Moranbah.

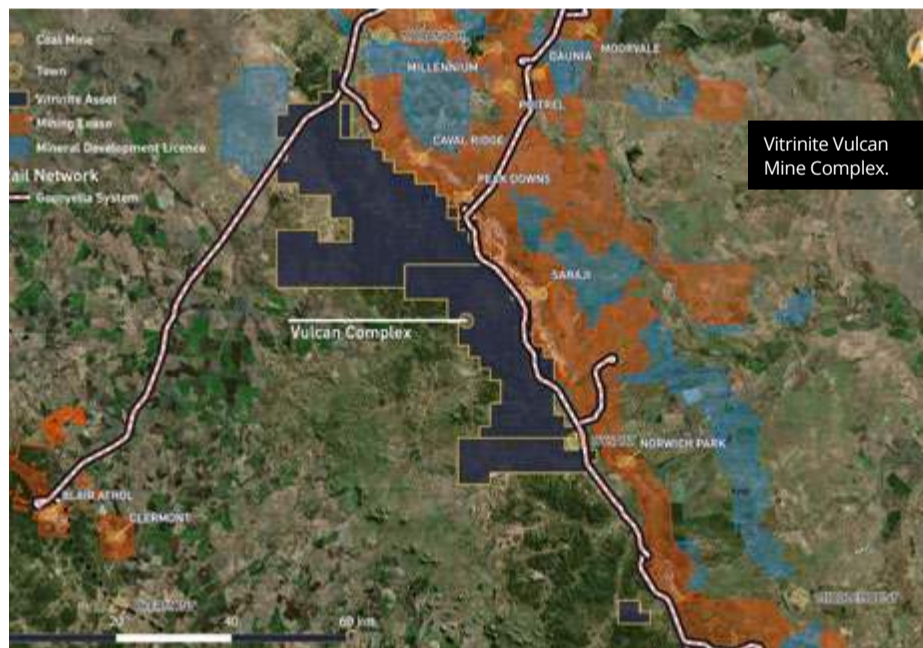
## Rapid Growth

Since September 2021, when the Queensland government granted a mining lease, Vitrinite has been shipping small consignments of coal to Korean and Japanese markets. The company now has a workforce of approximately 170, comprising both local and fly-in/fly-out employees, and is producing two million tonnes of coal per year. The A\$160 million project demonstrates continued investor confidence in Queensland's resources, infrastructure, and workforce, according to Queensland Resources Minister Scott Stewart. The resources industry is a major contributor to the state's economic recovery, supporting a sector-record 85,000 jobs.

Vitrinite's Chief Operating Officer, Mick Callan, has worked in the coal industry for 21 years and describes the operations at Vulcan as leaner than many other companies in the Bowen Basin. The company is in the lower cost bracket due to its lean operations, such as outsourcing coal washing to under-utilised facilities. This allows the company to deliver premium grade coal economically and efficiently to South East Asian markets.

## The Need for Technology

Vitrinite was looking towards state-of-the-art technology in order to maintain the delivery of premium grade coal economically and efficiently to South East Asian markets, and, according to Callan, the company has taken a major step towards achieving industry-best production targets by contracting SmartTech Australia to provide technology services for the Vulcan mine. SmartTech handles all the instrumentation on all of the Vulcan Mine's run-of-mine equipment. The ore stockpiled before the screen is sorted and the blend stockpiled again using equipment with SmartTech supplied Loadrite equipment installed on them.



Some of Vitrinite's Mining Dozers Equipped with LOADRITE Onboard Weighing Systems.



GHWM300M Highwall Mining Unit.

company to run the business effectively, accurately, and profitably.

Dan Barry, General Manager of Smart-Tech said his company was involved in providing Vitrinite with a range of material tracking and safety instrumentation to help deliver a more effective and economical operation. He said the need to track mass at the mine site was predominantly accomplished through Loadrite onboard weighing solutions. The data received from the onboard scale can also indicate that more people are required on a shift, or that there was a need to expand the operation by the addition of more equipment to achieve production targets. The Loadrite data has become a valuable tool at the Vulcan Mine, in providing a cost-effective way to obtain a large quantity of vital information.

SmartTech technology also supplies information to help with production and safety management, ensuring machines are not overloaded or carrying material outside manufacturer parameters.

## Systems you can Trust

Loadrite is a certified legal for trade system which can eliminate the expense of a scale house and operator; provide faster truck turnaround times; and traceable data on loading activity. At Vulcan, Loadrite is installed on the ore truck loader buckets, which can then calibrate and certify the loads from conveyor to the next destination. In fact, it covers multiple distribution movement by each vehicle. By using Loadrite the Vulcan mine can follow the ore through a number of transfers through Loadrite InsightHQ, a website portal which can provide real-time visibility of load/haul, processing, and products from haul trucks, conveyors, and loaders.

Overall, SmartTech technology is a valuable tool for the Vulcan Mine, providing a cost-effective way to obtain vital information for production and safety management. The Loadrite data is an important resource in achieving production targets, helping the company run the business effectively, accurately, and profitably.

SmartTech's Loadrite weighing system has been installed on the mine's wheel loaders, enabling the company to rely on tonnages that are being reported by Loadrite on the Komatsu 600 and 800 wheel loaders, which then transfer the coal from the conveyers to road trains to haul to coal wash facilities. The accuracy of the tonnages in the road trains is important in giving con-

trollers the information needed to invoice customers. The system involves the use of sensors in the trucks, however the fact the Loadrite equipment generates data automatically and provides accurate information is important to enable the company to reconcile data, helping to maintain control of the movement of material around the site safely and efficiently, and allowing the

In conclusion, the Vulcan Mine is a promising addition to the Bowen Basin coal industry, offering premium hard coking coal with a lean, cost-effective operation. The partnership with SmartTech Australia is a major step towards achieving industry-best production targets and ensuring the efficient delivery of high-quality coal to markets in South East Asia. **AMR**

A large, grey mining truck is shown from a low angle, filling most of the frame. The truck is positioned on a dirt surface, and the background is a clear, light blue sky. The truck's massive tires and heavy-duty body are prominent features.

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# ALL-IN-ONE SOLUTION FOR ENVIRONMENTAL COMPLIANCE & SUSTAINABILITY REPORTING

**F**ounded in 1998, Greenbase has a heritage of excellence in providing cutting-edge environmental and sustainability reporting solutions. We cater to complex, resource heavy, and energy-intensive organisations that are mandated to submit standardised reports under both national and international regulations.

## Envago: Your All-in-One Solution for Environmental Compliance and Sustainability Reporting

At Greenbase, we've engineered Envago, a fully integrated system designed to offer you comprehensive control over your environmental accounting and sustainability reporting. Supported by the unique synergy of environmental science, engineering, and accounting, Envago sets a new standard for achieving your company's sustainability goals.

## Rooted in Science, Driven by Accounting

We are environmental scientists and engineers who employ accounting principles and scientific methods. This multidisciplinary approach allows us to record and analyse your data to report on the environmental and sustainability metrics of your organisation, helping you meet your regulatory compliance and sustainability objectives systematically and comprehensively.

## A Seamless Confluence of Functions

What truly sets the Greenbase system apart is its versatility. Envago integrates

document management, communication protocols, workflow management, and reporting processes into a single, cohesive system. This all-in-one approach simplifies your operations, giving you more time to focus on strategic initiatives.

## Envago 7 Core Modules

1. ESG - Build and design your sustainability databook for disclosure of ESG and sustainability indicators.
2. Carbon - Budget, track, and project your carbon emissions on the journey to Net Zero.
3. Greenhouse Gas - A module specifically designed to report under the GHG Protocol and to the ISO 14064 standard.
4. Workspaces - Coordinate, collect and govern the data required for sustainability management.
5. Disclosure - Manage the disclosure of your indicators against regulatory and voluntary sustainability frameworks such as GRI, SASB, NGER and other reporting standards.
6. NGER - Designed to report to the Australian Government's National Greenhouse and Energy Reporting (NGER) program.
7. NPI - Designed to report under the Australian Government's National Pollutant Inventory (NPI) program.

## Reporting with Integrity: Always Auditable, Always Reliable

Timely, accurate, and auditable reporting isn't just a feature—it's a guarantee. Envago's robust architecture integrates industry best practices, ensuring that

your reporting is not only flexible and time-efficient but also on-demand audit-ready.

## Adherence to Regulatory Compliance

With a focus on adhering to strict regulatory compliance and contributing to sustainability objectives, we provide a clear pathway for your organisation to meet and exceed industry standards. Through Envago, we offer a complete audit trail, reinforcing your compliance efforts and providing transparency at all levels.

## GRI and SASB

- Greenbase is the only GRI Software and Tools Partner in Australia.
- Greenbase licenses and applies the IFRS® Sustainability Disclosure Standards, SASB® Standards, and SICs in our work.

## The Greenbase Methodology: Your Assurance of Excellence

The Greenbase Way™, our proprietary standardised, tried and tested, 10-step process integrates document management, workflow design, reporting methods and quality control. It is housed in our state-of-the-art Envago online platform, which is developed, owned and maintained by Greenbase.

## Grounded in Values, Guided by Vision

Our work is an embodiment of our core values and vision — providing the foundation that underscores our commitment to ethical business practices.

## Values

- Dependability: We always deliver.
- Continuous Improvement: We never rest on our laurels.
- Integrity: We act in good faith.
- Transparency: We cultivate openness.
- Collaboration: We work together.
- Joyfulness: We find fun in every day.

## Vision

Working together to create certainty from uncertainty for the future of people and the planet.

By integrating our specialised knowledge with an ethical approach, we've built an operational model that instils confidence and delivers results. When you choose Greenbase, you're engaging a partner committed to efficiency, ethics, and excellence. **AMR**



P: 08 9322 9966

E: [projects@greenbase.com.au](mailto:projects@greenbase.com.au)

W: [www.greenbase.com.au](http://www.greenbase.com.au)

# REMOTE WORKFORCE ACCOMMODATION



**O**ur fleet of Portable Hire Camps are designed to be set up and packed down very quickly, ideal for a variety of industry sectors looking to accommodate their workforce, particularly in remote parts of Australia. We have a wide selection of configurations to suit any size of workforce.

We design and engineer our own camps to ensure they are built to the highest standard and are built to withstand the harsh conditions of remote Australia. Our accommodation is very comfortable with all the mod cons and will make your workers feel at home.

We can cater for all your needs including substantial nutritional meals that won't disappoint.

#### Accommodation Units

- Fully adjustable reverse cycle air conditioning
- Provision for Internet & data communications
- Provision for satellite TV as option
- Window block-out screens for night shift operations
- High quality fittings & fixtures
- Dust proof door seals Insulated for temperature & noise control
- Single room & ensuited

#### Kitchen & Dining Rooms

- Full Commercial Kitchen grade capabilities
- Quality appliances
- Stainless steel work areas
- Ergonomically designed layout
- Hot & cold food servery
- Air extraction system
- Health code compliant

#### Bathrooms/Ablutions

- Spacious shower cubicles
- Toilet & Wash Basin
- Approved water treatment system
- Water storage skids, pumps & filters

#### Recreational & Administration Facilities

- The latest gymnasium equipment
- Comfortably appointed TV rooms
- Optional Foxtel TV
- Optional Game technology
- Office/ Shop

#### Ancillary Services

- Potable water skids
- Sewage Treatment Plant
- Starlink broadband internet systems
- Generator
- Electrical distribution systems
- Cool & Freezer Rooms
- All weather walkway systems
- Transport & Logistics

- Qualified Trade Professionals
- Safety focused
- Satellite telecommunications to all vehicles
- IVMS monitored vehicles -24/7 Nationwide
- MCA deliver nationwide Fleet of modern road trains Advanced Driver Trained
- All staff are fully inducted & authorised
- Friendly, well presented & co-operative
- We care about after sales service & support & respond accordingly

#### Camp Hire Extras

- Camp Management & Catering Services
- Transport services for mobilisation/ demobilisation & in-field camp moves
- Fuel & Potable Water Deliveries
- Trade Services, Carpenters, electricians, plumbers, & air conditioning technicians
- Waste Water Treatment Plants & Water Treatment Plants

#### Laundry

- Heavy duty appliances
- In transit restraint systems
- Linen press
- Ergonomically designed work areas

We are your solution for On-Site Workforce Accommodation and Portable Offices. Our fleet of Hire Camps range from 20 rooms up to 300 rooms.

We specialise in providing a full turnkey option including transporting and setting up the camp on-site, camp management and healthy nutritious catering and camp support whilst in the field.

We have a modern fleet of camps stationed around Australia ready for deployment to your site. We have the experience as we have successfully completed over 100 Remote Camp Hire projects for a variety of clients over the last 16 years.

The 'Plug & Stay' system ensures full camp functionality in a quick turnaround and are installed and maintained by our team of qualified and safety focused professionals. Our camps are designed & built for all types of remote requirements.

Camps are compact and tough, making them ideal for limited access locations and suitable for all climates and environments. Our plug and play style camps are quick and economical to mobilise and set up.

AMR



## PORTABLE CAMP HIRE

ACCOMMODATE YOUR WORKFORCE ANYWHERE, ANYTIME.

**Mining Camps Australia, a Centurion company, is a specialist provider of modern, portable accommodation solutions designed primarily to service the minerals, energy, infrastructure, construction, disaster recovery and agribusiness sectors.**

MCA camps are designed for the comfort and wellbeing of your people. Our "Plug & Stay" design philosophy delivers low impact infrastructure in compact, tough modular units ensuring we can configure to meet your amenity standards and the logistical and environmental considerations of your project.

Our qualified tradespeople are extensively trained and equipped to deliver your camp safely and effectively to support camp operations, relocations and changes in your requirements.



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**We've been designing, creating and delivering custom products in Australia since 2008.**

Custom buckles are our specialty but we also make custom awards, medals, badges, key rings, bottle openers and plaques. Every job we do for our clients is unique and custom made, so you know there is nothing else on the market like it. When it comes to your projects, milestones, special events, suppliers or staff recognition, a custom job really does show your appreciation.

- ✓ **Amazing Detail & Finish**
- ✓ **Really Quick Quotes**
- ✓ **FREE Design Service**
- ✓ **Lifetime Guarantee on all products**



**C**elebrate key milestones at your mine site with custom-made belt buckles to commemorate significant events.

Whether it's your 40,000th barrel of gold or hitting the ore body in time, Custom Buckles can design, create and deliver custom metal products suitable to your needs.

As Australia's original custom belt buckle manufacturer since 2008, Custom Buckles has produced tens of thousands of individualised and unique belt buckles for momentous occasions.

While buckles are their speciality, the team also make a whole range of custom metal products including awards, medals, badges, key rings, bottle openers, dog tags and plaques.

They are perfect for showing your appreciation for projects, milestones, special events, suppliers or staff recognition.

Every job Custom Buckles does for its clients is unique, with nothing else like that on the market.

Their client approach is straightforward: Design→Create→Deliver.

## REWARD AND RECOGNITION IN MINING

**COMBO PACK:  
 STARTING FROM \$69**

- ✓ Custom buckle
- ✓ Black leather belt
- ✓ Silver display tin
- ✓ Presentation box

### Design

Send your design to the team at Custom Buckles or just your logo and images for the team to do the design work for you.

Custom Buckles will then send you a mock-up graphic design of how your product will look.

Amend the design as many times as you need to get it exactly how you want.

### Create

Once artwork is approved, the team at Custom Buckles creates your unique mould and begins production on your custom product.

Enamel paint is injected for colour if required, the metal finish is applied and then the team antiques for the final stage before polishing off.

Only the best quality metals are used and the team ensures each item is perfect, polished and packaged before it is sent out.

### Deliver

Each item is individually wrapped and the packaging is tailored to client needs.

The entire order is placed in a solid box and delivered right to the client's doorstep.

The Custom Buckles team understands that no two jobs are the same and will work out a tailored pricing package based on individual client needs.

While production time takes 4-6 weeks depending on quantity ordered and the design detail, the team can also work with clients on delivery time frames.

Buckles generally start from \$35-\$45 each for the minimum order of 30 units.

Key rings, medals and bottle openers start from \$12-\$15 each for the minimum order of 50 units. **AMR**



No more mess with the

# FLANGELOCK TOOL FROM CKC EQUIPMENT



**T**rust CKC Equipment to supply you with the FlangeLock Tool, an ultimate contamination control tool for protecting any hydraulic system.

Produced in the US, the FlangeLock Tool is an easy-to-use cap which slides over the flange and is sealed by tightening the bottom plug by hand, keeping oil in and contaminants out.

CKC Equipment imports the FlangeLock Tool into Australia and sells it nationwide through the company's extensive network of distributors.

Greg Molloy, inventor of the FlangeLock Tool, needed a solution to using plastic bags and rags when preventing contamination and leaks, and so created a prototype which eventually led to manufacturing what is now known as the FlangeLock Tool.

With an easy on, easy off process the FlangeLock Tool offers a leakproof solution to hydraulic system and environmental cleanliness that is guaranteed to stop the mess and reduce the need for expensive clean ups.

The reduction in oil leaking from hoses also

drastically reduces the risks associated with slip and fall hazards, resulting in a large benefit to staff safety as well as a decreased chance of environmental contamination.

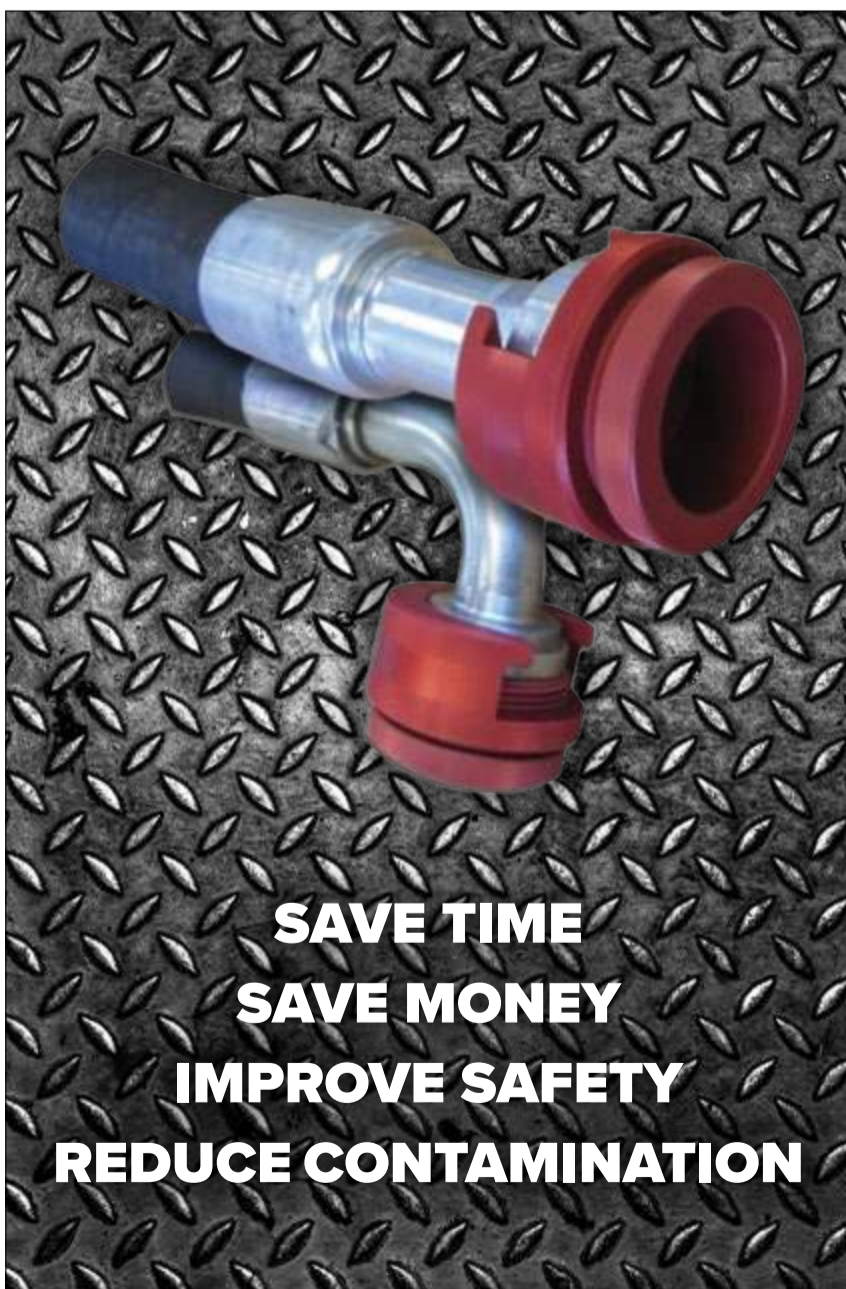
The FlangeLock Tool can be used across a breadth of industries including construction, mining, oil fields, dredging applications, wind turbines and large machine tools.

Currently manufactured in lightweight aluminium, it is produced in 12 sizes for 8, 10, 12, 16, 20, 24, 32, 40, 48, 56 and 64 in SAE Code 61, 62 and CAT.

Other advantages of the FlangeLock Tool are that no tools or expensive hardware are required while rags stuffed into hoses and messy plastic caps are a thing of the past.

Installation and use is quick and easy, requiring just one hand, with no additional equipment required. **AMR**

**GET YOUR FLANGELOCK TOOL NOW  
BY CLICKING HERE!**




**SAVE TIME  
SAVE MONEY  
IMPROVE SAFETY  
REDUCE CONTAMINATION**




## A leakproof solution to hydraulic system and environmental cleanliness.

The FlangeLock Tool allows for the simple sealing of open SAE Code 61, 62 & 62 CAT-Style hydraulic flanges without tools. Constructed out of lightweight high tensile strength T2200 anodized aluminium. Easy on, easy off.



**20/32TBS Kit**

A selection of common sizes including 2062, 2462, 3261, 3262 to suit both code 61, 62 and CAT flanges including blanking discs and o-rings.





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# A TRUSTED LIFELINE FOR REMOTE SITES.

**E**stablished in 1989, Laverton-based Desert Sands Cartage specialises in supplying remote outback and mining projects in regional WA and the Northern Territory with potable water, sand, fuel, and various other bulk haulage requirements.

Desert Sands also offers earthworks and mobile and on-site concrete delivery to clients for various construction projects.

In response to increasing demand for portable concrete supply and delivery, Desert Sands Cartage recently increased its capabilities by adding a Porta-Batch mobile concrete batching plant to its fleet, with a 50-tonne cement silo.

The batching plant can produce more than

32 cubic metres of concrete per hour and can be deployed at most remote locations in the Outback.

This is one of two similar batching plants Desert Sands Cartage has put to work to supply large-scale construction projects in remote areas.

#### Servicing Remote Regions

Desert Sands director Rex Ryles says his company can mobilise to remote locations to service its clients, whether it be to batch and deliver concrete using its new Porta-Batch plant, deliver earthworks materials and services, alongside many other services for mining, civil, and local government projects.

"We can also provide potable drinking wa-

ter for personnel mobilised on-site for all stages of the mining process, for example, exploration, earthworks, and construction phases," he said.

"No matter where your site is located, we travel far and wide to ensure you and your staff are looked after and have a reliable source of drinking water."

No job is too big or too small for Desert Sands Cartage, with clients ranging from the local Shire to larger operations such as Gruyere gold mine, Anglo Gold Ashanti sites, and various other large-scale mining projects.

#### A Range of Cartage Solutions

Desert Sands Cartage Contractors provide services including but not limited to:

Side tipper haulage, mobile batching plant/concrete delivery, supply and delivery of potable water alongside diesel and petroleum fuels, screened sands, river rock and blue metal materials.

Other services include maintenance grading, road building, site works, construction and excavator and loader-work.

Desert Sands can also provide contract screening, semi-drop deck hire, front-end loader hire, road maintenance and constructions for local government organisations, general civil works, bulk tipper haulage and much more. **AMR**

For more information, visit  
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CARTAGE CONTRACTORS  
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# Established Since 1989



- ✓ For all your transport and civil contracting requirements
- ✓ Supply of potable water to remote areas

- ✓ Side tipper haulage, including concrete, screened sand, dune sand, fuel and potable water
- ✓ Extensive experience in civil works and construction projects

#### GET IN TOUCH NOW

Rex Ryles 08 9031 1326 | [office@desertsands89.com.au](mailto:office@desertsands89.com.au) | [www.desertsandscartage.com.au](http://www.desertsandscartage.com.au)  
Lot 501 Cox Street Laverton WA 6440

# LIFT YOUR GAME WITH FRANNA



For more than 40 years, Franna has been the market leader in the design and manufacture of quality pick and carry cranes, chosen for safety, innovation, versatility and efficiency.

Considered the experts of the pick and carry industry, Franna has the capabilities to devise specific, tailor-made solutions to unique customer requests meaning on any given day, there could be a request for a specific feature or for the crane to meet a particular requirement.

Franna's design engineers are knowledgeable and experienced in logical thinking and practical attitudes to find solutions to 'square pegs in round holes', and the engineering team is continuously evolving and upgrading its cranes. In 2023, a total of 155 upgrades were completed, ranging from swapping out a hex head bolt to a round head in the leaf springs, to updating the generation 5 transmission to generation 6. While some of these upgrades are additional options, many of them become standard.

Last year also saw other significant requests asked of the engineering team at Franna, with one client needing to meet an air quality standard within the MAC25 cabin. For that to pass, an HEPA filter rated cabin air and cabin pressurisation monitor needed to coexist – a solution that was resolved by the team at Franna.

More features across the calendar year included an updated cooling pack aimed at improving serviceability, a redesigned bar grill that is now removable to better access and service the engine, a new pressuriser for the AT40 that minimises dust particles coming in while better pressurising the cabin, and a locator system for the MAC25 Superlift.

Customisation to meet client requests is a facet of Franna that leads to some of the most significant safety and practicality developments in the company's cranes – and this includes working with mining companies who need high performance machinery that is already fully equipped and ready to work.

With products sold globally, Franna cranes make up more than 90 per cent of the pick and carry market across Australia. On any given day, there are 10,000 cranes operating across the country – 50 per cent of which are Franna's pick and carry cranes.

Today, the company has a range of cranes targeting the heavy workload that comes with mine sites, and which are all designed to meet the safety and quality requirements of day-to-day operations in harsh outback environments.

With the mining industry notorious for difficult conditions due to uneven ground, rough, sandy terrains and caverns with minimal space as well as harsh, red dust blowing about, the durability and safety of cranes are continuously put to the test – but that's not a problem for Franna cranes.

The AT22, MAC25, and AT40 cranes' capacities vary from 22tonne through to 40tonne and each excels in rough terrain where access to space is limited. They

are engineered to improve productivity and efficiency during high-performance operations.

Franna cranes require no outriggers, allowing an operator to set up and start work almost immediately, and the compact footprint and unique design of each machine provides optimum access to tunnels and other areas of limited space on a mine site.

From lifting and laying pipes to changing out engines and everything in-between, it's easy to see why Franna cranes are such a popular choice for mining contractors. They are a staple of the Australian lifting industry, and it's not hard to see why. **AMR**



FOR MORE INFORMATION  
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# THE COMPLETE SCREEN SPECIALISTS



**A**ury Australia are manufacturers of a complete range of high-quality vibrating equipment including screens, feeders and centrifuges for the mineral processing industries.

Our equipment is designed and manufactured to the highest standards and is ISO9001 accredited.

We also provide aftermarket support for spare parts and service for vibrating equipment, rotating trommels and centrifuges.

Our engineering group has proven research and design capability, backed up by technical expertise from our Australian team, which has extensive experience in this field gained through working with vibrating equipment in the mining industry for many years.

Our design engineers have combined traditional vibrating technology with leading edge innovation and design techniques to produce products that are robust, very reliable, efficient, and cost effective.

Aury Australia began in 2010 and has been continuing to grow over the years.

In most recent times Aury Australia has expanded its geographical footprint within Australia with a new facility in Perth along with a new purpose-built facility in Rutherford NSW.

We also have existing Service and Sales facility in Mackay QLD. The new facility in Rutherford (Head Office) was designed to safely and efficiently assemble and test Aury equipment.

Aury have also recently leased a new facility in Perth designed to manufacture and assemble Aury equipment for the Western Australian mining industry.

The Perth factory has been operational from May 2022 and will be key to supporting our WA clients for the future.

Aury also have facilities in South Africa, Mozambique, SE Asia and China.

Aury Australia currently supplies vibrating screens to the mineral processing market in WA with a growing footprint in the iron ore and goldfields.

Aury Australia supply an extensive selection of products including a wide range of screen media, feeders and centrifuges for the mineral processing industry.

Our screen media is made both locally and overseas, with a dedicated resource team to support our product. **AMR**

**Visit [AuryAustralia.com.au](http://AuryAustralia.com.au) to view the complete range of equipment and services Aury Australia can provide.**

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# COMPLETE SUPPORT FROM THE GROUND UP

**J**etcrete is Australia's leading ground support specialist to the mining industry. Using the most advanced and innovative techniques, as well as specially adapted placement materials, Jetcrete delivers all surface and underground shotcreting and concrete spraying services to mine sites.

Jetcrete understands that no two mine sites are the same. With more than 40 years experience across the industry, the Jetcrete team has seen it all and can help navigate through any underground or above ground challenge.

The company manufactures about 271,000m<sup>3</sup> of concrete each year and has installed 440,000m of cablebolts.

Its fleet of 183 mobile concrete trucks are ready to service any Australian mining operation, backed by a team of 500 personnel across the country, and can establish sites in remote areas in a matter of days.

## UNDERGROUND SHOTCRETING

Jetcrete provides a complete service and one-stop shop solution for all stages of underground shotcreting.

These include excavation, onsite concrete, shotcrete and CAF manufacture, drains, high walls, bulkheads, vent walls, as well as the supply, delivery and installation.

The company's reputation for high-quality work across mine tunnels, portals and shafts has earned them a solid following in their field.

Jetcrete is trusted by and partners with mining majors including BHP, Glencore, Northern Star Resources, Newcrest Mining and Gold Fields.

## A CUT ABOVE THE REST

Over the years, Jetcrete has introduced most of the modern technologies used for shotcreting in Australian mining, such as overhead wet shotcrete, robotic shotcrete units, hydroscaling and most recently the industry benchmark for shotcrete thickness measurement – shotcrete scanner.

The Perth-based company is the first and only shaft lining contractor in Australia equipped to safely operate in niche and

highly-specialised ERZ1 hazardous environments.

The shotcrete solutions provider is also capable of delivering surface and underground civil infrastructure works including earthworks, concrete slabs, heavy vehicle workshops and site offices.

## WIDE ARRAY OF SERVICES

Along with shotcreting, Jetcrete provides a wide array of services including:

**Concrete manufacturing:** Jetcrete owns 16 batch plants, enabling mine sites to access 24-hour concrete, CAF and shotcrete manufacturing.

**Delivery:** A fleet of 75 underground agitators allows Jetcrete to support any site, including remote and hard-to-reach sites.

**Ready Jet® Drum Blasting:** Remote-controlled, high-pressure cleaning system for agitator drums eliminates the need for workers to enter confined spaces within the concrete mixer drum and reduces cleaning time by up to 75%.

**Remote shaft lining:** Jetcrete is the leader in remote shaft lining with three units in Australia, and further capacity in Indonesia and North America.

**Cable bolting:** Jetcrete is currently the largest Sandvik cable bolter operator in Australia.

**Resin injection:** An alternative active rock support system for underground mining, resin injection provides additional support for the encapsulation of TG cable bolts and ground consolidation.

**Civil construction:** Jetcrete's capabilities include heavy duty workshops, mine site offices, machine foundations and slabs, drainage and culverts, earthworks and

# JETCRETE'S WOMEN IN MINING DAY

Recently Jetcrete held the latest event in their Women in Mining event series at the Byrnegut Group's purpose-built Training Centre at their Perth Airport Head Office.

The event welcomed a group of women in to explore various pathways and careers in mining. The afternoon was filled with career information, hands-on experiences with VR technology, simulator mining equipment and a panel talk that was led by incredible women already working for Jetcrete and Byrnegut.

The ongoing event series is designed to invite women who are new to mining and remove some of the stereotypes (including gender stereotypes) that are commonly associated with the industry.

The event included presentations by female Jetcrete and Byrnegut employees from the group's Western Australia operations covering topics such as how they got into the industry, a day in the life of a female tradie and how they felt working in a male-dominated environment. Attendees also got some practical exposure through the Jetcrete's VR shotcreting simulator and Byrnegut's various mining equipment simulators.

Attendees were a mixture of apprentices, university students, people currently working on mine sites but not in mining roles and people looking to change industries. The feedback from attendees was very positive, with many agreeing that they "enjoyed the personal accounts of the mine life by current employees and the virtual reality experiences".

Jetcrete and Byrnegut will continue to run the Women in Mining event series in 2024 with Perth and the South West of WA next up in the roadshow. For 2024 date announcements, make sure you're following @jetcreteozptyltd and @byrnegutaustralia on Facebook.



# A Cut Above the Rest

**H**D Plasma and Laser Cutting Services provides an innovative and dynamic profile cutting service to all steel manufacturing industries within Australia.

The purpose-built, multi-function, steel processing business located in Bibra Lake, WA, is seen among the leaders in the steel cutting industry.

### Laser Cutting

The technology of the HD Plasma and Laser Cutting Services machines delivers superior performance, giving the ability to provide clients with exceptional quality, together with 24-hour operations, shorter lead times compared with other conventional laser cutting machines.

- Cutting table size 4000 x 2000mm
- Capable of processing up to 20mm thickness mild steel
- Capable of processing up to 20mm thickness QT Material
- Capable of processing up to 32mm thickness aluminium
- Capable of processing up to 25mm thickness stainless steel

### Plasma Cutting

HD Plasma and Laser Cutting Services operates three plasma machines - one Kinetic K4000 and two Kinetic K5000. These state-of-the-art, heavy duty combination plasma/oxy/machine centres can process a wide variety of materials at an extremely fast rate.

The 62m plasma cutting bed, together with 24-hour operations, allows high volumes of cutting to be achieved with short lead times.

- Counter sink/counter bore
- Drilling - 3mm up to 60mm
- Plasma cutting - 3mm up to 50mm
- Oxy-cutting - 60mm up to 300mm
- Beveling - up to 50mm with maximum of 45°

### Steel Plates

HD Plasma and Laser Cutting Services holds steel plate in stock.

Plate is sourced from quality local and imported steel mills, to cut a wider range of materials at a greater thickness range than most of its competitors. **AMR**



THE STATE-OF-THE-ART, HEAVY DUTY COMBINATION PLASMA/OXY/MACHINE CENTRES CAN PROCESS A WIDE VARIETY OF MATERIALS AT AN EXTREMELY FAST RATE.



GRADE	THICKNESS (mm)
AS 3678-250	UP TO AND INCLUDING 300mm
AS 3678-350	UP TO AND INCLUDING 300mm
FLOOR PLATE M/S	UP TO 10mm
BOILER PLATE - ALL GRADES	UP TO 80mm
QUENCHED AND TEMPERED	UP TO 80mm
CARBIDE OVERLAY	UP TO 40mm
ALUMINIUM PLATE	UP TO 32mm
PGI, ZINCANEAL, GALVANISED & COLORBOND	UP TO 6mm
STAINLESS STEEL - ALL GRADES	UP TO 40mm

# A cut above the rest



HD Plasma & Laser Cutting Services Pty Ltd is a purpose built, multi-function, steel processing business located in Bibra Lake, Western Australia.

We can deliver an innovative and dynamic profile cutting service to all steel manufacturing industries within Australia.

HD Plasma & Laser Cutting Services philosophy of progressive service to our customers is what is bringing us to the forefront of the steel cutting industry.

A continual process of system and service development and refinement is where our key advantage lies. We constantly find new ways to add value to the service we deliver to you.

Progressive service and quality is about staying one step ahead.

## Services



**PHONE: +61 08 9418 8462**  
**www.hdplasmacutting.com.au**

81 Discovery Drive, Bibra Lake WA 6163  
 Email: sales@hdplasmacutting.com.au

# NON NUCLEAR DENSITY MEASUREMENT



**D**ensity meters play a crucial role in diverse industries particularly Mining, serving purposes such as monitoring slurries and facilitating billing processes. However, prevailing meters in the market often grapple with issues of poor accuracy, potentially hazardous components such as Nuclear, or both. Typically, slurries undergo measurement through pumping within a pipe, generating an inferred reading from the sample. Alternatively, grab sampling involves taking samples from the slurry, necessitating laboratory analysis and resulting in prolonged turnaround times. The advent of the new real-time, non-nuclear density meter addresses these shortcomings by enabling the accurate and repeatable measurement of the entire sludge/slurry without the use of hazardous materials.

Territory Instruments is excited to introduce the The Red Meter, which employs a straightforward methodology combined

with sophisticated algorithms, empowers process engineers by delivering measurement data that is both accurate and empowering. The device continuously reads multiple variables, including density, media pressure, flow rate, and solids accumulator, utilising its integrated computer to perform calculations. This data is displayed on-screen and can be exported to third-party systems. Red Meter's disruptive technology aims to establish a new standard in industrial measurement, transcending legacy limitations and revitalizing crucial sectors of the global economy.

Operational simplicity defines the Red Meter's approach, as it measures the weight of the material in the pipe through deflection measurements. This process, devoid of radiation, combines with advanced mathematical formulas and algorithms to provide an accurate density reading every second. The Red Meter functions as more than a mere sensor; it concurrently

measures multiple variables, recording real-time analytics through its general-purpose computer and software. This flexibility allows customisation based on individual process and application needs.

Accompanied by the built-in software, Ruby, the Red Meter offers a user-friendly display with extensive customisation options. Users can alter the color scheme, configure display units, and access data locally or remotely when connected to the internet.

Red Meter's technology incorporates various components contributing to higher repeatability, superior accuracy, and extended product life. An abrasion-resistant liner ensures compatibility with diverse carrier liquids and abrasive particulates, enhancing the cartridge's longevity. The flexible cartridge, coupled with a high-precision displacement laser, measures deflection, which is translated into weight. The contin-

uous measurement capability, recording thousands of measurements per second, drastically reduces wait times from hours or days to milliseconds.

Boasting an accuracy of +/- 0.5% over a 6:1 density range, the Red Meter surpasses many continuous measurement techniques. Noteworthy is its superior response time, sampling up to 50 times per second, and adaptability to any pipe diameter and most specific gravity ranges.

Territory Instruments is a leading sales and service business for process measuring and control equipment, such as analysers, field instruments (pressure, flow, level etc), environmental measurement devices, control valves and other test and measurement products - across Australia.

AMR



## REDMETERS Australia's most innovative non-nuclear density meter

Territory Instruments is very proud to represent Red Meters in Australia, South East Asia and New Zealand. The Red Meter is an industrial measurement system providing key measurement data which can be used to optimise processes in real time. The data provided by a Red Meter can be used to calculate and measure density, pressure, flow rate and accumulated solids.



- » Accuracy  $\pm 0.5\%$
- » Repeatability  $\pm 0.4\%$
- » Selectable Display Options
- » PIN-Secured configuration & calibration menu
- » Remote Interface (HMI)
- » Remote Support & Upgrades
- » Two 4-20 mA Outputs possible.



T: 1300 162 335 E: [info@territoryinstruments.com](mailto:info@territoryinstruments.com) W: [www.territoryinstruments.com](http://www.territoryinstruments.com)

# NRM

## KEEPS TOP TIER MINERS STRUCTURALLY SOUND



It may appear a little eccentric that NRM Consultants, a structural engineering company based in Mandurah, doesn't have a company slogan along the lines of Nike's 'Just Do It', or McDonald's 'I'm Lovin' It'. However, according to NRM Consultants Principal, Dr Nicholas Mills, there is certainly some logic to this view.

Founded in 2017, Dr Mills has extensive knowledge gained from working with renowned engineering consultants in both the United Kingdom and Australia. From Principal Engineer and Chief Engineer roles at Bison Concrete in the UK, to senior engineering roles with Australian firms, combined with a PhD in concrete structures, it's no wonder Dr Mills become an authority figure in the industry.

You could say a slogan is just a mask in some respects," said Dr Mills.

"We don't have to say we're bigger, faster, or better. The work we do and the projects we have completed is what drives repeat business for NRM Consultants. Delivering structural engineering projects demonstrates real performance and proven capability, particularly in complex industrial and mining environments."

Although the consultancy has only been in business for five years, it has built an impressive resume including a number of clients that are considered 'Hall of Famers' within the Australian mining industry.

One project that demanded distinguished engineering expertise included a flagship gold mine in WA's Tanami Desert. NRM Consultants were contracted to undertake a structural review of the mine facility and the entire processing infrastructure prior to providing integrity reports for each facility within the operation.

NRM Consultants were also engaged to deliver arch designs and certification for two of the world's largest miners, and multi-plate suppliers, to facilitate a multitude of loading conditions as prescribed by AS2041. Typical vehicle loadings included HLP platforms for the transportation of mining vehicles, the provision of railway loadings, conveyor loadings and surcharge loadings.

Another project involved working with a global civil engineering specialist to structurally review a 50m diameter concentrator tank in WA's Kambalda region. NRM Consultants conducted a structural assessment of the 50-year-old concrete tank,

which had undergone severe corrosion, delamination, splitting and deformation. Leveraging NRM's extensive concrete expertise, the firm also delivered a structural report and recommendation, as well as a structural solution that remediated and extended the life of the tank.

As structural consultants to Goldfields, NRM Consultants have been involved in the review of several critical structures across their operations. One included the assessment of a large maintenance deck slab for corrosion and concrete performance, which discovered that the composite construction of Hollowcore plank and topping were structurally delaminated and compromised. This placed the mine maintenance vehicles on the deck at risk, potentially hampering maintenance during shutdowns due to safety limit issues on the deck.

NRM Consultants delivered structural remediations in a phased approach aligned to planned shutdowns in an effort to extend the structure's lifecycle. Additional structural remediations were also done to improve the slab performance, incorporating composite action with steelwork, and the use of high performance concretes and durable materials.

"We have also worked on many projects that deliver robust designs and assessments for structural improvement," said Dr Mills.

"From assessing structures for performance under structural distress, earthquake assessments on government structures, through to water infrastructure and tanks, we cover the full structural spectrum.

"Our clients also benefit from NRM's capability of providing site superintendence as part of the project delivery service to ensure structural provisions are incorporated as per structural requirements.

"In the end, who needs a logo or slogan when you have delivered on design, earthquake assessment, project management and technical services for all things structural."

For more information, visit <https://nrmconsultants.com.au/>

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## EXPANDING STRUCTURAL ENGINEERING TO NEW HEIGHTS



At **NRM Consultants**, we're all about delivering structural engineering excellence through robust, buildable, and sustainable solutions. Developing timely design and deliverables to suit the clients' timeframes.

We work on small-to-medium sized mining and water treatment projects, to some of Australia's leading mining and infrastructure corporations. We apply sound fundamental engineering expertise to all our projects, no matter how big or small.

**Speak with our structural consultants today and learn more about how our company can help you solve your engineering problems.**



📞 0431 239 536

✉️ [nrm@nrmconsultants.com.au](mailto:nrm@nrmconsultants.com.au)

🌐 [www.nrmconsultants.com.au](http://www.nrmconsultants.com.au)



# TERALBA'S EXPERTISE IN PLATE HEAT EXCHANGER SERVICING:

A TESTAMENT TO EXPERIENCE AND DEDICATION



In the realm of industrial processes and heat exchange systems, the significance of plate heat exchangers cannot be overstated.

These units play a vital role in so many sectors, from heating, ventilation, and air conditioning (HVAC), to industrial solution cooling and heating. Amidst the complexities of maintaining and servicing these crucial units, Teralba stands out as a beacon of expertise and reliability.

For over two decades, Teralba has been at the forefront of plate heat exchanger servicing, boasting a wealth of experience dating back to 1997.

Unlike the common buy-sell offers in equipment, Teralba has always been deeply involved in the inner workings of these units.

Our commitment goes beyond mere transactions; we possess a profound understanding of how plate heat exchangers function, enabling us to undertake a myriad of tasks ranging from selection for new applications to troubleshooting existing issues.

What sets Teralba apart is not just our knowledge but also our extensive inventory.

With a vast quantity of stock plates, gaskets, frames, and connection parts, we offer solutions tailored to diverse needs and specifications.

Whether it's replacing old equipment with new or providing piping spools for seamless transitions, Teralba ensures a hassle-free experience for our clients.

By eliminating the need for on-site piping

modifications, we streamline the process, saving valuable time and resources.

Central to Teralba's success is our team of dedicated plate heat exchanger specialists whose combined experience exceeds 53 years.

This wealth of knowledge is a testament to our unwavering commitment to excellence and continuous improvement.

Whether it's routine maintenance or addressing critical issues, customers can rest assured knowing that their plate heat exchangers are in capable hands.

In addition to our expertise and inventory, we offer expedited services, ensuring fast turnaround times to minimize downtime and maximize productivity. Moreover, our plate pack swapping service provides critical backup for essential equipment,

enhancing reliability and resilience in operations.

In an era defined by rapid technological advancements and ever-evolving industrial landscapes, the importance of reliable service providers cannot be overstated.

Teralba's track record speaks volumes about our ability to adapt, innovate, and exceed expectations.

As industries continue to evolve, Teralba remains a steadfast partner, empowering businesses with the expertise and support they need to thrive.

Teralba's proficiency in plate heat exchanger servicing is a testament to our experience, dedication, and unwavering commitment to customer satisfaction, we continue to set the standard for excellence in the industry. **AMR**

## Need help with Plate Heat Exchanger servicing? Trust Teralba

Plate Heat Exchangers for the Mining, Oil & Gas Industries

New Units

Spare Parts & Replacements

Service & Maintenance

**Teralba**  
'TRUSTED HEAT TRANSFER'

**Urgent work is our specialty.  
We have the experience and the stock.**

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# UNDERBODY DEFENCE:

## AUSSIE-MADE UVA FOR THE TOYOTA HILUX

In offroad and rugged terrains, vehicle protection is crucial. ARB's Smartbar, has now added the Under Vehicle Armour (UVA) to their Toyota Hilux protection range.

Offering extensive underbody protection tailored for Toyota Hilux (and Fortuner) models.

Demonstrating large coverage, durability, and light weight design the crosslink polymer UVA is essential for under vehicle protection, particularly for mine-spec vehicles.

Developed in Australia, the UVA goes beyond being a mere skid pan replacement; it's a holistic solution for protecting your Toyota Hilux.

Featuring a robust 10mm thickness and a distinctive shape with a deep rib structure, the UVA is engineered for maximum strength and impact absorption.

Its innovative design allows it to seamlessly

regain its original shape after an impact, ensuring continuous protection in the most demanding conditions.

Whether paired with the factory OE bumper, ARB SmartBar frontal protection systems, or the ARB Steel Bull Bar range, this underbody armour seamlessly integrates.

The UVA's crosslink polymer is a testament to durability, resisting high heat, corrosion, and rust.

This specially formulated material acts as a shield, safeguarding your vehicle's underbody from rocks, stumps, ruts, and other hazards.

Beyond robust protection, it also maintains a low vehicle mass (GVM), ensuring optimal performance without compromising on durability – a critical factor in any fleet.

Manufactured in four individual pieces, the UVA facilitates easy removal during

servicing, providing convenience for maintenance.

In the demanding world of mining, where terrain challenges are constant and for fleets to remain in service, the Under Vehicle Armour (UVA) emerges as a symbol of innovation and durability.

Designed and manufactured in Australia, this purpose-built underbody protection system offers unmatched coverage, compatibility, and hassle-free maintenance.

Safeguard your Toyota Hilux (or Fortuner) with confidence, knowing that the UVA has your vehicle's vital components protected.

Available through the ARB 4X4 Accessories network, go to [smartbar.com.au](http://smartbar.com.au) for more information.

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**ARB**  
SMARTBAR



DISCOVER THE RANGE OF SAFER,

# SMARTER

VEHICLE PROTECTION SYSTEMS



## Made with mining in mind.

We understand that mining vehicles need to survive in the toughest of conditions. With rough terrains and exposure to corrosive materials, mining fleets need a higher level of protection than your average vehicle.

Offering superior protection for your fleet, SmartBar polymer products are in a league of their own. With industry-leading polyethylene design, our products are engineered to absorb and flex upon impact: ensuring the safety of your employees and vehicles whilst keeping your fleet on the road.

### THE BENEFITS OF SMARTBAR VEHICLE PROTECTION

- Greater protection, safer for occupants and pedestrians.
- Fewer repairs are needed.
- Made from recyclable materials.
- Made from durable polymer which will never rust.
- Lighter in weight.

Visit [SMARTBAR.COM.AU](http://SMARTBAR.COM.AU) to find our range of Vehicle Protection Systems to suit your fleet.

### NEW - TOYOTA HILUX



#### Under Vehicle Armour

- ✓ Maximum Coverage
- ✓ Durable Crosslink Polymer
- ✓ Lightweight
- ✓ Includes transfer case protection cover



Proudly Australian made, quality products and partners.



# TAKE CONTROL OF YOUR OPERATIONS



Since 1975, Protoblast has led the way when it comes to engineered abrasive blasting systems for various industries. A family-owned and operated Australian company, now in its third generation, Protoblast manufactures all its equipment in Picton, NSW. With over 45 years of experience, the company has found time and again that the cost of logistics from outsourcing the abrasive blasting process is very often hidden and overlooked and has shown that it is, often, approximately equal to the invoice value of the blasting. This realization has motivated Protoblast to support local manufacturers in becoming more efficient and self-sufficient by providing high quality locally made, and serviced abrasive blasting equipment.

## The Power of Total Ownership and Support

Direct collaboration with the manufacturer ensures unmatched precision, guaranteeing uniform surface preparation and consistent results for every project. Protoblast believes that this level of control empowers businesses to elevate their standards, delivering excellence in every detail. The company takes pride in offering complete ownership and ongoing support throughout the client's journey, from the initial consultation to installation and beyond. Protoblast has a dedicated team working as one to ensure success at every step.

## Expert Guidance and Customisation at Your Fingertips

Protoblast recognises that every business is unique, with specific requirements and challenges. That is why Protoblast gives clients direct access to experienced engineers and professionals who possess in-depth knowledge of abrasive blasting processes and guides industries through the selection, customisation and implementation of equipment to suit precise and specific needs. With Protoblast's expertise and experience at client's disposal, achieving optimal results has never been more accessible.

## A Commitment to Excellence

Protoblast has garnered a reputation for excellence, and their commitment to customer satisfaction is unwavering. The team involves experts that are not only passionate about delivering top-of-the-line equipment but also dedicated to supporting businesses throughout their journey to success. The company understands that their triumphs are client's triumphs, and that is why they go above and beyond to ensure that clients experience with Protoblast is nothing short of exceptional.

## Protoblast's 2023 Highlights

Last year unveils a high-level of pride in the trust bestowed upon Protoblast in its

relentless pursuit of enhancing efficiency. This has played a pivotal role in simplifying and elevating clients' operational experiences, contributing to a more manageable and productive year. The company takes immense pride in showcasing the enhanced efficiency achieved by these three clients for 2023.

Sulzer, a long-standing customer of Protoblast, has been operating a blast chamber since its initial installation in 1992. Their blast chamber had served them well for many years, but the abrasive recovery system and the wet-type dust collector were becoming increasingly problematic. To address this concern, Protoblast upgraded their dust collector and abrasive recovery system which were installed last year, 2023. Protoblast's recent upgrade has made a substantial impact on Sulzer's operation. According to Sulzer, **"It has done everything we expected and more, we are saving 30-40% on abrasive alone. The new system is cleaning it properly compared to the old system."** This is a testament to the incredible results that collaboration with Protoblast can bring. This also means that Sulzer's consistent confidence in Protoblast's ability to deliver top-notch solutions enhance their operations and efficiency.

Janbay, a unique case for Protoblast in the residential construction sector, overcame supply challenges and demand for quick turnarounds by choosing the renowned Protoblast Section Blast Machine. This strategic decision enabled Janbay to efficiently process bulk steel sections, apply blast and paint treatments, and maintain a readily available stock for same-day delivery to Sydney metro. This highlights Protoblast's ongoing commitment to supporting manufacturers like Janbay in achieving excellence in their markets.

Also, last year Protoblast seamlessly facilitated the installation of a spacious blast booth for a truck trailer manufacturer. Through Protoblast's detailed drawings, the customer independently manufactured the booth, yielding substantial savings in both time and expenses. Protoblast's pivotal contribution included the supply and installation of the dust collector and abrasive recovery system.

At Protoblast, they believe in empowering businesses to achieve greatness. Their abrasive blasting equipment isn't just machinery – it's a catalyst for transformation. Whether you're seeking efficiency gains, enhanced quality, or a competitive edge, Protoblast has the solution.

**Embrace the power of total control with Protoblast!**  
[www.protoblast.com.au](http://www.protoblast.com.au)

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## ACHIEVE UNMATCHED PRECISION WITH PROTOBLAST'S ENGINEERED BLASTING SYSTEMS

A leading Australian manufacturer of  
**ABRASIVE BLAST EQUIPMENT**



Problast has been designing and manufacturing to suit customers' individual needs since 1975.

- ✓ ABRASIVE RECOVERY SYSTEM
- ✓ AIRLESS BLAST MACHINES
- ✓ SECTION BLAST MACHINES
- ✓ DUST COLLECTORS

The best way to prepare a surface for a coating is by using the abrasive blasting process. Whether you need to blast earthmoving equipment, turbines, structural steel or railway lines...

We have successfully completed projects for Bechtel, BHP Billiton, ThyssenKrupp and BAE Systems just to mention a few.

Problast has the experience to design and supply equipment that is fast, efficient, improves your product and saves you money ... year after year.

# ELEVATE AND TAKE CONTROL OF YOUR STANDARDS TODAY!

1300 895 381 6 Bollard Place, Picton NSW 2571 sales@problast.com.au protoblast.com.au

# GAIN COMPLETE SITUATIONAL AWARENESS OF IMPACTFUL WEATHER ON-SITE

Once again, we have seen a summer full of severe weather – from Tropical Cyclones pounding the east coast within weeks of one another, to record rain soaking Queensland and the Northern Territory, and heatwaves sweeping across the country. It won't stop there as we enter autumn, which is often a time of continued instability.

With weather creating heightened risks on-site for worker safety, productivity and profits, it makes sense to **access the most comprehensive weather solutions to guide your decision making.** Weatherzone Business, a DTN company, created the **Miningzone** interface specifically for the mining industry and, when you utilise our suite of solutions, they are tailored to your site and operational scope.

## Make Confident Decisions

Preparation and hyperlocal monitoring are imperative when confronting unprecedented weather risk. We deploy **proven solutions that deliver invaluable foresight:** aimed at improving your safety outcomes, reducing profit loss, and modelling what lies beyond the horizon so you can take action. Utilising meteorological consultancy and the decision-support interface **Miningzone** gives you an opportunity to fine-tune your existing systems of on-site weather risk management. This optimises your preparation for, and response to, adverse conditions.

## Never Underestimate the Storm

**Lightning creates potentially fatal conditions on-site.** There is a misconception that mining vehicles create a perfect Faraday cage, providing adequate physical protection. Unfortunately, large windscreens and side windows still enable lightning and side flash to penetrate the cabin, creating a dangerous environment for operators. Pyrolysis – the mixture of volatile compounds within the air chamber of tyres that can potentially ignite – creates tyre rupture or explosion. This process is sometimes delayed, posing a lying threat to workers within the vicinity of the vehicle, post-strike.

## Respond Proactively to Lightning Risk

Stopping operations when lightning is within an unsafe radius is the best way to safeguard staff and mitigate damage to assets. **We provide accurate detection of strike proximity** to identify when lightning penetrates this radius. This supports efficient Trigger Action Response Plans (TARPs) and reduces unnecessary downtime caused by hypersensitive on-site sensors. Weatherzone offers the **WZ Total Lightning**

**Network (WZTLN)** which operates in over 400 mines across the globe. Drawing on data from 1,800 sensors in more than 100 countries, the WZTLN delivers precise warnings of lightning proximity, configured to each mine's thresholds. Your site receives clear guidance on when to halt and restart production. When the WZTLN is used in conjunction with **WZBob Onsite Alerting**, your mine has conspicuous, site-wide audible and visual alerts providing enhanced safety outcomes for your personnel.

**“Utilising meteorological consultancy and the decision-support interface Miningzone provides an opportunity to fine-tune your existing systems of management.”**

## Monitor Conditions to Protect Infrastructure

Preparing a site by ensuring mobile mining equipment and operators are undercover takes time. **You can visualise potentially damaging storm systems before they hit, maximising**

**the time available to safely shut down.**

**Stormtracker** is the solution that allows a mine's control room operator to chart the progress of incoming weather, and mount a targeted response. A Geographic Information System (GIS), Stormtracker delivers proactive alerts, and displays multiple weather layers, mapped over your geofenced mining site. Your infrastructure is visible on the weather map, providing a clear picture of what and who needs to be prepared and protected.

## Mining Projects Vulnerable to Tropical Cyclones

Tropical cyclones and hurricanes pose a growing threat to mines globally. Weatherzone Business offers a **7-Day Tropical Cyclone Service** that's completely customised to each mine's site and infrastructure. Conditions are remotely monitored 365 days a year. When a system develops within 600 nautical miles of your site, our meteorologists begin communicating vital data to your operators. We are monitoring what is occurring within a radius of your mine site, as increased winds and flooding kilometres away can impact your closest airports, transport infrastructure, shipping, and river systems upstream. **Tailored risk assessments take all of this into account and are provided to enhance your site preparation.** Our meteorologists are on call 24/7 throughout impact, and visualisation via the Miningzone interface improves spatial awareness of its track.

**“Now is the time for companies to think ahead, strategising to mitigate the effects of increasingly volatile weather patterns.”**

Warm oceans and humid, volatile air influence the development and strength of these systems. It's widely accepted that their intensity will increase with time. For vulnerable mines, accurate monitoring provides time to

secure a site and evacuate personnel, reducing the risk of loss across the board.

**We Support You to Manage Climate Risks**  
**Utilising meteorological modelling and consultancy creates added layers of protection and situational awareness for mine operators.** Close consultation with our industry meteorologists drives your capacity to respond to climate impacts with confidence.

Seasonal outlooks are key to analysing the possibilities that weather has in store and underpins considered preparation. Foresight regarding potential drought, high rainfall and tropical cyclone activity guides effective risk mitigation. The success of planning water management, dust suppression, electricity storage, TARPs and evacuation procedures is influenced by a detailed awareness of potentially disruptive conditions. We give you this awareness.

## Receive Detailed Risk Communication

For the day-to-day management of immediate weather threat, quality risk communication is the difference between simply being aware of potential weather threat, and knowing what to do about it. Our meteorologists dissect complex data and deliver tailored briefings and analytics around the clock. **This support drives confident, rapid decision-making when impactful weather is imminent.** Audits of current weather management systems provide profitable opportunities to improve preparations and response, well before the storm inflicts its wrath.

## Plan for climate variability

**Our top-tier weather and environmental data and analytics can drive adaptability and preparation for the mining industry.**

It is indisputable that now is the time for companies to think ahead, strategising to mitigate the effects of increasingly volatile weather patterns. We support you with trusted weather and data systems, delivering a dependable foundation for this kind of recalibration. Weatherzone Business offers advanced solutions built on years of collaboration with the resources sector, and will continue to innovate as each new challenge arises. **AMR**

## Get in touch

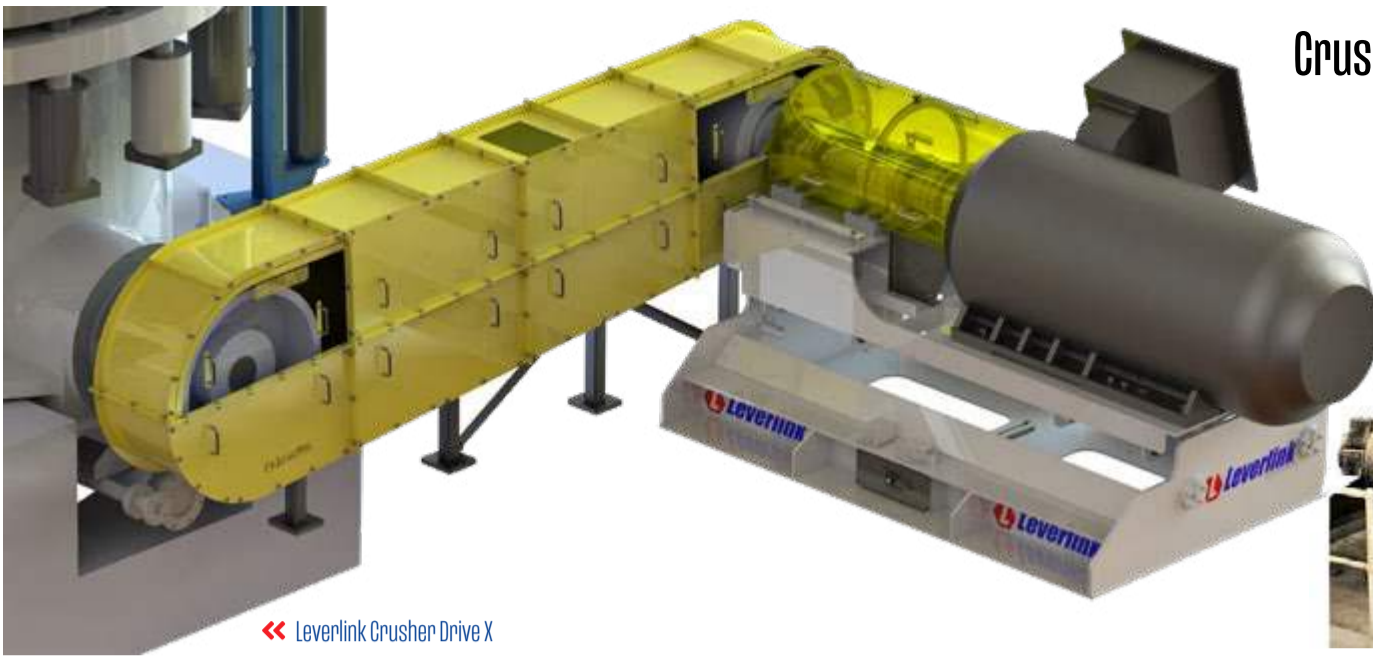
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Powering smarter weather decisions



« Leverlink Crusher Drive X



# LEVERLINK DESIGNS MOTOR BASES FOR CRUSHERS DRIVES

SIMPLY THE INSTALLATION, TENSIONING, CHECKING AND RE-TENSIONING OF THE V BELTS

Leverlink technology is innovative and uncomplicated. It has been tried and proven in the harsh environments of mining and quarrying for more than 30 years.

The principal of the system is to utilise a rubber torsion spring to store energy.

**Crusher drives come in a wide range of designs and sizes as do crushers.**

Some typical crushers in mining, quarrying, recycling and other associated industries.

- jaw crushers (single and double toggle);
- VSI – vertical shaft impactors;
- hammer mills

- cage mills
- gyratory and cone crushers
- rolls crushers
- sizers

In mining and quarrying, these would perform applications such as primary, secondary and tertiary crushing.

Typically, these would be belt driven.

**Crusher drive arrangement**

Small to medium size crushers, say up to 400kW, would be driven directly off the motor shaft.

However, larger electric motors, say +/- 1000kW range would utilise a lay or

jack shaft coupled directly to the motor to transfer the forces to a inboard or outboard drive pulley.

**Slide rails, base frame**

The electric motor would be connected to some form of system to allow the tensioning of the belts.

In larger motor sizes with jack or layshaft drives it was not uncommon to fix the drive centres and employ a jockey pulley on the back of the drive belts as a means of tension.

**Poor maintenance of drive belts**

It has been our experience that poor drive belt maintenance often reflects the diffi-

culty of the adjusting system to perform the task.

These maybe:

- corroded adjusted screw;
- difficult to access adjusting mechanism;
- alignment – no means of facing drive and driven pulleys;
- poor guarding design resulting in difficult access to check and or adjust drive belt tension;
- poor or no job training.

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leverlink.com.au 

## MOTOR BASES FOR ALL CRUSHER DRIVES

**COVERING:**

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# RAPID RESULTS IN CRUSHING & SCREENING



**R**apid Crushing and Screening Contractors Pty Ltd (Rapid) is a privately-owned WA company and commenced operations in 1978 as a provider of quality crushing and screening services to the civil contracting, construction, mining, and resource industries, under contract or hire.

Rapid specialises in the crushing and screening of all types of mineral ores, including lump and fines hematite iron ore, gold, manganese, nickel, lithium, special class site preparation and fill materials on major construction projects, as well as concrete and road aggregates, road base, rail ballast and armour rock.

Rapid has created a wide range of high-production mobile and modular crushing, screening, and conveying plants ranging from 600 tonnes per hour, through to plants to produce over 1,000 tonnes per hour.

Our operations continue to evolve and expand with specialised crushing and screening services supplied to clients that have included Woodside, Rio Tinto, BHP, Chevron, Moly Metals, Karara Mining Limited, Fortescue Metals Group, Hanson Construction Materials, Saracen, Goldfield, and Galaxy Resources; among many more.

Our modern office and workshop facilities in Perth, WA, and Mackay, QLD, ensure that Rapid can support the growth of its operations nationally in a timely and efficient manner, without relying on outsourced facilities and manpower.

Rapid's operations continue to expand with specialised crushing and screening services. Our company is backed up with a solid workshop team and in-house repairs, maintenance, and fabrication capabilities in our facilities on both sides of the country.

Essential to Rapid's success has been the back up and support offered from its own in-house fabrication company, Irvine Engineering (WA) Pty Ltd, which has been designing, fabricating, and maintaining crushing and screening plants alongside Rapid since its inception. Both companies have also developed good relationships with crusher & screen component suppliers and other specialists for further technical support.

Therefore, Rapid can fabricate and build its own custom designed purpose-built crushing and screening plants to client and site specifications. The company does not rely on outsourced contractors or off the shelf plants, thus avoiding potential loss of control over the quality of work and materials or reliability of supply.

Rapid is experienced in working in remote locations with limited access and limited communications. To this end, the company

has created a culture to be self-sufficient on site with a workforce that can make do with the resources on hand and ensure that all trades personnel are present on site to attend to issues as they occur.

Contact our team to discuss your crushing and screening requirements, right across Australia. **AMR**

## PERTH

**P:** 08 9452 5888

**A:** 577-585 Bickley Road  
Maddington 6109 WA

## MACKAY

**P:** 07 4952 3888 (Mackay)

**A:** 31 Dozer Drive,  
Paget (Mackay) 4740 QLD

[www.rapidcrushing.com.au](http://www.rapidcrushing.com.au)

# CRUSH & SCREEN MACHINE



[www.rapidcrushing.com.au](http://www.rapidcrushing.com.au)



# TRANSFORMING FLOWSHEETS WITH INNOVATIVE TECHNOLOGIES

**W**eir's Chief Strategy and Sustainability Officer Paula Cousins recently spoke at COP28 in the United Arab Emirates about the importance of harnessing innovative technologies to make mining more sustainable.

In a panel discussion hosted by the Ministry of Economy, Trade and Industry of Japan and moderated by the World Business Council for Sustainable Development (WBCSD), Cousins talked about a recent study that highlights a significant opportunity to reduce energy use and emissions in comminution.

The study is the first to utilise the WBCSD's Avoided Emissions Guidance to examine mining processes and the results have been independently assured by SLR Consulting Limited.

Three of Weir's technology combinations were evaluated against a conventional comminution circuit design for an archetypal mine processing 15 million tonnes of copper ore per year in Chile.

Each circuit was based on a 'rock to recovery' system boundary – that's to say, reducing rock direct from the mine to a size that enables the mineral to be recovered.

The four configurations were:

1. Conventional comminution circuit based on a Semi-Autogenous Grinding (SAG) mill and ball mill.
2. Weir's Enduron® High Pressure Grinding Rolls (HPGR) replacing the SAG mill at the initial grinding stage.
3. Enduron® HPGR, plus Swiss Tower Mills' (STM) vertical stirred mill replacing the ball mill.
4. Addition of a Eriez's HydroFloat® coarse particle flotation (CPF) unit.

The study shows that replacing conventional technology with innovative new solutions can cut energy use by 40%, while also avoiding 50% of CO<sub>2</sub>e emissions.

The world needs more transition metals to achieve net zero, but the mining industry needs to extract these using significantly less energy and water, Cousins explained.

'Our new, externally assured study highlights the potential for energy savings of 40% and for 50% of CO<sub>2</sub>e emissions to be avoided in comminution, the most energy intensive stage of mining processes,' she said.

'By adopting a systems-based approach to technology collaborations, we can help the mining industry scale up and clean up at the same time.'

The full results are published [here](#):

Circuit	Energy Consumption per Year (MWh)	Grinding Media Consumption per Year (t)	Total carbon emissions (tCO <sub>2</sub> e)
SABC circuit	345,480	13,170	175,060
2C HPGR BM	243,354	6,780	117,618
2C HPGR VSM	213,229	1,062	91,934
2C HPGR VSM and CPF	198,171	911	85,269
Emission factors (*)	419.8kgCO <sub>2</sub> e/MWh	2.28tCO <sub>2</sub> e/t	
Avoided energy, grinding media and emissions from baseline SABC circuit			
Circuit	Energy Consumption per Year (MWh)	Grinding Media Consumption per Year (t)	Total carbon emissions (tCO <sub>2</sub> e)
2C HPGR BM	102,126	6,390	57,442
2C HPGR VSM	132,251	12,108	83,126
2C HPGR VSM and CPF	147,309	12,259	89,791

(\*) The energy emission factor applied is from the International Energy Agency (IEA, 2022) for Chile's grid electricity in 2020. The calculations assume that the mining circuits are powered by grid electricity. Chile was chosen because more copper is mined there (27%) than any other single country. Whilst the energy and grinding media values will not change, situating the configuration in other regions or in other years may have a significant effect on the associated carbon emissions. The emission factor for the grinding media is a relatively conservative value, found in a couple of publicly available reports cited by Weir. <https://www.nclb.nclb.nclb.com/operations/2014/12/13/13> <https://www.nclb.nclb.nclb.com/operations/2014/12/13/13>

## Transformational technologies

Comminution equipment doesn't operate in a vacuum – it's part of a wider and deeply interlinked mineral processing plant where the comminution circuit's overall performance significantly influences mineral recovery.

Therefore, a holistic review of the overall circuit – from rock to recovery – is required.

These circuits are prone to increased feed variability, which requires the right combination of size reduction and classification equipment to minimise the fluctuation in product quality, as this enables greater efficiencies in the recovery circuit, explains



Bjorn Dierx, Weir Minerals Global Product Manager Enduron® HPGR and Vertical Stirred Mills.

'Enduron HPGRs can adapt to changing feeding conditions instantly because the roll speed and grinding force can be changed while in operation; as a result, the most effective, minimal stress-intensity force is applied to the particles to ensure they break at the given throughput rate,' he said.

The STM mill has a vertical mill chamber, with grinding rotors (discs with castellations) installed on the central mill shaft. The mill feed is a slurry, pumped through the bottom of the mill and discharging from top. The mill chamber is filled with ceramic grinding media to approximately 60% of its volume.

The grinding media bed moves only in the horizontal plane, which ensures energy isn't wasted. The vertical mill arrangement, combined with bottom feed entry and top discharge, ensures coarse particles don't short-circuit the mill.

'The grinding circuit that delivers the highest recovery and the lowest possible energy consumption is achieved by combining these two proven technologies. The Enduron HPGR prepares the feed for the two-stage STM vertical stirred mill grinding concept,' Dierx said.

'This grinding circuit is followed by Eriez's HydroFloat CPF technology, which allows the use of a coarser, rougher grind size, delivering the operator additional reductions in grinding energy-requirements.'

The recovery or efficiency of conventional flotation is strongly related to the particle size of the ore.

'Eriez's HydroFloat CPF represents a major step forward in terms of recovery, by extending flotation efficiency over a size range that is two to three times greater than conventional flotation machines' limit,' Dierx said. **AMR**



# TRAIN BOTH ONLINE OR FACE TO FACE WITH AN ACCREDITED AND EXPERIENCED TRAINING PROVIDER.

**A**dept Training is a Nationally Accredited college and delivers comprehensive, flexible training in drugs of abuse (urine, saliva and alcohol breathalyser) right across Australia.

Adept Training has been a Registered Training Organisation (RTO) for over 20 years and has successfully delivered training to hundreds of Australian businesses.

Our Nationally Accredited drug and alcohol trainers are qualified pathology collectors with Cert IV TAE and experience testing for drugs of abuse.

This Nationally Accredited unit of competency provides insight into the various requirements of collection of bodily fluids under the Australian Standards, the preparation of equipment, specimen collection methods via urine and/or oral and breath testing as well as specific chain of custody requirements. Training includes education on types and effects of drugs, privacy and

confidentiality of clients undergoing testing and dedication to accurate data collection and documentation.

This interactive course ensures that every participant is trained to the Australian Standards as an "accredited collector": AS/NZS4308:2008 for the collection of urine and AS/NZS4760:2019 for the collection of oral fluids or alcohol breathalyser.

Adept Training director Felicity Berriman said the RTO was proud to be Australian owned and operated since its inception in 2002.

"As a team, our passion is the health and medical fields and we have a wonderful team of trainers who are all industry experienced and who provide exceptional quality and professional training and assessment service to our students" she said.

We work with local drug and alcohol



testing laboratories and use test kits that are compliant with the Australian testing requirements.

"Our organisation also works closely with pathology and drug testing laboratories as well as individual organisations to maintain their workplace compliance and WHS standards".

Adept Training can customise training programs for anywhere between five to fifty people and offers quality education in a positive, supportive and welcoming

environment – either face to face at our college in Harris Park, online or on-site at the client's place of work.

Adept Training is dedicated to providing ongoing skills and knowledge to support the health and medical industries in their demand for well trained and job ready candidates to service these industries.

**Contact Adept Training to book your drug and alcohol training course now at [www.adepttraining.com.au](http://www.adepttraining.com.au) or call 1300 366 044. AMR**

## Accredited Drug & Alcohol Training

**Adept Training** is proud to be an Australian-owned healthcare training organisation with over 20 years' experience delivering training across a variety of sectors.

We provide Nationally Accredited products to all industries including the Australian mining and resources sector.

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# WORKPLACE SAFETY: DRUG & ALCOHOL TESTING SOLUTIONS

With more people being prescribed medicinal cannabis, Integrity Sampling can help ensure your employees are fit for work

For a complete solution to workplace drug and alcohol management needs, that includes program and policy development, drug testing, alcohol testing and education, Integrity Sampling is the Australian provider you can rely on to help with any drug and alcohol challenges your mine site may be facing.

Integrity Sampling's focus since 2001 has been on workplace drug and alcohol testing and management. Our experience means providing the most effective and inexpensive solution for your needs, which includes having transparent pricing and providing a total service solution of drug and alcohol testing, policy and procedure development and education.

One of the most common queries we re-

ceive from clients is how we can help them effectively manage medicinal cannabis in the workplace, given it is becoming increasingly more popular as a treatment for health issues.

There is indeed a place for medicinal cannabis with studies showing it assists in pain management and serious medical conditions, however there are regulations that must be adhered to such as approval from the Commonwealth TGA for the prescriber.

In the workplace, safety is of the utmost importance so while medicinal cannabis is legal if taken as a prescription, it does not lessen the safety concerns of employers, as consuming the product can impact one's ability to safely perform their job.

With medicinal cannabis and recreational-use cannabis a hot topic, this in particular also raises a unique challenge for the FIFO lifestyle with downtime and recreational drug use, whilst employers face the question of how they can manage workers' downtime effectively and encourage maintaining a drug-free workplace.

Our clients have been able to successfully manage and keep safety standards to the highest level thanks to comprehensive solutions supplied by Integrity Sampling, where we assist with conducting workplace drug testing, ensure testing accuracy and provide programs that are effective, fast and unobtrusive.

Providing education to management and

employees about cannabis use, both medicinal and recreational, is an essential component of any robust management program, and Integrity Sampling's consultants also help develop and present education to employees, contractors and other stakeholders.

Our tailored solutions of drug management will ensure health and wellbeing initiatives are designed specifically for your company to promote safety and productivity amongst workers.

**For more information about working together with Integrity Sampling to test, inform and educate your employees, visit online at [www.integritysampling.com.au](http://www.integritysampling.com.au)**

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## IF WORKPLACE SAFETY IS IMPORTANT TO YOU, IMPLEMENT DRUG & ALCOHOL TESTING WITH INTEGRITY

**Integrity Sampling is Australia & New Zealand's leading workplace drug and alcohol testing provider with geographical coverage across all states and territories.**

**WE CAN HELP YOUR BUSINESS WITH ALL ASPECTS OF WORKPLACE DRUG & ALCOHOL MANAGEMENT, INCLUDING:**

- Developing, Implementing A Drug & Alcohol Management Program
- Developing Policies & Procedures Related To Drugs & Alcohol
- Conducting Workplace Drug & Alcohol Testing – Random, Post Incident & Reasonable Cause
- 24 Hours, 7 Days A Week, 365 Days A Year Call Out Service
- Providing Education And Awareness For Employees

**HELPING HUNDREDS OF BUSINESSES WITH WORKPLACE DRUG & ALCOHOL MANAGEMENT SERVICES SINCE 2001**

- Workplace Drug Testing
- Workplace Alcohol Testing
- Drug & Alcohol Management
- Workplace Education
- Advice On Professional Rehabilitation Services

**HIGH CONFIDENCE INDICATES HIGH ACCURACY**

Integrity Sampling services all sectors where safety is a priority including mining, power generation, shipping, water transport, transportation, waste management, construction, agriculture & manufacturing

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**Integrity**  
testing with integrity



# CMI RESTRAINED MK II UPGRADE NEW STAINLESS-STEEL RESTRAINED MK II SERIES



**C**MI Electrical products are an Australian manufacturer of mining couplers and receptacles, under the Minto Industrial Products banner.

Minto a market leader, particularly within underground mining, our reputation is not only throughout Australia, but is now global with exports to mining installations in Indonesia, Papua New Guinea, China, South Africa and Mongolia to name a few.

CMI latest development is an improvement and major upgrade for the popular "Restrained" Range of couplers.

The Restrained couplers works in the

range of 300 & 425 Amps for 660, 1100 or 3300 Volts.

Now designed with Stainless-Steel castings for improved strength and reduced weight over the previous bronze castings.

Coupled with the newly redesigned Stainless-Steel interior cradle, which holds the teflon insulators and the socket & thimble arrangements for connection to reeling and trailing cables.

The result is a more robust coupler with improved maintenance features, safe for use in underground mining.

This product can be used in hard rock

mining and tunnel applications as well and has an explosion protected certification making it extremely suitable for use in underground mining applications. The new low-profile exterior design maintains greater strength and durability with an ingress protection of IP68.

The new Stainless-Steel interior replaces the existing Dough Mould Compound (DMC) material.

The Teflon insulators and the two-piece Stainless Steel cradle being far more durable, reliable and reduces the overall weight of the coupler.

The Stainless-Steel interior allows for

easier access to sockets with a two-piece design capturing the teflon insulators for ease of removal and replacement.

**For more information on this product, you can get in touch with CMI on 1800 264 222, or go to their website at <https://www.cmielectrical.com.au>**

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## Specialists in Electrical Cable & Mining Connectors

### Expertise and Precision is our purpose.

CMI Electrical Products are specialists in the manufacture and distribution of electrical cables and associated components for industrial, mining, infrastructure, commercial, petrochemical and information technology applications throughout South East Asia and Oceania.

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32 Duntroon Street,  
Brendale QLD 4500  
[southqldsales@cmielectrical.com.au](mailto:southqldsales@cmielectrical.com.au)

**CMI VIC**  
(03) 9532 1233  
3 Dissik Street,  
Cheltenham VIC 3192  
[vicsales@cmielectrical.com.au](mailto:vicsales@cmielectrical.com.au)

**CMI Head Office NSW**  
(02) 9807 6155  
F3 3-29 Birnie Avenue,  
Lidcombe NSW 2141  
[nswsales@cmielectrical.com.au](mailto:nswsales@cmielectrical.com.au)

**CMI QLD-Rockhampton**  
(07) 4921 0978  
Shop 3 at 76 Hollingsworth Street,  
North Rockhampton Qld 4701  
[northqldsales@cmielectrical.com.au](mailto:northqldsales@cmielectrical.com.au)

**CMI WA**  
(08) 9358 1788  
36 Division Street,  
Welshpool WA 6106  
[walesales@cmielectrical.com.au](mailto:walesales@cmielectrical.com.au)

**1800 264 222**  
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# SCHAEFFLER'S OPTIME CM

Schaeffler's OPTIME Ecosystem is a revolutionary condition monitoring system, designed to transform the landscape of industrial maintenance. Primarily targeting rotating machinery, it is adept at functioning across a diverse range of speeds, from 120 to 5000 rpm, and is also suitable for hazardous environments. The system's foundation lies in its wireless, battery-operated sensors that are remarkably easy to install. After the installation, the data collected by wireless OPTIME sensors is transmitted to a digital service via a gateway. This setup enables continuous monitoring and early detection of potential machine issues, thereby preventing costly unplanned downtimes.

A distinguishing feature of the OPTIME Ecosystem is its user-centric design, making it accessible to a wide range of users, from beginners to experts in the field of maintenance. Its affordability further enhances its appeal, breaking traditional cost barriers associated with advanced monitoring systems. The system's design excellence has not gone unnoticed, garnering it prestigious awards such as the

Red Dot Design Award 2021 and the Industry 4.0 Innovation Award 2020.

The 24/7 monitoring capability of OPTIME offers real-time data and analysis and allows maintenance technicians to tackle emerging issues promptly. This is a key factor in saving time and resources.

An integral component of the system is the OPTIME ExpertViewer digital service. This service is compatible with OPTIME and "OPTIME-ready" data, including data from Schaeffler SmartCheck and Schaeffler ProLink. ProLink, like SmartCheck, is part of Schaeffler's range of innovative monitoring tools, designed to work seamlessly with OPTIME. This compatibility ensures a comprehensive approach to condition monitoring, allowing users to leverage the strengths of different Schaeffler products in a unified manner. Additionally, the OPTIME C1 wireless automatic lubricator and the integrated digital lubrication management ensure optimal machine performance by continuously monitoring lubricator devices, alerting maintenance teams to critical lubricant levels and enabling



ProLink processor modules, vibration modules and I/O modules (input-output-modules).

OPTIME-Gateway

OPTIME-Ecosystem

remote adjustments, further enhancing operational efficiency.

Furthermore, OPTIME forms a key part of Schaeffler's broader Lifetime Solutions suite, offering an extensive approach to machine lifecycle management. This suite combines monitoring, analysis, and maintenance support into a cohesive package, addressing various industrial maintenance needs.

Schaeffler's OPTIME is a groundbreaking development in condition-based monitoring.

Its amalgamation of cutting-edge technology, ease of use, cost-effectiveness, and integration with a broader suite of tools, including ProLink, positions it as an indispensable asset in modern industrial maintenance. By implementing OPTIME, industries are poised to significantly improve their maintenance processes, resulting in enhanced efficiency, minimised downtime, and substantial cost savings. The OPTIME Ecosystem exemplifies Schaeffler's commitment to driving innovation and excellence in industrial maintenance solutions. **AMR**



We pioneer motion

## Condition monitoring made easy OPTIME Ecosystem



### OPTIME

streamlines operational efficiency through integrated software solutions, enhancing productivity, data analytics, and user engagement across various industries.



[medias.schaeffler.com.au/en/monitor/optime-ecosystem](https://medias.schaeffler.com.au/en/monitor/optime-ecosystem)

**SCHAEFFLER**

# Exactly What You Need

# When You Need It

**F**ield Machine Tools is Australia's largest stockist of specialist onsite machining and portable maintenance equipment.

We offer for hire and sale one of the most comprehensive ranges of portable equipment suitable for a large range of applications, materials and specifications.

FMT is a dry hire only company - we never compete against our customers for on-site service work - with conveniently located branches in Queensland, Victoria and Perth.

Maximising equipment up-time is critical to shortening project completion times and increasing bottom line profits.

Removing equipment from the job site to a repair facility can delay project completion and put a damper on profits.

This is where Field Machine Tools can help. FMT has the on-site repair and maintenance machines that will minimise maintenance times and keep equipment working for companies and their customers.

Keeping equipment and plants in top operating condition is a constant challenge for today's mining, oil, gas and power generation contractors.

Our wide range of portable equipment

is available for rent or purchase, Australia-wide from our three branches, and include equipment for machining applications such as Portable Milling Machines, Portable Lathes, Clamshell Pipe Lathes, Flange Facers (OD and ID mount), Line Boring Machines, Vessel Grinding Machines and Pneumatic Magnetic Based Drills.

For welding applications, there are Bore Welding & Cladding Machines and Induction Heat Treatment Equipment.

For valves, there are Valve Test Equipment, Valve Repair Equipment and Portable Valve Actuators and, for heat exchanger, condenser and boiler manufacture, repair and maintenance there are Tube Pulling Systems, Tube Cleaning Systems, Heat Exchanger Tools, Torque Controlled Rolling Motors and Australia's largest stock range of Tube Expanders and consumables.

FMT is the Australian agent for major international brands including:

Climax Portable Machine Tools, an impressive range of highly-sought after industrial equipment designed by a market leading manufacturer for the rugged challenges facing Oil, Gas, Mining, Chemical & Power Generation Industries.

CLIMAX pioneered the portable machining revolution in 1966.

For more than 50 years they have been the innovators and technology leaders in the industry they invented.

They're #1 for a reason!

Modec Motors and Portable Valve Actuators and Modec vane air motors have been used for 30 years as an alternative to traditional electrical motors in many demanding applications.

They supply OEM replacement motors to a wide variety of industries and application-specific motors to customer specification.

This includes a versatile range of Portable Valve Actuators for preventative maintenance of valves, even in the most demanding of environments, and incorporates a reaction device designed to reduce the risk of strain injury to the operator.

Krais Tube & Pipe Tools has been delivering top quality tube tools for over 40 years.

Designed and manufactured by their engineers, the whole process from paper sketch to producing the tools is controlled in-house with one of the biggest and most modern machinery and production line in the EU.

There is a comprehensive range of Condenser, Boiler Tube Expanders, Tube Roll-

ing Motors, Tube Installation Tools, Tube Cutting and Removal Tools, Tube Pulling equipment and Accessories.

Goodway Technologies is a USA-based manufacturer of specialised industrial maintenance products for HVAC, Energy, Manufacturing, Food and Beverage Production markets.

Since 1966, facilities and plant maintenance personal have used their innovative products to maintain HVAC systems, plant machinery, hazardous material clean-up, surface cleaning and other critical maintenance needs.

Established in 1995, Field Machine Tools (FMT) is a privately owned Australian company that provides engineering solutions for field applications to minimise downtime.

The scope of operations is to provide the most complete product lines available to OEM equipment manufacturers, maintenance providers, field service companies, power stations, petro chemical plants, mining industry and other related industries.

Call Field Machine Tools on **1300 FMT FMT** (1300 368 368), email **sales@fmt.com.au**

or visit **www.fmt.com.au** for more information. **AMR**



Field Machine Tools has a range of end prep machines suitable for 12.7mm to 610mm bore mount to face, bevel or counter bore tube and pipe.



Field Machine Tools has rugged and innovative portable flange facers for 19.1mm to 5054mm (0.75 to 199 inch) diameters. Several of the machines can be configured for facing, milling or both.



Field Machine Tools has OD mount flange facers suitable for 0mm to 3050mm (0 to 120 inch) diameters. Several models can handle flat face, raised face, RTJ, tongue and groove, lens ring, Grayloc and compact flanges.



Field Machine Tools has a range of Clamshell Lathes suitable from 33mm to 1676mm OD pipe preparation whether severing, bevelling or counter boring.



# NEW ZERO G FUELLING SYSTEM

REMOVES HEAVY LIFTING FROM REFUELLING HME



The new Zero G Fuelling System developed by Integrated Fuel Services and Solutions (IFSS) is continuing to prove popular at major mining operations across Western Australia.

IFSS's fluid handling system, which takes the heavy lifting out of refuelling heavy mining equipment (HME), has been rolled out at numerous locations across the state following a 12-month design and development period.

IFSS director Jon-Paul Van Loenhout said the response from customers has been overwhelmingly positive with the company receiving multiple orders following the successful deployment of the first Zero G Fuelling System.

"Through word of mouth alone we received multiple orders for the Zero G Fuelling System," Mr Van Loenhout said.

"A lot of the existing systems for refuelling are outdated so we have managed to modernise the process.

"We've designed a system where everything is light weight, creating a safer way to refuel, and helping our clients to achieve their compliance goals.

"I'm quite proud of what the team has been able to achieve," he said.

IFSS, formally known as Integrated Fuel Services which was founded in 2007, re-branded in 2017 when the company shifted its focus to provide a complete range of fuelling services and solutions for its customers.

The fuel solutions company recently completed a major project in Western Australia which involved creating an

800,000-litre storage facility with pipework, fabrication, and design all completed by IFSS.

IFSS has multiple facets to the business structure and continues to grow its operations across the state.

"Our Jandakot facility is the hub for our Design and Fabrication operations, focusing on the general execution of our larger-scale projects, including engineering, manufacturing, and assembly" Mr Van Loenhout said.

"We also have an established supply outlet in Welshpool with a team whose collective knowledge can provide excellent supply and product sourcing support across a vast range of fluid control and storage equipment."

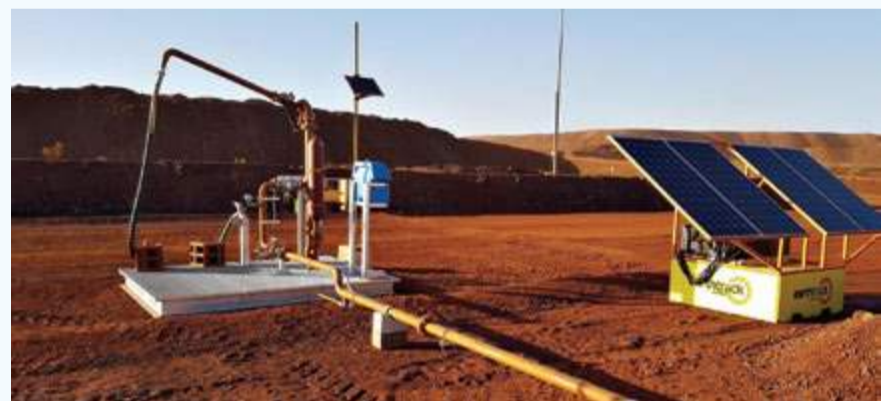
IFSS's main operating base for compliance, services and repair, work is located in Welshpool and has the capabilities to strip, inspect and repair nozzles, pumps, swivels and couplers.

"We have also set up a base in Kalgoorlie to provide a range of services to our key clients in the mining, commercial and wholesale fuel supply markets. We offer programmed maintenance, servicing and a range of compliance support.

Mr Van Loenhout said IFSS's Services, Fabrication and Supply teams would be happy to assist with any supply, services and product handling requirements. **AMR**



## COMPLETE FUEL SERVICES AND SOLUTIONS



**IFSS are a multi-disciplined company who provide Complete Services & Solutions to our clients covering Concept Design, Supply, Installation, Commissioning, Service or ongoing Programmed Maintenance.**

Our clients cover a large range of industries from Petroleum Handling, Mining, Defence, State Government and Councils, Earthmoving, Transport, Marine and General Industry who we supply an extensive range of services and equipment supply throughout Western Australia and beyond.



# WHY CHOOSE MSA M1 SELF CONTAINED BREATHING APPARATUS FOR YOUR PEOPLE?



**W**ith lives on the line, military, fire-fighting operations, and leading mining companies continue to choose the MSA M1 Self Contained Breathing Apparatus (SCBA) to protect their employees.

The latest iteration of the M1 SCBA, which was launched in 2019, has been continuously evolving since 1954 and is MSA's 10th generation SCBA.

MSA's most advanced, ergonomic, and modular SCBA system was designed and developed side by side with fire fighters. As testament MSA M1 has been specified for use in fire agencies globally with the London Fire Brigade commencing their rollout of the M1 SCBA last month.

MSA has now sold nearly 100,000 M1 SCBA

units since 2019, with 21,000 of those units being delivered last year alone.

MSA has rich history developing breathing apparatus solutions and 35 Years ago MSA solved a key SCBA air delivery issue of the time.

Previously, older generation SCBA pressure reducers delivered only 250 litres of air per minute, mainly due to manufacturers ignorance about physiological demands, and this left some end users not receiving enough air.

MSA has solved that issue and determined that the reason humans require air delivery capability of 300 litres per minute (LPM) from a breathing apparatus is due to natural physiological demands.

After MSA solved the air flow capacity

requirement, they switched their focus to concentrate on the other aspects of SCBA design such as twin cylinder capability, quickfill, hygiene, ergonomics, telemetry, cost of ownership, communications, better flame-retardant materials, weight reduction, and safety standards especially aspects that helped people breathe more easily or improved their capacity to do their job safer and more effectively.

MSA responded to a new emphasis globally on hygiene which has resulted in a more disciplined approach to the cleaning and sanitizing of all equipment.

As such, the M1 SCBA is by far the easiest SCBA MSA has ever manufactured to clean and disinfect, with no difficult to reach spots.

Particular attention has also been applied

to ergonomics, with MSA designing the M1 SCBA so that the weight is carried with the waist/hip to support even distribution.

MSA also always applies a strict approach to all relevant safety standards.

As such, the M1 does not just meet all required standards (EN137 and AS/NZS 1716), it exceeds them.

To list one example, the M1 is capable of operating within a temperature range from -40 degrees C to +60 degrees C, with the standard only requiring -30 degrees C.

It's MSA's singular focus on safety that allows the company to continue to produce high quality, market-leading products and continue to be the largest safety manufacturer in the world. **AMR**



*The Safety Company*

## EQUIPMENT THAT MAKES MAINTENANCE EASY AND RELIABLE

- ✓ Reduced maintenance costs due to extended service intervals
- ✓ Simplified disassembly and assembly of components
- ✓ Easy to upgrade and service without special tools
- ✓ All components for longer life with 10-year warranty



# ROXSET PROVIDING CUSTOMISED FLOORING FOR THE MINING INDUSTRY

After being founded over 30 years ago to resolve production flooring issues, Roxset continues to pioneer a range of innovative solutions to address flooring integrity, employee safety and workplace practices.

With its large in-house team and refined installation process, Roxset offer a 24x7 service throughout Australia, including remote locations.

From its large modern factory facilities incorporating a diverse fleet of trucks — ranging from small utes to HD semi-trailers — Roxset can provide customised tailored flooring to large, small and regional clients.

Roxset services a range of industries including food processing, pharmaceutical, industrial and mining, wineries and hospitality and clubs.

Roxset aims to provide a custom-tailored solution to suit all requirements and has developed a range of unique epoxy flooring and wall solutions called ROXSET SE to meet HACCP, BRC and AQIS Compliance.

The Roxset WS Super Bonding Agent allows for the bonding of cementitious screeds and provides superior bonding and ultimate strength while their expansion joints are made from pourable grade epoxy and provide a flexible result. Roxset's flooring systems have a graded finish

to waste outlets, ensuring liquid is correctly and efficiently drained.

Their flooring covering technology is unique in that it connects walls and floors to create a seamless 'One Surface' solution. By using wall to floor covering, excess waste liquid can be dispersed quickly, avoiding the effect of harmful bacteria growth.

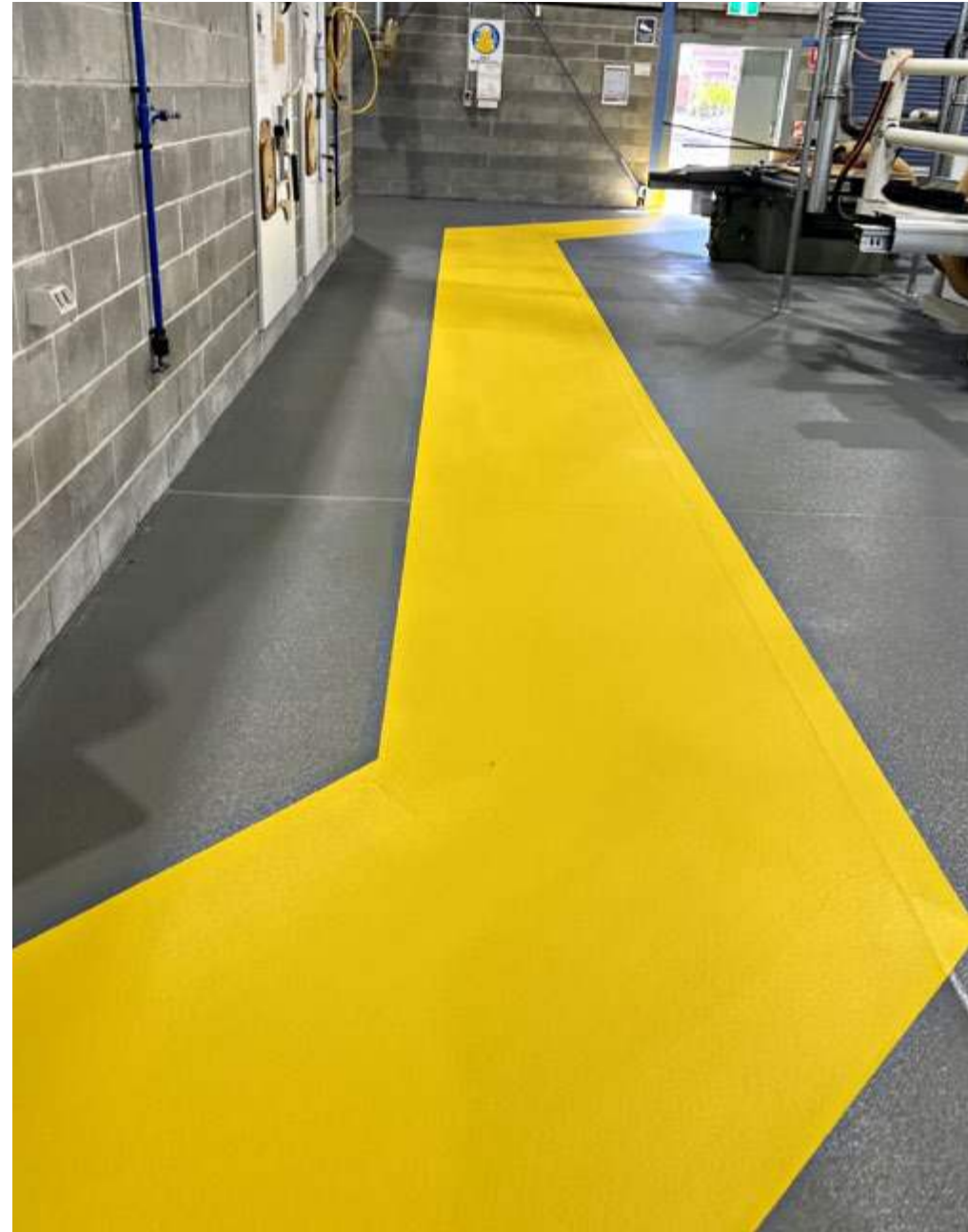
### Flooring Solutions In Mining

As they are typically in remote exposed areas that are prone to heat, cold and dust, mining and industrial flooring can often face extreme challenges.

Roxset SE Flooring solutions for industrial and mining applications can withstand a broad range of impact abrasive conditions whether in heavy vehicle workshops, mess halls, kitchens and amenities. Recently, global mining giant Rio Tinto turned to Roxset to provide a long-term fail-safe solution for its vehicle maintenance area.

The Roxset SE heavy-duty epoxy mortar system was installed at 6mm, with minimum downtime and provides a shrink free, highly chemical resistant coating which has excellent thermal and impact resistance.

To find out more, visit <https://roxset.com.au/> or call 1800 769 738.



## Health & Safety Flooring

### Multi purpose Flooring applications for the Mining Industry

Mining & industrial facilities can often face extreme challenges as they are typically in remote exposed areas that are prone to heat, cold, dust as well as constant wear and tear with large teams running 24/7 operations while living on-site.

Roxset offer a unique range of flooring solutions specifically designed for hard wearing industrial usage.

Our flooring applications can stand a broad range of impact and abrasive conditions, have a high chemical resistance, are non-slip, durable and long lasting.

Durable, Hard Wearing & Impact Resistant



[roxset.com.au](https://roxset.com.au)

1800 769 738



### The Roxset Difference

- Ability to service remote areas
- Fast Installation 24/7
- 30rs Experienced Crew
- Tested Certified Product
- 15+ yr warranty



### Key Areas:

- Vehicle Workshops
- Canteen Areas
- Kitchens / Wet Mess
- Amenities & Wash Bays
- Change / Locker Rooms
- Corridors & Walkways

**Roxset**  
HEALTH & SAFETY FLOORING

# Keeping Mines Cool

Gordon Brothers | engineering peace of mind since 1917.

It is well known that there are a number of safety issues in regards to underground mining in Australia and around the world.

One of the hottest topics associated with this form of mining is the high risk of heat illness which can lead to a loss of productivity, health issues and high worker turnover rates.

Auto compression, strata heat, water, people, explosives, oxidation, compressed air equipment, electric and diesel machinery are all heat load sources in underground mining that can result in operating temperature conditions well above safe working limits.

Often excessive heat load problems can be controlled through various ventilation

techniques — but if the heat loads are too high and safe working limits are exceeded, then the only means of maintaining acceptable working temperatures is through correct application of refrigeration.

Most mines in Australia make use of Bulk Air Cooling (BAC) prior to entry of the mine's air intakes.

This method is ideal where most of the air cooled will be utilised and has the advantage of all maintenance activities on the refrigeration system being surface based.

If the mine is very deep, or only a small proportion of the air chilled on the surface is of benefit, then other forms of cooling may be considered.

There are two main refrigeration systems

that can provide the refrigeration required by the bulk air coolers; vapour compression systems and absorption systems.

Vapour compression refrigeration systems are the most common refrigeration system for the mining sector offering high COP's (coefficient of performance), flexibility, and versatility; refrigerant vapour is compressed, condensed, expanded, and then evaporated in a continuous cycle.

Absorption refrigeration systems are similar to vapour compression systems except that, instead of a refrigerant passing through a compressor, it passes through a generator, an absorber, and an absorbent pump.

The primary advantage of absorption systems is they can be driven by waste heat

or low cost forms of heat, which supply the energy for the internal chemical reactions to take place instead of electrical power.

The waste heat required can be obtained from a variety of sources such as exhaust heat generated from gas and diesel power station exhausts and jacketing, and via the burning of coal seam methane.

Through the installation of bulk air cooling equipment utilising vapour compression and absorption refrigeration systems, it is possible to provide the required cooling to maintain safe working temperatures for employees, maintain or increase production, and take a mine to new depths. **AMR**

Readers who would like to know more about industrial refrigeration can visit [www.gordonbrothers.com.au](http://www.gordonbrothers.com.au)



## DETAILS

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gordon

## Gordon Brothers Industries

Leaders in Industrial Refrigeration and Mine Cooling Solutions



Our Mine Cooling solutions are custom designed, supplied, installed, commissioned and we can provide ongoing service support by our expert team located across Australia.

With Australia's largest team of engineers, technicians and project managers, Gordon Brothers has the expertise to look after all your cooling needs, from mine cooling to food processing.

To ensure we always have the parts you need, we stock Australia's biggest range of spare parts and lubricants.

# UNLOCKING SEAMLESS CONTROL SOLUTIONS: TELEMATION AT YOUR SERVICE



In the intricate world of modern industry, where machinery and technology work hand-in-hand, achieving operational harmony can be as challenging as navigating a complex maze.

At Telemation, we've made it our mission to simplify this journey, offering tailored solutions that seamlessly integrate diverse systems. With over 50 years of industry expertise and strong partnerships with leading companies like Tele Radio Remote Controls, EPEC Electronic Control Units, Inxpect Radar, Cross Control HMI's, Trombetta power management, Blink Marine CAN bus Keypads, and Kvaser advanced CAN solutions, we are your trusted guides in crafting custom control solutions for a wide spectrum of industries.

### One Cloud, One Format

Picture the convenience of overseeing your entire fleet, consisting of various brands and equipment types, all from a

single, user-friendly interface. Telemation transforms your asset management into a streamlined, intuitive experience.

This not only saves valuable time but significantly boosts productivity by eliminating the complexity of navigating multiple platforms and data formats.

### Total In-House Solutions

Beyond system integration, our expertise shines with HYDRASET, purpose-built for water trucks. This advanced automation and control solution redefines ease of operation while ensuring peak performance. Features include pump and PTO protection, water cannon operation, telemetry and more.

Our control software is highly adaptable, offering configurable interlocks, alarms, and alerts for preventive maintenance and operational safety. This system effortlessly integrates virtually any sensor, serving as a

diagnostic tool, enhancing safety, and preventing damage.

### Streamlined Light Tower Management

Managing light towers is simple and effective with our cutting-edge solutions. Our systems simplify operations, boost productivity, and enhance safety. The software features customisable alarms and alerts for proactive maintenance and secure operations. The versatile hardware accommodates extra sensors for advanced diagnostics, safety measures, and theft prevention.

Stay informed with alerts for low engine oil or fuel, and proactively respond to high winds with an inclinometer for safe retraction.

### Join the IoT Revolution with TotalEye

TotalEye, Telemation's advanced monitoring solution, delivers real-time insights and reporting, empowering confident de-

cision-making. It enables precise monitoring, measurement, collation, and reporting of critical data when and where you need it. TotalEye seamlessly integrates sensors, machine logs, and user input data, facilitating remote machine control, analysis and cloud-based management. This solution enhances operational efficiency, supports strategic analytics and ensures seamless machine-to-machine communication.

Telemation isn't merely about control systems; we craft unified solutions that empower your business across a multitude of industries, including mining, trucks, forestry, manufacturing, ports, marine and more.

Partner with us, and embark on a journey of operational excellence and innovation. Explore the boundless possibilities that await with Telemation. Your future of streamlined control and unrivalled productivity begins here. **AMR**



## Pioneering the Future of Automation

TotalEye IoT Solutions for Enhanced Operations, Real-time Analytics, and Data-Driven Success.



Learn more at [telemation.com](http://telemation.com)



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# EVERYTHING YOU NEED TO KEEP IT TOGETHER

*United Fasteners has released their updated product catalogue packed with everything you need to keep it together.*



**U**nited Fasteners' latest catalogue provides a simplified approach to their huge product range. Featuring a diverse selection of bolts, nuts, screws, construction & anchoring, industrial supplies, and other essential components, this catalogue caters to the increasing diversity of applications in industries such as construction, manufacturing, automotive, and more.

of the catalogue, accessible on its website. This digital format allows customers to browse the extensive product range conveniently, access detailed specifications, and make product enquiries directly on-line, streamlining the procurement process.

United Fasteners has prioritised user experience in the design of the new catalogue. The intuitive layout and detailed product descriptions make it easier for customers to find the right solutions for their specific needs. Additionally, the catalogue features a comprehensive index and cross-referencing system for quick and efficient navigation.

United Fasteners have a wide range of technical resources available to download for free on their website. From conversion charts, assembly torque guides and much more. **AMR**

Visit <https://www.unitedfasteners.com.au/help-and-resources/product-guides>



In addition to the printed version, United Fasteners offers a digital flipbook version

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# EVERYTHING YOU NEED TO KEEP IT TOGETHER

From surface to underground mining, we supply a wide range of high tensile fasteners, structural bolts, track & plow bolts, abrasives, chemicals, cutting tools and more to ensure machinery used within production and maintenance processes run efficiently.



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# PERFORM BETTER

Since its foundation in Valsamoggia, Italy, in 1957, ITM Group has designed, manufactured and distributed an inclusive range of undercarriage parts and customisable solutions for several industry segments, and the company continues to be ahead of the curb. ITM's global network of engineering technicians assists customers everywhere providing guidance on the most efficient use of undercarriage parts. ITM Mining Pty Ltd, a company of ITM Group, has major support hubs in Yatala, Queensland and Welshpool, West Australia with dedicated stock on hand to easily support the major mining centers throughout both the east and west coast of Australia.

## Continuous innovation

ITM believes in innovation. Through an efficient integrated design system, the ITM team delivers product performance improvements to its existing product range and develops products for new equipment models and applications. The Group has an ongoing research and development program, managed by dedicated engineering teams who use the latest technology to continuously improve and create products tailored to the needs of the industry.

## TRUST ITM™ Undercarriage Monitoring System

ITM has already introduced in the Australian market TRUST ITM™ – Track Advice Undercarriage Smart Technology – an innova-

tive integrated undercarriage monitoring system. Using wireless sensors and IoT technology, it provides key system parameters in real time, such as temperature. This is a strong indicator of a faulty component that can be assessed both in the field and remotely via the cloud-based portal. TRUST ITM™ technology enables mines to proactively prevent failures, improve maintenance planning predictions, reduce unplanned downtime and increase overall productivity. In particular, when applied to shovels, the embedded sensors significantly reduce tramming time by up to 50%. Real-time data extracted from these sensors keeps operators informed of temperature status and alerts them when critical parameters are reached. This eliminates the need for manual temperature checks in the field. In addition, this technology dramatically increases safety levels by reducing the risks associated with working live around the undercarriage.

## The new ITM Monoblock generation

In 2009 ITM produced its first monobloc for the OEM market for large dock cranes and other special applications, bucket wheeled excavators, bridge conveyors, large crushers. Over the years ITM has introduced monoblocks for large hydraulic and electric mining excavators and many advancements in its capabilities: increased casting capacity, new furnaces, refined our

steel, introduced automatic machining and induction hardening, acquired the software licenses for casting and heat treatment simulation and much more. Working together with its customers and collecting feedback directly from end users on the field, ITM improved products and services, achieving excellence results and developing a new range of monoblocks with specific features:

- **Maximum structural resistance:** produced with special cast steel according to ITM propriety material composition, mass heat treated to achieve the maximum structural life possible.
- **Maximum reliability:** fully interchangeable with all original equipment at lowest level for maximum reliability and serviceability for minimum machine downtime.
- **Extended wear life:** load roller contact area, central guide tooth and pin connection areas are all induction hardened to optimize wear performances.

ITM monoblocks are manufactured at Pyrsa, the ITM casting plant in Spain (located in Monreal Del Campo, Teruel). Pyrsa is a center of excellence for mining products. All parts produced at Pyrsa are made from "green steel", which is recycled steel used to create undercarriage components.

# ROCKBREAKING WITH

# Rammer®

**RAMMER**  
3288E

Choosing the right tool for the job might seem an obvious approach for getting the best result but all too often a small mistake can result in a big problem.

When it comes to using the Rammer hydraulic rockbreaker, choosing the correct tool will not only boost efficiency but also prolong the life of the tool.

In order to do so, it helps to understand some basic principles. There are essentially two ways of breaking with a hydraulic rockbreaker, penetrative breaking, also known as cutting, and impact breaking.

Penetrative breaking involves using a chisel tool, or a moil point, which is then forced inside the material. This method is best employed for soft, layered or plastic, low abrasive material.

Additionally, it is important to note that the high impact rate of the smaller rockbreakers makes them ideal for penetrative breaking.

Impact breaking occurs when strong mechanical stress waves are transferred from the tool to the material that is to be broken. This form of breaking is most effective when tackling hard, brittle, and very abrasive materials.

For impact breaking, the high impact energy of the large rockbreakers makes them ideal for impact breaking, with blunt tools achieving the best transfer of energy from the tool to the object. It should also be kept in mind that using the chisel tool will cause the sharp edge to wear quickly.

Jeff Jackson, Sales Manager and Director at Total Rockbreaking Solutions, said there is a very quick and simple principle to remember for selecting the correct tool for a rock breaking application.

"If the material that needs to get broken is still part of Australia (solid land), use the chisel tool and if it is blasted rock that needs to be broken into smaller rocks, use the blunt tool," Mr Jackson said.

Expanding on this principle, Mr Jackson said he has seen a few common operator errors that could have easily been avoided.

The first results when operators attempt to use the tool as a lever, like a crowbar.

This essentially occurs when operators strike into concrete or hard ground and then pry with the tool at the same time.

The impact of using the tool as a lever can result in it bending or breaking, which can easily be avoided by stopping when resistance is felt.

Similarly, the rockbreaker tool should not be used for moving rocks as this function can be effectively performed by the stone claw tool.

The second common mistake Mr Jackson has seen over his more than 10 years with Total Rockbreaking Solutions occurs when operators do not use the rock breaking tool at the correct angle.

The tool should be used at a 90-degree angle with the surface of the material to be broken.

If the operator notices that the angle has changed following im-





fact, the operator should correct the angle, returning it to 90 degrees, before recommencing the breaking operations.

Moving away from the optimal 90-degree angle and continuing to operate the tool can result in damage to the tool, including wearing out bushings faster.

A third key error Mr Jackson has seen from operators is using the tool for extended cycle times, such as striking in one place for more than 15 seconds at a time.

Hitting one spot for an extended can cause dust to build up under the tool which can dampen the impact effect and result in excessive heat.

If the object does not break, or the tool does not penetrate the material, the operator should stop the rockbreaker and change the position of the tool.

And, to further prolong the life of your rockbreaking machinery, regular maintenance and proper storage are vital.

**Visual inspections & greasing practices**  
Preventing unnecessary downtime through proper rockbreaker maintenance and service schedules is critical in mining applications. Rammer is committed to helping operators work safer and more productively, whilst keeping their rockbreakers in optimal condition.

Greasing, particularly keeping the tool shank well-greased during operation, is a highly recommended maintenance strategy. The right amount of grease depends on rockbreaker size, application, working cycles, wear rate of the tool shank and bushings, condition of the tool seal, and quality of the grease used.

The rockbreaker tool should be checked every two hours to ensure it is sufficiently greased, including the automatic grease

cartridge. Operators should monitor hydraulic oil temperature, and ensure all lines and connections are secure.

The mounting hardware on the rockbreaker and carrier should be checked and tightened if required.

Every 50 hours or at least once a month, the tool shank and bushings should be inspected for wear. If the grease grooves on the tool bushing are worn, the bushing must be replaced.

Hydraulic hoses should be regularly checked and replaced if necessary, and that the rockbreaker moves normally inside the housing, and vibration dampening elements such as pads and buffers are in good condition. The condition of wear pads and internal housing wear also require inspection.

It is also advised that operators avoid using a rockbreaker with the tool submerged underwater unless previously setup for such an application.

Regular visual inspections of the rockbreaker and its components are essential.

**Short & long-term storage**  
To protect the rockbreaker when not in use, the tool should be removed and the rockbreaker itself stored in a vertical position. The lower end of the piston tool and tool bushings can be protected with grease.

Connections should be sealed with clean plugs to prevent oil leakage and dirt from getting into the couplings. It is also important that the rockbreaker is appropriately secured to prevent it from falling.

**Preventative maintenance**  
The integration of Rammer's world-first RD3 hydraulic rockbreaker monitoring technology is an effective method for op-

## UNRIVALLED PERFORMANCE

For over 40 years, Rammer rockbreakers have proven the reliable solution for the toughest mining, quarrying and demolition applications. The company knows that getting the most out of your rockbreakers comes down to more than just the right product. It requires an in-depth knowledge of the science behind the product, its materials and components, which all combine to maximise service life.

Featuring advanced hydraulics, quality materials, and excellent power-to-weight ratio, Rammer rockbreakers have gained a reputation for safety and reliability, particularly in hard and abrasive Australian environments.

Their flagship rockbreakers and hydraulic booms are purpose-built to work safely and efficiently. From major excavation and clearing works, to the effortless breaking of hard rock, concrete, reinforced structures, asphalt surfaces, or even frozen ground, Rammer rockbreakers are designed for power and productivity in the most challenging conditions.

erators to remotely monitor rockbreaker usage and prevent premature failure. It provides operators with detailed information in real-time via the cloud based SAM platform, allowing them to manage service periods and minimise machinery downtime by scheduling maintenance during times that have minimal impact on production.

Product Line Lifecycle Manager for Rammer Rockbreakers, Esa Sjöberg says it's no surprise that their large rockbreaker range is a reliable choice for miners due to the robust components and high-quality steel used, which offer extra durability throughout the breaker lifecycle.

"Despite our innovative manufacturing processes and high-quality materials,

maximising rockbreaking effectiveness relies on correct working methods and maintenance that not only improve productivity, but help operators increase their equipment service life. That's why our team is dedicated to educating operators on how to achieve the most from their rockbreakers."

**For more information, or to locate your nearest dealer, visit**  
[www.rammer.com](http://www.rammer.com)

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Rammer authorised dealer network in Australia

- VIC/SA/TAS: [Walkers Hammers](#)
- NSW: [Groundtec](#)
- QLD, NT, PNG: [QLD Rock Breakers](#)
- WA: [Total Rockbreaking Solutions](#)



**Maximised productivity**  
Rammer's patented Fixed Blow Energy operating principle ensures that every impact – from first to last – is at maximum power, regardless of oil flow or frequency.

## SMART ROCKBREAKER TECHNOLOGY

Featuring advanced hydraulics, unique operating principles, quality materials and excellent power-to-weight-ratio, Rammer rockbreakers have gained a reputation for safety and reliability, particularly in hard and abrasive Australian environments.

The Rammer rockbreakers feature a built-in pressure adjusting valve, which guarantees every blow is delivered with maximum power, while an optimised piston design

transfers the maximum energy to every blow for greater productivity in all applications.

Robust components and high-quality steel, provide Rammer rockbreakers with extra durability throughout their lifecycle. This is further enhanced by a wear resistant lower boot and heavy-duty housing option, as well as membrane type accumulator that eliminates gas leakage during operations, and subsequently the need to recharge on site.

### Advantages of innovative technology:

- reduced breaking times
- real-time data on operation
- protection against premature failure
- longer tool life
- simplified maintenance
- reduced downtime
- lower cost per tonne of material broken



Scan for the authorised Rammer dealer locations in Australia:  
QLD | NSW | VIC | SA | WA | NT | TAS  
or visit [rammer.com](http://rammer.com)



Aussie 6" MQ600TD is a self primer, making it simple to set up and easy to use.

# AUSSIE MINERS



Aussie's GMP Mud Pumps now come with stainless steel impellers for longevity in abrasive applications.

## DRIVE PUMP EVOLUTION - GET THE COMPETITIVE EDGE

**T**he growth of Australian Pump Industries (Aussie Pumps) is largely a result of support from Australia's mining industry, this did not happen by accident. This family-owned company has a philosophy of working with Australia's key industries to build products that work well.

"We know what moves the Australian economy," says Aussie Pumps Chief Engineer John Hales. "The majority of the population know that Australia mines material, without understanding the work involved, the conditions and the safety issues faced by the industry. They are in fact blind to the chief contributor the country's affluence."

### EDUCATING AUSSIE PUMPS

Our job is educating ourselves, being students of the market. We want to understand how we can make life easier, safer, and of course bring improved productivity to the industry. Australia's mines need to be efficient to succeed in an increasingly competitive environment.

Globally, the mining industry needs to develop up to 140 new copper mines, 60 new nickel mines, 50 new lithium mines and 17 new cobalt mines. These minerals are vital for a decarbonized future!

### DEALING WITH CLIMATE CHANGE

The most obvious manifestation of the effects of Climate Change is of course, the weather.

It is becoming more erratic, in many cases more savage. Fires, floods, cyclones and even droughts all impact on the mining industry.

Australian Pump is working on solutions to alleviate the problems. Their basic approach is to develop products to handle the rigors of the industry and to minimise the effects of climate on man and machines.

### AUSSIES DROUGHT BUSTER RANGE

The company started out making 2" trash pumps for hire companies. They quickly

gravitated to bigger machines up to 4" and more recently, big 6" pumps.

"Our big 6" MQ600TD, the star of the show, is powered by an 80hp air cooled Deutz diesel engine," said Hales. The big pump delivers 6000 lpm, will handle up to 3" solids in suspension, and has a maximum head of 47.6m.

"It's a mighty beast," said Hales. "Imagine 3 of those side by side emptying a flooded mine. They'd be pumping out over a million litres per hour."

### SIMPLE IS BEST

The company learnt from building trash pumps for construction and quarry applications, that the fundamentals for mining industry gear are the same. The product needs to be simple, with as few components as possible, and of the highest quality. It also needs to be designed to cope with the huge range of liquids being pumped.

The features of the trash pump range are

quite extraordinary. A huge clean out port, built into the front of the bowl, enables it to be cleared of any debris that may get through the suction strainer.

The pump itself is one big cast iron monster, with a gigantic water tank built into the pump body. It's the pump body that enables the MQ600TD to draw water through a vertical lift of 7.6m.

The designers elected to use a titanium tungsten carbide seal mounted in an isolated oil bath, protected from the pumped medium.

The drive shaft from the engine clutch to the impeller is a mighty piece of 316 stainless steel, specifically over engineered by necessity.

The big machines can be mounted onto trailers or skid bases.

Mines wanting mobility chose the big 6" pump on a heavy duty site trailer.

"The site trailer is particularly robust,

fitted with big tyres, a tough steel frame, an army style draw bar and hitch point. With products like this, open cut mines and quarries can get back in action fast," said Hales.

**DRILLERS DO THEIR BIT**

Aussie Pumps is not blind to the exceptional contribution made by Australia's exploration drillers.

The work they do, the equipment they use, and their results are extraordinary. Australia's mining industry would be lost without them.

"Drillers started to buy some of our standard cast iron effluent pumps, some years ago," said Hales. "Over a period of years we've learnt, particularly through spare parts sales, what works for drillers and what doesn't," he said.

The result is a brand new range of Mud Pumps that have lifted the bar substantially in terms of a product that is designed specifically for this specific application.

**MUD PUMP MARVELS**

The new Mud Pump range is self priming of course. Who wants a non-self-priming pump on a mud pumping application?

The 2", 3" & 4" pumps offer a range of performances that are designed for specific Mud Pump applications. The 3" pumps delivers flows to a maximum of 1,500 lpm and heads as high as 55 metres. The 4" pump delivers flows to 2,200 lpm and heads to 30 metres.

Originally these pumps were fitted with stainless steel wear plates, and silicon carbide seals. They all feature front clean out ports that enable the pumps to be cleared without disassembly.

"That's a big feature," said Hales. "The pumps are all hydraulic drive and represent really good value for money. The best thing about the latest range is they are now fitted with 316 stainless steel impellers and tungsten carbide seals. That was a huge breakthrough," said Hales.

"We're seeing the industry sit up and take notice, with enquires coming in from all over the world. Drillers are sharing experiences within the close-knit international fraternity."

**FEEL THE STEEL**

Aware of the need to eliminate pump downtime and associated costs, the company is now introducing a range of Mud Pumps made entirely from cast 316 stainless steel.

"The big 4" pump could be available reasonably quickly as we are already building that pump for corrosive liquid applications including some in the food and beverage industry," said Hales.

"The high head 3" pumps are available with 316 stainless steel impellers, but we haven't built them yet with a stainless steel body."

The 3" B3XR-A pump, delivering 1500 lpm, is already on the market in cast 316 stainless steel.

"We know when built in stainless steel the pumps will outlive us," said Hales.

**SAVING SEALS**

Mech seal failures occur when pumps run dry.

"Nobody makes a pump that will run dry for any length of time," said Hales. "Mechanical seals are not designed for dry running!"

We are working now with drillers on ideas on how to come up with a fool proof system, in the form of either an alarm or an automatic shut off, to protect the pump from this misadventure.

"We are giving that everything we've got from a design and collaboration point of view," said Hales.

**Further information on Aussie's unique mining range including, Carver Krogh filtrate pumps, is available from Aussie Pumps [www.aussiepumps.com.au](http://www.aussiepumps.com.au)**

AMR



Aussie's cast iron tanker pump in hydraulic drive is practically maintenance free.



Aussie hydraulic drive pumps are compact and ideal for mobile installations.



# MAJOR MINERS TURN TO COERCO FOR LIQUID MANAGEMENT SOLUTIONS

**M**ining and civil engineers are increasingly turning to COERCO for liquid management solutions for a range of major projects across Australia. COERCO, widely known for manufacturing industry-leading poly tanks, has successfully expanded its capabilities since it was founded more than 30 years ago.

The company can take care of all aspects of liquid management and storage – covering prefabricated and customised solutions for process water, potable water, chemicals and waste systems.

Its broad range of solutions can be divided into three main divisions: contain; float; and, move.

Well-planned liquid storage & distribution is essential for the mining and civil industry. Whether you require a single tank for storing potable water or a more complex system for mixing or processing, COERCO can offer a solution.

COERCO can provide specialised pump support systems for tailings, decant and process water operations, including pontoons, strainers and intakes, pipe/cable float systems, floating walkways, and access gangways, to list a few.

COERCO can also provide liquid transport and dust suppression solutions, enabling you to safely and easily transport and distribute liquid around your site and further afield.

Recently, COERCO played a key role in

the development of the A\$777M Kidston Hydro Project, approximately 400 kilometres inland from Townsville in Far-North Queensland.

The project is the first pumped storage hydro project in the country for over 40 years, which is being built for Genex Power.

The Kidston Hydro Project, led by construction contractor McConnell Dowell - John Holland (MDJH JV), involved moving 30 gegalitres of water from the Eldridge Pit into the new Wises Dam.

With the given information, COERCO developed some concepts before agreeing on some configurations and the final design which was ultimately fabricated by COERCO.

Will Hefferan, surface works area manager for the project, said COERCO responded well to the challenges.

"It's been really easy working with COERCO," Mr Hefferan said.

"Whenever I need some information from them, they're easily accessible to call or chat with or send an email through and receive the information.

"If I had a job requiring a similar solution, I'd like to seek a solution from them.

"It's been very enjoyable working with COERCO, and as you can see with the solution we've got there, it all came to

fruition pretty well," Mr Hefferan said.

Cameron Green, surface works area manager for the project, said the team was given a 300-day construction window to move the water to the upper reservoir.

"That's dictated some fairly large pumps with a combined mass of about 60 tonnes," Mr Green said.

"We've engaged COERCO to provide that floating solution for that pump system and we had a few key performance elements.

"One, obviously the stability of the pontoon and its ability to carry the weight of the pumps safely.

"We wanted a durable pontoon, we wanted input on constructability, we wanted a modular system that could easily be transported to the site across some challenging roads.

"We wanted a system that we could put together with the available resources on-site and within the limitations of the site, which ultimately resulted in the modular pontoon.

"Given we need to pull 180 meters of water from within the pit, an elaborate winching system had to be developed to allow the pontoon to be descended, as the water level dropped that 180 meters."

Other major projects COERCO has recently been involved in include the construction and delivery of large-volume septic tanks

at Giralia Station and Nyinggulu Coastal Reserve, near Exmouth, in the Gascoyne region of Western Australia, about 1,200-kilometres north of Perth.

The Department of Biodiversity, Conservation, and Attractions engaged COERCO to provide Giralia Station with one septic tank with a minimum capacity of 31,000 litres and two more septic tanks with a minimum capacity of 27,000 litres each.

The Nyinggulu Coastal Reserve needed one septic tank with a minimum capacity of 31,000 litres and three additional septic tanks with a minimum capacity of 27,000 litres each.

Additionally, the tanks we required to have specific features, including a large capacity for servicing dump station dump points, direct mounting compatibility for dump points, light weight, durability, weather resistance, an inspection cap, an easily accessible pump outlet, and road transportability.

COERCO was also contracted by BHP to custom build a 5,000-litre diesel transfer tank for use in their site workshop at the Mount Keith Mine in Wiluna, in the Mid-West region of Western Australia, on the edge of the Western Desert about 1,000-kilometres northeast of Perth.

Leveraging expertise in diesel and chemical storage, COERCO's engineering team devised an efficient, economical and safe solution to overcome BHP's diesel storage challenge.

COERCO, a West Australian company formerly called Rapid Plastics, has come a long way since 1993 when it largely supplied to the animal and stock markets.

The company has significantly expanded its scope over the last three decades to provide holistic project delivery services to the mining industry, from expert consulting, system design and engineering, right through to the manufacture and delivery of specialised equipment.

COERCO's vast range of products and services has made it invaluable to its mining, civil and heavy industry clients.

Daniel Rignall, COERCO sales manager (resources), said the company has spent the last three decades developing an unmatched understanding of all aspects of liquid management and storage.

"Our large product base allows us to quickly turn around solutions as required," Mr Rignall said.

"If something does not fit the requirement as our standard offering, we have the ability to customise and engineer a solution.

"We are agile throughout the process from start to finish and this allows us to offer the client shorter lead times because what we're supplying is within specifications, in a very dynamic environment.

"When the goal posts of a project move, as they inevitably do in mining, we have the ability to move with them.

"Although we have direct competition in the different facets of what we do, we are the only ones to bring it all together and offer the complete service," he said.

"For example, a mining camp may need industrial process tanks, fuel transport, a sewage and wastewater management solution and a pontoon pump system."

Gareth Wallis, COERCO divisional manager, said the fact COERCO can provide a single point of contact for various requirements saves the client from engaging with multiple suppliers and separates COERCO from others in the space.

"Our vertical integration model for project delivery including in-house design and engineering, raw polyethylene processing, moulding and steel fabrication, allows us to pass on cost savings otherwise sapped up in middlemen processes," Mr Wallis said.

"We alleviate the friction in the project delivery phase by managing sections of the overall scope that are often left unattended until they are time critical."

COERCO has the expertise to navigate complex regulations and compliance requirements such as those that exist around the installation of septic systems, according to Mr Wallis.

"Septic tank regulations, such as those that deal with environmental assessments, can actually impede overall project delivery times. Because it's what we do, we are able to satisfy the requirements quickly because we don't need to go away and work it out.

"Project engineers might be doing this sort of work intermittently whereas we are doing it every day, so we have the ability to get the client what they need, when they want it."

**In-house Capability**

COERCO has predominantly been a poly-based product manufacturer, most commonly known for manufacturing poly tanks but has significantly widened its scope over the years to service the mining and heavy industrial markets and has also moved into steel fabrication to support the poly product range.

Civil construction services include liquid transportation and water delivery equipment.

And as the company's range has expanded, so too has its reach.

It now has three factories in WA with its main poly manufacturing facility and head office in Dalwallinu, which is about 250km north of Perth and ideally situated to service the mines in the Pilbara and northern areas.

The two other factories in Northam and Bunbury are predominantly for steel fabrication.

It also has an office in Malaga, to better service the needs of mining companies, many of which are headquartered in Perth.

Polyethylene inherently has a longer service life than alternative materials and is still predominant in COERCO's product offering.

"We continually invest in finding solutions to project requirements and our capacity in hybrid manufacturing processes (PE and

steel) allows us to customise to greater extents than a traditional supplier," Daniel Rignall said.

"A manufacturer who is just doing poly would then have to look for someone to align themselves with, or the reverse.

"We can integrate and customize a lot of what we do to greater extents than others might be able to."

**The Team**

COERCO now employs a diverse team of 150 fulltime staff at multiple locations throughout Australia.

As well as an operations team in its poly manufacturing and steel fabrication facilities, COERCO has its own in-house modifications team including a team of 10 qualified polyethylene welders who focus on customising products based on clients' requirements.

A highly skilled design and engineering team, including chartered engineers and draftsmen backed by a team of project managers, allows COERCO to meet the everchanging requirements of resource and mining projects.

Its technical expertise in Finite Element Analysis (FEA) and Computational Fluid Dynamics (CFD) allows the team to address complex engineering design problems and de-risk project delivery.

The sales team come from a variety of backgrounds including specialist supply to the oil and gas industry and the mining resource sectors, which brings a wealth of relevant experience to tackle challenges faced by clients.

An in-house team of 16 logistics management and transport operators manages COERCO's specialised transport fleet, so it does not rely on third parties.

Last but not least, management is the same as it was 30 years ago, therefore the company has a great deal of combined experience, stability and longevity.

"Key stakeholders of the company are still involved on a day-to-day basis," Daniel said.

"We are still a family-run WA business that has been around for 30 years and it is a very close-knit team with a great culture.

"This allows us to be flexible and responsive to change."

**A Total Solution**

COERCO's diverse team and the wealth of experience and knowledge it is able to draw on means the company is much more than solely a tank manufacturer.

It can offer a complete service, from the feasibility stage right up to and including the delivery of specialised equipment that has been custom designed and manufactured in-house.

COERCO is in its element when it is assisting EPC companies to complete turnkey projects by simplifying the demands of finding reliable, engineered liquid management solutions.

COERCO can prepare budget estimates, data, engineering and 3D drawings to prepare feasibility studies and a scope of works.

"We have fully chartered engineers and draftsmen who have the skills needed to keep the entire package managed in-house," Mr Rignall said.

"We can also assist the client's designers and help them with writing specifications and support their teams to support sections of the scope of works.

"We can provide the scope within the specifications required, adhering to all the regulations and standards.

"We often do jobs for clients that they need doing at the last minute when they're scrambling to piece a project together.

"Their resources are much better applied to what they are good at to ensure the deliverables for the client are met or exceeded.

"No two projects are the same so there is a lot of customisation required and design and engineering work behind that.

"So the client can literally hand us a section of the project and say: 'We want something that suits XYZ parameters' and we will go away and provide them a complete package based on that." **AMR**





GIW MDX.

# ADVANCING AUSTRALIAN MINING OPERATIONS: SPOTLIGHT ON KSB'S CUTTING-EDGE GIW® SLURRY PUMP SOLUTIONS

**F**ew industries are as tough on pumps as mining. Challenges are manifold and complex. Aggressive slurries and ever-changing conditions and materials cause mining pumps to wear out quickly.

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KSB has firmly established itself as a front-runner in providing superior quality, innovative, and performance-driven pump solutions for various sectors, particularly in the mining industry. As the heart of most mining operations, efficient pump technology is pivotal to delivering outstanding performance and long-term return on investment (ROI).

## KSB GIW® Slurry Pumps: Powering Productivity and Performance

KSB offers custom-engineered solutions for the mining industry through the GIW® brand. GIW® Slurry Pumps are designed to move slurry efficiently across various applications in the hard rock mining, mineral mining, oil sands and dredging industries.

All KSB products provide a seamless integration of advanced technology, me-

chanical design, robust materials, and precision manufacturing that empowers mining operators to surpass their productivity goals, bolster the bottom line, and gain a competitive advantage in today's demanding market landscape.

## Unmatched Wear Life

Equipped with advanced material technologies and patented designs, GIW® Slurry Pumps guarantee exceptional wear life, outlasting and outperforming standard industry offerings. Longer life cycle directly translates to fewer interruptions, reduced maintenance costs, and enhanced operational efficiency.

## Customised Pump Solutions

KSB appreciates the unique needs and goals of every mining operation. This customer-centric approach culminates in delivering customised solutions that match specific operational requirements and target outcomes. KSB engineers will partner with you, studying your project specifics to engineer tailored, cost-effective and high-performance solutions.

## Sustainability Focused

In an era where sustainability is key to future growth, KSB's products provide energy efficient solutions, thereby contributing to lower CO2 emissions. A partnership with

KSB translates to achieving operational excellence while remaining conscious of shared environmental responsibilities.

## Extensive Service and Support Network

Along with technologically advanced products, KSB provides an extensive network of services and support to guarantee optimal system performance throughout the product's lifecycle. From professional consultancy and training to regular maintenance and repairs, KSB provides custom maintenance strategies and onsite technical services.

When it comes to powering your mining operations with leading-edge, performance-driven, and cost-efficient pump solutions, KSB is the ultimate partner. Their robust, highly efficient GIW® Slurry Pumps will drive your mining operations to new levels of productivity and profitability. To all investors and decision-makers in the Australian mining industry, embracing KSB product solutions guarantees a promising and sustainable ROI. **AMR**



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**P** (08) 9470 6088  
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