RRP $10.00 incl GST

THE AUSTRALIAN MINING REVIEW

2022 | July

Your Gateway to the Mining Industry - Subscribe to our free digital edition! | australianminingreview.com.au

A product of Publications & Exhibitions Australia Pty Ltd



Metal Hawk Welcomes IGO Commitment P3



Autonomous Haulage Trials At Karlawinda P26



Talisman Opening Up New Ground In NSW P81

GREASEMAX®
automatic lubricator
simply superior!
RELIABLE
EFFECTIVE
ECONOMICAL
www.greasemax.au



NO batteries NO maintenance

cmi Electrical
Specialists in Electrical Cable & Mining Connectors
See our story page 15





GREEN LIGHT FOR ACLAND EXPANSION | PAGE 10

Complete support from the ground up



See our story on Page 32

JETCRETE
Australia's leading ground support specialist to the mining and construction industries
Find out more about our services and careers, visit: jetcrete.com.au



Many benefits of using Layflat Hose for Mine Dewatering.

- ✓ **Compactly stored:** Takes less than 1/10 of the space compared to poly pipe
- ✓ **Rapid Deployment:** Up to 4 km in two days
- ✓ **Easy Transport:** One truck can fit 3500 m of 300 mm layflat hose vs 10 trucks for poly pipe
- ✓ **Easy Handling:** No cranes required, only forklift
- ✓ **No Welding** workforce or machinery required
- ✓ **Continuous lengths of up to 200 m:** No joins required along the pipeline
- ✓ **Flexible** nature adapts to varying terrain
- ✓ **Tough and robust**
- ✓ **Swells under pressure:** Less energy and more pumping volume

Our Mine Dewatering Solutions

Waterlord® Layflat Hose

- For rapid, high-volume & high-pressure applications
- Ideal for long pipelines of 4-5 km
- Abrasion-resistant flexible heavy-duty layflat hose
- Comes in a range of diameters from 40 mm (1.5") up to 305 mm (12"), capable of achieving over 500 litres per second
- Shorter lengths also available for pump to rigid pipeline applications



Learn more about Waterlord products

Waterlord® Reeling System

- Fast, compact and easy to use
- Effortlessly deploys & handles large diameter hose
- Heavy-duty frame certified to carry up to 200 m of 12" hose
- Quick-connect hydraulic couplings for fast machine attachment



Learn more about Flexibore Layflat Hose

Flexibore® Layflat Hose

- Compact, easy to use
- High-tensile strength for very large submersible pumps
- Secure couplings



Contact us today on +61 3 9720 1100 or email sales@crusaderhose.com.au to learn more or request a quote!

www.crusaderhose.com.au

follow us

TOTAL DRILLING SOLUTIONS











Maxfield Drilling uses the most advanced drilling rigs available with the best maintenance team regularly servicing and maintaining equipment.

- **Production blast hole drilling**
- **Pre-split**
- **Rotary**
- **Down-hole hammer**
- **Top hammer**
- **Depressurisation/ sewatering drilling**
- **Exploration reverse circulation grade control and sampling**
- **Geotechnical**
- **Ground anchors and soil nails**
- **Remote drilling**

At **Maxfield Drilling**, our desire is to be the drilling company of choice, which drives us to set and reach high environment and safety standards whilst still achieving the highest level of production.

+61 3 6427 8240 **info@maxfielddrilling.com.au**

MAXFIELD DRILLING

maxfielddrilling.com.au

DRIFTMASTER™

Contents

ABN 28 112 572 433

A product of
Publications & Exhibitions Australia Pty Ltd

CONTACT US
P (08) 6314 0301
F (08) 9481 7322
160 Beaufort Street, Perth, WA 6000.
PO Box 8023, Perth BC, WA 6849

E-mail the editor at
editorial@australianminingreview.com.au

GENERAL MANAGER
Trevor Pickett
0429 916 282
trevor@australianminingreview.com.au

ASSISTANT GENERAL MANAGER
Biliana Harman
biliana@australianminingreview.com.au

EDITOR
Colin Sandell-Hay
colin@australianminingreview.com.au

ACCOUNTS MANAGER
Teresa Sabatino
accounts@australianminingreview.com.au

JOURNALISTS
Tamra Carr, Kathleen Southway

RESEARCH
Jason Strydom, Wayne Dyson

AMR SALES TEAM COORDINATOR
Cal Christelow
cal@australianminingreview.com.au

SALES EXECUTIVES
Donna Orton, Monika Bhardwaj,
Quentin Roberts, Natasha Lill

PRODUCTION MANAGER
Jeremy Pickett
jeremy@australianminingreview.com.au

GRAPHIC DESIGNERS
Jeremy Pickett,
Rebecca Johnson

PRINTER
Australian Community Media

Mental Health Help

Lifeline | **13 11 14**
Kids Helpline | **1800 551 800**
MensLine Australia | **1300 789 978**
Suicide Call Back Service | **1300 659 467**
Beyond Blue | **1300 224 636**

The Australian Mining Review is a free publication to all mine sites and mining companies in Australia. Its value is $11 an issue. (Includes GST, postage and handling).

The copyright is vested in the Proprietors of The Australian Mining Review; neither whole nor any part of this issue may be reproduced without permission.

The views expressed in this publication are not necessarily those of Publications & Exhibitions Australia Pty Ltd and its staff, but are those of the respective author who accepts sole responsibility and liability for them.

NOTICE TO ADVERTISERS:

The Trade Practices Act, 1974 came into force on the 1st October 1974. All advertisers and advertising agents are directed to carefully study the provisions of the Act, which contain strict regulations on advertising.

It can be an offence for anyone to engage, in trade or commerce, in conduct deemed "misleading or deceptive". Specifically s53 of the Act contains prohibitions from doing any of the following in connection with the promotion, by any means, of the supply or use of goods or services:

(a) falsely represent that goods are of a particular standard, quality, value, grade, composition, style or model or have had a particular history or particular previous use; (b) falsely represent that goods are new; (c) represent that goods or services have sponsorship, approval, performance characteristics, accessories, uses or benefits they do not have; (d) represent that the corporation has a sponsorship, approval or affiliation it does not have; (e) make a false or misleading representation with respect to the price of goods or services; (f) make a false or misleading representation concerning the need for any goods or services; or (g) make a false or misleading representation concerning the existence, exclusion or effect of any condition, warranty, guarantee, right or remedy.

PENALTIES:

For an individual — $10,000 or six months imprisonment

For a corporation — $50,000. It is not possible for this company to ensure that advertisements published in this newspaper comply with the Act and the responsibility must, therefore, be on the person, company or advertising agency submitting the advertising for publication. In case of doubt, consult your lawyer.



Explorers on the Move 03
News 10
New Technology 16



Tomingley Gold 20
Aeris Resources 24
Karlawinda 26
Thunderbox 28
McArthur River 30



Companies Gearing Up 32
Mine Site Rehabilitation 45
Breathing Equipment & Apparatus 46
Mine Shutdown 50
Drilling 51
Fleet Management 56
Wire & Rope Solutions 58
Air Compressors & Air Tools 59
Renewable Energy 60
Catering & Accommodation 61
Facilities Mgt & Camp Services 62
Tyre Management 64
Payload Monitoring 66
Dump & Haul Trucks 79
Pipes & Pipelines 71
Heavy Haulage 74
High Pressure Washing 75
Industrial Vacuum Solutions 76
Filters & Filtration 78
Process Plant Maintenance 79



Pumps 80
Exploration Drilling 81
GVM & Suspensions Upgrades 90
Materials Handling 94
Rockbreaking Solutions 96
Vacuum Excavation & Loading 98

Point your phone camera here to view online version!



Metal Hawk Welcomes IGO's Commitment To Stage-2 Nickel JV

Metal Hawk Limited (ASX: MHK) has confirmed that IGO Limited1 (ASX: IGO) has satisfied the Stage-1 requirements of its Earn-In and Joint Venture Agreement (EIJVA).

Under the agreement with Metal Hawk, IGO's wholly owned subsidiary Western Areas Limited has spent a required A$3 million on exploration across the Joint Venture Projects.

IGO achieved the Stage-1 milestone well ahead of the required timeframe and is now entitled to a 51% joint venture interest in Metal Hawk's Kanowna East, Emu Lake and Fraser South projects in Western Australia.

Significantly, IGO has elected to proceed with Stage-2 of the EIJVA whereby it can earn an additional 24% joint venture interest by sole funding a further A$4 million of exploration.

Metal Hawk is free-carried to a decision to mine and retains 100% of the gold rights at Kanowna East and Emu Lake.

"We have been really pleased with the pace and quality of exploration carried out by our joint venture partner, which has exceeded its obligation under the earn-in agreement, and with the results achieved to date," Metal Hawk Managing Director, Will Belbin, said.

"The election by IGO to progress to Stage-2 is a tremendous outcome for Metal Hawk that will see a substantial step-up in exploration expenditure without drawing on shareholders' funds. We also see this as a strong endorsement of the quality and potential of these projects."

Upcoming Activity

Kanowna East Diamond drilling is due to recommence in July 2022 and will continue to explore the interpreted southern extension of the ultramafic corridor hosting the high-grade Silver Swan nickel deposit.

Drilling will follow-up nickel sulphide mineralisation recently intersected in maiden diamond hole KEDD001, which identified a broad 220m zone of nickel-bearing ultramafic rocks.

Emu Lake Moving loop ground electromagnetic (MLEM) surveys are scheduled to commence in Q3 2022. The survey will cover areas of prospective ultramafic stratigraphy identified from recent AC (aircore) drilling along strike from the high-grade Binti Binti nickel deposit.

A Fraser South A heritage survey is scheduled for July 2022 to allow access for a reconnaissance AC drilling program planned to commence in October. Airborne geophysical surveys are also scheduled to commence in Q3 2022. ***AMR***

Superior Drilling Kicks off at Bottletree Copper Prospect

Superior Resources Limited (ASX:SPQ) has commenced its 2022 diamond drilling programme at its Bottletree Copper Prospect, located within the company's 100%-owned Greenvale Project in Queensland.

The programme comprises initially eight deep diamond holes for a total of 3,700 metres. The drill holes are targeting the core of at least one large interpreted Cu-Au-Mo porphyry system that is coincident with a 1.5km x 1km soil copper anomaly and a 1km-wide induced polarisation (IP) chargeability anomaly.

The first hole, BTDD005, has been collared 300m to the west of BTDD004, which was completed in 2021. BTDD004 was drilled to 658.9m and returned an impressive main copper zone of 224m @ 0.40% Cu, 0.05g/t Au, 0.9ppm Ag, 3.5ppm Mo (molybdenum) within an overall mineralised zone of 632m @ 0.21% Cu, 0.03g/t Au, 0.60ppm Ag, 18.0ppm Mo.

Core from BTDD004 is variably mineralised with quartz-chalcopyrite vein sets and disseminated chalcopyrite including the strongly mineralised 224m interval.
Systematic drilling during 2018 and 2021 targeted the most intense IP chargeability anomaly, which is now considered to represent structurally-controlled mineralisation that is distal to at least one large Cu-Au-Mo mineralised porphyry system.

Although considered distal to a core porphyry system, significant amounts of copper mineralisation exists, with hole BTDD001 (collared 500m east of BTDD004) returning an overall intersection of 552.6m @ 0.16% Cu, 0.02g/t Au, 0.7g/t Ag from 132m to the end of hole at 684.6m.

Structural information from the extensive mineralisation in BTDD004, together with multi-element soil geochemistry data, detailed surface alteration mapping and remodelled IP data, indicate that the core of a buried porphyry system lies to the west of BTDD004, where better mineralisation is expected.

The current programme will test high priority porphyry core targets as well extensive near-surface copper mineralisation that appear to be associated with several interpreted buried porphyry intrusions.

"We have just commenced the company's most anticipated and exciting drilling programme, targeting what we interpret to be the core zones of multiple copper-gold-molybdenum porphyry intrusions,"



Managing Director, Peter Hwang, said.

"We have reached this point after only two diamond drilling programs. Notably, last year's program provided numerous ground-breaking findings, including drill hole intersections of very extensive porphyry-style copper-gold mineralisation.

"Our step-by-step approach to this program focuses initially on a compelling and strong central zone of copper-gold-molybdenum soil anomalism, which is supported by a newly remodelled large chargeability anomaly, airborne magnetics and satellite imagery-interpreted intrusion centres.

"All of this sits down-dip and behind the massive 632 metres of copper mineralisation returned from BTDD004.

"However, the chargeability anomaly is large and extends for about one kilometre, so apart from having very large size potential, we do have a lot of ground to cover.

"Apart from the drilling, we will also be extending last year's multi-element soil geochemistry program westwards as indications are that porphyry mineralisation extends significantly further than the 1.5 kilometre soil copper zone that originally defined Bottletree.

"We will also be extending the MIMDAS IP survey to cover the expanded prospect area.

"We have an exciting few months ahead of us and we will be updating the market regularly as we receive significant visual and laboratory results." ***AMR***

Aldoro Doubles Wyemandoo Lithium Programme After Maiden Drilling Success



Aldoro Resources Limited (ASX: ARN) has elected to double the size of its maiden drilling programme at the Wyemandoo Critical Metal Project in Western Australia after early success.

A total of 26 RC holes have been drilled totalling 3,286m and ranging from 82 to 202m in depth. The majority of the holes have intersected pegmatites of various intervals from <1m to 6m with pegmatite country rock zones up to 19m.

The programme has been dictated by the pegmatite intersections where many have been interpretated as flat lying sills or moderately steeply dipping dykes orientated to the northwest.

To date drilling has concentrated in two areas, Dome 1 containing the two loop structures (Northern Loop and Southern Loop) and Dome 2 (approximately 5km southwest) where current drilling is progressing.

Given the continual shallow intersections to date coupled by confidence garnered fromXRF readings, the company is proposing to bring in a AC Hammer drilling rig to delineate the resource potential of Dome 1.

Dome 2 drilling has intersected purple lepidolite rich zones as well as identified greenish aluminosilicate possibly eucryptite (hydrothermal equivalent of spodumene) zones.

Pegmatite intersection vary from thin intercepts to zones in excess of 12m.

The company is highly encouraged by results to date and is currently in the process of increasing the drilling programme to 6,000m. ***AMR***

Cannon Resources Confirms High-Grade Massive Nickel Sulphide at Sabre

Cannon Resources Limited (ASX: CNR) has received further positive assay results from recently drilled massive nickel sulphide intercepts in diamond holes MFED117 and MFED118 at the Sabre prospect within the company's flagship Fisher East Nickel Project in Western Australia.



Diamond holes MFED117 and MFED118 were drilled earlier this month targeting high-grade mineralisation developed along the interpreted northern margin of the Sabre channel.

Both holes intersected significant widths of massive nickel sulphides within broader mineralised intervals.

MFED117 returned assays of 5.7m @ 4.5% Ni and 1.0 g/t PGE (Pd+ Pt) from 310.28m. Included in this interval was the massive nickel sulphide zone of 3.7m @ 6.0% Ni and 1.2g/t PGE (Pd+ Pt) from 311.30m.

MFED118 returned assays of 8.3m @ 2.7% Ni and 0.4 g/t PGE (Pd+ Pt) from 132.95m. Included in this interval was the massive nickel sulphide zone of 2.8m @ 5.2% Ni and 0.8g/t PGE (Pd+ Pt) from 138.48m.

"The targeting programme on the northern side of the Sabre channel has been a huge success.

The latest assays from holes MFED117 and MFED118 confirm the high-grade nickel content of the massive sulphide mineralisation developed on the northern margin of the Sabre channel," Cannon CEO, Steve Lynn, said,

"The high-grade nickel mineralisation has over 250 metres of plunge extent and remains open across strike and up and down plunge. We are applying the same targeting methodology to other prospective zones at Sabre and the diamond drill rig is currently at Sabre where we continue to drill these areas to assess their potential.

"Over coming weeks, with the return of the remaining assay results, we will launch into a resource update at Sabre where we are expecting both an increase in tonnes and grade."

MFED117 and MFED118 have intersected the mineralisation at a high angle and are estimated to be 90% to 95% of true widths.

The mineralised interval in MFED118 also incorporates a 0.95m zone of lost core where zero values for Ni, PGE and Co have been assigned.

Future Steps

Infill drilling is ongoing and will continue to establish the lateral width and plunge extent of the highgrade mineralisation at the channel margin.

This drilling will help determine geological controls on mineralisation and assist in future targeting and potential resource growth.

All outstanding assays from existing holes should be returned by July 2022. Cannon will then launch into a resource update for Sabre. This is expected to be completed by August 2022. ***AMR***

Black Cat hunts final grade control numbers at Myhree Open Pit

Black Cat Syndicate Limited (ASX: BC8) has resumed grade control drilling at Myhree, located within the Kal East Gold Project in Western Australia.

This drilling ensures the Myhree open pit will be in the 'Go Bay' as part of the Company's Kal East development plan,

Highlights:

- RC drill rig mobilised to Myhree to complete the remaining 50% of grade control drilling over the upper 50m of the Ore Reserve.
- The programme is expected to be completed in June 2022 with assays available July 2022.
- On conclusion of this programme, all pre-development drilling at Myhree will be complete. This will allow mining to commence at Myhree either as part of a toll treatment arrangement or as the first open pit to be developed once the Kal East processing facility is constructed.

"Myhree was discovered in 2018 and it is a significant achievement by the team to have the open pit portion of the deposit in a position to be mined by July 2022," Managing Director, Gareth Solly, said.

"The current programme will complete the remaining grade control drilling to 50m depth below surface and will be completed this month.

"A small amount of sterilisation drilling will also be conducted as part of our pre-mining activities around Myhree."

Kal East Gold Project (100%)

Kal East comprises ~800 sq. km of highly prospective ground to the east of the world class mining centre of Kalgoorlie. Kal East contains a combined JORC 2012 Mineral Resource of 18.8Mt @ 2.1 g/t Au for 1,294koz, containing an initial JORC 2012 Ore Reserve of 3.7Mt @ 2.0 g/t Au for 243koz.

Myhree Mining Centre (100%)

Open pit Ore Reserves of 0.7Mt @ 2.2 g/t Au for 52,000oz have been defined at Myhree. The remaining 50% of grade control drilling (~4,000m) is currently underway on the upper 50m of the open pit Ore Reserve.

This will allow mining to commence at Myhree either as part of a toll treatment arrangement or as the first open pit to be developed once the Kal East processing facility is constructed.

As part of the programme, sterilisation of a potential waste dump location will also be drilled.

https://www.blackcatsyndicate.com.au/ ***AMR***

AUSSIE WATER CART PUMPS

Hydraulic drive self priming 2" 3" 4"
Cast iron, Bronze or 316 stainless steel
3 year warranty



Aussie Pumps

WE'RE FOR
AUSTRALIA

02 8865 3500
Australian Pump Industries
aussiepumps.com.au

Caspin commences Mount Squires Project drilling campaign

Caspin Resources Limited (ASX: CPN) has kicked off drilling and geochemical soil sampling programmes at the company's wholly owned Mount Squires Project in the West Musgrave region of Western Australia.

The project is prospective for copper-gold and nickel-copper styles of mineralisation.

Drilling Underway at the Duchess Prospect

Previous soil geochemistry has identified a zoned molybdenum (Mo) – lead (Pb) – copper (Cu) – gold (Au) anomaly covering an area of at least two sq. km, approximately four km southeast of the Handpump Prospect, referred to as the Duchess Prospect.

The element zonation of the anomaly is characteristic of deeply weathered porphyry copper systems in which copper (Cu), gold (Au) and lead (Pb) are usually strongly leached, whilst more immobile elements such as molybdenum (Mo)remain in-situ, proximal to mineralisation in the core of the system.

Additional zonation effects are observed in tin (Sn), thallium (Tl), bismuth (Bi) and selenium (Se), which are all common elements found in halos around intrusive porphyry systems.

"Mount Squires is a very early-stage project located in a well-endowed, but under-explored province," CEO, Greg Miles, said.

"We're excited about finally getting back on the ground after a long pandemic-related disruption. The timing is excellent, while we wait for assays from our recent drilling at Yarawindah, we give our investors further exposure to discovery in another frontier with world-class potential.

"Our primary focus will be on the Duchess Prospect, which because of its unique element zonation and sheer scale, demands to be drill tested. We also recognise that we're on the doorstep of one of Australia's largest undeveloped nickel and copper deposits at Nebo-Babel.

"There are already multiple targets from limited exploration, and we think over time Mount Squires will grow into being a very important part of our portfolio."

Drilling will initially be on broad-spaced centres, testing the core of the anomaly as well as at least seven km of strike,



demonstrating the scale of anomalism in the broader prospect area.

Testing the Duchess Prospect is partly funded by the WA government Exploration Incentive Scheme. The Company is grateful for the continued state government support of greenfields exploration.

Following drilling at the Duchess Prospect, the rig will move to the eastern boundary of the project where we anticipate finding extensions of the West Musgrave trend that hosts magmatic nickel-copper mineralisation.

Drilling will search for mafic and ultramafic intrusive rocks that host strong copper mineralisation at the One Tree Hill Prospect, owned by OZ Minerals Ltd, only 200m from the tenement boundary.

The programme will utilise aircore drilling, which is fast and relatively cheap, although with limited depth penetration, but usually sufficient to test basement lithologies.

Up to 10,000m will be drilled across both target areas and will take approximately 4-6 weeks to complete. ***AMR***

Encounter and South32 join forces to accelerate NT copper exploration

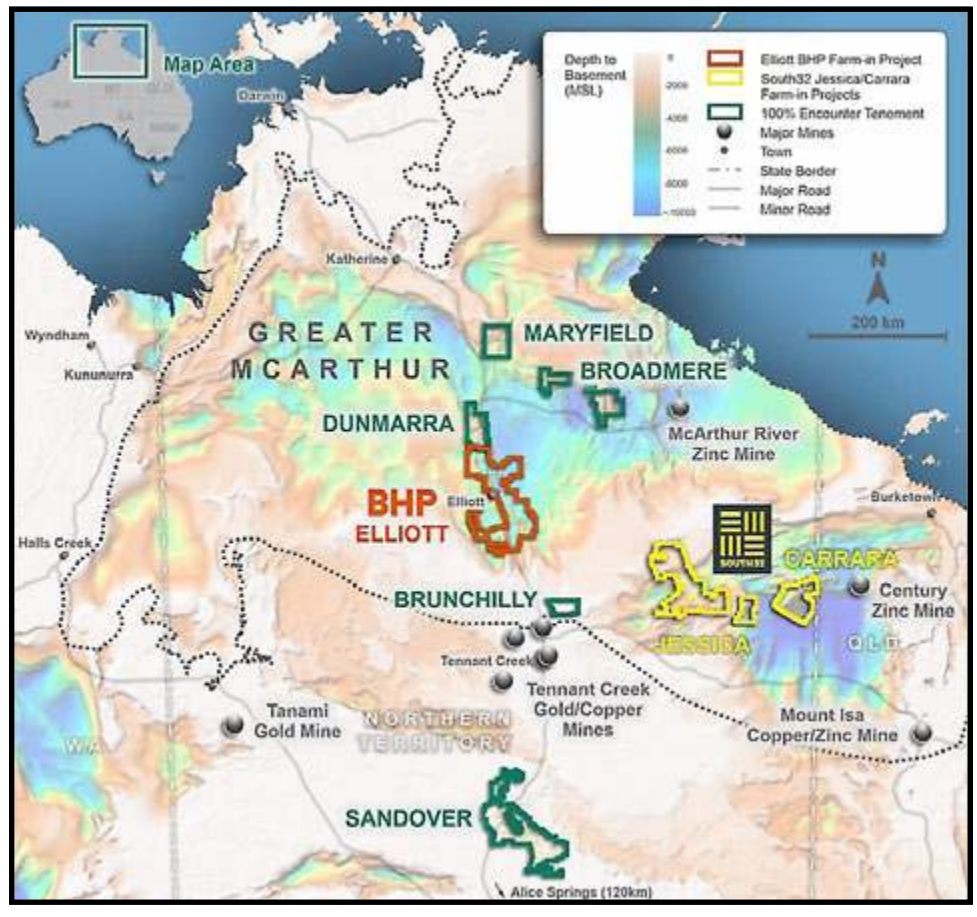
Encounter Resources Ltd (ASX:ENR) has confirmed that the junior explorer and a wholly owned subsidiary of South32 Ltd have entered into Farm-in and Joint Venture Agreements covering the Carrara Copper-Zinc Project and the Jessica Copper Project in the Northern Territory.

"The Greater McArthur Superbasin in the NT is fast emerging as one of the most significant global opportunities for the discovery of new, large sediment-hosted copper and zinc deposits under shallow cover," Managing Director, Will Robinson, said.

"Encounter is advancing this vast opportunity via a combination of farm-in agreements with some of Australia's largest mining companies (South32 and BHP) and an extensive portfolio of 100% owned projects. Identifying opportunities, completing early stage exploration and then accelerating work through partnerships is one of the company's stated objectives.

"To date Encounter has completed farm-in agreements in the NT that can provide up to $50 million in initial exploration funding from its partners.

"The search for Tier-1 copper and zinc deposits in the NT continues to gather pace and we are delighted to be working with high quality partners with accomplished exploration teams to capture this huge opportunity."



Jessica Copper Project

Jessica covers ~6,300 sq. km and licences EL32273, EL32317, EL32338, EL32339, EL32386, EL32387, EL32388 and EL32493 along key structural corridors east of Tennant Creek and is prospective for sediment-hosted copper and IOCG style deposits.

Access to the project is via the sealed Tablelands Highway that traverses the western side of Jessica.

Jessica captures compelling structural targets along the Brunette Downs Rift Corridor that was identified in the Geoscience Australia Exploring for the Future Programme. Jessica was targeted along the northern flanks of the East Tennant gravity ridge and the intersection with a major NNW structural corridor.

Jessica has potential for both basement IOCG style mineralisation and sediment-hosted copper deposits. Systematic assessment of drill chips from water bores at Jessica has been conducted by Encounter and a previous explorer utilising handheld XRF machines.

Areas of copper anomalism were selected for chemical analysis and for the sample interval 0-3m in RN28419 (No. 39 water bore) which returned 1.5% copper.

Next steps

Reprocessing of Geoscience Australia seismic lines that extend through Jessica to provide greater detail of the geology and structure in the upper 1,000m along the western margin of the sub-basin.

Infill gravity surveys are in progress covering a series of high priority magnetic targets in conjunction with an extensive regional gravity survey being undertaken by the Northern Territory Geological Survey.

Carrara Copper-Zinc Project

Carrara, which involves licences EL32476, EL32477, EL32701 and EL32813, was secured following the release of the South Nicholson Seismic Survey, a foundational dataset acquired as part of the Geoscience Australia Exploring for the Future Programme.

A key finding of this study is the correlation of prospective stratigraphic units from the Isa Superbasin into the Carrara Sub-basin that extend the Mount Isa Province to the west.

Carrara is located at an interpreted structural offset of the western margin of the Carrara Sub-basin where the prospective Isa Superbasin units are modelled closer to surface.

The giant Century Zinc Mine is located on the eastern margin of the Carrara Sub-basin, and there is a clear correlation of the Century mine stratigraphy across the basin in GA seismic data.

Late in 2020 a 1,751m deep stratigraphic drill hole (NDI Carrara-1) was completed as part of the National Drilling Initiative funded by the Minex CRC. This hole was designed to validate the interpretation of the South Nicholson Seismic Survey and was located within the Carrara tenement.

The results of the NDI Carrara-1 stratigraphic drill hole supports the interpretation that the geology of the Isa Superbasin extends throughout the Carrara Sub-basin.

The presence of copper and zinc sulphide mineralisation demonstrates that sediment hosted copper and zinc mineralising processes occur within the prospective host unit.

Next Steps

Reprocessing of seismic lines that extend through Carrara to provide greater detail of the geology and structure in the upper 1,000m along the western margin of the sub-basin.

A 2km x 2km gravity survey over Carrara by the Northern Territory Geological Survey is scheduled to be completed in the June 2022 quarter and will enable integration and interpretation in conjunction with other datasets. ***AMR***

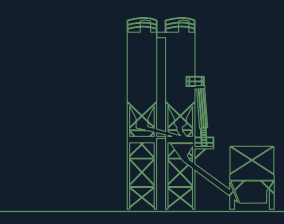


JETCRETE

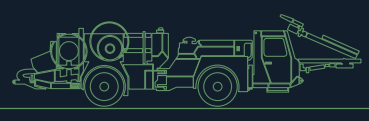
Complete support from the ground up

Australia's leading ground support specialist to the mining and construction industries

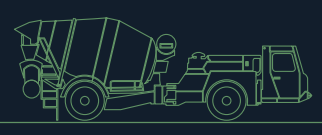
We use the latest techniques and specially adapted placement materials to provide a shotcreting service for clients across the country including:



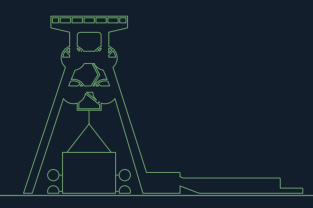
Concrete manufacturing



Shotcreting



Delivery



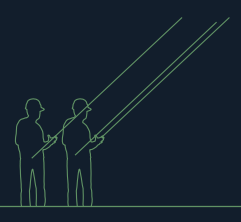
Remote shaft lining



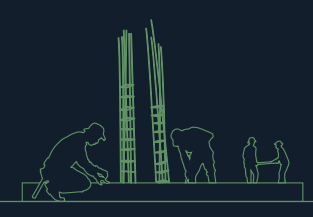
Cable bolting



Resin injection



Laser scanning



Civil construction

Find out more about our services and careers, visit:

jetcrete.com.au

Global Lithium Continues To Deliver Exploration Success At MBLP

Growing multi-asset lithium company, Global Lithium Resources Limited (ASX: GL1) has continued to receive encouraging lithium assay results from its Q1/Q2 CY2022 Exploration Programme at the wholly owned Marble Bar Lithium Project (MBLP), located 150km southeast of Port Hedland in the Pilbara region of Western Australia.

Significant intervals of lithium mineralisation continue to be intersected from the ongoing drilling at the MBLP.

• Results include: — 11m @ 1.42% Li2O and 62ppm Ta2O5 from 25m in MBRC0258 — 12m @ 0.88% Li2O and 44ppm Ta2O5 from 82m in MBRC0269 — 9m @ 1.09% Li2O and 61ppm Ta2O5 from 44m in MBRC0270 — 10m @ 0.81% Li2O and 80ppm Ta2O5 from 40m in MBRC0271 — 7m @ 1.00% Li2O and 71ppm Ta2O5 from 24m in MBRC0300 — 7m @ 1.82% Li2O and 66ppm Ta2O5 from 20m in MBRC0310

"Commencing in February 2022, our 60,000m exploration drilling programme has continued to build momentum at the MBLP, with lithium intercepts continuing along the >6km strike of the mineralisation already identified within the project area," Head of Geology, Stuart Peterson, said.

"The results highlight the prospectivity of the area, particularly as the drilling moves to the southern and eastern areas of GL1's tenement package.

"The drilling programme supports the targeting effort by the Global Lithium and CSA Global geology teams and provides a strong platform for future growth.

"Our immediate exploration focus, to add shareholder value across our two assets, remains clearly defined.

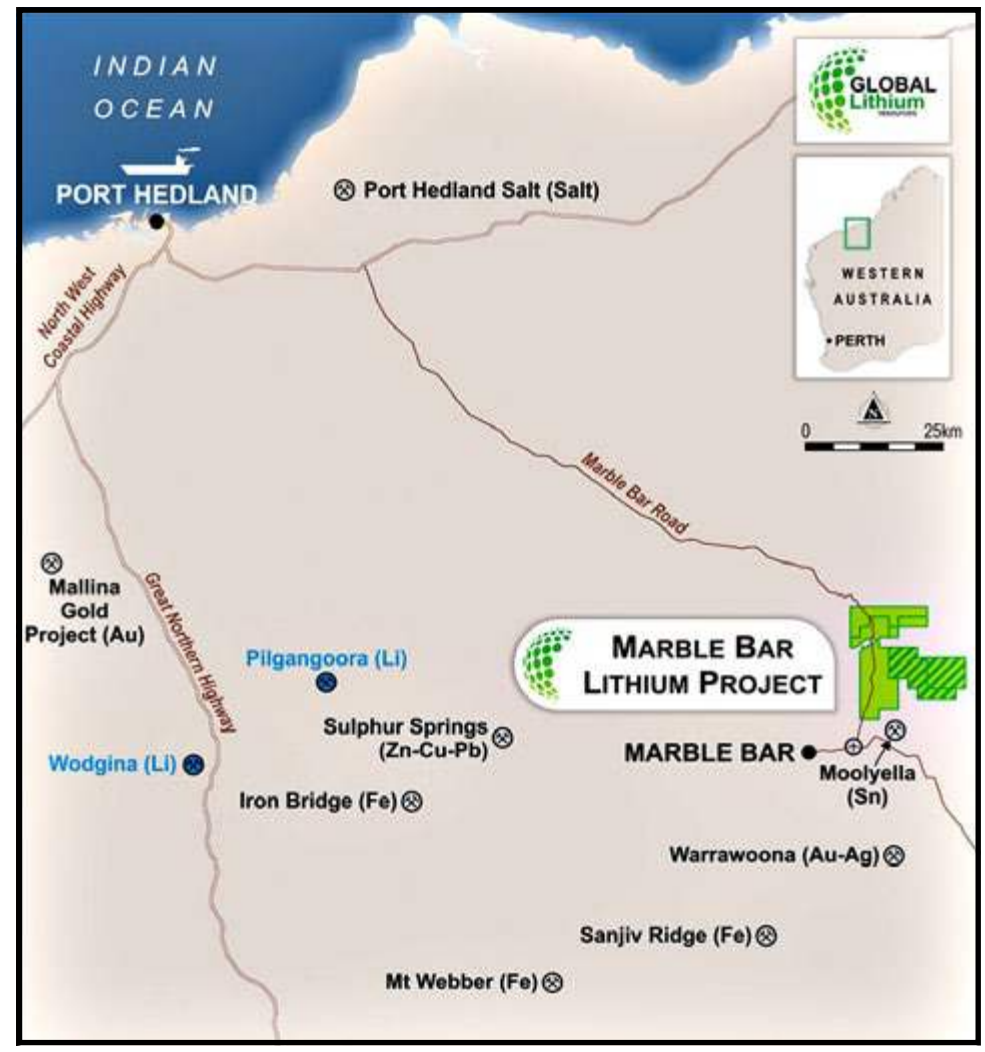
Firstly, deliver the ongoing CY2022 program at MBLP, including the highly prospective targets that remain untested and secondly, safely execute a 20,000m drilling and exploration campaign at the Manna Lithium Project in the Goldfields region.

"To our knowledge, we are the only lithium company to be drilling at two independent lithium project sites in the globally recognised, tier 1 lithium mining jurisdiction of Western Australia."

The majority of MBLP drilling has been designed and targeted to test geochemical trends and mapped pegmatite targets, particularly along the greenstone belt and also several granite hosted pegmatite targets that are located between the Archer deposit and the area to the east near the major regional structural feature of the Brockman Zone.

The drilling intersection highlights have been recorded from drilling to the south and to the east of the Archer pegmatite resource. The target zones extend over distances from 500m to 1.2km with a majority of the drilling being undertaken on a nominal grid pattern with a line spacing of 160m and a hole spacing of 80m.

Mr Peterson said the success of the programme indicates strong potential for future growth and provides further evidence that the MBLP is continuing to emerge as a significant spodumene lithium deposit, in a premier hard rock lithium mining jurisdiction.



The MBLP is situated close to major road infrastructure, with direct links into Port Hedland, where bulk commodities, including spodumene concentrate, are currently being exported.

The MBLP is also located approximately 15km from the town of Marble Bar, which provides ready access to services, skills and accommodation for our geology teams. ***AMR***

Great Boulder Obtains More High Grades from Ironbark and Mulga Bill Drilling



Great Boulder Resources (ASX: GBR) has received further significant assay results from the maiden RC programme at the Ironbark prospect as well as recent RC assays from Mulga Bill, both of which form part of the Side Well Gold Project, near Meekatharra in Western Australia.

"At Ironbark, hole 22IBRC003 returned two strong intersections along strike from the earlier result in hole 007 which intersected 14m @ 4.25g/t Au," Managing Director, Andrew Paterson, said.

"More drilling is now required in the central area of Ironbark to test continuity between this zone and another high-grade result of 22m @ 2.47g/t Au in hole 005 to the north.

"Based on these results it appears the northern-most hole 22IBRC006 was drilled too far west to intersect the trend, in which case Ironbark is still open along strike in both directions.

"Results are still coming in for the recent RC drilling at Mulga Bill. High-grade gold intersections in hole 22MBRC012 plus our highest-grade copper intersection in hole 22MBRC003 demonstrate the potential of the system.

"We're very keen to start RC testing the southern targets at Mulga Bill at the end of June. With the rig back on site for the rest of the year we will have a steady flow of results coming through and I'm sure there will be plenty more excitement as the story unfolds."

Assays have been received for the remaining RC holes drilled at the Ironbark discovery east of Mulga Bill.

Highlights include:

- 9m @ 4.49g/t Au from 104m in 22IBRC003
- 20m @ 3.05g/t Au from 120m in 22IBRC003
- 3m @ 1.06g/t Au from 74m in 22IBRC001A
- 3m @ 1.77g/t Au from 129m and 1m @ 6.85g/t Au from 137m in 22IBRC002

Highlights from recent drilling on the Mulga Bill – Loaded Dog trend include:

- 4m @ 7.02g/t Au from 84m in 22MBRC012
- 5m @ 8.67g/t Au from 114m in 22MBRC012
- 1m @ 39.30g/t Au from 84m in 22MBRC003
- 17m @ 1.39g/t Au from 151m to EOH (end of hole) in 22MBRC005
- 1m @ 9.09g/t Au from 227m to EOH in 22MBRC009
- 25m @ 1.34% Cu, 13.33g/t Ag and 0.41g/t Au from 88m, including 13m @ 2.01% Cu, 18.59g/t Ag and 0.36g/t Au from 88m within the "sulphide zone" in 22MBRC003

Next Steps

When RC drilling resumes at the end of June the first new target to be drilled will be at the southern end of the Mulga Bill – Loaded Dog corridor, where an air-core hole ended in 23.78g/t Au mineralisation at 150m depth.

An extensional and infill RC programme will also be completed at Ironbark. Current coverage comprises only seven RC holes spanning 400m of strike.

The next round of drilling will test continuity of mineralisation between the current intersections, test for strike extensions to the north and south and also test deeper targets beneath known intersections.

The 57 AC holes currently being assayed include infill drilling over significant gaps in coverage north and south of Loaded Dog, some of which test the target area immediately east of the IP chargeability anomaly recently tested by diamond hole 21MBRCD096. End-of-hole gold and multi-element assays from these holes will be integral to planning further RC drill campaigns in the area in coming months. ***AMR***

IMPACT ROLLER



Broons has led Impact Roller technology for over 35 years, with benefits to the mining sector:

- Deep Compaction
- Unrivaled Productivity
- Haul Road Construction
- Capping Tailings Dams
- Rock Rubbilisation
- Risk Mitigation
- Tyre Wear Reduction
- Limit Suspension Fatigue
- Operator Comfort
- Reduce Fuel Costs
- Secure Tip Heads
- Low Running Costs



BH-1300 MS
14 Tonne
1300mm Module

Features

Heavy Duty Linkage
Gusseted Chassis
Extra Wear Plates
Lugged Tyres



BH-1950 MS
18.5 Tonne
1950mm Module

Broons Group (08) 8268 1988 - info@broons.com - www.broons.com



Positive Queensland News With Green Light Given For New Acland Stage 3

After five months of extensive consultation with New Hope Group and key stakeholders, the Queensland Government can now finalise the New Acland Stage 3 approvals.

The Coordinator General recently issued her Change Report which states the conditions to be incorporated into New Acland Stage 3's Environmental Authority.

The landmark development in the approvals process, which stretches back 15 years, allows the Queensland Government to implement the Land Court's recommendation that approvals be granted.

The Department of Environment and Science can now incorporate the Coordinator General's stated conditions and issue the Environmental Authority.

This will then allow New Acland Stage 3's Mining Leases and Associated Water Licence to be granted.

New Hope Group CEO, Rob Bishop said the Queensland Government can now approve New Acland Stage 3.

"New Acland Stage 3 has been extensively reviewed, assessed and scrutinised." Mr Bishop said. "The Land Court process and the Coordinator General's consultation process has allowed everyone to have their say about the project.

"This historic development is a green light for finalisation of the approvals process and means we can now focus more on plans to re-open the mine and recruit our workforce.

"Local workers, contractors and local businesses will benefit to the tune of $1billion over the life of the project. At the peak of construction, there will be close to 600 local workers on site at New Acland Mine.

"Throughout the life of the project, the permanent workforce will be approximately 400 full-time roles, made up of Darling Downs locals."

New Hope Group would like to thank local workers, farmers, business leaders, community members and their families for their continued support of New Acland Stage 3. ***AMR***

BHP Planning To Shut Down NSW Coal Operations By 2030.



BHP has announced is undertaking studies to wrap up mining at its New South Wales Energy Coal (NSWEC) portfolio after it failed to attract any buyers for the asset.

The mining giant revealed it will retain New South Wales Energy Coal (NSWEC) in its portfolio, seek the relevant approvals to continue mining beyond its current mining consent that expires in 2026 and proceed with a managed process to cease mining at the asset by the end of the 2030 financial year

The decision follows BHP's review of its lower grade metallurgical and energy coal assets that was announced in August 2020 and has also resulted in the divestment of its interests in Cerrejón and BHP Mitsui Coal (BMC) in January and May 2022 respectively.

Assessment of the resource economics, geotechnical profile and future investment requirements determined that continued mining in the near term and moving to a closure in 2030 provides the optimal financial outcome when compared to alternate options.

Continuation of mining to the end of FY2030 will afford eight years to work with our people, State and Federal governments and local communities in the Hunter Valley region on a transition approach that supports long-term community sustainability.

BHP said plans to continue operating NSWEC to FY2030 are subject to obtaining relevant approvals to enable mining beyond the current consent, which only provides approval for mining until 2026.

Work is underway to prepare the application for the relevant approvals with the New South Wales and Australian governments to support mining until 2030. This will also include plans for closure of the asset, including rehabilitation and determining the most appropriate postmining land use. It is expected that continued work on rehabilitation will take 10 to 15 years following the cessation of mining.

The provision for closure of the mine as at December 31, 2021 was approximately US$700 million.

"We thoroughly reviewed potential options for NSWEC including divestment and future investment requirement," Minerals Australia President, Edgar Basto, said.

"Seeking approval to continue mining until 2030 avoids closure in 2026 and enables BHP to balance the value and risk of those considerations and our commitments to our people and local communities."

NSWEC Vice President, Adam Lancey, said the company will work with our people, local business partners, Traditional Owners and local and state governments to operate safely and productively, prepare for closure and sustainable rehabilitation of the site, and ensure the pathway to closure is managed in a way that meets community and regulatory expectations.

About NSWEC

The New South Wales Energy Coal (NSWEC) asset comprises the Mt Arthur Coal operation, which is located near Muswellbrook, New South Wales. Mt Arthur Coal is operated by Hunter Valley Energy Coal, an entity ultimately owned by BHP Group Limited. ***AMR***

PUMPING SOLUTIONS *FOR MINING*





DIESEL POWERED PUMP SETS



SUBMERSIBLE PUMPS



FOLDING STANDPIPES

VIC - ROWVILLE • CORIO **NSW -** ARMIDALE **WA -** PERTH • KARRATHA • KALGOORLIE • ALBANY **TAS -** HOBART • BURNIE

1300 HIREWATER
4 4 7 3 9 2

www.pinnaclehire.com.au

PINNACLE HIRE

*"higher levels of **expertise**"*



Maximise Profitability by Maintaining your Equipment

ERIEZ OFFERS TOP QUALITY TECHNICAL SERVICE, REPAIRS AND ON-SITE INSPECTIONS

- On-site field service inspection and repair
- Skilled handling of dangerous magnetic equipment
- Regular equipment maintenance reviews
- Equipment re-manufacturing
- Original OEM parts
- Full "As New" warranties
- Auditing and reporting





80 Years Experience

613 8401 7400 | Sales.au@eriez.com | Eriez.com.au

ERIEZ®



WA VOWS TO CLOSE STATE-OWNED COAL POWER STATIONS BY 2030

The WA Government has declared that Western Australia's State-owned coal power stations will be retired by 2030 - as the continued uptake of rooftop solar and renewables forces changes in the energy system to ensure a secure electricity supply and guard against higher power bills.

Collie Power Station will close in late-2027 and Muja D in late-2029. As previously announced, Muja C's Unit 5 will close later this year and Unit 6 in 2024.

WA's electricity system is being increasingly challenged by the overwhelming uptake of rooftop solar.

These pressures force Synergy to offload excess power generated during the day at a loss, and add additional maintenance and generation costs, which are ultimately borne by taxpayers.

To address this, the State's energy generation system will embark on a sensible, managed transition to a greater use of renewables, while ensuring electricity reliability and affordability continues to be paramount.

WA Premier Mark Mark McGowan has confirmed an estimated $3.8 billion will be invested in new green power infrastructure in the South West Interconnected System (SWIS) - including wind generation and storage - to ensure continued supply stability and affordability.

He said this will be the largest infrastructure programme in WA since METRONET, and will set the State up for a reliable, affordable, renewable energy future - while creating thousands of jobs in regional WA.

According to the Premier, without the decision to retire the power stations, over the next decade WA would either see major electricity price hikes or taxpayers would be forced to fund billions of dollars of subsidies to keep the system running.

Under current settings, it is estimated household electricity costs would rise from their current average rate of about $1,800 per year to more than $3,000 per year.

Alternatively, WA taxpayers would be required to subsidise Synergy to the tune of almost $3 billion to 2029-30 to cover the ongoing losses of the energy provider, taking funding away from key government projects and services.

"For more than a century Collie has literally powered the State - and my Government is absolutely committed to ensuring the town has a strong economic and jobs future," Premier, Mark McGowan, said.

"The reality is our current electricity system is becoming increasingly unsustainable due to the uptake of rooftop solar and growing demand for renewable options for generation.

"Maintaining the status quo would see average yearly household power bills increase by over $1,200 within eight years.

"Alternatively, taxpayers would have to spend billions subsidising the system, taking funding away from key government projects and services.

"This investment makes economic sense, as it pays for itself by 2030-31, instead of continuing to pay increasing subsidies under the status quo.

"Western Australia will implement a sensible, managed transition to a greater use of renewables for electricity generation, while ensuring we maintain electricity reliability as a priority.

"My Government is providing a new half-a-billion dollar package to support Collie through this transition - focusing on industrial opportunities to create new blue collar jobs around the town. This brings our investment in Collie's transition to over $662 million.

"The transition will be implemented in a sensible, consultative manner, with long lead times to ensure workers and the wider community can plan for the future.

"We will also embark on one of the biggest infrastructure projects ever seen in WA - a projected $3.8 billion investment in renewable generation and storage to create thousands of additional jobs in regional WA, many in Collie and surrounding areas.

"These initiatives will create new local industrial and blue collar jobs to make sure the local workforce has the opportunity to transition into new, high quality roles in the Collie area." ***AMR***

Miners Blast Queensland Government Over "Blatant Resources Royalty Grab"

The Minerals Council of Australia (MCA) has claimed mining investment and regional jobs in Queensland are at risk following that State's Government's announcement of a "blatant resources royalty grab" on an industry that has for years been paying more than its fair share of tax.

"This extraordinary 40 per cent royalty on revenue together with Australia's 30 per cent tax on profit makes Queensland the highest taxing mining jurisdiction in the world. This is unacceptable," MCA, CEO, Tania Constable, said.

"This tax grab is short-sighted and counterproductive over the long term and has the potential to scare off investors in all commodities.

"It will not only impact thousands of direct mining jobs but also thousands of small businesses and many communities that support mining.

"Mining investment and jobs should not be put at risk through any move to increase the already high tax burden on the industry," she said.

The MCA spokesperson said mining operations are the backbone of many regional Queensland towns, providing employment, opportunity and a sense of community.

"Everyone across Queensland benefits immensely from successful mining operations from jobs right through to paying for services such as hospitals and schools.

"Stable and internationally competitive tax regimes are critical to ensuring mining investment continues to grow and deliver further benefits for all Queenslanders.

"Australian mining consistently pays amongst the highest tax in the world including company tax, royalty receipts and payroll tax to federal, state and territory governments."

The MCA said the system works as more royalties and company tax are delivering to the people of Australia – over $39 billion in 2019-20 and will go higher.

"In the period 2010-11 to 2019-20, Australian mining paid $106 billion in royalty taxes and $132 billion in company taxes – 30 per cent of all company tax paid in that period.

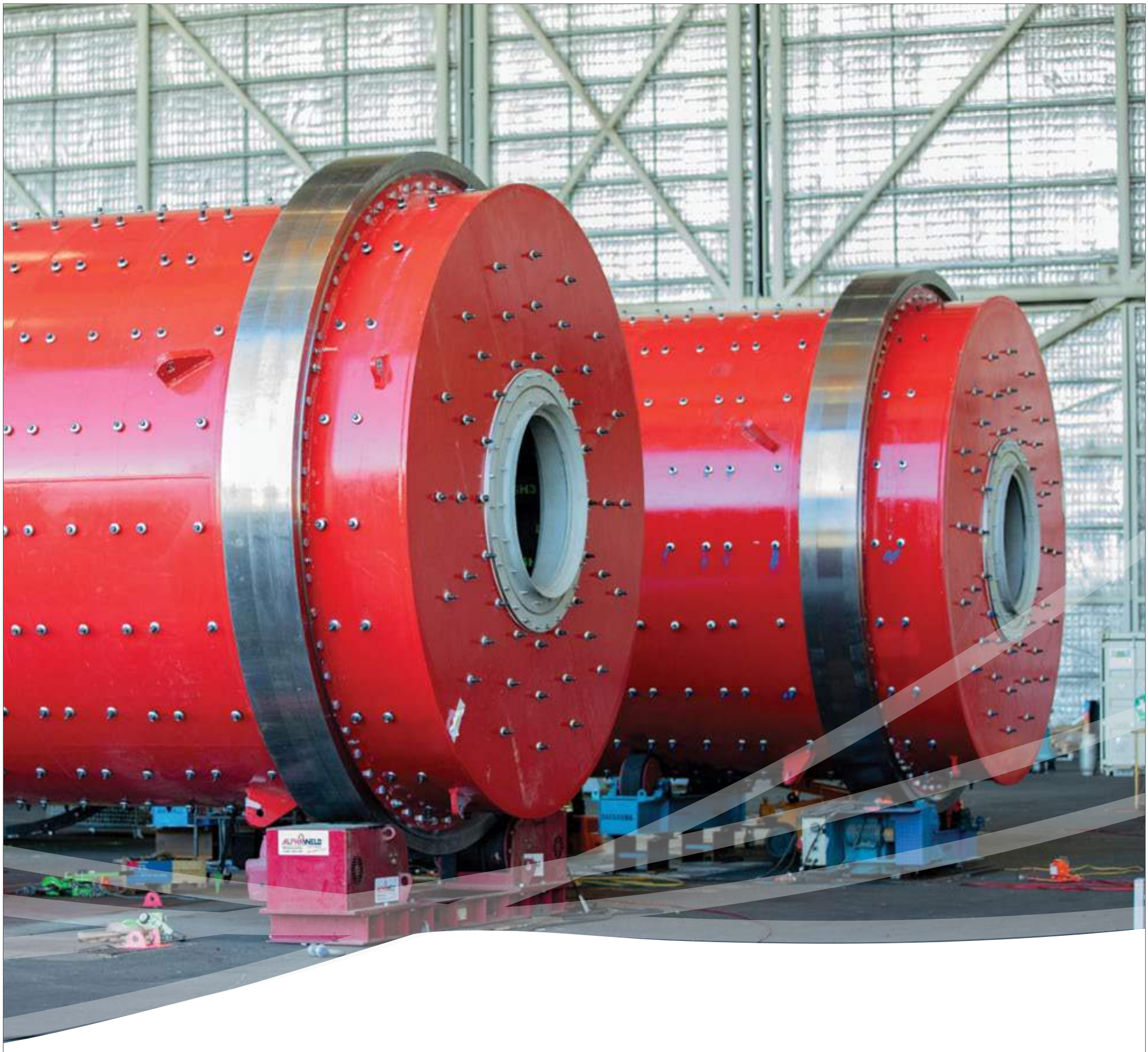
"While Australia has an established comparative advantage in mining exports, future investment in new mining and minerals processing operations is not guaranteed.

"The mining industry faces significant competition from emerging mining regions in Africa, as well as traditional mining centres in South America and Canada to attract investors.

"The decision by the Queensland Government was made despite assurances prior to the last state election that there would be no new or increased taxes that could undermine investment in the sector.

"Equally disappointing was that the industry was not consulted on the proposed hike in royalties; a process that is critical for a change that will impact the sector," Ms Constable concluded. ***AMR***

Media Contact:
Peter Kos
M: 0447 452 675
P: 02 6233 0670
E: peter.kos@minerals.org.au
W: www.minerals.org.au



INDUSTRY LEADERS IN IRON ORE SCRUBBER DESIGN AND OPTIMISATION

Get the most from your mining operations and achieve higher, more consistent production outcomes with McLanahan's reliable equipment, superior engineering capabilities and value-driven support solutions.

We help companies the world over in the solid fuels, industrial minerals and hard rock ore sectors with a broad range of safer, simpler and smarter material processing solutions that can be relied upon to perform as needed, when needed - now, and into the future.

McLanahan®

FEEDING // CRUSHING // SAMPLING // DEWATERING // SCRUBBING

mclanahan.com.au

Rio, WesTrac and Caterpillar bring Remote Dozer System to WA

Removing dozer operators from high-risk environments was the sole driver behind Rio Tinto's rollout of a remote dozing solution.

And as the solution was rolled out, any initial resistance to relocating from the cab to a nearby remote operator station was quickly overcome.

While safety performance is always a key consideration when new technology and work practices are implemented in the Australian mining industry, it is not always the primary driver.

But for Rio Tinto, WesTrac and Caterpillar, a new tele-remote dozing system (TDS) at Rio Tinto's iron ore operations in Western Australia is wholly focused on operator safety.

Rio Tinto Superintendent Process and Technical Michelle Woolcock says the overarching brief was to effectively manage potential safety risks associated with dozers working in areas that were more susceptible to risk.

"The brief was to take the operator out of the line of fire, in particular to reduce the risks associated with slipping or stability issues, for example when they were working on stockpiles or close to steep walls," Michelle said.

The solution utilises the Cat MineStar Command for Dozing technology and a dedicated operator control centre, allowing for non-line of site operation of dozers working in high-risk areas.

There is also an over-the-shoulder console which allows operators to work within visual range, typically used for temporary or one-off movements of machines.

The remote operator control centre is similar to a simulator with all the in-cab controls replicated. Rio Tinto's also incorporates a vision kit, making use of four cameras on board each dozer and relaying machine information and visuals in real time via a WiFi network.

Rio Tinto Superintendent Operational Readiness Jamie Webster says the initial rollout of the TDS at the Cape Lambert Port facility north-east of Karratha is focused on high-risk operations on coarse ore stockpiles with steep gradients and "live" areas where ore is fed into underground tunnels.

"These dozers are operating in quite a tight area around lots of fixed assets," Jamie explains. "That means work is quite intricate and the real benefits will be realised in pushing ore from the stockpiles into the live zones.

"The dozers are working at the top of a large stockpile and if a dozer slips it could go down a bank, or if it's working while the apron feeder is operating, the ground could fall away from underneath it.

"Obviously, we already have processes in place and technology to mitigate such risks but putting the operators into a station away from the danger zones eliminates any potential risk of harm, no matter how small that risk might be."

While removing operators from high-risk zones is driving the rollout of the solution, Michelle says it does not mean removing operators from site. She says remote operators still need to be "close to the action" and have detailed site knowledge to function most effectively and efficiently.

"As much as 'non-line-of-site' operation sounds like it could be carried out from anywhere, the reality is that these operators are multi-tasking in their roles," Michelle says. "It will depend on the state of the coarse ore stockpile and what's coming in and going out. They need to be able to visually inspect and determine what needs to be done. They might spend an hour or two dozing then move on to other tasks while they wait for the stockpiles to be replenished.

"When you need dozer operators, you typically need all hands on deck, and when you don't need them, if they're sitting in a control centre hundreds of kilometres away, it's far more difficult to stay on top of other tasks they might carry out on site."

The pair admit there was some resistance among the first trainees, but as operators



became more familiar with the solution, they embraced it.

"A lot of operators quite literally work the dozers through their seats," Jamie says. "They might have worked for decades and are accustomed to feeling the movement. So they're having to relearn how to drive the dozer without that sense of movement, and they're relying entirely on the visual feed of information rather than the other senses from being in the mobile rig."

WesTrac Product Manager – Mining Technology Gary Scott says the Cape Lambert project provided an ideal proving ground to develop rollout strategies that can be extended to other sites.

"Every site and situation is obviously going to have some unique aspects, but there is a set of core requirements that will apply across all implementations," Gary said. "It starts with an audit on the available machines to understand the current capabilities, then we can define the technology requirements to be fitted to those machines.

"Across an operation like Rio Tinto's, we'd typically expect to see a fair bit of consistency but there may still be differences based on the age of the site and the asset maintenance and replacement schedules.

"The system readily interacts with other Cat control systems including MineStar Terrain, so we can set up working parameters including geofencing and avoidance zones."

Those operating parameters and control solutions will be vital as the TDS technology is rolled out across Rio Tinto's mine sites, including its new Gudai-Darri mine.

When production commences this year, the site will be one of the most technologically advanced mines in the world and will feature a large fleet of autonomous haul trucks, water carts and drill rigs. In such environments, any manually controlled equipment, whether in-cab or remotely operated, must be equipped to interact with autonomous machines.

While every aspect of the TDS technology and the way it interacts with other equipment is safety focused, Jamie expects that in time the operations will see productivity gains too.

"There's still a lot to understand about how we can be the most productive with this system," Jamie says. "As we're learning and developing, and as everyone becomes more familiar with the new way of operating, the added comfort and control will lead to operators being even more productive than we are today." ond, AREEA' Director Operations, said.

AMR

AREEA Declares Local Resources Employers Are Working Hard To Eliminate Harassment

The Australian Resources and Energy Employer Association (AREEA) has declared the nation's resources and energy employers are working vigorously to eliminate sexual harassment from the industry

"Australia's resources and energy employers are working vigorously to eliminate sexual harassment from the industry," Tara Diamond, AREEA' Director Operations, said.

"We welcome today's final report tabled by the Western Australian Parliament's inquiry into sexual harassment within the mining and resources industry.

"While extremely disappointed at the depth of the issues it has uncovered, AREEA thanks the members of the Community Development and Justice Standing Committee for their extensive work on this critically important issue. This report will add significant further value to the work being undertaken in the hope such an inquiry need not be repeated in the future.

"The industry is committed to eradicating such behaviour and rebuilding its reputation as one that has safe and respectful workplaces with zero tolerance for sexual harassment and all other forms of bullying and harassment.

"As the national representative group for employers in the mining, oil and gas, and service and contracting sectors, AREEA is working intensely in this space, including through its National Industry Taskforce on workplace sexual harassment established at the start of this year.

"This taskforce comprises representatives from a diverse range of employers, all collaborating on meaningful actions and initiatives to change the culture of the industry.

"AREEA, the representatives on our national taskforce and our membership more widely, will now digest fully the inquiry's final report before engaging on its various recommendations to eradicate sexual harassment from our workplaces."

MCA says mining sector committed to eliminating sexual harassment

Meanwhile, the Minerals Council of Australia (MCA) has welcomed the release of the WA report.

"The Australian mining industry's core value and commitment is the safety, health and psychological wellbeing of its workforce, where everyone who goes to work returns home safe and healthy," MCA CEO, Tania Constable, said.

"We cannot claim to be taking the health and safety of our workforce seriously, if the focus of our safety systems and culture do not include the health of the whole person: physical and psychological."

Ms Constable said the minerals industry has made substantial progress over the past two years on addressing sexual harassment in the industry, with the MCA Respect@Work Taskforce delivering a number of actions:

- Published a new safety and health policy to specifically incorporate psychological harm and respectful behaviours (January 2021)
- Explicitly committed to eliminate sexual harassment in workplaces (January 2021)
- Adopted a National Industry Code on eliminating sexual harassment (July 2021)
- Published a comprehensive toolkit of resources to support industry (December 2021).
- The MCA recognises, however, that the industry has a long way to go to eliminate sexual harassment across its workplaces and will continue to support members achieve this critical reform and undertake further actions, including:
- Embedding the National Industry Code on eliminating sexual harassment
- Holding regular CEO-led discussions
- Developing clear expectations on hiring and promotion of candidates with shared values about respectful workplaces
- Developing guidance on sharing information on incidents across the industry, and preventing terminated employees moving across the industry
- Delivering a series of webinars to support embedding of the national industry code.

"The MCA is also encouraged by the incoming Labor Government's commitments and it will work cooperatively to prioritise the practical and victim-centric adoption of the 55 recommendations from the Respect@ Work Report.

"It is important that all jurisdictions are consistent in the development and application of legislative and policy settings designed to prevent and respond to sexual harassment. Society-wide cultural change is required, not just for some workplaces in some jurisdictions." ***AMR***

CMI Earthing Receptacle



CMI are continually developing new and improving on existing products and are proud to announce a new Earthing receptacle to add to the existing Restrained Series.

The Earthing receptacle is IP 68 rated, design fits the existing restrained castings, with a newly designed brass interior bonding the three phases to earth.

Long lengths of insulated cable have an inherent capacitance, which must be eliminated by discharging voltage to earth to make the installation safe in any mining application.

This product can be used in above or below ground mining and tunnel applications and has an explosion-protected certificate.

CMI Electrical Products have been established in Sydney since 1954.

Operating primarily as a cable manufacturer under the well-known brands of H[illegible] Aflex and XLPE.

CMI are also experts in the field of explosion protected mining equipment under the Minto Industrial Products banner.

As a market leader, Minto is synonymous within the Mining Industry.

Particularly within the underground coupler and receptacle market.

Minto have been supplying couplers for underground mining in Australia for over 40 years.

Our reputation has grown to become global, with exports to mining installations in Indonesia, Papua New Guinea, China, South Africa and Mongolia to name but a few. ***AMR***

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.

CMI QLD-Brisbane
(07) 3863 0749
485A Zillmere Road,
Zillmere QLD 4034
southqldsales@cmielectrical.com.au

CMI QLD-Rockhampton
(07) 4921 0978
Shop 3 at 76 Hollingsworth Street,
North Rockhampton Qld 4701
northqldsales@cmielectrical.com.au

CMI VIC
(03) 9532 1233
3 Dissik Street,
Cheltenham VIC 3192
vicsales@cmielectrical.com.au

CMI WA
(08) 9358 1788
36 Division Street,
Welshpool WA 6106
wasales@cmielectrical.com.au

CMI Head Office NSW
(02) 9807 6155
18-20 Railway Road,
Meadowbank NSW 2114
nswsales@cmielectrical.com.au

1800 264 222
cmielectrical.com.au





BLUNDSTONE UNVEILS NEXT GENERATION OF SAFETY BOOTS

Global icon in innovative safety footwear, Blundstone has launched its most dynamic range yet with the arrival of RotoFlex.

RotoFlex is an all-new, design-driven range of composite toe cap safety boots, developed using the latest biomechanical technology for optimum stability and flexibility.

The RotoFlex range takes work boots to new heights and cements Blundstone's place as the market leader for safety footwear.

Crafted with years of research and development, the RotoFlex range provides a true suite of industrial composite boots that are fit for purpose across a wide range of industries for the hardworking men and women of Australia.

Created on new tooling and hardware, the RotoFlex range is full of safety and comfort features that provide innovative, evidence-based, detailed protection for the worker that wants strong yet flexible footwear.

"The RotoFlex boot system is unmatched in its combination of stability with the freedom to move. This is achieved through biomechanic expertise, using the science of human structure and function and applying it to the requirements of a modern Australian work boot.

The result is each component working together to create a new boot system that is safer, more comfortable, better performing and longer-lasting. This is something the safety footwear market in Australia has been demanding for many years," says Adrian Blandford, Blundstone's Global Work & Safety Range Manager.

The biomechanics system central to the design of each boot can be broken down into four key elements: GripTek HD, Fortalite, Aircell and Softcell.

GripTek HD is Blundstone's all-new sole design, which provides all-day stability and comfort. The sole (with its unique tread pattern) is lightweight, durable and specifically crafted to make the RotoFlex boot suitable for hard surfaces and graded ground. Created for the worker that wants the feeling of stability and comfort as they work, GripTek HD provides a strong foundation from the ground up, through the unique polyurethane (PU) tread patterns and super-cushioned midsole, with zoned support carefully designed to provide comfort for the entire day.

The **Fortalite** toe cap is for the worker who wants a boot that meets leading safety standards without compromising comfort, ease or unnecessary weight. Using innovative technology Fortalite provides compression-proof safety by using a patented ground-breaking Polymer composite material that holds strong under immense pressure. The Fortalite toe cap retains its shape without restricting toe movement or all-day comfort.

An **AirCell** footbed provides ultimate air flow and full-body comfort with every step. This is achieved with a specialised zoning design, where the footbed is uniquely constructed to activate ventilation, moisture control, and cushioning comfort as you walk and move.
The material breathes, pumps air, and is soft—but at the same time robust—ensuring workers get better air circulation and cushioning from their boots.

Blundstone's unique fit system, **SoftCell** creates more room to move within a stable foothold. This is achieved through expert understanding of the connection between a moving foot and the inside of a boot, providing a form-fitting and comfortably snug boot with space to move. The result is an unbeatable fit with unrivalled comfort.

The RotoFlex range brings six new safety boots into the Australian PPE market and is suitable for workers across a range of industries.

The range includes four unisex styles; the six-inch #8560 and #8561, the five-inch #8553 and #8550, and two women's boot styles; the #8863 and #8860 ***AMR***

ABB Launches Next-Generation Mine Hoist Control System

ABB has launched ABB Ability NGX Hoist Control, a global control system enabling mining companies to achieve maximum performance and safety of hoist operations.

Building on ABB's reliable and proven past generations of hoist control systems, it brings new levels of reliability, flexibility, and ease of use to smaller companies on greenfield projects or upgrades. It can also help larger companies reduce costs and improve efficiencies through standardisation of control systems.

ABB Ability NGX Hoist Control is adaptable to any type of hoist and can be used in upgrade projects replacing third-party control systems. The NGX Hoist Operating Station was designed with the latest ergonomic and human factors engineering guidelines and is based on the latest human machine interface (HMI) insights, offering the most modern and intuitive operator interface.

It can be easily integrated with other market leading ABB technologies including ABB Ability Safety Plus for hoists – the first fully SIL 3 certified hoist solutions which ensure the highest level of safety – which was first commissioned in 2019 on the world's largest friction hoists.

It is also compatible with advanced digital monitoring service ABB Ability Performance Optimization for hoists which continuously tracks the status of a mine hoist and improves uptime, availability, performance and productivity by providing actionable information on key performance indicators (KPIs) and provides remote access to ABB experts at all times.

"This exciting new launch follows the recent introduction of ABB Ability Safety Plus and is another milestone for greater levels of reliability, optimization and protection for mine hoists," said Oswald Deuchar, Global Product Line Manager for Hoisting, ABB.

"With ABB Ability NGX Hoist Control mine operators benefit from more flexibility and an improved user experience, including round-the-clock support and the ability to manage hoists for greater optimization. By implementing the same control system across plants OPEX can be further improved."

Max Luedtke, Head of Global Product Group, Mining Aluminium Cement and Vice President at ABB, said the health and safety of people working in mines, from our



people to our customers' employees, is of paramount importance at ABB.

"ABB Ability NGX Hoist Control is the latest example of this and follows the development of ABB Ability Safety Plus for hoists and of autonomous solutions including ventilation on demand and digital services.

Together these improve the quality of the working environment, and enable remote supervision and autonomous operation, removing operators from hazardous areas," he said. ***AMR***

JUMBO PUMPS

Safer.
More efficient.
Economical.



The **Truflo Pumps' Jumbo Pump** has been engineered specifically for the underground mining industry, providing a real answer to underground hardrock dewatering cost reduction—it replaces the need for submersible pumps at the face. Designed for, and proven at, Australia's largest underground mining operations.

APPLICATIONS

Underground Face Dewatering
Longwall Dewatering
Tunnelling
General Dewatering
Sump Drainage
Roof Bolter's Dewatering

AUSTRALIAN MADE AND OWNED

TRUFLO PUMPS 1992 30 YEARS 2022 Excellence in Dewatering Systems

truflo PUMPING SYSTEMS

FREECALL AUSTRALIA
1800 813 677
www.truflopumps.com.au

"

You saw it, and thousands of others in the mining industry have too.

BOOK your position for **2023 NOW!**

handbook@australianminingreview.com.au





EPIROC'S BOOMER PINPOINTS PRECISION WHILE PROVIDING PARAMOUNT PRODUCTIVITY

Epiroc's Boomer S10 S provides near surgical precision in drilling and major cost savings throughout the cycle – all thanks to being the world's first one-boom jumbo featuring Epiroc's Rig Control System.

The consistent, repeatable, and quality-assured results are made possible by advanced automation, operator-assisting features, and digital drill plans.

"With Boomer S10 S as our latest addition, we are proud to offer a sustainable automated operation for the small segment, with a complete range of automated rigs for face drilling, production drilling and rock reinforcement underground", said Sarah Hoffman, VP Sales & Marketing at Epiroc's Underground division.

The great value of automation

Thanks to the digital drill plans and Epiroc's Rig Control System the drill rig is perfectly aligned in the drift to optimize accuracy, providing less overbreak and underbreak, and longer pull rounds.

"The Rig Control System provides drilling accuracy way beyond what human eye measure could ever accomplish. It is high-quality production from start to finish, and a great milestone reached for mine development", said Niklas Berggren, Global product manager face drilling equipment at Epiroc.

When applying the High-Performance Development method – a way of working during the entire drill cycle –Boomer S10 S offers up to 25 % more development meters1 compared to traditional one-boom jumbos.

The total cycle time is reduced thanks to better pull-length, fragmentation, and less need for scaling.

"It's a snowball effect on productivity: accurate drilling holes means less explosives, less scaling and better tunnel profiles. In turn, a better tunnel profile means less rock reinforcement and less tear on all the machines in the drift.

All this leads to significant cost reductions while increasing productivity and safety for everyone involved," Niklas Berggren explains. ***AMR***

Continuing Chinese Shipping Delays has led to Tripling of Australian Trade Finance Requests

A recent fresh wave of COVID lockdowns in China leading to more supply chain disruptions has left Australian businesses looking for new ways to stem cash flow problems.

Funding solution provider OptiPay has seen enquiries for trade finance triple in recent weeks as businesses find getting stock from overseas is harder, more expensive and is taking longer.

"It's definitely global supply chain issues that are driving these enquiries," says Optipay CEO Angus Sedgwick.

Since the beginning of March congestion levels at ports in mainland China have increased 30 to 40% after Shanghai was locked down due to the country's zero-COVID policy.

"New lockdowns in China caused chaos once again. Some businesses are experiencing six week delays in receiving their goods while others are waiting up to six months," he says.

"Trade finance allows them to free up working capital and not have it tied up while goods are manufactured and then shipped."

"It's also more cost-effective and flexible than a business loan or overdraft," he says. Mr Sedgwick says he looks for the following when assessing a business for trade finance.

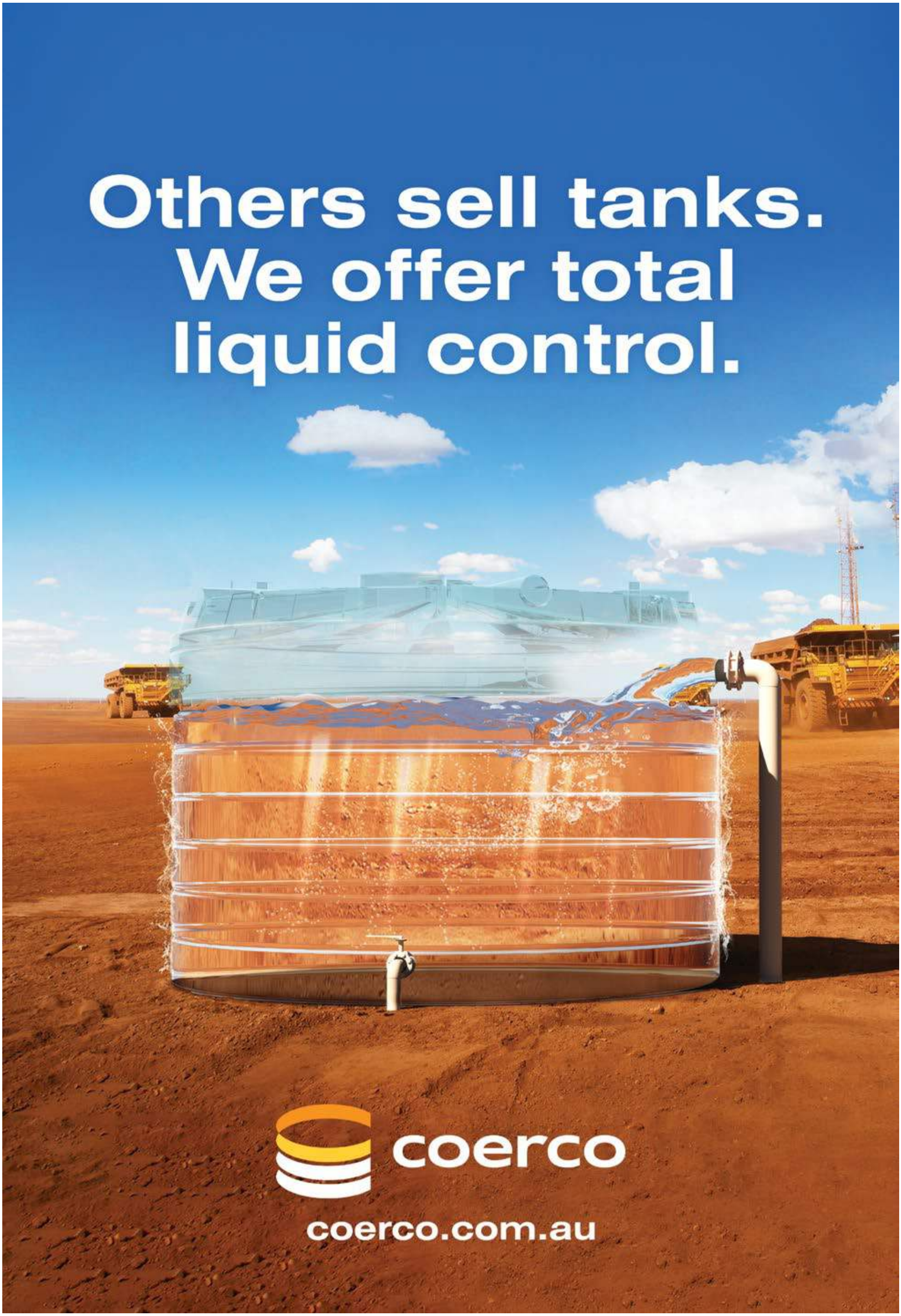
- Established business – must be turning over at least $3mill annually making sales to other businesses rather than consumers.
- Selling products that are saleable to multiple markets.
- Ability to put 30% of the transaction as a deposit.
- Strong stock turnover

A recent survey from the NAB found supply chain constraints are a major issue for 28% of Australian SMEs. 1 in 4 expect it will still be a significant issue in 12 months time.

"Supply chain issues are going to continue to present as a problem for many businesses well into 2022 and now is a good time for them to re-evaluate how they deal with international suppliers and look at ways of reducing pressure on their cash flow," says Mr Sedgwick.

"The global supply chain issues will no doubt be a key contributor to the predicted level of insolvency returning to pre COVID levels over the coming 12 months," he adds. ***AMR***




Others sell tanks.
We offer total
liquid control.
coerco
coerco.com.au



The Tomingley management team celebrating the pour of the 500,000th ounce bar (L to R) Andrew Wotton, David Pritchard, Ken Birmingham, Craig Pridmore, Jason Hughes (General Manager), Belinda Hollingworth, Brian Prendergast, Daniel Short, Chris Hiller, James Didovich.

TOMINGLEY CELEBRATES 500,000 OUNCE MILESTONE



Casey Martin receives the Outstanding Trade, Operator or Technician Award.

Alkane Resources recently confirmed the 500,000th ounce of gold was poured at Tomingley.

"Pouring our 500,000th ounce is a significant milestone that provides a fitting testament to the teams that have worked on the Tomingley Gold Project and Operations since the days of discovery by Alkane in the early 2000's," Alkane Resources Managing Director, Nic Earner, said.

"When we commenced mining at Tomingley in 2013, the plan was to produce 380,000 ounces from open cut and underground over seven years. We were also quietly confident that further discoveries would be made during that time to allow extension.

"Here we are, nine years later, entering our second decade of production and passing 500,000 ounces, proving that our confidence was well founded.

"We have met or exceeded our production guidance every year of operation and surpassed our original production targets.

"We have expanded our resources around the existing mine and added new discoveries to the south of Tomingley. Our geological teams are seeking to expand these resources even further.

"As a result, our current Life of Mine plan shows a further ~700,000 ounces of planned production over the decade ahead.

"On behalf of the board I wish to thank our employees and contractors for their sustained excellence, and our shareholders and other stakeholders for their continued support of the company."

Background
Tomingley Gold Operations is a wholly owned subsidiary of Alkane, located near the village of Tomingley, approximately 50 kilometres southwest of Dubbo in central western New South Wales.

The gold processing plant was commissioned in January 2014 and has been operating at the design capacity of 1Mtpa since late May 2014. Mining at Tomingley is currently based on open cut and underground mining at the Caloma and Wyoming deposits.

The current Life of Mine plan includes the San Antonio and Roswell (SAR) deposits, located 3- 5km to the south. Alkane is expecting to obtain development approval for SAR in mid-2022. Tomingley has consistently met or exceeded guidance over its' years of operation.

Tomingley Gold Extension Project
Alkane's intention is to develop the Roswell and San Antonio deposits, which are located three to five km south of Tomingley, as soon as possible. Alkane continues to progress approvals for this development. The Environmental Impact Statement has been through public display with all submissions now received by the NSW Department of Planning and Environment. The company expects to respond to these submissions throughout May. The expected timing of Project Approval remains mid-2022.

Alkane's Casey Martin wins NSW Women in Mining Award
In other news, Alkane's Casey Martin has been presented with the Outstanding Trade, Operator or Technician Award at the 2022 NSW Women in Mining Awards.

Casey joined Tomingley Gold Operations in 2021 as an Underground Bogger Operator, breaking new ground as the first woman underground at the operation.

Casey was also recognised for her dedication to encouraging more women to take on non-traditional roles in the mining industry.

NSW Minerals Council CEO Stephen Galilee congratulated all of the winners and finalists.

"There are many incredible women in our NSW mining industry and these Awards celebrate their achievements in a range of fields," Mr Galilee said.

"From technology and innovation to engineering and trades, as well as in operational roles and running businesses, our award winners highlight the opportunities for women in mining and showcase the career paths available in our sector.

The winners in the five award categories will be entered into the Women in Resources National Awards. ***AMR***

Glastonbury
Mining Consultants Pty Ltd
Andrew Glastonbury—Director
PH: 02 6365 1392
MOB: 0417 653 135
www.gmcmining.com.au
Mob 0417 653 135
andrewg@gmcmining.com.au
- Estimating
- Cost Analysis
- Due Diligence
- Contract Negotiation
- Tender Preparation & Evaluation
- Project Management
- Feasibility Studies
- Technical Reviews & Audits
- Contract Management
- Operational Reviews & Audits



Two Epiroc t45s in operation at Tomingley

8-Year Drilling Company Of Choice For Tomingley Gold Operations

Maxfield Drilling offers total drilling solutions, with the most advanced drills for all surface mining, quarry drilling and civil construction work.

The current, leading-edge drilling fleet allows Maxfield Drilling to provide clients with professional and expert service.

With an impressive list of current and past blue-tier clients, Maxfield Drilling managing director Dean Maxfield says the core of the company's success is its strong customer service and honesty.

"We have built a solid reputation of quality and professional work," he says.

"Our experienced personnel have access to the best training in the industry.

All services are covered, including but not limited to, production blast hole drilling, pre-split, rotary, down-hole hammer, top hammer, depressurisation/sewatering drilling, exploration reverse circulation grade control and sampling, geotechnical, ground anchors and soil nails and remote drilling.

Outstanding Safety And Environmental Performance

With an outstanding safety record spanning 35 years, Maxfield Drilling is focused on staying at the forefront of safety. The company works to high environmental standards while achieving its hallmark high production levels.

There are clear Work, Health, Safety and Environmental policies and this provides a strong indication of the excellent leadership, commitment and accountability Maxfield Drilling has towards these areas.

Drill Safe is the company's Safety Management System, which supports the company in complying with legislation across all Australian jurisdictions, including focusing on best practice in risk management and compliance.

Maxfield Drilling is also committed to providing a safe and healthy working environment and safe systems of work for all its workers, irrespective of their locations.

Equipment, training, instruction, information and supervision are provided to ensure all duties are fulfilled in a safe and productive manner.

Maxfield Drilling ensures its workers are adequately trained and made aware of any impacts their decisions and actions may have on the environment.

The company is dedicated to reducing waste, maximising recycling, designing equipment and procedures to minimise impact on the environment, understanding and complying with clients' environmental management systems, policies and procedures and seeking clarification of plans and procedures prior to starting work.

Thumbs Up From Tomingley Gold Operations

When Mining Superintendent Kym Mosey from Alkane Resources - Tomingley Gold Operations was asked for comment on Maxfield Drilling, he was only too pleased to make the following observations.

"Maxfield Drilling has had been providing blast hole drilling services to Tomingley Gold Operations for over eight years, throughout the company's entire open cut drill and blast operations," he said.

"In this time, the consistency and delivery of their high level of performance, professionalism and service delivery have been outstanding and impeccable."

Mr. Mosey described that he has not seen this level of professionalism and finesse of service delivery from any other drilling contractor in his many years of mining experience.

"Maxfield Drilling is focused on the needs of the operation and are always willing to modify, change and adapt to what is required, as demand and operational challenges emerge as they do over the life of mining operations," he said.

"Tomingley Gold Operations expect delivery on quality, quantity, time-based targets and cost delivery every day and Maxfield Drilling delivers these."

Mr. Mosey also highlighted that Maxfield Drilling utilises the latest cutting edge technology and has always been able to maintain the drills and the systems to a very high level of accuracy, availability and reliability.

"The systems and management processes used by Maxfield are proven to deliver what the clients need," he said.

"I would highly recommend Maxfield Drilling to any prospective mining company looking for a supplier that really does deliver on reliability, consistency, professionalism and cost." ***AMR***



Maxfield Drilling's newest fleet member – 2021 Sandvik DPI1100i.



Maxfield Drilling ute in the foreground and the DX900i in the background.



OzArk Brings Wealth Of Expertise To Tomingley Contract

Surveying a creek line for Aboriginal heritage during the Tomingley Gold Extension Project.

OzArk Environment & Heritage provides a range of professional ecological and heritage services throughout NSW and interstate.

Since 2009, OzArk has been heavily involved at the Tomingley Gold Operations in NSW, undertaking specialist Aboriginal, historic and biodiversity assessments, including:

- Aboriginal and historic heritage and biodiversity assessments for the Tomingley Gold Project between 2009 and 2011, including an Aboriginal archaeological test excavation programme.
- Biodiversity monitoring for specific fauna and flora populations, including the Superb Parrot and the Eastern Yellow Robin over 2016 and 2017.
- Aboriginal and historic heritage assessments for the Tomingley Gold Extension Project over 2020 and 2021.

In July 2022, OzArk will be completing an archaeological test excavation at the former village of McPhail, located south of Tomingley, as part of the Tomingley Gold Extension Project.

The village of McPhail supported the McPhail gold mine and dates to the mid-1880s. During its height of operation, it supported two hotels, at least one church, a school, shops, and dwellings.

Tomingley Gold Operations ensure that Aboriginal and historic heritage and biodiversity are appropriately assessed and managed and is one of the main reasons OzArk looks forward to continuing its working relationship with Tomingley Gold Operations on its projects.

About OzArk

Operating since 2000, the company is experienced in working within all levels of the approval pathway, including State Significant Developments, State Significant Infrastructure as well as local scale projects. OzArk's team of archaeologists and ecologists work in unison and utilise the company's extensive local knowledge to provide clients with a streamlined and cost-effective development solution.

The company provides a flexible, tailor-made approach to environmental and heritage management and is proud of its innovative approach to working with developers and regulators to provide management recommendations that are culturally and environmentally sensitive.

OzArk is an approved contractor for: Local Government Procurement Professional Consulting Services; Transport for NSW Professional Services Contract; and TransGrid Environmental Assessment Panel. It is also third party certified for QMS, EMS and OH&S. ***AMR***



Inspecting trees for Aboriginal cultural modifications.



DONT BE LEFT IN THE DARK.



Keep up to date with the latest industry specific news.

THE AUSTRALIAN MINING REVIEW

your **Gateway** to the **Mining Industry**

Subscribe to The Australian Mining Review today or visit us online for full news coverage and industry specific products.

australianminingreview.com.au



AERIS GETS THUMBS UP FROM SHAREHOLDERS FOR ROUND OAK ACQUISITION

Established Australian copper-gold producer and explorer, Aeris Resources Limited (ASX: AIS) has received shareholder support for its proposed acquisition of Round Oak Minerals Pty Ltd.

At a recent Extraordinary General Meeting, Aeris shareholders overwhelmingly approved all resolutions related to the Transaction. All conditions precedent have now been satisfied and completion of the transaction is scheduled for July 1, 2022.

"Today's strong support from our shareholders is a resounding endorsement of not only the Round Oak acquisition but also our clear strategy to grow Aeris into a mid-tier miner with long-life assets," Aeris' Executive Chairman, Andre Labuschagne, said.

"The addition of the Jaguar, North Queensland and Stockman assets significantly diversifies our portfolio and increases our exposure to copper and zinc, both of which are considered 'future metals' and forecast to have increasing demand profiles in the decades ahead.

"We again thank shareholders for their support."

In late April, Washington H. Soul Pattinson and Company Limited confirmed it had entered into a sale agreement with Aeris Resources to sell its wholly-owned subsidiary, Round Oak Minerals Pty Limited for total consideration of $234 million. Upon closing of the transaction, WHSP will receive $80 million in cash and $154 million in Aeris shares, resulting in WHSP becoming Aeris' largest shareholder with a 30.3% ownership interest.

Robert Millner, Chairman of WHSP, will join the Aeris Board as a Non-Executive Director upon completion. The transaction is subject to Aeris completing a capital raise and obtaining shareholder and other approvals. WHSP is expected to receive total cash distributions of approximately $100 million from Round Oak in FY22 up until completion, following continued strong operating performance at its Jaguar zinc and copper mine in Western Australia and Mt Colin copper mine in Queensland.

The transaction combines two complementary businesses to create an emerging, mid-tier base and precious metals company with a diverse portfolio of four operating mines and the flagship Stockman development project underpinning an attractive organic growth pipeline.

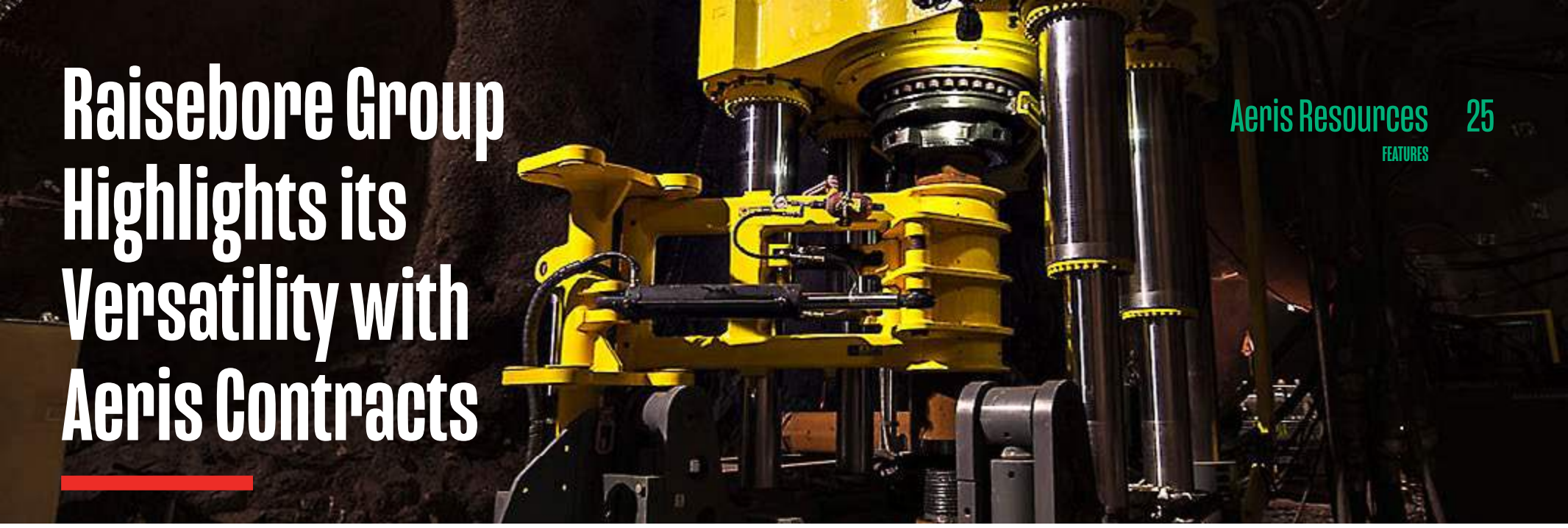
"This transaction represents the culmination of a significant phase of investment in building a substantial base metals business and, through the combination of Round Oak with Aeris, provides a strong platform to continue WHSP's exposure to copper which is well-positioned to benefit from global trends in electrification and renewable infrastructure," Todd Barlow, Managing Director of WHSP said.

Prior to the Round Oak acquisition, Aeris Resources' owned two operational assets, the Tritton Copper Operations in New South Wales, and the Cracow Gold Operations in Queensland. In FY2022, Tritton is forecast to produce 18,500 – 19,500 tonnes of copper and Cracow is forecast to produce 56,000 – 59,000 ounces of gold.

Aeris recently reported copper production of 4,040 tonnes at AISC of A$5.94/lb.

The company also confirmed that Budgerygar development progressing on schedule with an updated Mineral Resource estimate targeted for Q4 FY22; that the Avoca Tank access decline remains on schedule, while the Murrawombie Pit Cut-back design had been completed and tender underway. ***AMR***

Raisebore Group Highlights its Versatility with Aeris Contracts



With a vast suite of skills and a wealth of experience, the Raisebore Group of companies has provided a wide range of service to Aeris Resources for a number of years.

The Raisebore Group of companies has been operating for more than 30 years and encompasses Raisebore Australia (RBA), DRC Drilling (DRC) and 360 Mining (360).

Currently all three of these entities provide services for Aeris at the Tritton, Murrawombie and Avoca Tank mines.

RAISEBORE AUSTRALIA

Raisebore Australia Pty Ltd (RBA) has ongoing contracts with Aeris and has contracted at Tritton mines for over 20 years, providing raise drilling services at Tritton, Murrawombie and Avoca Tank including working on production slot holes, escape ways and ventilation shafts both surface and underground. It is currently drilling the ventilation shafts for the Avoca Tank and Budgerigar mines.

A true specialist RBA focuses on raiseboring only; be it conventional, down-reaming or up-hole. RBA offers its services to both the mining and civil construction industry and employs approximately 50 personnel.

The company has a major focus on safety and believes that this value has contributed significantly to its outstanding safety performance where it had not incurred an LTI for a period of nine years.

RBA has completed projects in all States of Australia, along with the Northern Territory, New Zealand, Vietnam, Hong Kong, Portugal, Spain and Ghana. It has drilled and excavated many of the major shafts in Australia, up to 865 m in depth and up to 5.5 m in diameter.

RBA has a fleet of 15 Raiseborers, with the capacity to ream shafts from 0.66 metres to 6.0 metres in diameter, and up to 1,010 metres in depth.

RBA's past and current clients include BHP, Rio Tinto, Xstrata, MMG, Newcrest, Barrick Gold, Oz Minerals, Aeris Resources, CMOC, Oceania Gold, Aurelia Metals Ltd and Newmont in Australia, New Zealand and West Africa.

360 MINING

360 Mining has an 18 month contract to help develop the Avoca Tank Mine, which is due to be completed in March 2023 after commencing in October 2021,

360 Mining now an established underground mining services provider which is able to draw from some of the industry's most experienced professionals to deliver on its commitments to its customers,

The suite of services provided by 360 Mining allows a client to cover a multitude of activities with one contractor.

Turnkey Mining Services include:

- High speed development
- Production Drilling
- Cable Bolting
- Project Management
- Labour Hire
- Equipment hire (wet/dry)

DRC DRILLING

DRC Drilling has been contracting with Aeris on site for the last four years, providing both surface and underground diamond drilling services.

DRC is a market leading contract drilling company formed in June 2015.

It specialises in providing surface and underground drilling services to the resources sector such as diamond drilling and reverse circulation drilling.

It also had the ability to drill large diameter holes up to 28" to allow use of Range III casing for applications such as deep water wells, shallow oil and gas wells and Coal Bed Methane (CBM) drainage.

The company's has strategic workshop and office bases located in Cobar, Orange, Perth, Mount Isa and Port Augusta, with their Head Office based in Adelaide, servicing our Australia-wide operations.

Sharing the facility with Raisebore Australia provides both businesses with cost and resource efficiencies, ensuring the lower overhead costs flow through to its clients.

The Raisebore Group of companies is truly a one-stop-shop for raisebore, mining and specialist drilling activities in Australia and around the globe. *AMR*

Raisebore Australia
DRC Drilling Our people make it happen
360Mining

THE RAISEBORE GROUP OF COMPANIES
FOR ALL YOUR DRILLING NEEDS





The **Raisebore Group of companies** has provided a wide range of service to **Aeris Resources** for a number of years.

The **Raisebore Group of companies** has been operating for more than 30 years and encompasses **Raisebore Australia (RBA), DRC Drilling (DRC) and 360 Mining (360)**.

The Group has a proud record of supporting **Aeris Resources** and its projects.

CONTACT US:

RAISEBORE AUSTRALIA
(08) 8358 4444
david.hunter@raisebore.com.au
www.raisebore.com.au

DRC DRILLING
08 8358 4400
admin@drcdrilling.com.au
www.drcdrilling.com.au

360 MINING
08 8358 4444
admin@360mining.com.au
www.360mining.com.au



MACA AND CAPRICORN COMPLETE SUCCESSFUL AUTONOMOUS HAULAGE TRIALS AT KARLAWINDA

Capricorn Metals Ltd recently revealed that Karlawinda earthmoving contractor MACA and its technology partners SafeAI and Position Partners (collectively Automation Partners) have completed a stage 1 proof of concept of a proprietary automated haulage (driverless trucks) technology system through field trials conducted at KGP.

The field trials were undertaken by (and at the cost of) the Automation Partners in a cleared and safety bunded area away from the active mining operation at KGP to demonstrate and evaluate the capabilities of the proprietary autonomous vehicle technology.

The technology was installed on a Hitachi EH3500 model 180T dump truck and a haulage cycle route established for navigation. The field trial culminated in the achievement of successful autonomous load, haul and dump cycles in February 2022.

This milestone is part of the Automation Partners proof of concept for the technology. Work will continue on developing the technology to the point that it is ready to be installed on trucks in an active mining environment. Capricorn and MACA – non binding memorandum of understanding Capricorn is following the trials and progress towards validation of the technology with interest as there is potential long terms benefits to both MACA and Capricorn of a successful roll out, including:

- improved operating efficiency and availability which could deliver cost savings;
- lower consumption of fuel and lower wear on tyres and brakes;
- lower personnel demand in a tight labour market; and
- improved safety outcomes from reduced personnel numbers in the active mine environment.

Capricorn and MACA management have a long history of successful project collaboration. It is based on this relationship that Capricorn provided the Automation Partners access to the KGP mine site for the autonomous haulage field trials.

Given the relationship and the encouraging proof of concept achieved to date Capricorn and MACA have signed a non-binding Memorandum of Understanding (MOU) that sets out both parties long term intentions to further trial and ultimately implement the technology at KGP.



"The autonomous haulage trials that MACA and its technology partners have completed at Karlawinda are a very exciting first step in innovation that could be a step change opportunity for the mid-tier open pit mining space," Capricorn Executive Chairman, Mark Clark, said.

"Capricorn is proud to have facilitated the trials and is impressed by the proof of concept that has been achieved to date.

"We are very pleased that as long-term partners, Capricorn and MACA have executed a non-binding MOU that outlines an intention to further trial and ultimately roll the technology out at Karlawinda in the longer term if it meets all required safety, efficiency, regulatory, legal and commercial hurdles."

Strong Production

The KGP completed its second full quarter of steady state production in the March 2022 quarter. The operation continued to perform strongly with record gold production of 31,769 ounces (Q2: 30,316 ounces). This excellent result, which takes year to date production to 86,414 ounces, sees Capricorn on track to achieve in the upper end of annual production guidance range of 110,000 – 120,000 ounces.

Cash cost before royalties for the quarter was $942 per ounce and the all-in sustaining cost (AISC) was $1,086 per ounce.

Costs have increased slightly from the previous quarter as the third mining fleet was operating at full capacity for the entire quarter with a corresponding increase in mining volumes.

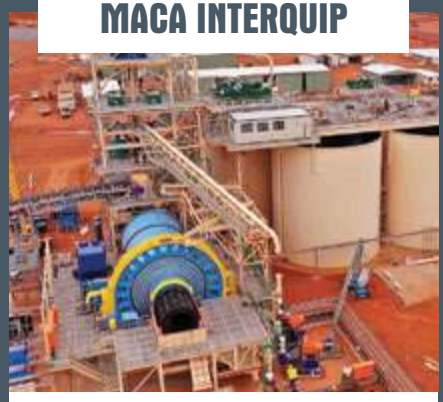
These costs are indicative of the expected life of mine AISC costs which are expected to be in the order of $1,100 - $1,200 per ounce.

Meanwhile, Capricorn has commenced a 129 hole (29,500 metres) near mine RC programme across the Southern Corridor and Tramore areas with results to form part of Mineral Resource Estimate and Ore Reserve update for Karlawinda in the September 2022 quarter. ***AMR***

CAPABILITY SUPPORTING KARLAWINDA

MACA is a trusted contract partner of Capricorn Metals. From feasibility to construction, into mining and autonomy, our operating divisions provide support to the Karlawinda Gold project.

MACA INTERQUIP



- Procurement management and SMP installation of the three stage crushing and carbon-in-leach gold processing plant

MACA CIVIL



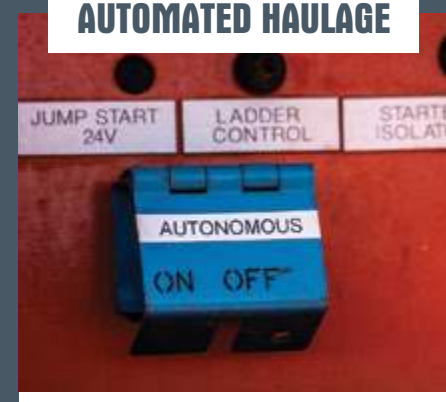
- Construction of 2.6km airstrip capable of landing a 100 seat jet aircraft

MACA MINING



- Drill and blast
- Load and haul
- Plant and equipment maintenance
- Tailings storage facility

AUTOMATED HAULAGE



- Successful proof of concept of retrofittable autonomous haulage solutions

Deployment of AI-powered autonomous haulage at Karlawinda, is one example of how our focus on continuous improvement is helping to future proof our client operations.

maca.net.au

6 VITAL TOOLS TO GROW YOUR BUSINESS

Our Mining Business Development Package has helped businesses like yours, across a range of industries, to form relationships with key decision makers on Australian mine sites.

The 12 Month Package includes:

- Access to our Mines Database (Provides details for Key decision makers across 400 mines)
- Social Media Blast to over 7000 followers across all Publications & Exhibitions platforms
- 12 hard copies of The Australian Mining Review (monthly), including The Australian Oil & Gas Review
- Weekly Mining Report (Carefully researched, real business opportunities)
- Weekly Mines Activity Report (Operational Activity specific to Mine Sites)
- Directory listing on Mine Suppliers Online



t. 08 63140302 e. cal@australianminingreview.com.au www.australianminingreview.com.au/bdp



Northern Star Records Strong Production At Thunderbox

Northern Star Resources Limited (ASX-:NST) has reported strong results from the Yandal Production Centre (supplied by the Jundee and Thunderbox operations).

At Thunderbox, open pit mining continued to pre-strip D Zone while preparation for open pit mining operations at Otto Bore, located to the north of the Thunderbox plant, commenced. Underground production activities continued to build with similar tonnes to last quarter at both A and C Zone areas.

The company reported that the Thunderbox mill expansion is progressing well with commissioning expected in the first half of FY23. The bulk of the civils and the coarse ore stockpile completed, SAG mill shells delivered and installed, and activities to erect associated steelwork and electrical infrastructure install are well underway.

The Thunderbox Operations (TBO) are located in the highly prospective Yandal Belt and the Agnew-Wiluna Belt in the North Eastern Goldfields of Western Australia.

Northern Star acquired TBO in 2014 and commenced commercial gold production in 2016. TBO includes the Thunderbox, Kailis, Bannockburn and Waterloo Projects.

Mining at Thunderbox is by bulk, low-cost open pit and underground methods. Current open pit mining involves an excavator in backhoe configuration supported by a fleet of rear dump trucks.

The underground operation is a modern mechanised trackless mine employing a combination of longhole open stoping methods based on ore zone widths. Paste fill has recently been introduced to maximise recovery of the orebody and ensure stability of the mining areas.

Metso Contract
In other news, Metso Outotec has been chosen to supply its Premier SAG Mill for the Thunderbox gold mine expansion.

"The Thunderbox expansion increases the operation's hard rock processing capacity to 6Mtpa (million tonnes per annum) from the current 3Mtpa and decreases processing costs as outlined in our 2021 Investor Day presentation," the company noted.

"Northern Star's selection of Metso Outotec for the mill supply is supported by their locally based expertise, large mill supply history and ongoing collaboration with Northern Star."

Metso Outotec's Premier SAG Mill is a customisable horizontal grinding mill, capable of meeting a wide range of processing needs. Metso Outotec head of grinding business line Christoph Hoetzel said the mill would surpass Northern Star's requirements.

"We are pleased to be chosen as a supplier for the Thunderbox expansion. The gear-driven Premier SAG Mill to be delivered will feature 18 megawatts of motor power," Mr Hoetzel said.

"With the Premier mill range, we advance our unrivalled innovation legacy providing our customers with the most reliable technology, engineered to exceed their specific requirements."

Hoetzel also echoed Tyrell's sentiment around the strong relationship between the two respected companies.

"We are looking forward to continue the collaboration with Northern Star Resources and to be part of their success story," Mr Hoetzel said.

Using Metso Outotec's Polymer Hydrostatic Shoe Bearing (HSB) and an online mill control system, the Premier mill can benefit a range of mining applications and can be capably integrated with existing infrastructure.

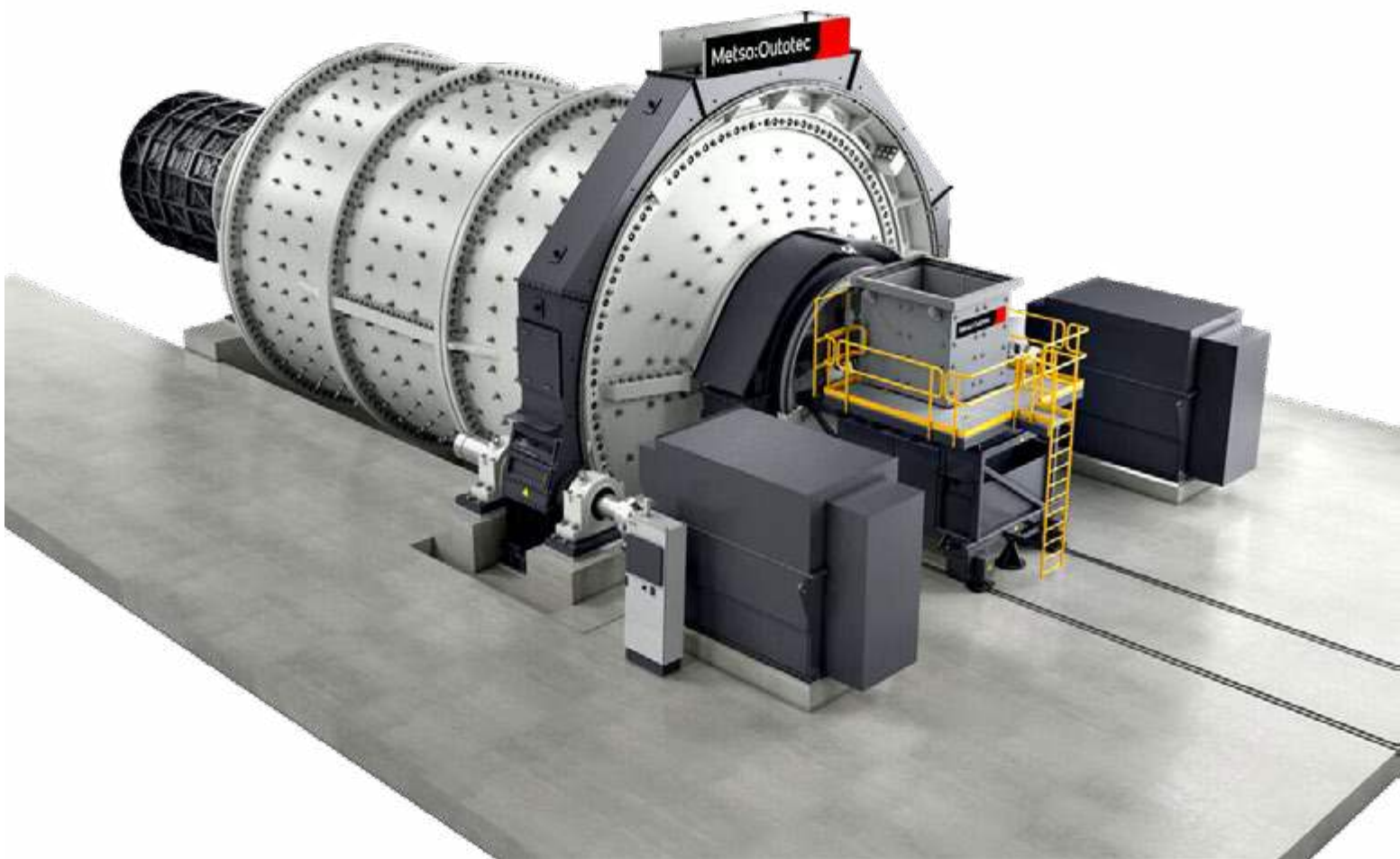
GRES Contract
Meanwhile, GR Engineering Services Limited (GRES) is progressing its engineering, procurement and construction (EPC) contract with Northern Star in relation to the Thunderbox 6 Mtpa Expansion Project.

The works involve the design, engineering, procurement, construction and commissioning of the Project. The contract sum is $101 million and work is expected to start immediately.

"GR Engineering is excited to continue working with Northern Star, one of the world's leading gold producers, to safely deliver the Thunderbox Expansion Project," Commenting on the award, Mr Geoff Jones, Managing Director, Geoff Jones, said in commenting on the award.

"We have worked with the Northern Star team over many years and see this award as a strong endorsement of our proven (engineering, procurement and construction) delivery capability."

Northern Star's General Manager Processing, Simon Tyrrell, said the Thunderbox expansion increases the operation's hard rock processing capacity to 6.0Mtpa from the current 3.0Mtpa, and decreases processing costs. ***AMR***



GR Delivering for Northern Star



GR Engineering Services Limited (GRES) is a leading process design and engineering company which supports mining developments from study to operation.

GRES an ASX-listed company, provides fixed price Engineering-Procurement-Construction (EPC) and Engineering, Procurement and Construction Management (EPCM) project delivery services to the mining and minerals processing industries internationally.

GRES has a long association and continues to work closely with Northern Star Limited on delivering the 6Mtpa mill expansion project at the Thunderbox mine, part of the Yandal operations. The EPC contract was awarded in April 2021 and site works are progressing in line with schedule and budget.

GRES has successfully completed feasibility studies, process and engineering designs and construction for projects of various scale covering a diverse range of metalliferous and mineral commodities.

The company has delivered mineral processing, hydrometallurgical facilities and infrastructure for a range of clients, both in Australia and internationally.

With extensive experience across a range of commodity types including gold, copper, lithium, graphite, iron ore, mineral sands, lead and nickel, the company is equipped to provide solutions for all types of mining projects.

The innovative engineering solutions developed by GRES enable its clients to confidently move into development with the knowledge that the outcomes from study work will be reproduced in the operation of their projects.

GRES has a proven track record of delivering integrated project solutions, having provided services in more than 20 countries and across a vast range of commodities.

GRES has a presence in the Americas via its wholly owned subsidiary Hanlon Engineering & Associates, Inc. (Hanlon), based in Arizona, USA.

Hanlon is a single source, all-inclusive engineering and management firm that has a well-known brand throughout the US.

GRES also has a presence in the hydrocarbons industry via its wholly owned subsidiary, Upstream Production Solutions (Upstream).

Upstream is a leading provider of operations, maintenance and well management services to the oil and gas industry in Australia.

GRES has recently acquired MIPAC who was founded in 1997 and has operated for nearly 25 years on projects in Australia and internationally as a leading global provider of control systems engineering, automation and technology services. ***AMR***









IM Report Notes EM Improvements at McArthur River

A recent Independent Monitor (IM) Report on McArthur River Mine found continuous improvement in environmental management and performance at the mine.

The primary objective of the IM's Annual Environmental Performance Audit Report (AEPAR) is to provide transparency to the local communities in the Gulf Region on whether McArthur River Mining Pty Ltd (MRM) is fulfilling and managing compliance related to environmental obligations.

The AEPAR assesses MRM's performance in a wide range of areas, including its compliance with regulatory approval conditions; its implementation of NT Environment Protection Authority (EPA) recommendations; its implementation of environmental commitments; and its environmental risk management process.

MRM achieved a high level of overall compliance with the conditions imposed under its Authorisation and Waste Discharge Licence, as well as with the implementation of the NT EPA recommendations. The IM found that MRM has continued to avoid or minimise potential environmental risks through proactive management and monitoring across a wide range of site activities.

The Independent Monitor found the mine demonstrated a high level of environmental performance with no significant environmental issues requiring urgent investigation during the audit period.

The AEPAR also found that the McArthur River and its tributaries were considered to be in good health and that it is safe for people to eat fish from the McArthur River including barramundi, sooty grunter and cherabin (freshwater prawns).

Adam Hatfield, Acting General Manager of MRM, said: "The Independent Monitor continues to conduct a detailed review of our environmental performance and make constructive recommendations for how we can continue to improve."

"The entire workforce at MRM is committed to operating responsibly and I'm very proud of their achievements. The Independent Monitor's positive findings about our environmental performance and the continued good health of the McArthur River are a testament to the ongoing progress we've made in recent years."

The report assessed a total of 1,055 conditions. There were no non-compliances. There were 39 requirements scored as partly compliant, however, these were largely administrative (e.g. documentation procedures) and posed a low risk to the environment.

About McArthur River Mining

McArthur River Mining is located in the Northern Territory approximately 970 kilometres south-east from Darwin and 60 kilometres south-west of its closest township, Borroloola. MRM mines one of the world's largest zinc and lead deposits.

MRM provides direct employment to about 1,060 people, including contractors. In 2021, the mine contributed almost $500 million to the local, Territory and national economies through our payment of wages, spend on goods and services from more than 1,000 suppliers – much of which we sourced in the Territory – taxes and community investment projects.

McArthur River is a located on one of the world's largest deposits of zinc and lead, about 970 kilometres south-east of Darwin in Australia's Northern Territory. The operation includes an open cut mine and processing facilities.

Zinc and lead is mined and processed at McArthur River Mine and trucked to Bing Bong Loading Facility on the Gulf of Carpentaria. From there it is shipped around the world.

The mine is committed to operating in a safe, responsible and sustainable manner. It also contributes significantly to world supply of zinc used to galvanise steel—the key method for preventing corrosion—for example, in cars and buildings.

AMR



McArthur River Mining Project

with Custom Designed Solutions

Bulk Fuel Storage, Dispensing, Monitoring & Management

McArthur River Mining (MRM) in the Northern Territory approached PETRO Industrial with a challenge to assist in designing a solution to improve their refuelling needs on the mine.

The Mine was expanding, and an improved diesel storage system was needed to keep track of the fuel dispensing and usage on site.

Throughout the pandemic, travel and safety restrictions changed the way that the mining sector functioned. PETRO Industrial did not hesitate to switch to a more remote system to work closely with MRM and presented several conceptual designs for a new and improved Fuel Farm.

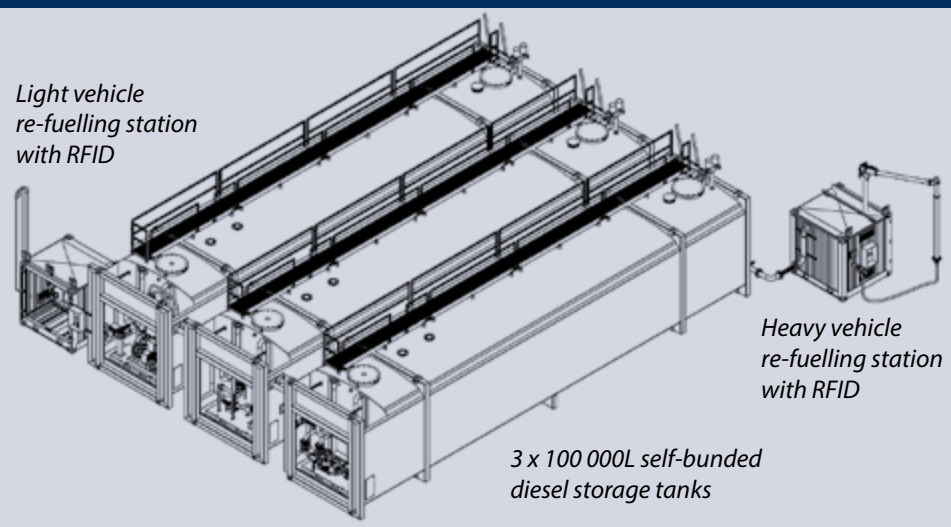
PETRO Industrial made sure that the client received as much information as possible to make an informed decision. Video factory walk-around were just one way to show remotely who we are and what we do – going that extra mile to give the client confidence in potential supplies and a working relationship to pave the future.

PETRO Industrial was awarded the tender!

We supplied:

- 3 x 100,000 litre diesel storage tanks.
- 2 x remote re-fuelling modules - for light & heavy vehicles.
- iPETRO PRO Fluid Management System,
- With RFID readers (***automatic vehicle identification & authentication***) coupled with,
- Two of PETRO Industrials unique remote fluids management consoles.

PETRO fulfilled all the requirements outlined for the McArthur River Tender. The tanks, dangerous good stores and equipment have been delivered and are waiting for final commissioning within the next few weeks.



Detailed 3D drawings of the proposed re-fuelling solution were presented

Future Plans

The PETRO Team is currently working closely with the MRM team to fulfil the next tender in supplying a Lubrication storage and dispensing system.

We are very appreciative of the faith that McArthur River Mining has put in PETRO Industrial in the toughest of times and we look forward to the ongoing journey with MRM.

PETRO INDUSTRIAL

Custom Solutions

PETRO Industrial leads the way in custom designed, engineered, manufactured, and installed bulk fuel storage tank farms.

Our solutions are not ***off-the-shelf*** solutions, they are ***tailor-designed*** to suit the clients needs. We have been in the business of providing turn-key solutions to the mining industry for well over 10 years across the globe.

WE ARE THE SPECIALISTS

At PETRO we specialise in **Bulk Fuel Storage Farms** that allows the storage of large volumes of fuel in a compliant and safe manner.
Every employee has extensive knowledge in his/her respective field of expertise.

PETRO INDUSTRIALS' TANKS

PETRO's tanks are self-bunded – a "tank-in-tank-design" and modular by design, making it easy to up or down scale fuel storage as the project changes phases.

The outer tank serves as the bund and the inner tank as the holding tank. This makes the tank environmentally friendly and very safe. PETRO's tanks are compliant according to all regulations and certifications.

All the PETRO tanks come with or without an integrated weatherproof, lockable Pump Bay Housing that accommodates all the equipment. Remote free-standing re-fuelling modules are also available.

All the pipe work is designed by PETRO's in-house engineers and installed by PETRO's own team. Electrical is also designed and installed by PETRO's *Hazardous-Zone-Qualified* teams.

PETRO'S FLUID MANAGEMENT SYSTEM

View, trace and manage every drop of fuel!

PETRO's Fluid Management System, the iPETRO Pro FMS, is a Real Time On-Line Cloud Based System where data can be viewed and managed from anywhere in the world – all you need is a device with internet access.

ALL activities at the pump/dispensing point are captured and saved on the iPETRO Cloud Website.

Only pre-authorised users that's created by the manager can activate the pump via a code, or a touch-less key, or by automatic recognition.

Powerful reports showing all aspects of the fuel usage are available in various formats.

iPETRO FLUIDS MANAGEMENT





Heavy vehicle re-fuelling module with loading arm and iPETRO Pro Remote Console with automatic vehicle identification and authentication (RFID).

PETRO ON-SITE SERVICE & MAINTENANCE

PETRO Industrial has a team of market-leading experts that offer on-site installation and commissioning services. The PETRO Industrial technicians are hazardous area certified with the capability of commencing on-site servicing, maintenance, and breakdown support.



Each Remote Console at the two re-fuelling modules sends its data to the iPETRO Pro Console giving the client two extra data collecting points within one iPETRO fuel management system.



JETCRETE POWERING AHEAD ON BACK OF STRONG BUSINESS GROWTH

Leading ground support specialist Jetcrete has undertaken a successful re-branding and is now looking to add to its workforce with its business going through a strong growth spurt.

The company, which is now offering a larger range of solutions to support the Australian mining sector, continues to win new contracts and field new enquiries and is looking to build on that momentum.

Hoping to improve and increase its scope, Jetcrete recently added two more capabilities to its broad range of services. The company employs the latest techniques in resin injection and cable bolting, which are alternative active rock support system in underground mining.

The resin injection service in particular has become a major presence in hard rock mining and was successful with resin injection for ground stabilisation at Argyle Mine. Resin is injected into the foundation and expands like a gel to create pressure and achieve stabilisation of rock, sand, gravel, concrete and caved material.

It has proven to be a faster and less-invasive solution than previously used methods. Meanwhile, cable bolting is an established technique and an alternative active or passive rock support system for underground mining, with the bolts dramatically improving the shear and tensile strength of the rock mass.

Jetcrete does the majority of its cable bolting work in major mining operations in New South Wales, such as at Broken Hill and at Newcrest Mining's Cadia Valley Operations in south Orange and is actively pursuing more mining contracts in this field.

The Perth-based company is considered a leading innovator of shaft lining solutions and has refined the remote shaft lining system, with a continuous effort in upgrading its system reducing safety risks. The business is capable of providing a complete service for all stages of underground shotcreting - from onsite concrete products manufacture - to delivery and application.

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. Jetcrete has extensive experience in all aspects of concrete spraying and is able to establish sites in remote areas in a matter of days.

It has successfully completed Shotcrete Solutions Specialists projects all over Australia, including shaft lining coal mines in Queensland. Jetcrete operates in North America and 19 mine sites across Australia, working closely with a number of mid-tier and major clients.

The company, which is ISO-accredited and is backed by mature and robust health, safety, environmental, and quality systems. With 17 batch plants, 90 agitators, 59 remote concrete units and operating over 12 cable bolting plant, Jetcrete can do any specialist ground support job, anywhere.

Jetcrete has been the trusted provider of shotcrete solutions to industry for more than 35 years and has earned a reputation for high-quality work.

It is the first and only shaft lining contractor in Australia equipped to safely operate in ERZ1 hazardous environments.

Over the years, the company has introduced most of the modern technologies used for shotcreting in Australian mining, such as overhead wet shotcrete, robotic shotcrete units, hydroscaling and shotcrete thickness scanning solution.

Jetcrete has positions available for a range of skilled staff. ***AMR***

Pressure and Safety Systems – for Advanced Safety Valve Solutions



STAINLESS STEEL VALVES FOR CRYOGENICS AND HYDROGEN



STORAGE TANK BLANKETING VALVE.

PRESSURE! We all know about pressure. Pressure at work, pressure at home. We are under pressure to finish a project, under pressure to complete an urgent maintenance job, and under pressure to do what the family wants to do.

But when it comes to industrial system pressure it can mean big trouble.

Over pressure or under-pressure (vacuum) in equipment operating in an industrial situation is capable of causing considerable damage to equipment and endanger the lives of personnel.

From the mega-failure of a Fuel Storage Tank through splitting or imploding to the simple rupturing of a hose connection, all these situations should be protected against by the correct selection of one of the many variations of Safety Valves or similar devices.

Australia's Pressure and Safety Systems is well known for working with industry and providing expert advice to customers and assisting in the selection and supply of the correct equipment to ensure the safe operation of pressure systems.

The company represents a renowned group of world leading manufacturers of safety and relief devices from Europe, the UK and the USA.

New industrial processes based on advanced technology are demanding all valves perform to ever increasingly high standards. P&SS is meeting the challenge and provides valves for applications as diverse as Cryogenic, Hygienic, Refrigeration, Hydrogen production/storage and Vacuum situations.

Traditional Steam and Liquid applications and Compressed Air & Gas services also require increased standards of performance. To meet these requirements valves are now available in Stainless Steel with set pressures to 1500 bar with ASME, TUV and CE approval.



ATMOSPHERIC VALVES FOR COMPRESSED AIR

SAFETY VALVES FOR DRILL RIG COMPRESSORS

The company has represented some of its overseas suppliers for more than 50 years and enjoys the support and technical expertise built on these enduring relationships.

Large stocks of a wide range of products are available ex-stock and the company has its own pressure testing and setting facility enabling valves to be customised to a customer's specific needs and be supplied with a Test Certificate.

Under Pressure and Safety System's tight safety regime, all valves are set to their designated "blow-off" set pressure on a specially built test rig and certification is completed in house.

Pressure and Safety Systems also has a well-appointed mechanical workshop to repair and overhaul customer's valves.

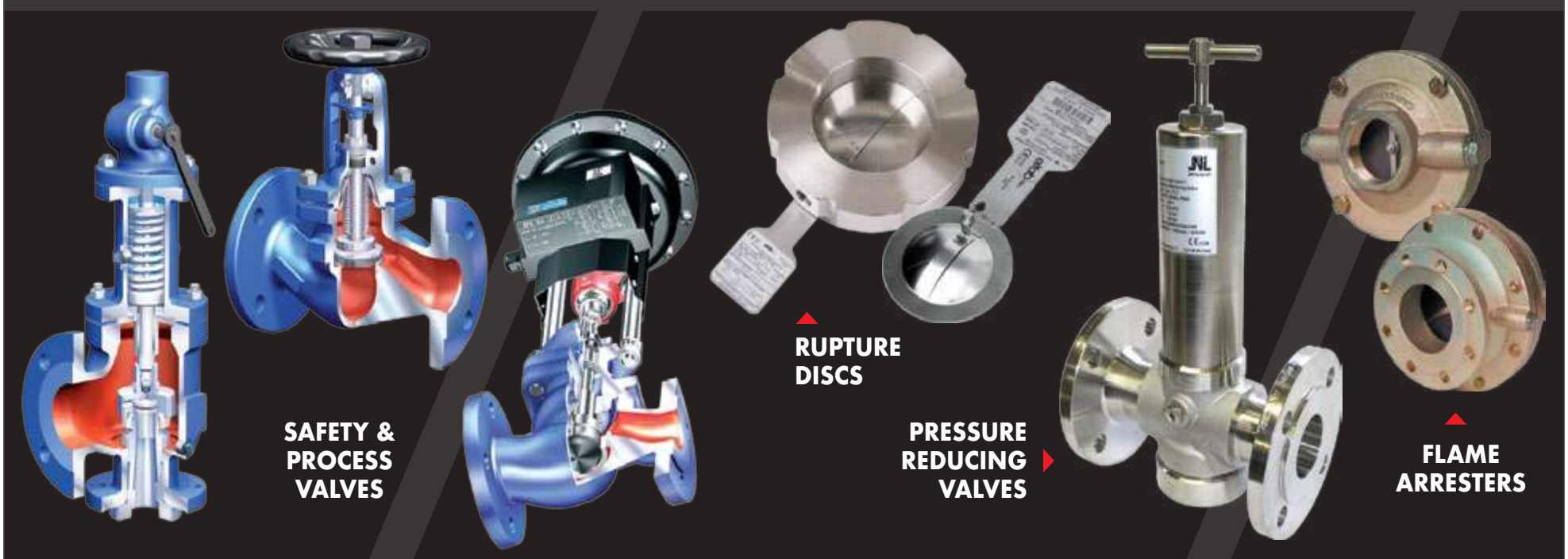
Backed by the extensive experience of its international suppliers and with access to sophisticated computer sizing programmes, Pressure and Safety System's clients are assured of receiving expert advice as to the most suitable pressure relief device to meet their specific requirements.

If you want help to relieve the "pressure" of your day-to-day operations, then Pressure and Safety Systems and ready and fully equipped to assist with your needs. ***AMR***

P&SS 50 GOLDEN JUBILEE 1966-2016
PRESSURE & SAFETY SYSTEMS

WE HANDLE PRESSURE®

Tel: **(03) 9699 7355** / e-mail: **valves@pressureandsafetysystems.com.au**



AGENTS & STOCKIST FOR WORLD'S BEST OVER & UNDER PRESSURE MANAGEMENT DEVICES

ARI ARMATUREN · SEETRU · KUNKLE · elfab pressure intelligence · Valve Concepts, Inc. · GOETZE ARMATUREN · Niezgodka ARMATUREN · RITAG Armaturenwerk · MERCER VALVE CO., INC. · WeatherCap™



Reliable Water for Remote Sites

Desert Sands has recently acquired a Concrete Batching Plant, which has a 70 cubic metre capacity. The plant also includes a water chiller, to assist with hot weather projects.

Mining is thirsty business and Desert Sands Cartage Contractors has the solution.

Established in 1989, the Laverton-based contractor is a specialist service provider to mining projects in regional WA and the Northern Territory, with one of its key services including potable water supply and cartage.

According to Desert Sands director Rex Ryles, when projects are in the exploration, earthworks and construction phases, the company is called in to provide potable drinking water for personnel mobilised on-site.

"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," he said.

"We've worked with mining companies and regional shires far and wide from the Gruyere gold mine to Anglo Gold sites, Downer EDI, Gold Fields' Granny Smith mine, Poseidon and many more."

At the Gruyere gold project, Desert Sands was involved from the first shovel in the ground through to production, looking after civil earthworks, camp/plant concrete set up, and camp potable water.

The contractor also has extensive experience in hauling gold ore, nickel ore and concrete, along with screened sand, dune sand and fuel into some of the most remote and isolated areas in Australia.

Other specialty services include contract screening, der and semi-drop deck and front end loader hire, road maintenance and construction for local government organisations, general civil works, bulk tipper haulage, and more.

More information on the company's offerings can be found at **www.desertsandscartage.com.au** or by calling **(08) 9031 1326**

AMR



A Cut Above the Rest

HD 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.

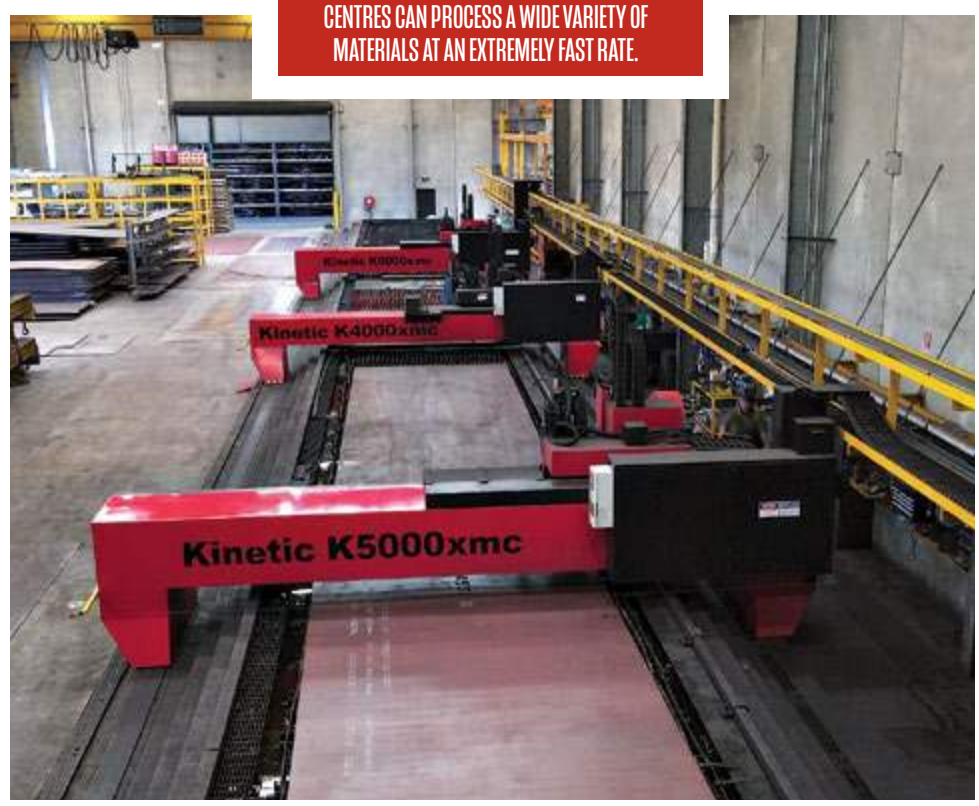
- Counter sink/counter bore
- Drilling – 3mm up to 60mm
- Plasma cutting – 3mm up to 50mm
- Oxy-cutting – 60mm up to 300mm
- Bevelling – up to 50mm with maximum of 45°

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, ZINCANNEAL, GALVANISED & COLORBOND	UP TO 6mm
STAINLESS STEEL - ALL GRADES	UP TO 40mm

A cut above the rest

HD PLASMA & LASER CUTTING SERVICES





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

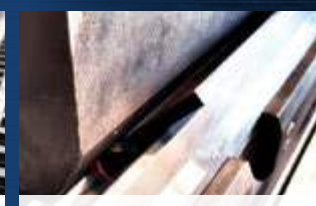

LASER CUTTING


PLASMA CUTTING


OXY CUTTING


DRILLING/ C-SINKING/TAPPING


CAD/ CAM


PRESSING


ANCILLARY SERVICES


STEEL PLATE

PHONE: +61 08 9418 8462
www.hdplasmacutting.com.au

81 Discovery Drive, Bibra Lake WA 6163
Email: sales@hdplasmacutting.com.au

Seifert Thermal Management of Enclosures and Machines



CABINET WITH PELTIER FITTED.



PELTIER CABINET COOLING UNIT 200W 24V DC WALL-MOUNTED 900X600.

Seifert Peltier units offer an alternative cooling option where conventional compressor / condenser systems are inappropriate.

Thermoelectric elements create a temperature differential between ambient and internal heat sinks. This encourages an internal cool air circuit while fans help transfer convective heat to atmosphere. Cooling capacities range from 30W up to 800W

These units are available in Stainless Steel 304 or 316

They are an ideal cooling solution for harsh environments such as mining, especially where maintenance is limited. The smaller units are wired to “on”. That is the fans are working 24/7. The option to introduce a thermostat then regulates the units on/off according to temperature changes, this extends the life cycles of the fans. The larger units have a temperature set controller built in.



TG 3050 WITH DUCT.

They are resistant to extreme ambient conditions and operate well in dusty, oily environments where temperatures can vary from -20DegC to +65DegC.

These units are available in 12V, 24V and 48V DC and 120 - 240V AC

The external fans on these units are rated to IP68. However, the units as a whole are rated to IP66.

Suitable for indoor and outdoor applications. Multiple Peltier units can be installed in side mount orientation only. Top mounting is to be avoided as this can promote condensation.

Condensation drip trays are also available.

These units are offered in a recess format and with an external duct fitted.

The recess version suggests part of the Peltier will penetrate into the enclosure to be cooled, use this option when their minimal equipment to be cooled. Equally use the duct to keep the Peltier external to the enclosure. This option assumes the enclosure is crowded with equipment. ***AMR***





Exactly What You Need When You Need It

Flanges routinely need machining maintenance to improve joint integrity, prevent leaks and corrosion. Field Machine Tools is keeping Australia's plants, valves and pipes precision machined and robust with their first-rate flange facing products.

With head office in Queensland, the company is one of the nation's largest stockist of onsite machining, bolting and maintenance equipment for both sale and hire with branches in Victoria and Perth. FMT is Australia's only pure-play equipment supplier, we never compete against our customers for on-site service work.

FMT is also the Australian agent for 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, 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!

Field Machine Tools Manager Michelle Mills said the Climax range included Flange Facers that had proven to be popular amongst Australian industry for their durability and precision.

Ms Mills said clients had 29 different models to choose from, this extensive range allows operators to tackle an unrivalled range of applications from 0 to 199 inches (0 to 5054 mm).

"We have available a very comprehensive range as we understand that in industrial settings, flanges come in many different shapes and sizes," Ms Mills said.

"Being able to maintain them with a selection of machines that are synonymous in operation is incredibly advantageous for operators, because it can significantly cut down on productivity down time and the costs associated with repair.

"So we pride ourselves on offering a versatile range.

"For instance, machines like the CLIMAX FF1200/2400/3600 are designed to perform in the harshest of environments, this machine can handle flat face, raised face, RTJ, tongue and groove, lens ring, Grayloc®, and compact flanges.

Ms Mills said the CLIMAX FF5300 was also an exhibition of versatility, with a more compact swing diameter with a minimum clearance of 22.75 inches (577.9 mm).

The product's range spans from 5.7 to 40 inches (144.8 to 1016 mm), meaning it can work in a large range of applications that would usually require at two machines.

Aside from versatility, the Climax products stand out due to their performance-focused design and ability to minimise tool deflection during cutting.

The machines are rigid and provide reliable results, even over bolt-hole patterns and weld overlays, making them a preferrable choice over other models.

With a user-friendly build, the Climax range boasts an abundance of features that help technicians reduce setup time and allow users to perform more work in less time.

Ms Mills said this included features like setup fingers and leveling feet, which reduced crane time by enabling quick machine alignment.

"These machines are also easier for technicians to set up, operate and transport because they are lighter and modular," Ms Mills said.

"They perform well, because they are also made well.

"These durable flange facers are built to last under demanding conditions.

"The manufacturer uses quality materials, high-grade bearings & gears, robust motors, high-grade cutting bits or tooling.

"It won't just do its job in a showroom; it will keep providing great results for two decades and be an excellent return on investment.

"And, importantly, it's extremely safe."

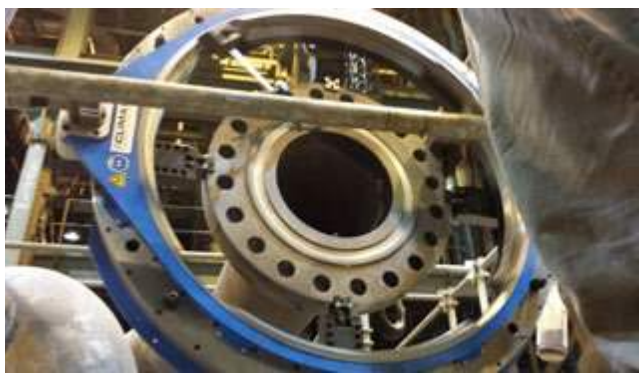
Ms Mills said the range's safety features included pinch point protection, remote-controlled operations, safety interlocks and hands-free feeds to protect technician hands from moving parts. Additional measures included an emergency stop feature and a low-pressure safety system to prevent unintended restarts.

The original manufacturer has also strengthened the product's credentials with a comprehensive after-sales service offering, including training and application support from experts.

Clients can call the manufacturer – Climax – at any time or contact Field Machine Tools for support.

For more information,
visit **www.fmt.com.au**

AMR







Innovative Products

ID MOUNT FLANGE FACERS

Field Machine Tools has rugged and innovative portable flange facers for 0.75 to 199 inch (19.1 to 5054 mm) diameters. Several of the company's machines can be configured for facing, milling or both. Many of the models reface, mill, bevel, square, counterbore, or cut end-prep configurations for welding. For easy setup, smaller units use an integral mandrel to quickly lock into place, while the larger units can be installed with a separate mount or chuck to which the facer body is installed.

OD MOUNT FLANGE FACERS

Field Machine Tools also offers various models of OD mount flange facers to reface, mill, bevel, square, counterbore, or cut end prep configura¬tions for welding. Also considered both rugged and portable, the flange facers are suitable for 0 to 120 inch (0 to 3050 mm) diameters. Several of the company's machines can be configured for facing, milling, or both. For easy setup, larger units can be installed with a separate mount or chuck to which the facer body is installed.

SYGMA MINIFACERS

Best suited for small flanges, this product range comprises of powerful manually operated flange facers for machining connectors in hard to reach places. The setup only takes minutes, while the machining is finished within seconds. It eliminates the need for heavy equipment compressors and other power sources while being extremely easy to operate. They are compact, handheld and delivered in a hard case to guarantee safe transportation and storage machines wherever needed.



Why are you risking it? When it 'just makes good sense' to design, source and fabricate in Australia for Australian business.

For miners selecting a steel fabricator, price driven procurement would have it that custom plant and equipment can be sourced offshore with the belief that the same deliverable will be achieved for less.

But Perth-based mining fabricator and innovator, Western Metalworx has some hard truths to share with companies going offshore for their fabrication needs.

"The proof is in the pudding," says Anthony Chiera, Managing Director reflecting on his company's rise to trusted partner of blue chip and global mining contractors.

"The supply and manufacture of custom components and equipment from within Australia to Australian mining projects not only makes good business sense but can also save your reputation.

And that is even before we had these relatively new and emerging risks like disrupted supply chains, war, rising energy and shipping costs, and shortage of components."

Quality of the final product is of course often mistakenly thought to be comparable from offshore sources, however in many instances it's not just the manufacturing process that could leave you open to risk, but the quality of the steel itself.

"A quality product begins with quality material, and we've spent more than a decade securing a strategic supply network, to ensure our procurement of steel is high end, from a diverse and trusted supply base and built for the harsh conditions and standards in the Australian mining industry," explains Chiera.

Today Western Metalworx holds long-term relationships with pre-qualified steel merchants in locations including Korea, Japan, Sweden and China, proven to deliver steel compositions that can deal with mining industry applications, stress fatigue and harsh environmental factors like the Pilbara sun.

It's not uncommon for Anthony and his team to fix up a job procured offshore, from shoddy welding that does not meet Australian standards, to cheap Indian steel with a high recycled content, such poor workmanship can lead to serious injury or catastrophic failure.

"Some of the offshore flaws we've been asked to fix recently include a hydraulic boom arm showing stress fractures just 8 weeks after commissioning, something you wouldn't expect to see for ten years or more. When making decisions on the repair, we were unable to obtain the material data report because it didn't exist.

Another catastrophic example - hydraulic pipes that were failing under pressure and a manufacturer's data report (MDR) supplied in another language with no reference to an ISO or Australian Standards.

Machinery down time costs money, but when you consider the immediate impact to life and limb of those working for you, procurement needs to put the safety of the operator before anything else," says Chiera.

With a rising focus on environmental, social and governance (ESG) issues, Western Metalworx has seen a positive rise in customer's seeking Australian workmanship and with greater rigour around supply chain due diligence and concern for security of supply.

It comes down to being willing to associate yourself with the final output. While not every job requires an MDR, Western Metalworx have invested heavily in documentation and transparency, from reporting on welding qualifications, procedures, QA/QC inspection, surface treatment and steel source and composition – reports should reflect how reputable a job is.

In addition, appropriate supplier due diligence should extend to ethical labour and working conditions, another factor to consider once sourcing moves away from home.

"I'd urge procurement professionals to remember the age old saying 'you get what you pay for' and if you're going to buy overseas, at least explore the option of having it made here in Australia – I'd bet you'll be relieved with the outcome.

In most cases you'd be looking at a 20-30% price differential, but that percentage becomes irrelevant when you come out with a flawless product and your reputation still intact," concludes Chiera.

With 35 staff, an expanding purpose-built Malaga workshop and a reputation for uncompromising quality, Western Metalworx is one of the state's leading providers of steel and aluminium fabrication for the mining and industrial sectors.

AMR

WESTERN METALWORX

Custom Fabrication and Repairs for the Mining Industry

At Western Metalworx, we've built our business and reputation from the ground up. We understand the industry and its associated challenges, making us Perth's go-to mining fabricators.

OUR APPROACH TO OVERCOME MINING CHALLENGES

Innovate

We consider custom solutions to fix unique problems – there is no 'one size fits all' in the fabrication industry

Create

We develop a solution that efficiently gets a machine up and running – and is built to last

Ideate

We work with our clients to build on their deliverables in a collaborative process

Ready to engineer your vision? Get in touch with a fabrication expert for all your custom mining requirements.

westernmetalworx.com.au **+61 (0) 8 9248 1183** **enquiries@westernmetalworx.com.au**



CONQUERING THE SECTOR

Viking industrial is fast becoming the partner of choice for Australia's mining sector due to their world-class diesel plant and equipment solutions.

The proudly Australian company has been racing ahead of the curve to deliver a wide range of products spanning power, air, water, lighting, and fuel storage.

With a highly experienced team and ability to fully customise products to suit client needs, Viking industrial have been engaged to power multiple major projects.

This includes multiyear Snowy 2.0 Scheme, the largest committed renewable energy project in Australia.

The diesel solutions provider delivered the iconic project with the first temporary generators for early works across various sites supplying Snowy 2.0 with a total of 16MW of power.

Similarly, Viking Industrial were engaged to support the WestConnex M4-M5, a motorway slated to be Australia's largest road infrastructure network.

The project has included Viking Industrial an assortment of plant and equipment, including generators with specialized emission control systems that allow them to safely run underground.

Viking Industrial BD & Brand Manager Simon Luu said their team also worked closely on projects with Rio Tinto, Minerals and Tianqi Lithium.

He said these major projects were quickly shaping Viking Industrial into an industry leader in reliable, fixed speed diesel power.

"We have been experiencing record periods of growth and expansion, which has enabled us to provide and even stronger and more flexible service to the Australian mineral resources sector and other critical industries.

"We have opened new locations in Cooma and Karratha, bringing our national footprint to five dedicated branches which has increased our accessibility and levels of support."

The company's new branches offer a comprehensive product range, that includes both mobile and static fuel storage tanks and solutions that can hold in excess of 10,000 litres.

It offers fixed and portable diesel air compressors, industrial, diesel and solar LED mobile lighting towers and a robust diesel generators range.

Viking Industrial products are supported a dedicated sales team that have been trained to understand the unique needs of industrial settings and offer reliable and cost-effective solutions.

The turnkey offering means the company's dedicated expert team can walk clients through the entire scope of a project, no matter how large or small.

Mr Luu said Viking Industrial was also independent of engine manufacturers, meaning it was uniquely positioned to source equipment directly and build bespoke power solutions.

"We also have a large rental fleet, which is available nationwide," Mr Luu said.

"It includes generators, lighting towers, distribution equipment and a variety of other solutions.

"We provide the whole package – a comprehensive equipment range and delivery strategy to meet your lead times.

"We offer installation, commissioning, training, and servicing to keep equipment well-maintained and productive while in use.

"Our fleet is modern with an average of two years wear, to make sure clients are offered equipment in excellent condition.

"From our five branches nationwide, all equipment can be rented dry (without servicing) or wet (with servicing) and we have both freight and cranage available.

"The core of our business is really to provide reliable and cost-effective power to Australian projects at every stage.

"We aim to keep each project running safely, efficiently and on time – that is our promise."

For more information, please visit https://vikingindustrial.com.au

AMR







WHY CHOOSE VIKING?

» INDEPENDENT
The fact that we're an independent company, not tied down to any one engine manufacturer, means we can offer you a wide range of products customised specifically to your job requirements and budget.

» VERSATILITY
We understand that no two jobs are the same, and that's why at Viking, we spend time with our customers to offer a range of payment solutions to suit the job. Multiple payment options and full turn-key packages are available to fit your budget and requirements.

» AUSTRALIAN
Our whole range of products are made to high quality spec and assembled by us here in Australia. This means that you can expect only the most modern and up to date products and equipment in the game.

» SAFETY
Used on the largest projects nation-wide we are always big enough to meet the strictest site requirements while small enough to remain flexible and find options to solve any problems swiftly.

VIKING INDUSTRIAL

SALES | RENTAL | SERVICE

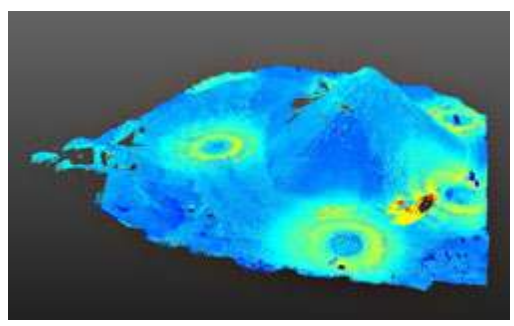


Fixed Speed Diesel Power
Solar Lighting, Fuel Storage, Pumps and More
6 Locations - Australia Wide
Dedicated 24/7 Service Team

VIKINGINDUSTRIAL.COM.AU

WORKING WITH VISION







Australian-based technology company Holovision is supporting increased productivity in the mineral resources sector by launching their 3D Metrology solutions to the market.

By utilising both structured light and laser high precision scanners, the cutting-edge process is a highly efficient way to accurately and comprehensively document an object's physical features and condition in real-time.

Their metrology scanners work by defining a part or object by millions of points to a dimensional accuracy of up to 0.035mm, enabling asset owners or managers to see subtle deviations, slight variations, fine details and exact dimensions. The obtained data is beneficial for reverse-engineering of parts, parts replication and rapid prototyping.

The technology is also ideal for wear monitoring and analysis, preventative and predictive maintenance, original equipment manufacturer (OEM) fitment and patent enforcement.

Holovision's Operation Manager, Brendan Jakubenko, stated, "When deployed during the design process, our Metrology Scanning solutions offer businesses the opportunity to shorten prototyping cycles, as well as improve fitment and tolerances when integrating new components into existing assemblies."

"The accuracy of this data allows us to verify quality control and conformance during manufacture and assist with design decisions to enhance component aesthetics. We achieve this by modelling directly to OEM parts & tolerances, regardless of whether part specifications are available."

Holovision's Metrology-Grade Scanning solutions are backed by their expertise across multiple 3D capture technologies, including laser scanning, drone photogrammetry, and services such as surveying and BIM.

3D laser scanning also has broad capabilities for the mineral resources sector as it can digitally capture objects, structures, and environments faster and more accurately than traditional methods.

"To name a few useful applications, we can laser scan for condition assessments, to develop accurate as-built drawings, or for calculating if new assemblies or equipment will fit into the available areas before relocation commences." stated Mr Jakubenko.

"Our team can also use drones for various types of mapping, generating stockpile or excavation volumetric calculations, capturing high resolution imagery for site progress reporting, condition assessment processes and more."

"The potential applications for these technologies are broad, and the sooner businesses see how much we can de-risk their operations with regards time, cost, human error and safety, the better."

Holovision's Advanced Visualisation technology makes data as accessible as possible to clients. They can view their point cloud data or model from anywhere via a cloud-based viewer or immerse themselves within a design through extended realities for design validation and troubleshooting before the physical space comes to fruition.

The capabilities of these solutions create a project management tool through remote collaboration, offering stakeholders a collaborative space to interact with their digital site.

Holovision was founded by Des Watkins, the Managing Director of the 54-year-old steel fabrication company Watkins Steel.

Mr Watkins knew the 3D technology had the potential for application beyond the steel industry and thus formed Holovision to take the solution to other markets.

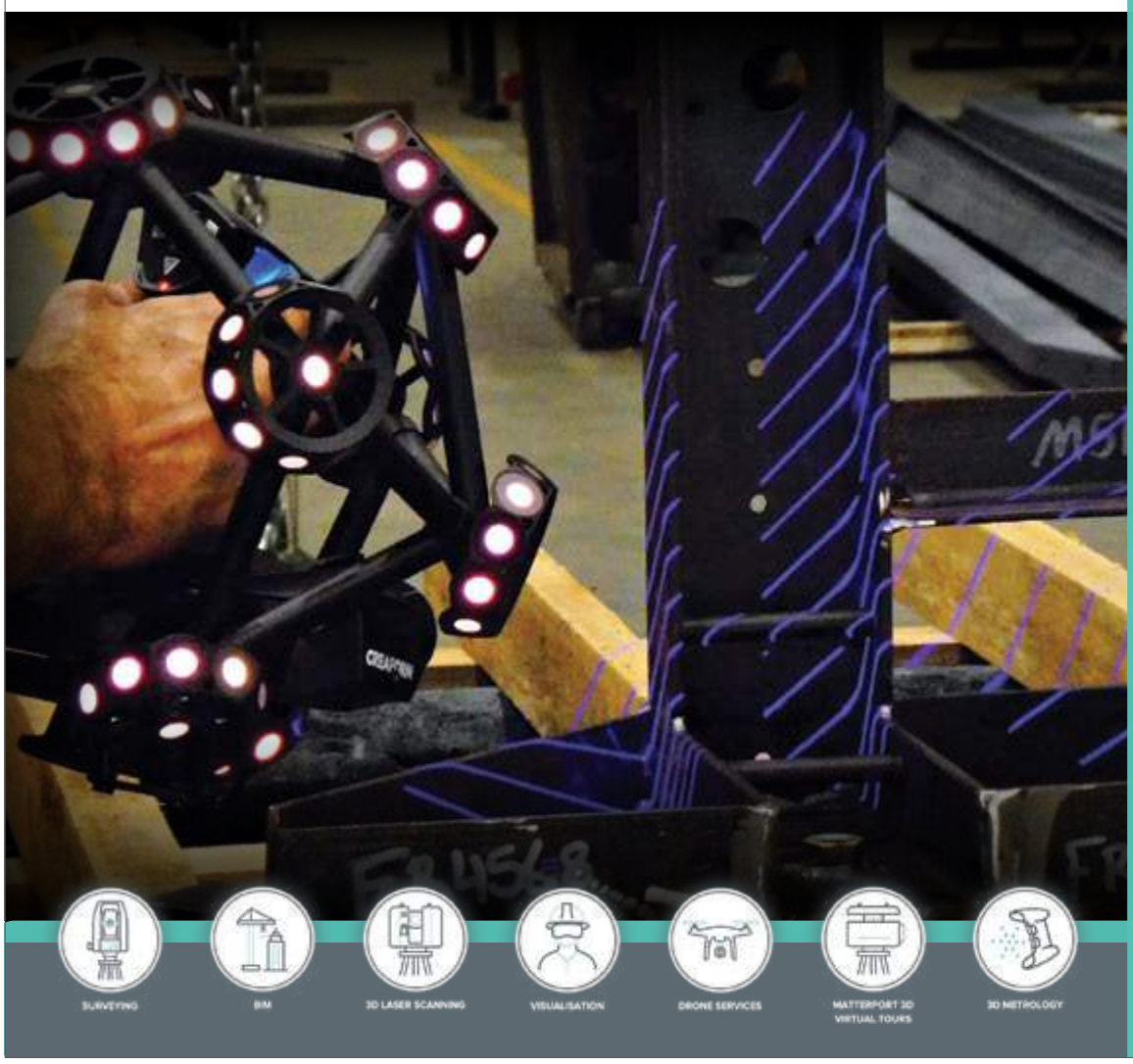
Therefore, Holovision is rooted in a thorough understanding of technology and industry, uniquely positioning it to support the dynamic needs of the Australian mineral resources sector.

“We have had success in the application of our 3D spatial solutions across multiple industries. We work primarily in the Arichecture, Engineering and Construction (AEC) sector, but also transport, manufacturing, utilities, facilities management, and now even the film and TV industry,” said Mr Jakubenko.

Holovision will be exhibiting at the Queensland Mining and Engineering Expo at Mackay Showground from 19th to 21st of July. Visit them at Stand C224 to discuss how their solutions can benefit your operations.

AMR

holovision
SEE IT ALL



Spatial & Digital Design solutions

Cutting edge 3D solutions

We are an Australian-based technology company that specialises in Spatial Services and 3D digital solutions for a range of industry sectors across Australia and overseas.We have offices in Brisbane, Mackay, Cairns, Melbourne and Darwin.

Our core service is 3D Laser Scanning, but our team also specialises in Surveying, 3D Metrology, Construction Modelling, Drone Services, Matterport 3D Virtual Tours and Advanced Visualisation.

We have clients in:
- AEC
- Mining
- Utilities
- Transport
- Manufacturing & Processing
- Heritage
- Film & TV
- Aviation & Aerospace

Contact us today to see how our solutions can assist your next project or visit us at stand C224 at QME.

1300 465 684
info@holovision.com.au
www.holovision.com.au

schenck process

Resetting the life cycle clock



Combining over **50 years** of service to the Australian mineral processing industry with a **state-of-the-art production facility**, we are uniquely placed to reset your machine's life cycle clock. Using our cutting edge equipment and **OEM know-how**, we can give your machines a new lease of life, all backed by our **exclusive factory warranty**.

That's great news for both your bottom line and the environment.

Don't take our word for it - see for yourself what sets us apart from generalist equipment repairers

www.schenckprocess.com.au

we make processes work

BE AT THE FINGERTIPS OF EVERY MINESITE OPERATOR AUSTRALIA WIDE

Join **Mine Suppliers Online** and be seen by mine operators all over the country.

Our comprehensive directory is the one stop when looking for services on the go.

- List your company details, logo and services
- Boost your own website SEO and expand your presence
- Be contacted directly via our instant messaging system
- Expand your online presence

Get a listing today!

Mine Suppliers Online

CALL 08 6314 0303 trev@australianminingreview.com.au www.minesuppliersonline.com.au



THE STORAGE SPECIALISTS

Reece's Event Hire is supporting increased flexibility at Australian mine sites with their large clear span building solutions.

Versatile, durable, and reaching as wide as 50m, the structures are capable of housing some of the largest machinery found in mining operations, making them popular onsite storage alternatives.

The solutions can be deployed at any rural or remote site and are most suitable for mine shutdowns, stock storage, large stockpile coverage or any operation that needs additional storage space.

The Western Australian company can connect the robust structures to power and provide lighting, making them ideal workshops or temporary manufacturing facilities.

Reece's Event Hire General Manager Ewan Simms said the structures could also come with air conditioning, keeping staff cool on lunch breaks.

"They make great crib rooms, too" Mr Simms said.

"We can supply these clear span structures on either a temporary or a long term basis, to suit all kinds of mining set ups.

"We have extensive experience working within the mineral resources sector in Western Australia and have capacity to mobilise this infrastructure state-wide."

Mr Simms said Reece's Event Hire was focused on high-quality design and functionality, as well as stocking a comprehensive product range.

The building solutions specialist works with Western Australia's largest marquee supply company to deliver a wide variety of sizes, spanning 3m, 6m, 8m, 10m, 13m, 15m, 20m, 25m, 30m and up to 50m completely clear span. No structural uprights to get in your way.

The marquees have been used in multiple industries as shelter and storage solutions, including the medical and logistics sectors.

From mobile testing sites, housing mine site equipment or dockside product storage, Reece's Hire Marquees have proven successful in providing companies with long and short term storage facilities at a greatly reduced cost, compared to the usual solution of costly built permanent structures.

"Varied restrictions in each state have impacted companies' ability to expand, greatly increasing the demand for temporary storage facilities with unpredictable timeframes," Mr Simms said.

"Having one of the largest ranges of marquees in Western Australia, Reece's have been able to successfully deploy their range of marquees throughout the state to support businesses and industries urgently requiring temporary storage solutions.

"Our business values your company's time constraints and specific needs, so to ensure we provide you with the easiest experience possible our trained consultants will work with you during the initial consultation to ensure we can deliver exactly what you need.

"And our products aren't just for industrial settings.

"We can also provide marquees for event spaces, with flooring, audio visual equipment and furniture." ***AMR***

For more information, visit https://reeces.com.au

At Reece's Event Hire, we can help you store:

- Vehicle storage
- Machinery Storage
- Retail Good Storage
- Operational Shelters
- Briefing Rooms
- Training/ Induction Rooms
- Medical Stations
- Mess Halls
- Events
- Corporate Events
- Agricultural Shows
- Motor Vehicle Shows
- Caravan & Camping Shows
- and more...

We are
reece's EVENT HIRE

We've been a staple of the Australian events sector since 1914.

We are one of the largest marquees hire companies in Western Australia.

Need one of our solutions at short notice?

We have you covered!

MINING, OIL & GAS operators engage us for our

"bloody big tents"

We have a proven and successful record of providing companies with long and short-term storage facilities at a greatly reduced cost, compared to the usual solution of expensive built permanent structures.

Reach out today:

(08) 9378 4722
www.reeces.com.au





Erizon Helps Guarantee A Successful Revegetation Project On Degraded Land

Mine-site rehabilitation is a legal obligation for all mining projects in Australia and it is also an activity whereby the industry can clearly demonstrate its sustainable development commitment to key stakeholders and the local community.

Rehabilitation through revegetating with healthy, suitable vegetation that supports existing ecosystems is the most efficient and effective way to meet these environmental remediation requirements. Inadequate implementation of revegetation can cost significant time and money. A tailored, well-timed approach is the key to a successful, long-term revegetation project.

Common issues with a 'spray and pray' methodology
When it comes to revegetation, some companies will plant seeds, add fertiliser and hope for the best – what's known as the 'spray and pray' methodology. Ignoring pre-site testing, adequate site preparation, sourcing the optimal plant species, utilising the right techniques, and timing the project correctly could result in a costly and time-consuming exercise in the long run.

THE ERIZON APPROACH

Ensuring (and maintaining) a successful revegetation project
The key to avoiding the issues compounded by a 'spray and pray' methodology lies in finding a tailored solution for a project. No single revegetation approach will fit all sites. Each area is distinctive and, thus, needs a specific revegetation programme. This is the Erizon approach.

STEP 1 - Soil Analysis
Good quality soil is the foundation for any successful revegetation project. Each project starts with a thorough understanding of the physical, chemical, and biological characteristics found on-site. Attending the site in person to collect soil samples allows the Erizon team to better understand rehabilitation needs, noting soil type, landscape, prior land use and early species considerations. A comprehensive analysis of the soil samples is then completed in a lab environment.

The results provide us with essential information to determine what adjustments need to be made to ensure a favourable growing environment and a more complete vegetative establishment.

STEP 2 - Choosing The Right Plant Species
Correctly identifying the plant species appropriate for the specific site you want to revegetate is imperative.

When choosing the optimal species, the team at Erizon will consider:

- Revegetation purpose. Determining the purpose of the revegetation project before starting it will serve as a guide in choosing suitable plants to grow on your site. For example, in rehabilitating degraded areas with low soil fertility and structure, Erizon would choose plants that can create micro-climate conditions and enhance the soil health and moisture.

- Natural habitat. It's crucial to consider the environment of the site needing revegetation, then, to choose a plant species that naturally grows or thrives in that area.

- Native and local plants. The ability to adapt to local climate and soil conditions is one attribute of local or native plants. It's important to use them whenever it is possible since they are more likely to be self-sustaining and will provide longevity to your project. Some plants need more time and care for cultivation. Erizon will select only those that suit a client's schedule for proper maintenance.

STEP 3 - Drone surveying and trial
A 3D survey is undertaken of the proposed revegetation site to accurately measure the area size and map it to a high degree of detail for quality, planning and analysis purposes. As each site is different, this inspection allows Erizon to get an early assessment of the best strategy moving forward, while tailoring the revegetation project and timeline to each individual site.

For revegetating large areas, Erizon has developed a custom trial to give the best possible insights into the most effective methods for your project's success.

Erizon monitor the trial's success through Envizo - a performance monitoring system that collects data, allowing 24/7 remote access to a full range of performance indicators. These can include temperature, humidity, soil moisture levels, average rainfall and much more.

Live video and reporting capabilities allow our team to accurately study the behaviour of each trial. Once the trial is complete, the client will have full access to a comprehensive report analysing the trial period. From here, Erizon can design the perfect solution for a project.

STEP 4 - Tailor the best solution
Erizon's experts carefully select the best solution for a client's unique project. The company considers erosion control and product effectiveness, including its ability to facilitate growth and the functional longevity required for protection.

STEP 5 - Growth medium application
Damaged and depleted soils require more than conventional methods to achieve sustainable growth. Through the application of world-class growth mediums, Erizon can support faster vegetation growth while minimising erosion. By combining EnviroSoil and EnviroLoc Hydromulching BFM solutions tailored to your site-specific requirements, Erizon can ensure sustainable plant growth and help you achieve your revegetation goals.

STEP 6 - Even and uniform application
While Erizon offer a uniform approach, not all sites are uniform. The company looks at the best way to maximise growth and remediation success, with a range of options available to perfectly suit a site's needs. Once a site is ready, the company's highly trained technicians prepare the solution. Strict guidelines are in place to ensure the correct mixes, ratios, and percentages are implemented, maximising the performance of its solutions.

When it comes to application, Erizon uses state-of-the-art equipment.

STEP 7 - Drone Spraying and Spreading
Once solutions are applied and seeding is complete, Erizon creates a timeline to ensure the continued care of the site. After four to eight weeks, the company uses the latest drone technology to apply fertiliser, trace elements and soil probiotics to the site. This ensures the longevity of the revegetation and ongoing project success.

With the ability to cover varied and uneven terrain, drones provide a safer and more efficient solution to projects where access is limited, with aerial spraying treating areas up to 40 times faster than manual spraying. Additional key benefits of drone spraying include:

- Cost savings, with a reduction in labour costs and more efficient application of spray solutions.

- Improved precision, with intelligent control systems enabling precise navigation at centimetre-level. Erizon's drones also adjust spray height accordingly for uneven terrains.

- Consistency, as optional spray solution amounts are maintained.

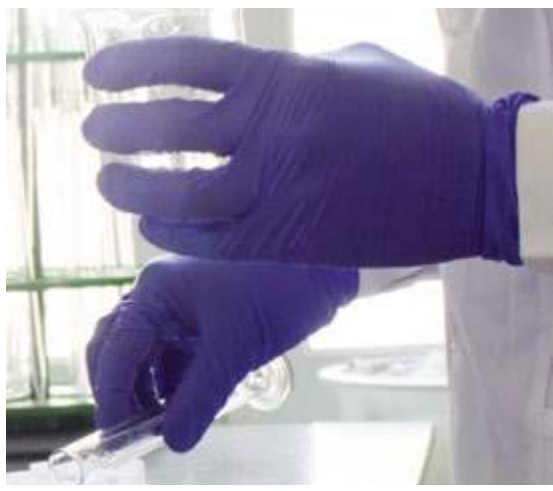
- Being all-terrain compatible, with our drones able to fly in all weather conditions, including dangerous and hard-to-reach areas.

STEP 8 - Post-project monitoring
Monitoring and maintenance are vital in ensuring the ongoing success of a revegetation project and this continued support of the site means Erizon can ensure a client's goals are met.

Erizon recommends commencing recording observations from the beginning of the revegetation project. This will assist in providing baseline information to help inform of the project's progress. Erizon use the latest in drone, sensor, and imaging technology to accurately manage this monitoring.

For further information please contact Erizon on **1300 182 182**, **info@erizon.com.au** or visit the company's website on **www.erizon.com.au**

AMR







How Often Should You Change Your 3M Speedglas Filters and Consumables?

No two welders are the same. But, every welder needs their welding helmet to be able to weld, and every welding helmet needs to be properly maintained to perform at its peak.

To help out, we've broken down the recommended change frequencies for PAPR filters and core spare parts for your Speedglas welding helmet. It is worth noting that the recommendations provided here are based on a minimum of 4 hours usage per day.

PAPR Filters

Pre-filter
We recommend replacing your pre-filter once or twice a week, as this will have a direct knock on effect on the other components of your Adflo system. Most notably, regular turnover of the pre-filter will lessen the workload of the particle filter, saving you money and helping extend your Adflo PAPR battery life. This in turn will ensure you receive the best possible value for money in the long run.

Particle filter
As soon as the indicator on your filter turns red, it's time to give it an emotional sendoff and get a replacement. Alternately, you may need to swap out for a fresh filter when the battery operating time becomes too short, or when the low airflow alarm is triggered by a fully loaded filter. We anticipate you'll be replacing your particle filter monthly at the very least.

Gas filter
The rate at which you should replace your gas filter will be dictated by the regulations at your workplace. Please note that smell and taste are not recommended as a measure of change.

Odour filter
At the risk of stating the obvious, the minute you smell an unpleasant odour is the minute your odour filter needs changing. You're welcome. Oh, and when you're ready to change, you can purchase an odour filter replacement pad instead of a whole new filter, saving you a few bucks.

Consumables

Outer cover lens
As your helmet's first line of defence, it's inevitable that your outside cover lens will accumulate scratches and spatter while you work. As such, you should look to change it out whenever the lens becomes deeply scratched or too dirty to clean with a soft cloth. We estimate this will be necessary once or twice a week, though this does of course depend on the conditions under which you are welding.

If you're working in particularly extreme conditions and find the standard lens is constantly needing to be replaced, you may consider upgrading to either the scratch resistant or high temperature lenses. Built to withstand harsher environments, these should provide more longevity for heavy duty welding applications.

Inner cover lens
The inside cover lens should require less turnover, provided it is looked after and regularly cleaned. Typically, you should only need to replace it once a month, though again this will vary from welder to welder. Put simply, the lens should be replaced whenever it incurs damage or when visibility starts to decrease. It's worth noting that you should never weld without your inside cover lens inserted, as it protects the auto-darkening lens from any dust, sweat or particulates that may cause damage.

Grinding visor plate
You've purchased a flip-front welding helmet so that you get an uninterrupted, clear viewing while you grind. So, why not keep it that way? Grinding sparks and particles can cause damage to your grinding visor and impact it's clarity, so we suggest looking to replace this every 2 weeks, or more often in the event that visibility is reduced.

Sweatband
Welding isn't all glamour; there is sweat involved. The sweatband inside your helmet can make all the difference, so be sure to put in a fresh one when things start to drift into unhygienic territory. You should be making this switch at least once a month, or more regularly depending on the nature of the work and your surrounding environment. Also, if you're one of those people who sweats more than most, you'll need to swallow your pride and stock up accordingly.

Face seal
If you're rocking a Speedglas respiratory welding helmet, this is another item where replacement is largely tied to hygiene. While our recommendation is to replace your face seal every 2 months, you may well need to do so more often. This certainly applies to those working in an especially dirty environment.

Blackwoods stocks the full range of PAPR filters and core consumables for your Speedglas Welding Helmet including pre-filters, particle filters, gas filters, odour filters, cover lenses, grinding visor plates, sweat bands and face seals. ***AMR***

Find the right filters and consumables for your Speedglas PAPR Welding Helmets here:





Blackwoods

HELPING KEEP
WELDERS SAFE

Blackwoods Gas, Welding & Abrasives Specialists, through onsite assessments, can provide practical, fit-for-purpose solutions to help manage the risks of welding fumes and ensure your team is protected.



SCAN THE QR CODE
to contact a Blackwoods Gas, Welding & Abrasives specialist **TODAY.**

13 73 23 **blackwoods.com.au**

TRIDENT® P2 Level 3 Surgical Disposable Respirators (RTCFFP2)



TRIDENT®

The No. 1 Fitting Mask in an independent Australian scientific fit test study.

Industree Group Pty Ltd is an Australian owned and operated, carbon neutral, innovator, designer and manufacturer of premium Personal Protective Equipment (PPE).

Industree's fit for purpose products deliver best in class certified protection, quality, comfort and value.

TRIDENT® Disposable Respirator ranges were designed to meet the highest levels of certification, performance and comfort.

TRIDENT® RESPIRATORS

Since their launch, TRIDENT® have rapidly become the number one product of choice for P2 disposable respirators. TRIDENT® P2 Level 3 Surgical Disposable Respirators (RTCFFP2) and TRIDENT® P2 Valved Disposable Respirators (RTCFFP2V) provide optimal protection against mechanically and thermally generated particulates including: dusts, mists, fumes and smoke. The three panel design delivers improved comfort with a form fit facial seal.

Developed with the end user in mind, TRIDENT® respirators are now also available in extra small, small, regular, and regular with extended head straps to ensure end user safety and comfort at all times.

Research Paper

Link to the Research Paper:
https://www.sciencedirect.com/science/article/pii/S2468045121000961

In the recently published research paper ***Randomized crossover study comparing quantitative fit tests between Trident™ and 3M™ Aura™ N95/P2 respirators*** comparing N95/P2 Respirators quantitative fit tests, the TRIDENT® respirator achieved outstanding results. Professor Daryl Williams and his colleagues at Melbourne University recruited 500 participants for their comprehensive study.

Their findings were consistent with previous research showing very high QNFT pass rates with three-panel flat-fold respirators. Their tests overwhelmingly showed that TRIDENT® respirators outperformed their 3M™ competitor:

"We found that both the overall and first-attempt QNFT pass rates of the Trident P2 respirator were significantly higher than the 3M Aura (99.2% vs 92.6%, $p < 0.001$; and 92.6% vs 76.4%, $p < 0.001$ respectively).

The overall fit factor and the individual fit factor were also significantly higher for the TRIDENT FFR than the 3M Aura."

Supported by unrivalled PortaCount® fit testing results and unique proprietary design features, the growth in demand for TRIDENT® Respirators has been exceptional as it fits 99.2% of end users.

TRIDENT® Disposable Respirator ranges are designed locally and are available nationally online and in-store through ATOM – The team behind the teams driving mining in Australia.

TRIDENT® - An Industree Group Brand.

Industree Group – Protecting People Everywhere™

AMR

TRIDENT®



TRIDENT® P2 Valved Disposable Respirators (RTCFFP2V)

TRIDENT®



Part No: **RTCFFP2V**



Part No: **RTCFFP2**

BREATHING NEW LIFE & TECHNOLOGY INTO RESPIRATORY PROTECTION

TRIDENT® P2 RESPIRATORS

- Advanced multi layer technology protects against mechanically and thermally generated particulates, fluids and aerosols.
- Three panel design provides structural integrity, form fit seal and optimal comfort. All three mask panels and seams have been independently tested and certified to AS 4381:2015 Level 3 – ISO 22609.
- Bacterial Filtration Efficiency (BFE) >99%.*
- Fluid protection level 3: 160 mmHg.*
- Proprietary adjustable foam nose pad to ensure optimum facial seal and reduce fogging of eyewear.
- Valved for release of heat and moisture for increased wearer comfort and life of the product.**
- Fits many face sizes and shapes, both female and male.
- Unrivalled PortaCount® fit testing results.
- Low breathing resistance for comfort and increased life of the product.
- Designed to be used in conjunction with other PPE.
- Latex free.
- Each mask individually packaged for improved hygiene and portability.



TRIDENT® ADVANCED MULTI LAYER TECHNOLOGY

1. Front Line Particulate Barrier
2. Structural Matrix Filter
3. Micro Particulate & Fluid Barrier A
4. Micro Particulate & Fluid Barrier B
5. Soft Skin Comfort Layer

* RTCFFP2 - P2 Level 3 Respirator Only
** RTCFFP2V - P2 Valved Respirator Only

Available in sizes XS through to Regular with Extended Length Head Straps.

STANDARDS & CERTIFICATIONS

CERTIFIED P2
AS/NZS 1716: 2012
ID No. BMP 732382

RTCFFP2 ONLY

AS 4381: 2015 Level 3
ID No. BMP 737354

ARTG 344154

A CarbonZero® Product

ATOM®
atom.com.au | 1800 999 024

INDUSTRIAL & SAFETY WAREHOUSE
WALK THROUGH

Purchase the TRIDENT® range of respirators from ATOM, online or in-store.

AMR **JUL**2022

WT's FOR SHUTDOWNS



We **T**hink shuts aren't all the same. The thing that is the same is that all shuts are an opportunity to Work Together.

Working **T**ogether means customers achieve the best outcome - no matter how small or large the job.

WT's brings a skilled team to deliver the results you need. Our Shutdown Team includes:

1. Engineers to assist with project planning, project management and design for system improvement.
2. The Purchasing Department to ensure parts availability and logistics are taken care of without delay.
3. Administration Staff to ensure site access, travel plans and accommodation are sorted.
4. Skilled technicians both on site and in our workshops to get the work done right.

This is **WT**'s or **W**ise **T**echnology in action, and the reason **WT** Hydraulics is the best choice.

WT's will:

- look after your HSB system
- re-plumb your Mill End Bearings
- install your wheel lock system with 50 mm pipe spools,
- even, change your Apron Feeder plumbing to 80mm ID pipe.

WT's can design and supply a system for remote Condition Monitoring. With machine learning this will bring your equipment into the generation of Industry 4. This technology will extend the service life of your upgraded system and reduce maintenance cost blowouts. ***AMR***

We are a busy team so schedule us in now!
Call 9434 5866





THE PRESSURE IS ON IN THE MINING INDUSTRY



DYNASET PRODUCTS TO BOOST THE VERSATILITY OF YOUR MACHINERY
PROTECT IT WITH HYDAC FILTRATION AND OIL CONDITIONING SYSTEMS



WT experience the power of wise technology
HYDRAULICS
SALES · SERVICE · REPAIRS

Pressure is what WT Hydraulics knows best.

Working together we will use this pressure and convert it into the power to drive your production and reduce your costs.

Dynaset HPW pumps are perfect for at the source Dust Suppression systems to improve worker health and safety.

HYDAC H2gO vacuum dehydration of contaminated oil extends system service life and reduces maintenance.

Call the WT Hydraulics Team at any of our branches. We can help you with a complete hydraulic system design, installation, maintenance, service and quality hydraulic components.

✓ MOTION AND CONTROL ✓ FILTRATION ✓ HYDRAULIC TOOLS
✓ PUMPS AND MOTORS ✓ PNEUMATICS ✓ HOSE AND FITTINGS



PH: (08) 9434 5866
14a Port Kembla Drive Bibra Lake 6163
PERTH - KALGOORLIE - ESPERANCE

Check our website for more information and client testimonials:
www.wthydraulics.com .au

MSD
MINING SOLUTIONS

UNDERGROUND PRODUCTION DRILLING SPECIALIST

We provide a range of top hammer drill rigs to suit almost every underground production drilling requirement:

- Production stope drilling
- Longhole and ventilation rise
- Cable bolt holes
- Sludge and probe drilling

✓Labour Hire
✓Underground Infrastructure
✓Mine Development Projects

08 6323 7312
info@msdmining.com.au
37 Mordaunt Circuit, Canning Vale WA 6155

MSDMINING.COM.AU

QUALITY DRILLING AND SAMPLE RECOVERY





Raglan Drilling has the capacity and capability to work around Australia with 18 rigs specialising in RAB, Air Core, Reverse Circulation, Diamond, Auger and Lake Drilling.

The company has come a long way since 2006, when brothers Hugo and Gus Lacey started out with a one air-core rig in Kalgoorlie, WA.

Fifteen years later, Raglan Drilling has become well-known for delivering high-quality sample recovery and safe exploration drilling services.

Raglan Drilling director Gus Lacey started out in the mining industry as a geologist and has experience running resource definition programmes, grade control drilling, grade control modelling and ore extraction.

"With drilling experience from both sides of the industry, Raglan Drilling understands issues relating to poor sample recovery, hole deviation and the effects on resource estimation, head grade, block model calculations and dilution," he said.

His brother Hugo started as a driller's offsider for McKay drilling and worked his way through to a driller in record time.

Hugo is also a competent RC & AC driller who provides a wealth of knowledge in all aspects of air drilling.

"Our long-term clients include AngloGold Ashanti, Apollo Consolidated, Breaker Resources, Horizon Minerals, Lefroy Exploration, Nexus Minerals and St Barbara," said Gus.

"We strive for effective and clear communication to ensure the best outcome for every drill program."

With dedication and a 'can do' attitude, Raglan has gained a reputation for strong client relationship and satisfaction amongst a crew of 80 people.

Raglan Drilling's commitment to the health and safety of its employees and the protection of the environment is demonstrated by four-plus years of ISO accredited systems.

The list of equipment that Raglan Drilling provides includes a fleet of modern Deep Hole RC rigs, Deep Hole Diamond and fully mobile small foot-print Air Core rigs.

With 10 years of Salt Lake Drilling, Raglan offers a full suite of drilling disciplines and specialty skills for those "hard to reach" exploration targets.

Raglan Drilling also supplies complete remote camp setups with either Explorex-type caravans or transportable buildings.

Every three months, Raglan Drilling holds geology lectures with the Goldfields geoscientific community in Kalgoorlie, WA.

Drop Raglan Drilling a line now on
08 9021 3833 or email
admin@raglandrilling.com.au
to find out more. ***AMR***



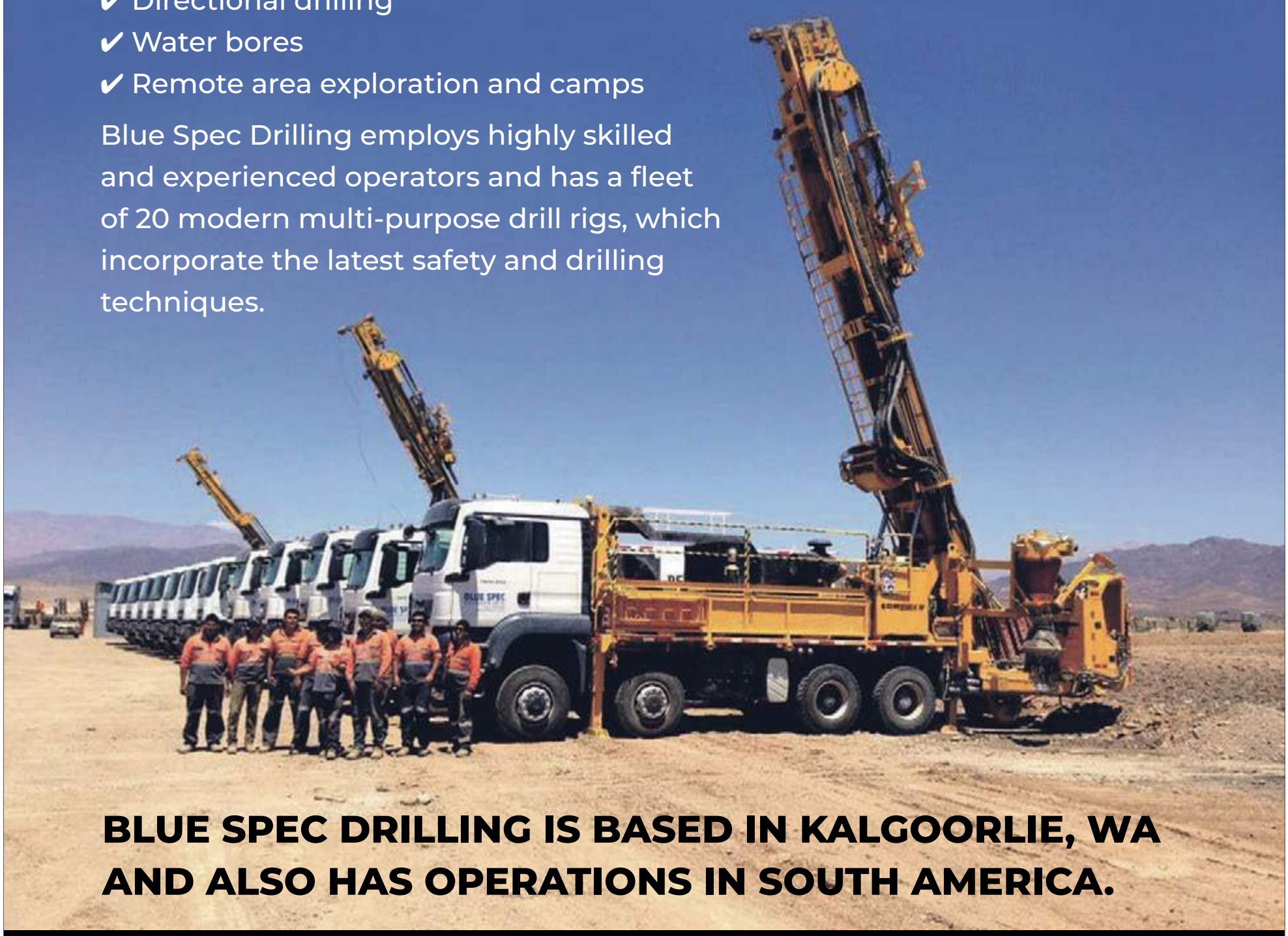
BLUE SPEC DRILLING PTY LTD



Blue Spec Drilling Pty Ltd provides a variety of drilling services including:

- ✔ Reverse circulation
- ✔ Surface diamond drilling
- ✔ Directional drilling
- ✔ Water bores
- ✔ Remote area exploration and camps

Blue Spec Drilling employs highly skilled and experienced operators and has a fleet of 20 modern multi-purpose drill rigs, which incorporate the latest safety and drilling techniques.



BLUE SPEC DRILLING IS BASED IN KALGOORLIE, WA AND ALSO HAS OPERATIONS IN SOUTH AMERICA.

CONTACT MURRAY BLACK

M. 0417 973 394 **P.** 08 9021 3033

E. murray@bluespec.net.au **W.** www.bluespec.net.au



Solutions for Mining and Exploration Geologists

Getting to the Core of the Matter

Handle and Store Drilling Assays with Confidence

Are you looking for the very best core sample handling system for your drilling and assaying needs?

Look no further than Adept Conveyor Technologies – a leader in the field of core sample tray conveyors, roller racks and benches, as well as drill core handling systems.

The company designs and manufactures roller core tray racks, industrial roller racks, mobile storage shelving units, bench arrays and a range of roller racking system solutions at the best price and in the shortest lead time.

Core Tray Benches for Mining and Geo-Physics

As a supplier with extensive field experience, Adept Conveyor Technologies services all your exploration and analysis operations at remote sites anywhere around the country.

The team are specialists in static and gravity conveying equipment that assist in the manual handling of core trays.

Drilling samples can be placed on these core sample roller tray racks for assaying, analysis and storage in line with current regulations.

Everything is catered for – from the smallest single conveyor section to replacement parts and accessories to complete integrated project systems.

The designed and fabricated conveyor and rack systems are made of mild steel and fully galvanised, with stainless steel options.

Occupational Health and Safety

Adept Conveyor Technologies' mobile roller conveyor racks deliver optimum workflow, efficiency and ergonomics effectively and reliably.

There is no lifting work required by core tray operators as the modular and mobile steel roller racks, which are on wheels, can be detached and moved to make other configurations.

The team at Adept can assist in the mitigation of occupational health and safety issues by providing proper hardware solutions in the manual handling of materials handling.

Static and Gravity Systems for Core Sample Handling

Static and gravity systems offer low inertia and free movement of core sample trays throughout the sampling area with ease of operation for all manual handling staff.

Most equipment requires no external power source to operate, providing the most economical options in system design and start-up costs. The cost of ownership is incredibly low, with the equipment being virtually maintenance-free.

Adept specialises solely in core shed design, using standard stock roller racking parts, and has designed many systems that can meet your exact requirements.

A wide range of gravity roller table conveyors are available to suit any core shed application.

Cost Savings

Involving Adept in the planning and design stages can lead to a reduction in power costs during operations.

Key markets that Adept Conveyor Technologies supply include the mining, materials handling, warehousing, supply chain logistics and manufacturing industries.

Adept has more than 40 years' experience designing and building large, complex conveying systems for major clients in line with advancements in conveying technology.

Let Adept Conveyor Technologies maximise your return on investment with intelligent, benchmark quality solutions for all heavy industry fit-outs.

Flexible, Quality Solutions

With decades of creating solutions and designing hardware solutions for clients, Adept offers the ability to purchase direct from the manufacturer with full in-house design and engineering expertise, cutting out resellers with limited product and engineering application knowledge.

All parts are manufactured in Australia to quality benchmark standards and all systems are installed and commissioned right around Australia.

Adept has a comprehensive range of products relating to core sample tray conveyor benches. ***AMR***

Need more information? Contact Adept Conveyor Technologies now (details in the advertisement next page).



Adept is a leader in the field of core sample tray handling, delivering optimum workflow, efficiency and ergonomics effectively and reliably.



Drilling and assaying samples can be placed on these core sample roller tray racks for assaying, analysis and storage in line with current regulations.

Cost of ownership is incredibly low, with the equipment being virtually maintenance-free.

One word...

adept







For the very best core sample handling systems in all exploration and analysis operations.

- Core sample tray conveyors
- Core tray roller racks
- Core roller benches
- Drill core handling systems
- Static and gravity conveying equipment

Adept Conveyor Technologies is a leader in the field of core sample tray handling, delivering optimum workflow, efficiency and ergonomics effectively and reliably.

- Australian design and manufacture
- Leaders in materials handling systems
- Specialist core sample handling systems
- Full CAD system design and engineering inhouse
- Broad product range
- Low cost – deal direct with the manufacturer
- Short delivery times
- Special requests to suit customer applications

adept conveyor technologies

Talk to Adept now, the conveyor manufacturer with the field experience.

P: +61 2 9771 4655 (Sydney)
+61 3 9357 8814 (Melbourne)
E: sales@adeptconveyor.com.au

www.adeptconveyor.com.au

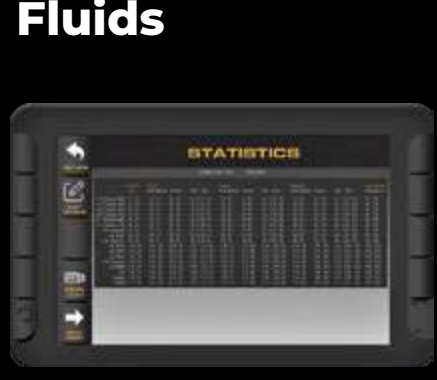
QMW
www.qmw.com.au

Q CARBON

The Q-Carbon Control system seamlessly combines a variety of different controls, integrations and safety features whichwould be typically independent into a single, user-friendly, point of control. With built in significant diagnostic capabilities to protect module health and maintenance, the Q-Carbon system allows for full and ongoing customisation and updates to future proof your service module investment.



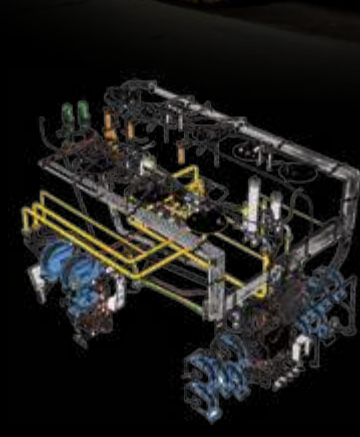
Fluids



STATISTICS AND MAINTENANCE STRATEGIES



DESIGN



LOW LEVEL PUMP PROTECTION



MONITOR AND REPORT



MAIN DISPLAY INFORMATION

Hydraulic Control

- Fine proportional motor control
- Flow, pressure, temperature display and protection
- Built in customisable safety interlocks
- Adaptable for future integrations

Levels

- Guided wave radar IP69K
- Failsafe overfill protection
- Low level pump protection
- Module and in-cab level displays

Fluids

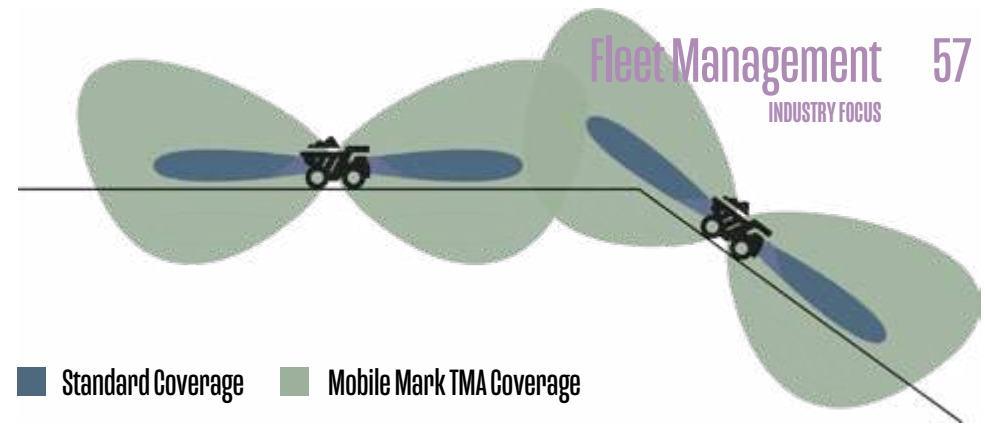
- Flowrates
- Transaction data
- Maintenance diagnostics
- Data logging

Q SYSTEMS

NATA

www.qmw.com.au

OFFERING PRECISE AND RELIABLE COMMUNICATIONS



A Mobile Mark TMA has even greater reach than a 8dBi stick antenna, but it has the broader beam width of a 2dBi antenna, as illustrated below. The extra beam width allows the signal to reach higher and lower elevations to maintain connections at most angles encountered in a mine.

Modern mining is highly dependent on communications technologies. With the uptake of autonomous vehicles, improved safety integration, asset location management, improved utilisation, carbon output monitoring, the demand for rugged and reliable communications has become paramount.

Mining communications is not just the point to point or mesh sending/receiving of data over an RF link, it also includes the highly critical reception of GNSS (Global Navigation Satellite System) for both precise positioning and timing.

If we look at an autonomous mining vehicle today, the range of RF technologies is extensive, starting with a GNSS receiver that can decode multiple frequency (L1, L2, L5) signals from multiple satellite constellations (GPS, GLONASS, GALILEO, BEIDOU, QZSS, NAVIC) as well as receive correction data form either L-Band satellites, 4G mobile, or dedicated land-based UHF reference stations. Then we have the vehicle to vehicle and vehicle to infrastructure communications. The RF technologies used here typically include VHF/UHF for 2-way voice, 2.4GHz/5.8GHz WiFi, 4G & 5G mobile (600 to 6000MHz), and in some cases dedicated private networks in the 3GHz range.

Australian mining typically takes place in remote areas where there is little or no communications network infrastructure. Mining companies must setup their own highly reliable site to site connectivity as a backbone. Mine site to mine site may include fibre optic, Microwave and long range directional 4G & 5G communications.

Reliable Precise Positioning in Real Time

For GNSS to provide precise position updates at 20 to 100 times per second, you need a rugged antenna and receiver that can discriminate the satellite signals from the numerous sources of noise and interference from multi-path. Multi-path is the largest source of error in GNSS positioning as the reflected signals can come from any reflective surface. Antenna design is critical in dealing with multi-path signals, a good design can reject reflected signals whilst at the same time ensuring minimum noise impacted true satellite signals.

Having a GNSS precision antenna still requires a precision receiver that has the processing capability to discriminate true satellite signals from all noise types. With so many different satellite constellations now available, it makes sense to utilise as many constellations as what is available in your location. The principle is simple, the more satellites you have in direct line of sight, typically overhead, the more precise your position calculation will be. To take advantage of multi-constellation satellites, your receiver should have adequate tracking channels in order to provide very fast updates (up to 100Hz) as the satellites move overhead.

Because of the number of variables that affect GNSS performance (reflected signals, satellite constellation, etc), it is difficult to predict just how well GNSS will perform in a particular type of environment. For some applications, interrupted availability is not a significant disadvantage. For cross-country vehicle tracking, for example, occasional position updates to base are more than sufficient to know where the vehicle is in its route. However, there are several applications that require more robust positioning – positioning data that can be relied upon to be always there, always accurate, always trustworthy. Combining GNSS and inertial technology is an ideal way to address this. Integrating an Inertial Measurement Unit (IMU) from the ground up in your GNSS receiver provides for seamless precision even when your receiver moves under cover or is in tight canyons or at the face of an open cut mine. Trimble OEM has developed a range of products with integrated IMU's from standalone receivers to integrated Antenna/Receiver/IMU that can also receive correction data from a CORS network.

Vehicle Communications

Vehicle to Vehicle and Vehicle to Infrastructure communications is dominated by WiFi Mesh Networks. The HP-TMA (High-Performance Tactical Mesh Antenna) from Mobile Mark is specifically designed for use in rugged mobile networking environments such as mining. These antennas combine a unique high performance circular wave pattern and signal boosting that provides longer range and greater link stability between mobile clients. As vehicles traverse uneven terrain or varying elevations, the HP-TMA ensures superior signal coverage and data throughput, and better penetration through obstacles.

Step Global is a Value Added Reseller for Trimble OEM GNSS and Harxon GNSS products, including UHF data radios, as well for Mobile Mark and PCTel antennas. Providing a full range of products from GNSS antennas through to 5G/LTE and WiFi antennas.

RUGGED ANTENNAS FOR MINING APPLICATIONS

Step Global are Australasia's leading distributor of antenna brands such as Trimble, Mobile Mark, PCTel and Harxon.

GNSS ANTENNAS & RECEIVERS

Rugged multi-constellation, multi-frequency for vehicles

Zephyr 3
- Phase centre from <2mm
- Gain from 50dB


Zephyr 3 Rugged

BX992
- Sattelite channels: 2 x 336
- RTK and L band enabled provide accuracy to 0.8cm
- Max update rate: 100 Hz
- Dual ant. inputs provide heading output


BX992

TS112
- Centimetre level TerraStar-C & RTK accuracy
- Comprehensive GNSS support for robust signal tracking


TS112

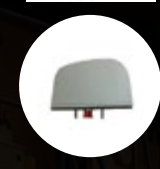
HX-CVX600A
- High precision <2mm PCV repeatability
- Gain from 40dB to 50dB
- L band enabled for correction services
- HX-AULT002 supports 5G and DSRC


HX-CVX600A

WI-FI ANTENNAS

For mine site infrastructure

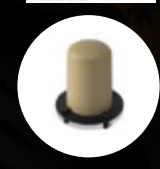
BD-2400
- Bi-directional Wi-Fi blade antenna
- 2.4GHz 8dBi bi-directional gain


BD2400

YAG-8
- Directional antenna
- 2400-2485 MHz & 4.9-6.0 GHz
- Gain: 8 dBi


BX992

TMA-24A-302CT
- 2.4-2.5 GHz
- Gain: 17dB Rx


TMA-24A-302CT

BOA-LCMGPS-PTNF-4LTE
- Multi-band
- Four port MIMO
- Cell, GSM, PCS, Wi-Fi


BOALCMGPS

LTE ANTENNAS

4G/LTE & 5G antennas for vehicles & base station

RM-WB1-DN SUB-6, 5G
- Sub-6 surface mount antenna
- 600-6000 mHZ


RM-WB1-DN SUB-6

OD3-600/6000 MOD2
- Frequency: 617-960 mHZ & 1700-6000 mHZ
Gain: 2-4 dBi


OD3-600/6000 MOD 2

Y42700WB
- Wide-band log periodic MIMO
- 600-2400 mHZ, 14dBi
- 4200-6000 mHZ, 6dBi


Y42700WB

DOD7-700/2700
- 2 X MIMO LTE omnidirectional
- 694-960 mHZ & 1700-2700 mHZ
- Gain: 5-7 dBi


DOD7-700/2700

www.stepglobal.com E: sales@stepglobal.com Ph: +61 3 9551 7334

UNILIFT
SPECIAL WIRE ROPE

Superior quality ∞ Higher performance
Increased working hours ∞ Decreased down-time



Unilift are widely recognised in the mining, lifting, drilling, off-shore and construction industries as the No.1 Australian company for steel wire rope solutions.

Manufacturing quality lifting assemblies for special applications, and structural suspension cables for the mining, drilling & offshore energy sectors, extensive service-life trials have proven that Unilift ropes last significantly longer than any other rope on the market — with up to 236% recorded in some cases.

Every Unilift rope comes fully lubricated — with each strand treated during manufacture — and ropes are supplied tension-free, allowing installation with zero torque-induction to eliminate twisting & bird-caging. These elements, combined with the correct sheaving, fleet angles & reeving all greatly improve service life.

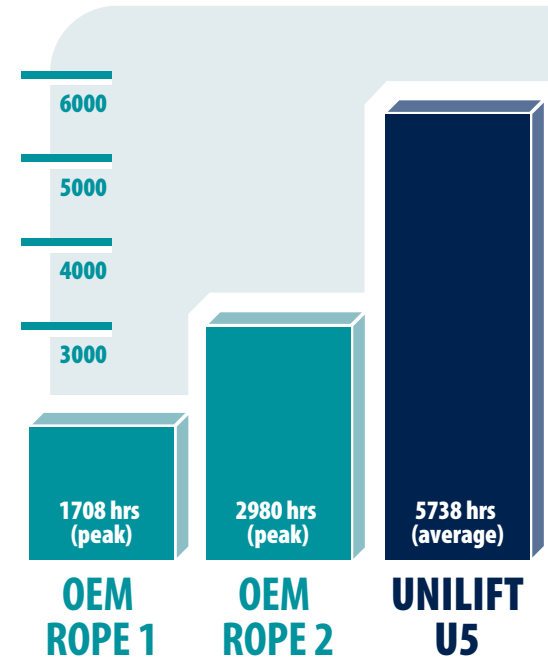
Unilift also supply complete suspension cables systems for stackers, reclaimers, drag lines & electric rope shovels, by assisting clients to select suitable ropes plus all necessary end-terminations & hardware to suit their equipment, design factors and loadings.

Working closely with mining and drilling companies, Unilift rope experts consistently provide a range of improved solutions where OEM or cheaper wire ropes are failing to reach their expected service life.

They regularly receive the satisfying feedback "…these ropes are incredible!" when clients accustomed to replacing ropes every few months see service life intervals increase by 6-12 months.

Unilift Equipment Pty Ltd distribute ropes throughout Australia, New Zealand and now North America.

UNILIFT ROPE LIFE COMPARISON
(total hours worked)









EST. 2016

HAWK HIRE

AIR & POWER SPECIALISTS

HIRE • SALES • SERVICE • PARTS

AIR COMPRESSORS

USA BUILT, AFTERCOOLED, BMA & MINE SITE READY INC. FIRE SUPPRESSION



NORTH QLD, CENTRAL QLD, BOWEN BASIN AND ALL SURROUNDING AREAS, SOUTH EAST QLD

- LARGE UNITS 900-1150-1300-1600CFM
- SMALL PORTABLES TOWABLE ROAD REG. 185-210-375-425CFM
- HIGH PRESSURE RANGE UP TO 500PSI COMBOS
- STANDARD PRESSURE OPTIONS
- CERTIFIED & WORKSAFE REGISTERED
- LONG & SHORT TERM HIRE
- SERVICE & SUPPORT BY OEM TRAINED TECHNICIANS
- 24/7 MOBILE FITTER TEAM

FULL FLEET RETAIL SERVICE, BREAKDOWN & REPAIR OF CLIENT OWNED EQUIPMENT

GENERATORS 9KVA TO 610KVA • LOAD BANKS • DISTRIBUTION SUITES • FUEL TANKS • EWP
PUMPS • COMPRESSOR & GENERATOR PARTS & ACCESSORIES • CONSUMABLES

AIR&MUD

AIR COMPRESSOR SALES - MUD DISTRIBUTION

AIR & MUD YOUR 'ONE STOP' DRILLING FLUIDS SOURCE
PREMIUM QUALITY MUDS, FLUIDS & CHEMICALS FOR DRILLING
AIR ENDS, PARTS, AIR COMPRESSOR SALES

CALL NOW: 1300 336 766

13 TRANSPORT AVENUE, PAGET, QLD 4740
sales@hawkhire.com.au | www.hawkhire.com.au



THE NEXT GENERATION

Generators Australia is keeping the lights on across Australian mine sites with their cutting-edge range of power products.

Based in Western Australia, the company is a leading supplier for Globe Power and has a comprehensive and environmentally friendly equipment offering.

The Globe Power brand is known for its world-class manufacturing standards and its product mix spans the latest diesel generators, solar lighting, diesel and hybrid lighting, air compressors and lithium generators.

The range, which is designed by Australians, also includes high-quality solar and lithium battery solutions, hydrogen power, solar powered security cameras, mine spec solar lighting towers and other power accessories.

Generators Australia Director Tim Helfers said the company was proud to partner with Globe Power and forge other relationships with brands focused on sustainability and performance.

He said mining operators were able to buy the reputable products new or used through Generators Australia branches in every state.

He also said clients could rely on the company's extensive after-sales services, which included generator repair, servicing and maintenance.

"We have fully qualified technical experts on hand for all generator repair and servicing needs," Mr Helfers said.

"These experts are available nationwide and they have years of experience with generator maintenance and addressing product issues.

"Our services are available whenever you need them, seven days per week.

"On top of that, we can guarantee high-quality design and performance across our new and used products.

"We actually update our new product range every few years to ensure we're always offering the latest technologies and we service our used equipment regularly to ensure our older models stay in great shape."

Mr Helfers said clients interested in a hire service could engage the Australian company's unique fleet, which is designed and produced in purpose-built and accredited manufacturing facilities.

The products have been deployed in some of Australia's most demanding sites, including Chevron's Barrow Island, Roy Hill and INPEX's Ichthys LNG, one of the world's most significant oil and gas projects.

Mr Helfers said the company's loyal and growing client base was the result of a highly experienced and professional team, fantastic services and unrivalled power products.

"Generators Australia products are renowned for their market leading technology and world class manufacturing both in Australia and internationally," Mr Helfers said.

"Globe Power products have earned a reputation for their durability and quality standards on some of Australia and international toughest construction sites.

"Get in touch with us to find out how we can power your operation." ***AMR***

WHY CHOOSE US?

New Fleet – Our equipment is constantly replaced every 3-5 years to ensure quality and reliability.

Best Value – We consistently deliver the best valued service in the industry.

Transport – Largest fleet of tilt trays and low loaders in the industry.

Remote Specialists – We specialise in remote project equipment hire and service support.

Technical Labour – We supply permanent mechanical on site labour.

MOVE INTO THE FUTURE WITH GENERATORS AUSTRALIA



Generators Australia has partnered with an Australian manufacturer to transition from diesel to hydrogen.

Following extensive design and testing from the research and development team, we have announced our Globe Power GP550V hydrogen generators.

Coupled with our new hydrogen on-board plant, we can make hydrogen and inject into a Volvo engine.

The innovation will create less carbon output and has a large diesel consumption savings.

These units will be ideal for mine sites and camp power 500kva-3000kva.

They will be brought to market in late 2022. Stay tuned!

generatorsaustralia.com.au

AUSTRALIAN DISTRIBUTOR LOCATIONS

Perth, WA | Adelaide & Whyalla, SA | Darwin, NT | Brisbane & Miles, QLD | Sydney & Newcastle, NSW | Melbourne, VIC

GENERATORS AUSTRALIA

Committed to Healthy and Safety



Recon is passionate about fresh quality food and prides itself on giving the best hospitality and service to customers and clients.

Recon Catering is regarded as a leader in contract catering and accommodation services, along with facilities management, for various mining, gas and offshore industries.

An integral service provider to a range of clients across Australia, and proudly 100% Australian owned and operated, the company is passionate about fresh quality food and prides itself on giving the best hospitality and service to customers and clients.

No location is an obstacle as Recon manages set-ups to shutdowns, including rolling camps. It remains focused on catering, accommodation, and all aspects involved, including waste management, janitorial services, wet mess management, village maintenance and aerodrome services.

With a proven track record with all our current clients, Recon Catering has established a reputable work ethic from its management to the dedicated and qualified staff.

Recon Catering has been established with a fresh and capable approach to fulfill projects on time, on budget, with quality goods and services.

Due to low company overheads and a well-skilled workforce, Recon Catering has some distinct advantages over the competition.

It establishes long-term quality relationships with clients, through high end product delivery and a flexible adaptable attitude and culture throughout the company.

Recon Catering industry competence covers a broad variety of services delivered by experiences, safe, professional, and well-mannered staff, all selected through specific recruitment process and internal training.

The Vision

It is Recon Catering's aim to become an industry recognised mid-tier service provider that delivers tailored facility management services with the flexibility to satisfy every client's personal needs.

Its teams are known for their open and proactive approach and committed to the principles of collaborative contracting. It understands that the delivery journey is as important as the final product.

Each Recon catering team is defined by the project they are delivering, and are chosen on a best-fit basis.

Recon Catering is fortunate to employ a pool of talented people, across all levels of staff from senior management to camp managers.

The core team specialises in key areas such as HACCAP, quality assurance, and environmental management.

Ongoing training and development programs keep our staff skills at the forefront of the industry.

The Core Team

Nigel Stevens: Founder of Recon Catering, Nigel has more than 25 years' experience in the hospitality industry, working in remote areas.

Kristina Kolosova: The Operations Manager, Kristina has been in this position for four years. Highly experienced in HR and mining/defence OH&S, she brings a wealth of experience from her six-plus-years in hospitality administration.

Victor Fitzpatrick: The company's Executive Chef plays a pivotal role in the Recon Catering team and has been with Recon for three years. A chef for over 20 years, he has a passion for great food, which is passed on through the team. ***AMR***

From Set-up to Shutdown...

Quality Catering & Camp Management

Address
PO Box 81 Paradise Point
QLD 4216

Phone
0499 449 979

Email
admin@reconcatering.com.au

reconcatering.com.au







CASE STUDIES

Case Study 1.

South Australia Accommodation Village

Minesite Furniture was engaged to refurbish a 400+ bed accommodation village in South Australia.

The project required full custom manufacturing and would feature outdoor chairs, indoor and outdoor tables, beside tables, television units, coffee tables and lamps.

The company held many video conferences with the client to guide them through the design and selection process, while sending samples to site to help the client get a good look and feel of the product.

Minesite Furniture also create a number of 2D layouts and 3D renders throughout the design stage so the client could get a visual idea of how the completed rooms would look.

The selected furniture was delivered to site via removalists to a remote location in South Australia last December.

The delivery was successfully executed just 10 weeks from the initial order.

Case Study 2.

Accommodation Builder WA

In January, Minesite Furniture successfully executed a project for an accommodation builder in Western Australia.

The project spanned 16 rooms and needed to feature fully customized premium beds, wardrobes, beside tables, desks, chairs and fridge hutches.

Minesite Furniture worked closely with the client to jointly design a custom fitout for the rooms.

A sample batch was manufactured so the client could have a good look at what they were buying and how it worked with the space.

The products were manufactured and delivered within two weeks.



CREATING A HOME AWAY FROM HOME

Leading Australian company Minesite Furniture has made mental health a priority in its plan to transform mine site accommodation into better places to live.

The commercial furniture provider specialises in giving soulless dongas a stylish makeover, as well as fitting out taverns, bars, dining halls and offices.

Considered the only dedicated mining furniture supplier within the country, the company is a well-known vendor for most major mining operators and facility management companies.

It provides a mix of stocked product and custom solutions, championed by an expert team of inhouse interior designers and furniture consultants that specialise in creating wellbeing-focused environments.

With research showing that FIFO workers face significant mental health challenges, the industry has invested heavily in eliminating workplace stressors and helping staff feel more at home when working in remote locations.

Minesite Furniture Director Elton Fawkes said that included paying careful attention to the design of the built environment, which he said was proven to play a role in how staff feel.

"Design and wellbeing are very much entwined," Mr Fawkes said.

"At Minesite Furniture, we believe that improving living conditions, morale and mental health of the workforce should be first and foremost in peoples' minds in 2022.

"And we make sure the work we do in mining accommodation villages directly and positively has an impact."

OF THE HIGHEST QUALITY

Global mining giants such as Rio Tinto, FMG and BHP have already partnered with Minesite Furniture to spruce up their accommodation sites with the company's range of premium chairs, tables and joinery.

Spanning dining, office and bedroom furniture, each product is piped through a rigorous quality control process, tested for durability and backed by a 5-year warranty.

The first-rate options are imported directly from a number of reputable manufacturers across Europe, Asia and Australia and come with varying price points, providing a great selection for every budget.

Minesite Furniture is also Australia's largest stockist of accommodation camp furniture, holding roughly $6.8 million in stock across 3 warehouses nationally.

Mr Fawkes said the extensive inventory meant operators could feel confident of quick dispatch and delivery times, as well as substantial savings.

"There is a selection of more than 500 products and colours to choose from at any given time via our website, while the Minesite Furniture showroom gives you opportunity to actually see, feel and test our range," Mr Fawkes said.

"Our strong market position also means we have great buying power and can offer exceptional furniture at lower prices, which are slashed even further by our freight company partnerships.

"These high-volume deals mean delivery costs are significantly lower too but to reassure our clients, we also offer to beat any other published price on similar furniture in the market by 5 per cent."

WHAT YOU WANT, WHEN YOU WANT IT

Mr Fawkes said Minesite Furniture's extensive experience supporting the mining and defence industries meant the business fully understood the importance of quick and comprehensive service.

The company does onsite visits to get accurate site measurements and helps operators bring their visions to life, with either basic 2D layouts or in-depth 3D renders.

The process is a complete turnkey solution, from an empty room to a detailed and client-focused design process, through to delivery of selected furniture.

Mr Fawkes said the delivery stage was particularly important for Minesite Furniture, which he said was strongly committed to short time frames.

"Our large stock holding means that deliveries are fast," Mr Fawkes said.

"Our response time to enquiries is at maximum two hours and we make sure that operators ordering items already in stock get notice of dispatch within 48 hours.

"Our delivery options are also highly tailored.

"We have full metropolitan and regional coverage, we can offer door-to-door service or even deliver direct to a preferred freight carrier depot.

"These are just some of the reasons why many mining operators and facility management companies choose Minesite Furniture for their furniture fit out solutions."

For more information, visit:
www.minesitefurniture.com.au
AMR

Home Away From Home



Improve the **Living Conditions, Morale and Mental Health** of **your Workforce.**



We offer

- Quality with a 5-year warranty
- A 5 per cent price beat guarantee
- Free furniture design consultation
- 48-hour dispatch time for stocked items
- Maximum two-hour response time to enquiries
- Australia's largest range of commercial mining camp furniture

CONTACT US TODAY

Melbourne	03 9923 7970
Perth	08 9350 2870
Sydney	02 9423 3800

Minesite FURNITURE



CELEBRATING OTRACO'S 50TH ANNIVERSARY OF WORLD LEADING TYRE MANAGEMENT

OTRACO, a global leader in earthmover (EM) tyre management, was started by Basil Winterbourn at Mt Newman Mining's Whaleback iron ore mine on 24th August 1972. Fifty years later, Otraco is still managing tyres on site for BHP Iron Ore.

In 1972 Basil was the Newman site manager for a Port Hedland based company that sold, serviced, repaired and retreaded tyres, and which provided an EM tyre maintenance, repair and retread service to the Mt Newman Mining operation, 450 kilometres south of Port Hedland.

Over time Basil could see that the company in Port Hedland was not adding real value to the Newman mine site – even today, retreaded EM tyres are rarely an economical proposition on large haul trucks (certainly in the Pilbara's hot and harsh operating conditions); in those days, it was far less so.

With the encouragement of then Newman mine manager, Ian Gunn, Basil founded OTRACO – Off-The-Road Australia Company – selling his car and chattels and borrowing enough to get the company up and running. He also created a new business model: EM tyre management, because unlike its competitors Otraco was not a tyre reseller or a tyre maintenance company; it provided a comprehensive and independent tyre management service with the primary goal being to minimise tyre and wheel related costs (direct and indirect) for its clients. Today that concept would be referred to as minimising the client's tyre related TCO – total cost of ownership.

Basil employed a smart young engineer and the two visited mines throughout Australia and North America to come up with ideas and a world-class methodology for providing proper EM tyre service and management. Otraco pioneered many areas related to EM tyre management, including tyre life analysis methodology (fitment-period batching and axle-fitment-bias compensation), tyre pressure and temperature monitoring systems (TPMS) and the industry's understanding of tyre explosion mechanisms. Even the tyre position numbering system, used almost universally now, originated from Otraco.

The company grew – initially winning new contracts in Western Australia and Tasmania. In the mid-1980s it tripled in size in the space of two years, including its first Rio Tinto operation with the start-up of Argyle Diamond mine in 1985 (where Otraco retained tyre management service until mine closure in 2020) and Newcrest's Telfer gold mine in 1988. Its first Rio Tinto iron ore contract commenced with Paraburdoo-Channar in 1993. Otraco now manages tyres at all Rio Tinto's and BHP's contracted open pit operations in Western Australia.

Otraco identified the industry need for a comprehensive web-based tyre management system and set about developing one – OTRACOM – which is now a world leading TMS providing tyre, wheel and chain tracking, analysis and reporting functionality to more than 80 projects globally.

There were other opportunities further afield – particularly internationally. Otraco expanded overseas – first into Indonesia at Rio Tinto's Kelian gold mine in 1994 followed by South America a year later to manage EM tyres on the largest copper mine in the world – BHP's Escondida; then into Brazil and the world's largest iron ore mine at the time – Vale's Carajas. Codelco's Radomiro Tomic copper operation was added in 2008.

Otraco expanded into the east coast of Australia in 2001 at Newcrest's Cadia gold mine and Barrick's Lake Cowal gold operation in 2005 (now owned by Evolution Mining). The company's purchase by Downer in 2006 introduced it to the Hunter Valley and Bowen Basin coalfields where it has maintained a strong presence since.



The first South African operation commenced in 2010 at Anglo American's Mogalakwena project – the largest platinum mine in the world – followed by the Kolomela and Sishen iron ore mines (including tyre management for Anglo American's mining contractor, Moolmans).

Its Southern African operations have continued to expand – Swakop's Husab uranium mine in Namibia, Debswana's Jwaneng, Orapa and Letlhakane diamond operations in Botswana. More recently, in South Africa, Otraco has commenced tyre management at Exxaro's Grootegeluk, and Glencore's Impunzi, Tweefontein and Goedgevonden coal mines. Assmang's Beeshoek, Bruce and King iron ore projects have since joined the growing list of clients.

Otraco had long recognised the need for competency-based training and certification of tyre technicians and was a pioneer Australian Registered Training Organisation in this field. In 2010 it set up the Otraco Training Centre (OTC) in Perth – a fully functional mine-style workshop with a fleet of equipment ranging from light and industrial vehicles through to an underground bogger and two haul trucks – staffed with registered trainers providing the theory and practical activities required to develop safe and competent tyre service personnel. The OTC remains the world-leading training facility for the EM tyre service industry.

Otraco, purchased by Bridgestone in 2021, now manages more than 50 projects in three main regions globally – Australasia, Africa and the Americas – with an enviable client list including BHP, Rio Tinto, Anglo American, Glencore, Codelco, Newcrest and Yancoal.

We are looking forward eagerly to the next 50 years and anticipate our new ownership will enable further growth across all the regions in which we operate, and beyond. ***AMR***



OTRACO

TRANSFORMING TYRE MANAGEMENT



We are an Australian based company with over 50 years' experience delivering off the-road (OTR), and light mobile equipment (LME), tyre management solutions. Our clients come from across Australia and around the globe.

Solutions Tailored to Client Requirements

- Complete tyre management delivered by Otraco's fully accredited tyre technicians located onsite. Otraco provides tyre maintenance supported by world class safety programs and asset management solutions.
- Our computerised tyre management system (OTRACOM) tracks and manages tyres and rims, from manufacture to disposal. Providing essential performance data reporting at key stages.
- Tyre pressure monitoring (TPMS) delivered via software that utilises live data feeds to monitor tyre life. TPMS systems issue alerts when maintenance is required and produce performance data reports.
- Training and engineering support that assists clients to commission, operate and maintain cost effective tyre management solutions worldwide.

CONTACT US NOW

T: 1800 OTRACO (687 226) **E:** info@otraco.com
W: **www.otraco.com**

50 YEAR ANNIVERSARY

Keeping the big wheels turning for 50 years



SMARTTECH BRINGS EXCITING NEW OPPORTUNITIES TO THE PAYLOAD MONITORING SPACE

Leading advanced solutions provider Smarttech Australia prides itself on the innovation and flexibility it utilises to support a wide range of customers.

The Australian Mining Review recently caught up with General Manager, Dan Barry, to discuss the company's highly regarded Payload Monitoring service offering.

AMR: Smarttech provides a range of services to mining sector, where does Payload Monitoring fit.

DB: I guess you would describe it as the spine of our business and we are undertaking more and more business in the mining space by utilising our offering in various ways and providing increasing value to the mining industry.

There has always been a huge following from the mining industry for payload management, payload monitoring and we have some extensive sites that utilise our solutions.

Our services sort of traverse the myriad of different components or sectors within that mining business. For example, there is a value proposition coming out now with payload management and yield management in terms of looking at the cycle from drill blast to crush, to putting materials through washbasins and ending up with a ROM pit or a stockpile of ore. During that process the ore may be handled over five or six times across various machinery.

Our business is focusing now on how we can make sure all of those pieces of machinery along that process are engaged in some form of payload monitoring. That can be utilised to ensure that there isn't any leakage or slippage depending on what sort of industry you're referring to, or at least identify any causes for reduction in yield or production in that process. We can also assist in understanding what is occurring downstream with some of the analysis tools you can utilise from having that raw data available.

We sell a software solution, in conjunction with our Loadrite portfolio called Insight. This is a web-based platform that utilises all of that information in reporting, including the way in which the material is handled throughout the site, and in particular it can assist in the way in which the material invoiced and then handled from the site and to the end destination.

Our initial value proposition in the core mining focus area is the link from material to stockpile and then there is the aspect of looking at how to create a production increase.

I think there is a realisation in the marketplace that being able to invoice from the bucket of a loader is incredibly valuable. Basically, we use that loader as a Legal For Trade certified scale which can be invoiced on the fly per bucket or per truck. This can be managed via the Insight software which creates an invoice per truck, that can be then automatically generated and submitted to the purchaser. There is a huge benefit that in terms of no longer requiring weighbridges and things like that and also being in control of your own destiny.

A lot of our customers are seeing a benefit in terms of ensuring there aren't any discrepancies. They can see exactly what the tonnage is for what is outgoing and then they can compare that to what the arrival values are and then perhaps identify any leakage along that journey. That has become a very common workflow that is utilising some of these payload management tools that we offer through the Loadrite portfolio.

The other area that has probably become quite important relates to a value placed on the chain of responsibility legislation for any on-highway vehicles. Overloaded highway vehicles are now subject to that chain of responsibility legislation and that creates a liability workflow that we can monitor with that same reporting data from the payload management solutions.

For those scales that load those trucks that go on-highway we now have a record that ties again back to that Cloud information, so that you can keep a track of all, for example, dockets that would be utilised for on highway vehicles that are traveling on public roads. That has become something that many sites using long haulage are now utilising. We are seeing clients now wanting to have that information available to them so that they can ensure they are compliant with the weights associated with each individual truck.

I think that we see many benefits working with the three core value propositions that we offer through the Loadrite portfolio.

Firstly, there is the understanding of where material or workflow is in terms of creating a stockpile throughout various handling machines, such as crushing machines and conveyor belts. By having that information available along each of those steps you then have the potential to feed back the information into a bigger data set, which can then generate a great deal of value from an analysis perspective, both proactively and reactively.

Then we see a benefit in being able to invoice directly from the bucket through the Loadrite Legal For Trade solution and then there is the loading process and understanding that none of the trucks are overloaded.

We have various other solutions that we offer that that also revert that back to an overarching trade agreement, that verifies essentially the weight versus haulage distance and time.

That can be automatically generating an invoice for a work-in-progress column for the mine itself, or for the contractor, to verify that whole process itself also has a value that's generated through those scales being Legal For Trade.

There are other various peripheral benefits that we see that our customers can obtain through the adoption of those payload management solutions.

AMR: The Loadrite payload management system has grown into the premium brand in a relatively short period. It traverses multiple industries and has been particularly popular within the quarrying sector.

Smarttech has seen increasing interest from the mining industry in its payload monitoring solutions in recent times and the company is confident that its take-up will continue to grow as more and more companies understand the significant value which can be obtained from this very accurate and flexible service offering. ***AMR***

SMARTTECH® AUSTRALIA



The Best in Mining & Civil Technology

About us

The field and office staff at SmartTech are trained and experienced in the Mining & Civil industry, we have over 20 technicians, some who have been with us from the beginning carry extensive product knowledge within our portfolio.

Learn how easy it is to utilise technology that makes significant improvements in the project workflow. The team at SmartTech know how to apply this innovative technology to effectively solve your biggest Mining & Civil challenges.

With the addition of On-Board Weighing, Safety and Software solutions to your civil construction projects, you're in a stronger, more competitive position. You'll experience new levels of productivity that will enable you to earn the bid and be profitable, project after project.

Only one partner offers the broadest, deepest and most advanced set of tools, advice and support to revolutionize your construction workflow – SmartTech Australia.

Loadrite Services

Our technicians are the only in Australia that certified by the National Measurement Institute to verify Wheel Loaders to be Legal For Trade (6.8) for LOADRITE onboard weighing systems.

With our experienced team, comes an equipped fleet. SmartTech has a calibration truck in every state we service (Western Australia, Northern Territory, Queensland, New South Wales, Victoria and Tasmania.)

1800 655 860 **www.smarttechaustralia.com.au**



Tecweigh's WY15 conveyor belt scale combines Stainless Steel IP66 load cell technology with rugged long-term accuracy.



Tecweigh's open and enclosed weigh belt feeders for truck-filling.

Weigh More Precisely and Reliably

For a trusted partner in precision equipment, look no further than Tecweigh, the leader in quality bulk materials weighing.

With scales in continuous operation for over 30 years, Tecweigh is your ideal solution partner for weighing and material handling in the mining and aggregate industries.

Tecweigh's professional team works with clients to prepare tailored weighing solutions including on-site service.

All weighing products are manufactured in Australia and there is a full testing, spare parts and repair services team ready to be deployed across the country.

Conveyor Belt Scales
Conveyor belt scales, also known as Weightometers, are integral instruments in the mining industry, designed to weigh products as they flow on a conveyor belt.

Tecweigh is a leading designer and manufacturer of belt weighers and is still experiencing success with its next-generation product, the WY15 Conveyor Scale.

In keeping with the company's tradition of unbeatable accuracy, dependability, and ease of use, Tecweigh's WY15 single idler (+-0.5%) or dual idler (+-0.25%) conveyor belt scale combines the unique time and labour-saving features of its belt scale calibration with strain gauge load cell technology.

It utilises two hermetically sealed stainless steel IP66 bending-beam load cells, featuring a rigid all-welded construction, making it more reliable, durable and thanks to inbuilt calibration weights is easier to use than other scales on the market.

Tecweigh's equipment features: powder coated or stainless-steel frame and speed sensor; low voltage input power 9-36V DC; LED scoreboard displays; outdoor stainless cabinets; wireless remote rate/total displays; and industrial network communication protocols (Ethernet, Profibus, DeviceNet, Modbus RTU and others).

Weigh Belt Feeders
Many of Tecweigh's weigh belt feeders have been in operation for over 15 years, making them the most rugged Weighbelt Feeders in the mining industry.

Whether it is used for conveying, blending, loading or batching, Tecweigh's weigh belt feeders can withstand the rough handling and the toughest material, day in and day out, thanks to its rigorous design, testing and construction.

While the standard range for the weigh idler system is from 100kg/hr to 1000t/hr, Tecweigh can custom design for greater capacities, with no impact on its high performance.

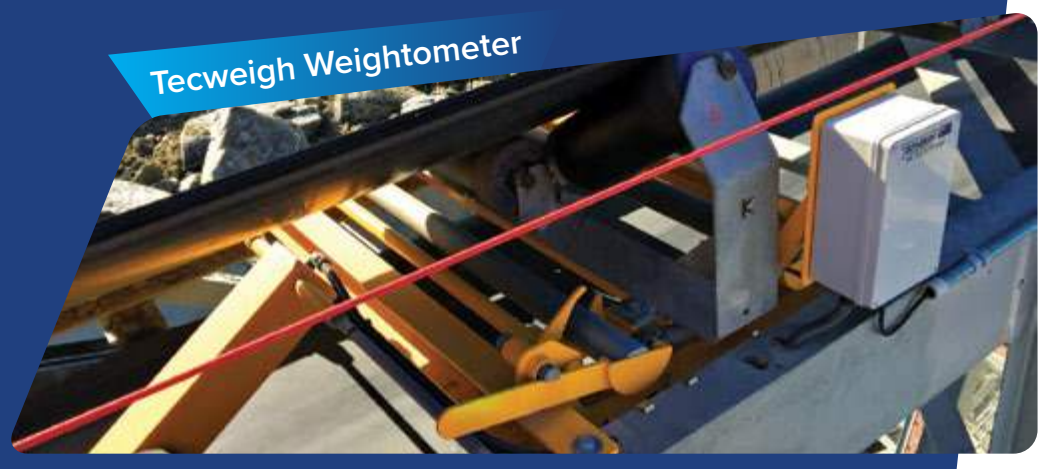
Tecweigh's weight belt feeders use stainless steel, hermetically-sealed load cells.

Calibration is quick, easy and safe, utilising self-storing calibration weights that eliminate any bulky chains or awkward hand-on weights.

Being sized for specific applications means these weigh belt feeders provide the most accurate calibration possible and the most exceptional accuracy for clients. ***AMR***

Custom engineered weightometers & other weighing solutions

Tecweigh Weightometer





Tecweigh weigh belt feeder

AUSTRALIAN MADE

TECWEIGH
Continuous Weighing Solutions

Tecweigh Weightometers or Conveyer Belt Scales are designed to measure accurately your product throughput whilst employing your existing idlers - No Special Weigh Idlers are required.

Tecweigh Weigh Belt Feeders offer an extensive range of models. Available in throughputs from 100 kilograms per hour to 1,000 tonnes per hour, our Weigh Belt feeders are available with a custom design for greater capacities. They can be used for Blending or Dosing together with Truck Filling- Benefit only one trip to the Weighbridge.

Tecweigh Products have Accuracies of +-0.5% for a Single Idler Scale and +-0.25% for a Dual Idler Scale. Instantaneous and Total throughput is available from the WP20 Weight Processor which can be equipped with an Ethernet/IP Modbus TCP communications option.

This allows your Plant PC/PLC to access all Scale parameters in real time and control the process optimally.



Contact us on
sales@tecweigh.com.au

tecweigh.com.au

Efficient Underground Haulage

Minetruck MT65 is designed for fast productive haulage in large mining and construction operations. With a smart system and robust components the Minetruck MT65 ensures productivity, reliability, operator safety and comfort along with ease of maintenance.

Minetruck MT65 has integrated functions and is ready for automation thanks to Epiroc's Rig Control System (RCS). It keeps track of your operation with our telematics solution Certiq where vital equipment information can be gathered and visualised.

Engineered with safety in mind Minetruck MT65 includes features such as a ROPS and FOPS certified operator cabin, SAHR brakes, automatic brake test, open-door brakeapply function and exterior status lights.

Thanks to the great steering feel, frontaxle suspension, and ergonomic operator environment with low noise levels, this truck is pleasant to operate for long periods.

Service work gets done safely, quickly and easily thanks to the maintenance friendly design. Minetruck MT65 has a superior service bay, service points reachable from ground level and service-related information available in the control system.

Recent Improvements to Minetruck MT65
The new engine dramatically lowers emissions, enabling more sustainable operations. Lower emissions improve the working environment and reduce the need for ventilation, leading to lower operation costs and a smaller environmental footprint.

Another great advantage of Minetruck MT65 is its new ejector dump box option for compact envelop applications. We developed this solution to cover more applications with the same load frame. The modular design is a pin-on solution that attaches to the load frame, which makes it possible to swap between standard and ejector dump boxes as needed.

An additional load-weighing display can be placed in the cabin window, so the loader operator can ensure that the truck is fully loaded every time. This will not only help maximise the payload but also minimise the risk of overfilling/overloading. This information can also be monitored through Epiroc's proven telematics system Certiq.

Certiq monitors and records vital machine information, which helps to both improve productivity and reduce unnecessary wear.

Contact us to discuss your haulage needs

www.epiroc.com/en-au

1300 366 880



Minetruck MT65 is engineered with safety, productivity and operator comfort in mind for haulage in larger underground mining and construction operations. The built in reliability combined with higher capacity and high ramp speed leads to dramatically increased productivity. To improve energy efficiency we have reduced fuel consumption and decreased running cost.



Minetrucks to fit your haulage needs

Epiroc's range of mine trucks for underground mining and tunneling applications includes models with payload capacities from 20-65 tonnes. The articulated underground trucks have a high power-to-weight ratio for good speed on steep grades. The Rig Control System uses smart features to prolong the life of your mining haul truck while making your underground haulage safer and more productive.

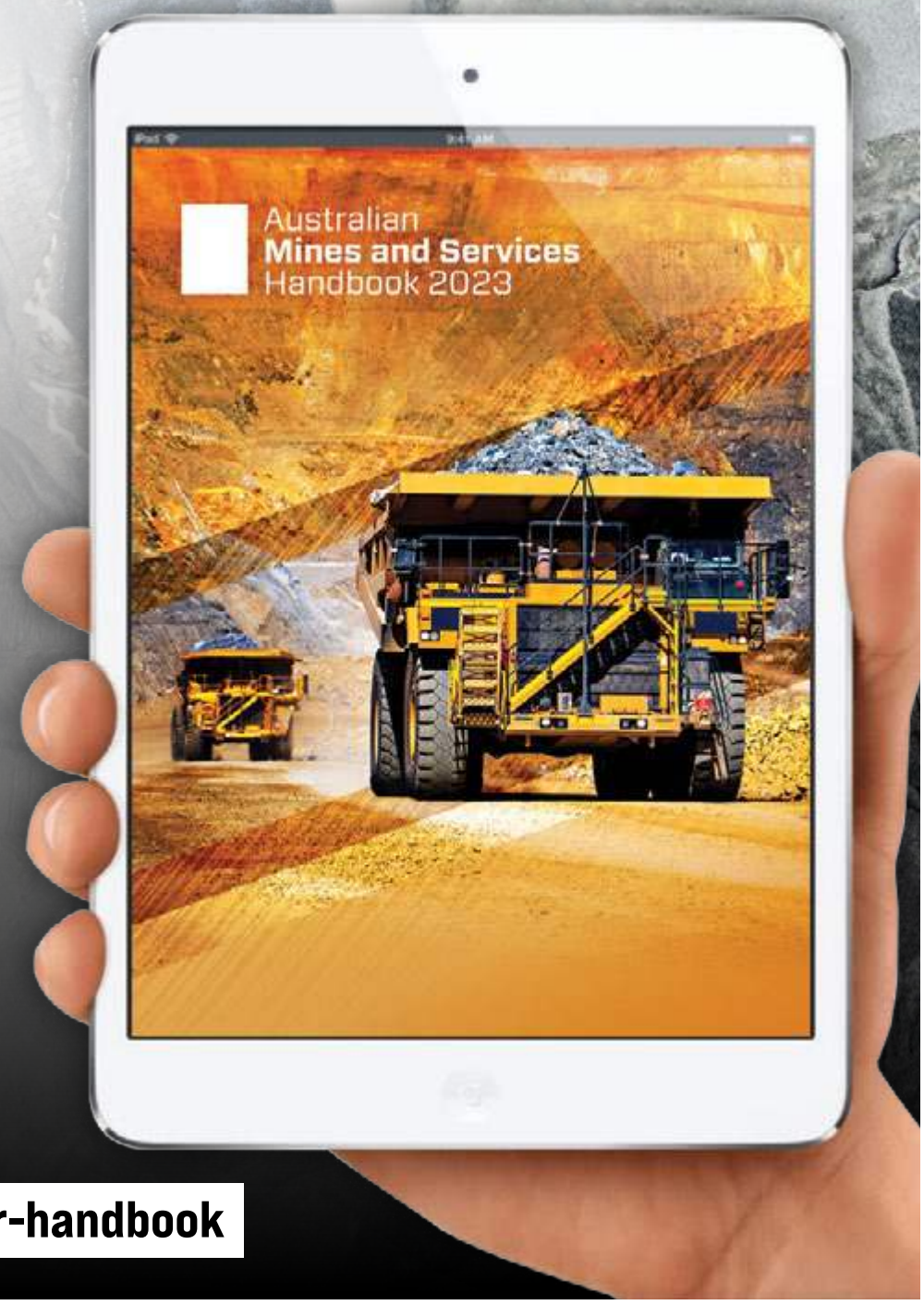
Epiroc

epiroc.com/en-au

Australian Mines and Services Handbook 2023

DON'T MISS OUT on 2023!

Let them find you in **the Bible** of the **Australian mining industry.**



BOOK NOW!

australianminingreview.com.au/amr-handbook

ANGUS
FLEXIBLE PIPELINES

Manufacturing For Over 220 Years

Bentham EST. 1788

THE TRUSTED CHOICE IN LAYFLAT HOSES

- MINE DEWATERING
- GROUNDWATER EXTRACTION
- EMERGENCY WATER SUPPLY
- POTABLE WATER TRANSFER

> Greater bore depths than all other flexible risers
> Significant stock holding nationwide
> Every metre of hose is rigorously tested
> Worldwide potable water approvals





Wellmaster

The industry standard flexible rising main for all types of ground water extraction and well monitoring operations, reaching depths of over 320m - as deep as Australia's tallest building!



Super Aquaduct

The premier choice for emergency and drinking water delivery operations, offering major performance advantages and cost savings over rigid pipe.



Stock available across Australia suitable for all fluid transfer applications. Contact our team to see how we can help with your operations!

> Phone: **1300 438 4673**
> Email: **sales.australia@angusfire.com**
> Visit: **angusflexiblepipelines.com.au**

CIRLOCK
LOCKOUT / TAGOUT EQUIPMENT

30 YEARS
Celebrating making lockouts since 1992

PIPE ID Markers



What are Pipe ID Markers?

Pipe ID Markers help to quickly and easily identify pipe contents. This is especially helpful in an emergency situation. It also saves time during maintenance.

Where to use Pipe ID Markers
A Pipe ID marker consists of printed text on a coloured background with a contrasting border and a chevron to show flow direction.

The colours are determined by the pipe's contents.
White on Light Blue - **AIR**
Black on Sand - **GASES**
White on Orange - **ELECTRICAL**
White on Blue - **WATER**
White on Violet - **ACIDS & ALKALIS**
Black on Silver - **STEAM**
White on Green - **WATER**
White on Brown - **OILS**
White on Black - **OTHER LIQUIDS**

Text and marker sizes are also specified. Markers must be placed adjacent to all junctions, valves, wall penetrations etc. Markers shall be spaced no more than 8m apart, except for long uninterrupted straight runs of external services where spacing shall not exceed 50m.

Australian Standards
Australian Standard AS 1345-1995 - "Identification of the contents of pipes, conduits and ducts" - specifies guidelines for pipe marking.

Markers are to be placed adjacent to all junctions, valves, service appliances, bulkhead and wall penetrations. Markers shall be spaced no more than 8m apart except for long, uninterrupted straight runs of external services where spacing shall not exceed 50m.

CIRTAG® standard Pipe Markers complies to AS 1345-1995 Standards.

The Benefits of Pipe Markers
- **Prevent accidents:** Unmarked pipes are a danger. Numerous injuries occur through ignorance of pipe contents.
- **Reduce Errors:** Know the contents of the pipe.
- **Improve operating efficiencies:** Marked pipes let workers trace a process problem and resolve it quicker.
- **Improve plant appearance:** Markers provide a clean, organised appearance.
- **Enhance quality programs:** Ensure your blueprints are up to date with Cirlocks range of pipe marking solutions.

Cirlock Pipe ID Markers
Cirlock Pipe ID Markers are Made in Australia and as a result we guarantee fast delivery. Our Pipe ID markers are custom made and available in small or large quantities. There is a minimum order of 10 markers (markers sold individually – can be a mix of markers) and our markers adhere to Australian Standard AS 1345-1995 - "Identification of the contents of pipes, conduits and ducts" - specifies guidelines for pipe marking. ***AMR***

CIRLOCK
LOCKOUT / TAGOUT EQUIPMENT

LOCKOUT EQUIPMENT

PIPE MARKERS

Pipe Markers help to quickly and easily identify pipe contents. This is especially helpful in an emergency situation. It also saves time during maintenance. A Pipe ID marker consists of printed text on a coloured background with a contrasting border and a chevron to show flow direction.

Cirlock Pipe ID Markers are Made in Australia and guaranteed fast delivery.

LOCKOUT PADLOCKS

Cirlock's Lockout Tagout Padlocks come in 8 different colours, with various shackle sizes and shackle types (Non-Conductive and Stainless Steel) and can be keyed differently, keyed alike or master keyed, to suit your requirements.

Cirlock Padlocks are available for immediate dispatch.





AUSTRALIAN MADE

See our full range on our website: www.cirlock.com.au
lockout@cirlock.com.au | 1300 889 738

celebrating 30 YEARS OF TRADING

Redefining Rigid Pipelines with Flexible Layflat Hose

Setting up pipelines for dewatering on mine sites remains a big part of water management. **Crusader Hose**, the water logistics expert, knows that flexible layflat pipelines and reeling systems can offer the perfect replacement for poly pipelines. Manufactured in Australia, their large diameter layflat hose is moveable, and their innovative reeling system makes handling flexible pipelines easy and safe.

Moving large volumes of water can be challenging for engineers when aiming to control water levels. Rigid poly pipelines are typically utilised, which do the job but are often time-consuming to install and difficult to relocate. Over 36 years of manufacturing experience, Crusader Hose has redefined water transfer pipelines using flexible layflat hose and reeling solutions.

Rising water tables, cyclones and storms can cause havoc for an open-cut mine as keeping water out of the open pit is one of the primary functions in supporting mine operations. Mine dewatering in emergencies needs to be done swiftly and efficiently.

Poly pipe has been used for decades by mining companies for water transfer. Although a successful method, poly pipe is large and cumbersome to handle. Many trucks are needed to transport a reasonable length, and their unloading requires special equipment such as cranes.

Poly pipe is also expensive, if not impossible, to redeploy and relocate. It is not uncommon to see obsolete HDPE pipelines left abandoned on-site once mining has ceased or the pit has moved, as HDPE recovery and recycling can be costly.

Crusader Hose is an Australian business that manufactures layflat hose and reeling systems. Established 36 years ago, Crusader Hose has worked with many industry leaders and is recognised as a progressive and innovative company. Developments in R & D have raised their hose quality to world-standard and expanded their engineering capabilities to fabricate reeling systems to deploy and retrieve layflat hose rapidly.

“We are proud to be the only manufacturer of mine dewatering hose in Australia and, with our capabilities, support the mining sector with world-standard high-quality systems,” said Francois Steverlynck, Managing Director of Crusader Hose, “although competing against a market flooded with imports has had its challenges.”

Mine dewatering is a two-pronged approach; first, water extraction from the open-cut mine pits, then transferring the extracted water to another area. High-pressure pipe is a critical requirement, as the water often needs to be pumped up a high wall and across long distances. Crusader Hose has developed large-diameter Waterlord® layflat hose that can handle these high pressures and flow rates.

Developing reeling systems in-house with their dedicated engineering department has been a key strategy at the company. “We know and understand the difficulty in reeling up layflat hose, as we make thousands of metres at our factory daily,” said Francois, “hence we feel best suited to designing and fabricating solutions due to our intimate hose experience.” Two of the most popular reeling systems are the Hamersley™ and the Bayswater™.

The dewatering needs can vary among mines, and the Hamersley™ and the Bayswater™ are finding their way into large and small mining operations. Interchangeable spools of the Hamersley™ make it quick and easy to deploy multiple lengths of hose, whereas the Bayswater™ is a trailer-mounted modular system ideal for pipelines up to 8 inch.

Layflat hose is compact and easily transported. Once on-site, forklifts are most often used in unloading the flatpacks from the truck. Made of abrasion-resistant polyurethane, Crusader Hose dewatering hose not only handles high pressures but the rigours of the Australian terrain and climate, as well. The reeling systems provide quick and easy deployment at the commencement of dewatering and later recovery once the temporary pipeline is no longer needed. Flexible layflat pipelines offer a suitable alternative to rigid pipe systems in emergencies or other shorter-term applications.

“There are many benefits in using flexible layflat hose and reeling systems, and we are eager to assist mining engineers in finding more efficient solutions for their dewatering requirements,” continued Francois, “we are not here to replace poly, just to make alternative options to rigid lines.”

The mining industry has been using poly pipe for a long time and does not yet fully appreciate the benefits of a flexible long-length layflat hose pipeline. Innovative businesses like Crusader Hose are solutions-driven and work hard to change that. With the Hamersley™ and Bayswater™ deployment systems, using layflat hose has never been easier. “We’re keen on helping the mining industry overcome the seeming challenges of using layflat hose, and Crusader Hose is fully committed to supplying complete systems,” concluded Francois. ***AMR***



Bayswater Mobile Hose Crate with 203mm Waterlord® layflat hose.



Hamersley Reel System deploying 200m of 305 mm Waterlord®.

Flexible pipeline using large diameter Waterlord® from Crusader Hose.

MERKANOOKA HAULAGE



Merkanooka Haulage knows dirt. Understanding the value of efficiently and safely transporting bulk gold and iron ore, James Yewers, owner and founder, and his team pride themselves on being the first choice for premium bulk haulage, crusher feed and on-site road maintenance services in Western Australia.

Operating at remote mine-site locations, Merkanooka is complemented by the full package when it comes to on-site service. Using high quality, custom equipment; Kenworth prime movers, Boomerang trailers and Komatsu earthmoving gear the Merkanooka team get to know the job and share enthusiasm towards exceeding targets.

On-site services are integral to the smooth running of bulk haulage on mine sites. Merkanooka's portable workshop and office spaces enable the service, maintenance, HSET and administration to be conducted on site and regularly and creates the hub of their 24/7 operations.


Vinnie Fisher

High quality equipment deserves a high quality team. James provides the heartbeat of the company. A fourth-generation farmer in Western Australia's Midwest, James and wife Marika couldn't resist the unique opportunity to diversify their broadacre cropping family business and in 2010 began hauling iron ore with the farm truck at the newly established Karara Mine not far from their rural home.

James found passion from the dirt and hard work, followed the road of opportunity, and now manages a large fleet of trucks, a robust workforce and a thriving business.

Merkanooka Haulage are operating at several gold and iron ore mine sites, haul bulk agricultural products and transport heavy equipment by float. James has earned respect as an industry partner, craving knowledge on all aspects of the job and building both client and team relations.

James is honoured to recently employ Mr Vinnie Fisher to lead Merkanooka's vigorous workforce. Vinnie brings to Merkanooka a wealth of experience in and knowledge of the transport, bulk haulage and mine site services industry with over 40 years in the industry.

Vinnie has held senior roles with some of the largest players in this industry and is ready to share his expertise and abundance of knowledge with James and the team to lead a complete review of all aspects of the business, the streamlining of systems, processes and adding efficiencies and innovations. Joining the company with decades of senior experience and industry confidence provokes anticipation of a long and successful future for Merkanooka.

James and Vinnie share a vision to draw on the wide range of experience within the Merkanooka team to further service clients, current and potential. Vinnie's experience extends to mine rehabilitation and site services. ***AMR***



COMMUNITY-FOCUSED
FAMILY BUILT
We strive for excellence in everything we do. A company forged from four generations of WA locals who understand the value of hard work, and the importance of getting the job done right.
Specialists in:
- **Haulage**
- **Crusher feed services**
- **Road maintenance**
Merkanooka Company Pty Ltd
0427 615 785 | Vinnie Fisher
vinnie.fisher@merkanooka.com.au
MERKANOOKA HAULAGE
MERKANOOKAHAULAGE.COM



With a 6t capacity, a 2.4m turntable and 2m height clearance, the R7 Robowash was built for heavy duty component cleaning across multiple industries.


The R7 has a 2800l water storage capacity with both wash and rinse functions for eliminating contaminants when cleaning components.

AUTOMATE YOUR INDUSTRIAL CLEANING

R7 ROBOWASH KEY FEATURES
- PLC Control with HMI screen allowing for fully customisable cleaning settings
- Space saving lid function with 200mm self-adjusting pneumatic safety cylinders
- High torque, electrically driven basket with torque clutch
- Highly efficient washing technique utilises dual pumps with 9-Bar pressure and high impact spray nozzles

Robowash offers the most advanced cleaning technology for the mining industry and is a market leader in the supply of automatic cleaning equipment.

Its high-pressure washing system is highly effective at removing oil, grease, dirt and grime from any material and eliminates the need for costly and labour-intensive manual cleaning methods.

Introducing the R7 Robowash machine
This machine is perfectly designed for heavy industrial cleaning applications and is capable of cleaning large, heavy components with precise cleaning and contamination control.

The R7 Robowash machine is suited for large off-road diesel 16-cylinder engine blocks and components, marine and stationary power rebuild and remanufacture, as well as large general engineering and manufacturing components.

Cleaning is contained in an enclosed cabinet, the automated process means employees are free from exposure risk, traditionally labour-intensive processes are minimised and operations enjoy increased productivity and throughput.

Options include additional spray bar for internal oil gallery flushing, on demand gas heating for high capacity cleaning applications, advanced filtration for contamination control as well as the ability to run caustic soda with additional rinse function.

R7 Machine Specifications
The R7 Robowash is unmatched in its reliability, superior performance and productivity. Specifications include the following:

Load Capacity: 6.0 Tonne / 6000 KG
Basket Dimensions: 2400mm Diameter
Internal Height: 1500mm / 2000mm
Tank Capacity: 2800 L
Machine Weight: 9.0 Tonne
Max Electrical load: Minimum 63A, 100A preferred for Electrical Heating.

Robowash also offers larger capacity machines and custom machines for any cleaning applications.

Commitment to Automation
Robowash Managing Director Jay Jasper said health and safety were among the company's top priorities, as well as providing customers with a one-stop-shop for industrial cleaning solutions.

"We offer a complete range of industrial parts cleaning machines for the mineral resources sector and all other major industries," Mr Jasper said.

"Whether it's for smaller precise cleaning or large, heavy industrial applications, Robowash machines are engineered to have increased cleaning capacity, advanced contamination control and reduced energy consumption.

"This is the power of automation."

About Robowash
Robowash manufactures industrial aqueous parts cleaning machines for the mining, engineering and automotive industries. Industrial Parts Washers are our core business and we have supplied machines to many of the major equipment repairers in Australia.

In addition to the Robowash machine that automates industrial cleaning, Robowash offers a total service package that includes workshop assessment, installation and commissioning, operator training, wastewater removal and treatment, preventative maintenance and the flexibility of rental or purchase options. ***AMR***







MAKING LIGHT WORK OF HUGE JOBS

DHV RANGE. HIGH POWERED. HIGH PERFORMANCE.

Australian Industrial Vacuum (AIV) have backed the DHV High Powered Industrial Vacuum range as the ideal solution for heavy industries, describing it as showcase of innovation and high performance.

Designed for intensive use, the DHV range has unrivalled suction performance and collection capacity, enabling it to handle large quantities of dusty or dense materials.

It can support the dry material recovery of cement, stone, industrial sand, wood chips and other abrasive content where spills are 1 cubic metre or larger.

The DHV range has a quick mechanism to discharge debris into bulk bags and the vacuums come equipped with detachable containers that can be easily moved using a forklift.

The vacuum's self-cooled pump guarantees high vacuum values and airflow, while the suction unit is protected by polyester filters and class M safety cartridges, for dust as small as 1 micron.

The range has maximum filtration efficiency thanks to an automatic alternating chamber filter cleaning system, while HEPA H14 filtration is also offered to ensure the safe handling of fine and toxic dusts.

The DHV range is the only high powered industrial vacuum equipment that can offer IECEx Certified componentry guaranteeing its safety and compliance when extracting combustible dusts. IECEx Certification is a quality assessment specification based on standards provided by the International Electrotechnical Commission (IEC). It is recognised globally, and is imperative if you're dealing with dust of a combustible nature such as coal, aluminium or saw dust.

AIV Managing Director, Ken Schafer made the executive decision for AIV to become the exclusive distributors of the Delfin brand in Australia due to the quality and workmanship of the vacuums. He confirms the vacuums are long-life, powerful and a cost-effective maintenance solution for industrial settings and challenging environments across Australia.

He said they were also an extremely safe product that were easy to operate across the entirety of a plant.

"DHV's can be used in a Centralised Vacuum System for the easy and safe handling of large quantities of material even over long distances and from different points of the same plant," he said.

"Conveying material with a piping system from all areas of the same plant into a single collection point guarantees the highest efficiency and optimisation of space whilst reducing injury risks and improving safety for all workers. This of which we have seen implemented in many businesses across Australia."

"At AIV, we specialise in high performance industrial vacuums and have a solution for all zones, industries, and applications."

SUCKING UP THE COMPETITION

Australian Industrial Vacuum's high-powered DHV range is matched only by the company's strong product mix, spanning a variety of popular industrial options.

Working closely with suppliers in Italy, Asia and Canada, the Australian company has kept ahead of the curve on new and emerging vacuum advancements.

Mr Schafer said the AIV offering was a reflection of the market's most durable and innovative products designed to improve productivity and efficiency.

"We provide the tools you need to keep your workplace safe, compliant and of course, clean," Mr Schafer said.

"We have an extensive range of models and power sources that can meet any requirement – we encourage you to come and have a look!"

When considering bulk material recovery





and heavy industries, the DHV Industrial Vacuum range is the ultimate choice. Our skilled sales consultants work closely with our qualified engineering team to consider all aspects of the project to present a solution that is tailored to your specific requirements.

We offer access to proposals, drawings, technical data and airflow calculations on your project so you can put your complete trust in the process, and know that your opinion is valued every step of the way.

Mr Schafer said each vacuum cleaner was complemented by a comprehensive range of tools and accessories to enhance their capacity.

He said staff felt strongly about providing turnkey solutions for clients, making AIV a one-stop-shop for industrial maintenance products and services.

"We offer lifetime support on all our equipment and our knowledgeable and friendly team guarantees a response to all enquiries within a day," he said.

"We have years of industry experience and can offer honest, reliable and useful advice."

ABOUT AIV
Based in Victoria, Australian Industrial Vacuum is fast becoming a market leader in industrial vacuum supply and the maintenance partner of choice for the mineral resources sector.

Their high-performance industrial vacuum cleaners ensure a clean and safe workplace that requires less manpower than other alternatives.

The products can be used for hours at a time and are purpose-built for challenging conditions, enabling them to remain operational no matter the debris picked up.

The company sources their innovative products from renowned global manufacturers and they are the exclusive national distributor of the popular Delfin range.

Mr Schafer said AIV's core mission was to offer high quality, reliability, efficiency and effortlessness across their products and services, delivering the best industrial vacuum cleaner working to improve your efficiency always.

"If you are looking for **industrial vacuum cleaners for sale** look no further than AIV for great choices and professional expertise.

"Contact us today to find out more."

For more information, visit Industrial Vacuum Cleaners Australia | Australian Industrial Vacuum

AMR

Australian Industrial Vacuum

delfin

WHY CHOOSE AIV?

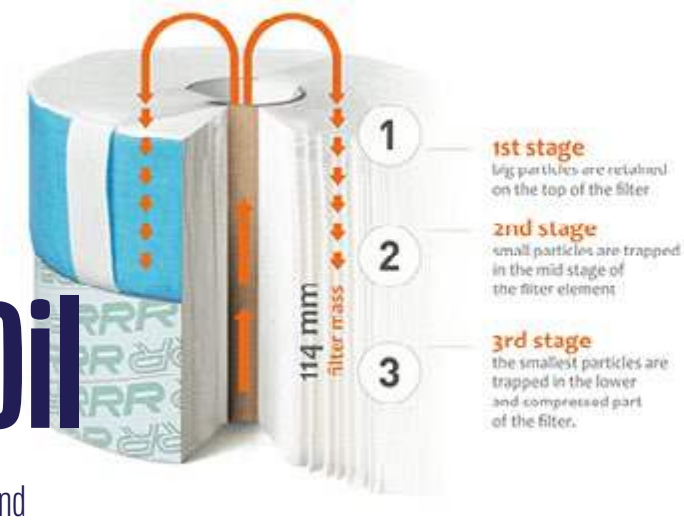
DESIGN
Dependability, durability, and devotion is at the forefront of the AIV service and product offering. We have sourced innovative and quality products from the global manufacturing stage and have secured exclusive distributorships for these products. We provide support with both onsite and back to base servicing and ensure the use of innovative componentry with proven longevity and excellence.

SERVICE
AIV recognises that your time is money, and we react quickly. Quotes are normally accomplished in one day. Spare parts are kept in stock at all times. We can meet your needs with customisation options and have a qualified engineering team ready to create solutions that work. We offer access to drawings, technical data and airflow calculations on your project so you can put your complete trust in the process.

WARRANTY
Australian Industrial Vacuum recognises that you are buying a solution to a problem, not a vacuum cleaner. That's why if there are any issues after start up we stick with you until you're satisfied. Many vendors will walk away if a problem gets expensive. We will NOT. NO other vendor offers that sort of support.

OUR PROMISE TO YOU

When you buy from AIV, you can trust in a qualified team to find a tailored solution for your needs. Whether you require an industrial vacuum solution for material recovery, spills, wastage, product transfer or more we are here to help. Australian Industrial Vacuum is Australia's leading family-owned industrial vacuum supplier. From humble beginnings we offer genuine and reliable advice and are passionate in our solutions. Enjoy peace of mind knowing your needs will be heard and adhered to the best way we can. With years of experience, we understand the difference a quality industrial vacuum can make in heavy industries and we work to ensure your investment improves efficiency, safety and will stand the test of time.





Perfectly Clean Oil

Triple R Filtration Australia is the leading provider of Triple R Filters and Tan-Delta oil condition sensors in the Australian market.

Engine oil filtration
Increased demands to extend oil change-out intervals on engines has resulted in the use of synthetic oils being used on modern engines. These synthetic oils have resulted in oil change-out intervals being significantly increased, thereby reducing costs associated with oil changes. Extended oil change-out intervals have also impacted the filter used on the engine. Change-out of the filter element is in most cases associated with a change-out of the oil and the filter element has therefore had to be adapted to meet this requirement.

Filter elements have also had to adapt to other aspects of modern engines.
- Improving fuel economy
- Improving power
- Reducing emissions

Clean oil improves fuel economy and power output by reducing friction and wear on moving parts of the engine. Increased wear causes oil to enter the combustion chamber, burns with the fuel and is exhausted into atmosphere as particles and hydrocarbons.

Full flow and by-pass filters
Filters usually installed and supplied with the engine are referred to as full flow filters.

A variety of housings makes the Triple R filter solution **suitable for any size engine**.



The total flow rate of the lubrication pump is directed through this filter to lubricate the engine. By-pass filters are an addition to the full flow filter. A flow of oil is directed from the main oil supply into this filter to enhance filtration capability. Filter media used in by-pass filters is specifically designed to capture small particles which the full flow filter cannot.

Soot
Soot and sludges in engine oil are formed as a by-product of incomplete combustion. When the air and fuel mixture fails to ignite completely, there is leftover particles. These particles find ways into the lubricating oil and is reflected as soot. It is very rare that the engine combusts completely, so most engines will produce soot.

Extended oil change-out intervals increase the risk of high soot build ups in the engine oil. Full flow filters installed on engine have limited ability to remove this soot as particles are too small for the filter to remove. By-pass filter however have the ability to remove this soot and sludges in oil.

Oil change out intervals
Oil change-out intervals are almost always dictated by the engine manufacturer. These intervals are based on distance or operational hours of the engine. There is an increasing trend to further extend these intervals.

Testing of oil samples has shown that this can happen after the recommended interval has elapsed.

Triple R by-pass filters
Triple R filter elements have unique features which make the element suitable for by-pass filters used on engine. No other filter element on market displays these unique features.

1. Engine oil enters the filter media in a radial direction. This ensures that oil is directed into the thick 114mm of depth media.

2. A 1st stage of filtration ensures that larger particles are trapped in the least compressed filter media. By doing this, element lifetime is extended.

3. In the 2nd stage, the filter media, which is now more compressed, ensures that smaller particles are being filtered out of the oil. This again ensure maximum filter lifetime.

4. In the 3rd stage of filtration, the filter media is compressed at maximum by means of the outer wrap, which traps all small particles in the oil.

The filter element has a very large volume of cellulose filter media contained within. This volume or area of media ensures that the element is effective at removing contamination as well as ensuring extended lifetime of the element A selection of housings makes the Triple R filter solution suitable for any size engine.

Selection of the type of filter housing is carried out quite simply by the sump size of the engine. Housings are typically available in aluminium, steel and stainless steel and range from single element housings to multiple element housings.

Housings are supplied with integrated valves needed for functioning of the filter as a by-pass filter fitted onto the engine. This makes installation hassle free with no other control valves to be installed.

Oil condition sensors fitted on-engine
Our expertise extends into providing solutions for on-line oil condition sensor solutions. These sensors are installed on-board engine and provide feedback to the user on condition of the oil. Use of continuous real time on-line oil condition sensors reduces risks associated with infrequent oil sampling and gives the user transparent information on oil condition to make more informed decisions on oil change outs.



Plug and play solutions for logging and retrieving data.

Tan-Delta
Triple R Filtration Australia is proud to represent Tan-Delta oil condition sensors in the Australian market. We are the leading provider of Tan-Delta sensors into Australian market. The Tan-Delta sensor outputs the condition of the oil as an easy to understand value. Installation of the sensor is trouble free and the outputs from the sensor can be integrated with ease.



The **Tan-Delta** sensor is packaged into a mobile kit format.

Features
- Unique sensor technology measuring remaining useful life of oil
- Analyses the electro-chemical properties of oil with unrivalled accuracy
- This accuracy allows the sensor to also measure other contamination in the engine oil such as fuel dilution, wear metals and water in oil.
- Easy to understand output values
- The sensor also outputs the rate of change of the oil. This is a very useful value as it indicates the rate of oil degradation
- Plug and play solutions for logging and retrieving data
- Data communicated to a Cloud based platform if required

The sensor is also packaged into a mobile kit format. This allows the sensor to be used to measure condition of the oil on multiple compartments without the need of permanently installing one. ***AMR***





MAINTENANCE TIPS FOR SUSPENDED ELECTROMAGNETS



Proper care and routine maintenance go a long way toward saving costs and preventing headaches through breakdowns. Planned maintenance is critical for all types of equipment, especially in quarries and cement plants, mining and recycling operations.

Suspended electromagnets (SE), available in both self-cleaning and manual cleaning models, have a minimum design life of 20 years. To achieve that, it is important for plant operators to plan maintenance accordingly.

Here are some tips to keep your SE magnets in as-new operating condition regardless of the application or environment.

For manual clean SE's, maintenance is straightforward. Plant operators should check tramp iron accumulation every shift or daily with the frequency of cleaning being determined by the amount accumulated.

Tramp on the magnet face can affect the magnetic field so a cleaner magnet is a stronger magnet!

Debris and dirt must be cleared from the top of an SE periodically. A layer of dust can act like insulation trapping excessive heat and weakening the SE's strength. A cooler magnet is a stronger magnet!

The maintenance tips for self-cleaning SE's is predicated by putting safety first. Stop the belt of a self-cleaning SE before carrying out any activity:

- Check Rubber Belt Daily – The system set up to discharge tramp iron is made up of a heavy-duty rubber conveyor belt and pulley assemblies that need routine inspections to ensure trouble free operation.

  On average, a rubber belt can last between 6-12 months depending on the size and shape of tramp material and the frequency of presentations. The object of planned maintenance is to reduce unscheduled downtime though unexpected breakdowns. Since you cannot predict tramp iron and belt damage, it is recommended to keep a spare belt on hand.

  It is important to keep the belt running to help cool the magnet when energized. A cooler electromagnet is a stronger magnet!

- Check Belt Tension Monthly – Efficient belt operation is achieved by applying the appropriate tension. If the tension is too high, it can cause premature failure of the belt, pulley shafts or bearings. If the belt is too loose, excessive sag could result in interference from the belt onto the conveyor or into the burden.

  For best performance, please check the Eriez Installation and Operating Manual (IOM).

- Grease Bearings Monthly - Lubricate bearings to a schedule consistent with other equipment in the same environment. The Eriez IOM provides a guidance. Limestone and cement dust will destroy bearings if not lubricated on schedule. A damaged bearing may lead to the pulley shafts being damaged.

- Check Oil Annually – Check the oil level once a year. Maintain the proper level, identify and repair potential sources of leaks. We recommend changing oil every five years and to filter it between periods. A magnet performs strongest with fresh oil.

Eriez has the complete in-house capability necessary to service, repair and refurbish damaged equipment quickly, accurately, and safely.

Eriez' magnetic separation, flotation, metal detection, fluid recycling, materials feeding, screening, conveying and controlling equipment have application in the process, metalworking, packaging, plastics, rubber, waste management and resource recycling, food, mining, aggregate and agriculture industries.

Eriez manufactures and markets these products through 12 international subsidiaries located on six continents.

For more information, call (613) 8401 7400.

For online users, visit www.eriez.com.au or send email to sales.au@eriez.com.

Eriez Magnetics is located at 21 Shirley Way, Epping, Victoria, 3076.

AMR

Proper Pump Clearance Equals Longer Wear Life



KSB GIW® MDX (Mill Duty eXtra Heavy) pumps are built to withstand the most extreme conditions. The key design features of MDX pumps work together to maximize wear life and maintain throughput for a more productive mill operation. The newest addition to this already impressive family of pumps is the MDX-850, officially the largest pump assembly in the MDX line. And just like its predecessors — the MDX-850 features an adjustable suction liner which can be adjusted remotely or by hand while the pump is in operation.

The Nose Gap
There are multiple variables that impact a slurry pump's wear life. One of the simplest ways to improve wear life is to include frequent pump clearance adjustments as part of your regular maintenance and service program. There are three main wear components in a slurry pump: the impeller, the suction liner, and the shell or casing. In the operation of a centrifugal pump, performance is affected by pump clearance, which is the space between rotating and stationary centrifugal pump elements.

The clearance between the impeller suction nose face and the suction liner is commonly called the "nose gap." Controlling the nose gap is important because of its direct impact on pump internal recirculation and the resulting effects on pump performance and wear rate. Maintaining a small nose gap optimizes pump performance and wear life. Wear of the suction liner and impeller cause the nose gap to widen during normal pump operation. As the gap opens, internal recirculation increases and solids in the slurry further increase the rate of wear.

Regular nose gap adjustment
KSB recommends weekly nose gap adjustment for severe duty applications with extreme wear rates. With proper adjustment, the impeller will be as close as possible to the suction liner without touching it, extending the wear life of each part.

Adjusting the nose gap while the pump is shut down is simple and should be considered routine maintenance. The entire bearing assembly moves via an adjusting screw and nut accessed on the back of the pedestal. Use the adjusting screw to move the assembly forward, back it off to the proper clearance, then tighten. The step-by-step adjustment procedure and minimum nose gap setting varies depending upon pump design, so always refer to your KSB GIW® Slurry Pump Maintenance Manual for details.

The nose gap on pump assemblies that include an adjustable suction liner (ASL) should initially be set with the adjusting screw and nut when new parts are installed. For later adjustments, the ASL is accessible from the suction side and can be utilized while the pump is in operation or stopped. Directions for nose gap adjustments using the ASL can be found in the KSB GIW® Slurry Pump Maintenance Manual. KSB Australia can also be contacted as there are expert, certified KSB field maintenance technicians available to answer questions and assist customers with ASL adjustments.

Remote nose gap adjustment
The key to efficient pump operation in aggressive wear applications is precise weekly maintenance, including adjusting the internal clearance, aka nose gap, between the pump's impeller and suction liner. These adjustments have traditionally been made by hand, but the GIW® RAMSL (Remotely Adjusted Mechanical Suction Liner) improves this maintenance procedure by allowing for remote monitoring and adjustment of the nose gap. RAMSL makes weekly gap maintenance faster and more accurate.

KSB evaluated multiple options for the RAMSL before deciding to base the design on mechanical components for a more robust product with easy maintenance features and high operational reliability. The RAMSL interface serves as a control panel for operation and the output source for reporting critical data, including vibration readings and precise measurements (i.e., within 0.25 mm) of suction liner position.

The MDX-850 features an improved interface between the suction liner and the suction plate, which allows for the use of a wear ring and innovative hydraulic features at the pump inlet. As with all MDX pump assemblies, the MDX-850 has an adjustable suction liner that is RAMSL compatible.

GIW® SLYSEL & GIW® SLYsight
Deciding which slurry pump is right for your needs can be daunting. To help, KSB Australia offers GIW® SLYSEL, a proprietary software program for selecting the right pump using specific application parameters.

GIW® SLYsight is the next step up in pump wear part analytics. While other systems estimate wear, GIW® SLYsight utilizes custom, strategically placed sensors to measure the actual wear rate of a pump's parts, as well as the nose gap, while the pump is running. This data is provided in regular reports and available on a convenient dashboard to let customers know exactly which parts need attention and when they require replacement. This enhanced monitoring system adds to a pump's maximum wear life. *AMR*

MEET THE KSB GIW® MDX-850



The MDX-850 is the latest and largest addition to the already impressive line of KSB GIW® slurry pumps. Due to mining operators experiencing increased demand for minerals and ore, the need for a mill duty pump larger than the MDX-750 was clear. Capable of pumping service class four slurries upto 16,000m3/hr, this pump will meet your plant design tonnes and maintenance wear life expectations.

The KSB GIW® MDX is equipped to tackle the most extreme slurry pumping duty conditions. With its patented wearing parts and material technology, the MDX matches operating cycle times with scheduled mill outages meaning fewer disruptions and increased operational efficiency.

Learn more at www.ksb.com.au or speak with a KSB representative 1300 073 887.

KSB MINING

KSB



TALISMAN RIGHT ON TARGET IN EXCITING LACHLAN FOLD BELT

A decision to focus its attention on the precious and base metals riches of Central NSW looks set to pay off handsomely for Talisman Mining (ASX:TLM).

After a history of iron ore success in Western Australia, Talisman elected to investigate the historic mining grounds of the Lachlan Fold Belt and acquired significant landholdings in an area that is one of the hottest exploration destinations in the nation.

A subsequent positive review of its NSW properties in mid-2021 by highly-regarded consulting geologist Dr Jon Hronsky OAM, resulted in the identification of numerous compelling gold and base metal targets. This prompted the company to secure additional ground and to undertake important target generation work.

The Australian Mining Review recently spoke with Talisman Mining CEO, Shaun Vokes, about Dr Hronsky's involvement and the future upside the company is currently investigating

"I have known Jon for a long time, and he undertook an impressive body of work for us which was then presented to our board. What came out of that review was confirmation that we were in a highly prospective area," Mr Vokes said.

"Jon then mapped out some of these metallogenic corridors and key regional structures, which led to us identifying and picking up some more ground. We have now ended up with a big ground package in a prime area."

Talisman moved quickly to follow-up Dr Hronsky's ground-breaking work.

"The next thing we needed to consider was what was the most effective way to explore the new targets and acreage we acquired. Following on for Jon's review, we undertook another inhouse review to see what sort of commonality there was amongst the existing mines and recent discoveries.

"What we identified was two key items. One was that all of the significant deposits in that area have a gravity anomaly related to structural alteration and that has usually been identified post discovery. The other thing was that airborne electromagnetic surveys have been really useful in this area.

"So, we undertook two regional scale surveys. We did a large airborne gravity survey of approximately 15,500 kilometres. We then followed that up with a more targeted VTM, airborne electromagnetic survey. Just in those two geophysical surveys was a $2.2 million investment. However, we thought it was a wise investment.

"We knew that this area is structurally complex and that all the mineralisation in this area is associated with these structures and we believed well, this is a shortcut, this is potentially a faster means of targeting the places where we need to before moving in to do more detailed work, including drilling.

"While that work is currently being interpreted, it has already thrown up some pretty interesting drill ready targets that we will look to pop some holes into as soon as we can get a rig in there."

Mr Vokes said the company was confident it can start spinning the drill bit on its new targets soon.

"It has been hard in the recent past to obtain rigs, but it is getting easier at the moment because there's a whole lot of them.

"We have been fortunate that there is a quality regional drilling contractor who's located in Condobolin who we have been using. There has also been a lot more interest, especially from Western Australian and Queensland drilling companies willing to travel to New South Wales and set up bases there, because there is a lot of work happening.

"Obtaining assay results has still been slow but I think the assay labs are starting to get back on top of that."

Mr Vokes says the Lachlan Fold Belt and Cobar have become a major attraction again for explores.



"When you look at the recent interest in CSA, I mean selling for $1.5 billion, that just goes to show that even for an old deep mine, there are people with a view that there's still plenty of life in it yet.

"We still think there is a lot of copper upside in the Cobar area and that we are well placed to take advantage of it."

Talisman demonstrated its faith in the area recently with the strategic acquisition of Exploration Licence EL8907 from Rio Tinto which significantly expanded its prospective footprint in the Cobar Superbasin.

EL8907, which covers an area of 1,043 sq. km, is considered highly prospective for copper-gold mineralisation and encompasses the intersection of several regional-scale structural lineaments. The western areas of the Tenement host historic workings and prospects that have seen little to no modern exploration but have been worked previously for quartz-vein hosted gold, possibly indicative of the surficial expression of a concealed epithermal gold system.

Meanwhile, the prospectivity of the Lachlan Fold Belt was outlined again recently when Talisman reported highly encouraging assay results from initial drilling at the Kaolin Shaft Gold Prospect, located within its Central Lachlan Project in NSW.

The initial assays have reinforced the potential of the Kaolin Shaft Prospect for VMS-style polymetallic mineralisation potentially similar to that at the nearby Mineral Hill mine, with initial drilling intersecting wide zones of VMS-style base metal sulphide and gold mineralisation over an extensive strike length.

With a large acreage position in one of the hottest exploration regions in Australia and a wealth of high-quality targets to test in the near future, Talisman is certainly a company to follow. ***AMR***





ANDREW BAILEY
CEO of MinEx CRC

GOING UNDERCOVER

VAST AMOUNTS OF MINERALS RICHES YET TO BE DISCOVERED IN AUSTRALIA

Australia has had hundreds of years of mineral exploration success, with hundreds of millions of tonnes of ore taken from the ground yearly.

The country is still one of the world's leading producers across a broad spectrum of commodities – begging the question, is there much left to discover?

The *Australian Mining Review* (AMR) recently asked that question of one of the world's leading experts in that area – and he came up with a resounding yes.

Andrew Bailey is CEO of MinEx CRC, the world's largest mineral exploration collaboration bringing together Industry, Government and Research Organisations. He strongly believes there are many more major finds to be made in Australia – with technologies helping lift the cover on the vast deposits still buried under the overlying sand, soil and sediment covering much of the nation.

AMR: Australia has an extremely successful mining history. Have all the big deposits been found, or is there still a positive future for explorers in this country?

AB: From looking at our original documents, honestly, 70% of Australia is undercover. Almost all major discoveries are where there are areas of outcrop. There are still vast areas in Australia under cover, whether two metres or 2000 metres, many of which are poorly explored.

We know the potential exists, the rocks that outcrop go under cover, and they are still there. You can see that from geophysics; however, acquiring a sample of them is difficult. People need to know where to drill, and effectively obtain samples of these areas through drilling and geophysics.

The good thing now is that the industry has more efficient techniques and ways of exploring those undercover areas, which will help us confirm the potential of these deposits that have been hidden for so long.

A ton of stuff has, for example, has been discovered over the years in the Mt Isa region, and we know that those rocks plunge south and go south for hundreds of kilometres undercover which can be anywhere from 50 m to 1000 m thick. So, there are sure to be more Mount Isa's undercover. And it's the same for many of these areas, where we haven't had the techniques or ability to drill them in the past. But new technology is really changing that.

AMR: There are plenty of recent examples of major discoveries made in areas that explorers have previously ignored. DeGrey's Hemi gold find comes to mind

AB: In the Northern Territory, the Barkly area is where we have done a lot of the early work through our National Drilling Initiative (NDI) program. The area is now attracting a lot of attention and has provided some promising new discoveries. For example, Inca Resources have drilled quite an impressive hole in their drilling campaign. It looks like the Barkly may be a copper province, and there really appears to be potential for IOCG, Olympic Dam-type copper-gold deposits in that part of the world. And, you know, the juniors are exploring and following up with what we did.

Then there is the Chalice Mining Julimar discovery, found northeast of Perth, which is not dissimilar to DeGrey's Pilbara success. People have known forever that these exploration areas have been there, but they can lay dormant until someone drills enough holes and a discovery has been made. Then it really kicks it off, and excites industry.

FUTURE GROWTH

AMR: MinEx CRC is now in its fourth year of research and is focused on a new set of exploration tools and new ways to deploy those tools that recognise the fundamental importance of collecting quantity and quality data from the subsurface. This new set of exploration tools recognise the fundamental importance of collecting quality data from the subsurface.

AB: The Cooperative Research Centre is focused on developing more productive, safer and environmentally friendly drilling methods to discover and drill-out deposits. This includes pioneering work on coil tube (CT) drilling technology and innovations in diamond and RC drilling techniques aimed at improved drilling optimisation and automation.

In parallel, the CRC is developing new technologies for collecting data while drilling. This is being undertaken in four separate industry-led projects utilising geophysical, seismic, downhole analytical and 3d modelling improvements.







A National Drilling Initiative (NDI) is also underway, with drilling programmes already completed in 2020 and 2021.

Participants supporting MinEx CRC include:

- Major Mining Companies (>A$5 billion) contribute $200K per annum to up to four projects.
- Mid-Tier Mining Companies (A$0.5-5 B) contribute $100K per annum to up to two projects.
- Geological Surveys indicate which projects they support with funding leveraged from survey drilling funds of >$2M invested in the National Drilling Initiative.
- METS Supplier Companies, selecting at least one project which they will support with $50K pa cash and $50K pa in kind and an option to commercialise outputs.

AMR: What are the next steps for Minex CRC?

AB: We are on a 10-year journey – and so far, we're meeting our milestones and progressing well - and it is going to continue. The aim of our 10-year life is effectively to develop new technology and stimulate exploration, primarily in Australia.

Our sponsors include major mining companies, METS providers, Junior Explorers, and service providers. Then there are the eight geological surveys from all the States and Territories, including Geoscience Australia.

All of our participants want to contribute to safer, faster, and more environmentally aware exploration techniques and technologies.

Our research has not all been about drilling but also seismic, downhole analytics and 3d modelling and even some of the more fundamental areas of geological research, things like age dating and understanding the very specific ages of rocks across the country for more informed exploration.

AMR: Your technologies and new exploration ideas have already been used with success in the Northern Territory.

AB: Yes, an excellent example of applying the tools we have developed was the early-stage exploration work we have undertaken in the Northern Territory. We utilised some of our technology, research, and different partners, which had an amazing effect. For example, we worked with Geoscience Australia and its Exploring for the Future (EFTF), which funded the seismic surveys.

We then followed up with drilling in collaboration with Geoscience Australia and the Northern Territory Geological Survey, and pulled together some great information. The success of that programme has been borne out by the amount of new interest we have created.

This research has resulted in extensive tenement takeup. Four companies had pegged ground in the area in 2017; 36 companies are now actively exploring that part of the Northern Territory. It's been a huge land rush, and some interesting possible discoveries have been made.

We are drawing to the conclusion of a campaign in South Australia with the National Drilling Initiative in collaboration with the Geological Survey of South Australia. We are applying our coiled tubing technology in the Delamerian area with significant results from a technology and mineralogy perspective.

It is a similar process to our drilling campaign in the NT; it is a small area that has been under-drilled with little understanding of its mineral potential.

We have worked to help generate targets and to try and understand mineral systems, and the aim is to stimulate new exploration and attract companies to go and have a better look at it.

We will follow that with drilling in the far east Yigarn in Western in collaboration with the Geological Survey of Western Australia later this year. New work in the western parts of New South Wales will follow next year.

AMR: With a history of significant success already and some exciting new projects about to get underway, Minex CRC is playing a critical role in ensuring Australia remains at the top of the global mining industry tree. ***AMR***



WHEN YOU DRILL DOWN TO IT

A MESSAGE FROM LEADERSHIP

We would like to take this opportunity to welcome you to iDrilling Australia, An industry leader in Exploration Drilling.

As the Leadership Team of iDrilling Australia, we are responsible for overseeing all aspects of the drilling programs and ensuring that you receive unparalleled service and support. Our managers have well over 100 years' experience between them in providing diverse and reliable drilling support to the mining industry. Combining this with a workforce of 70 people, a fleet of 12 drill rigs and 60 support vehicles, and customised maintenance facilities in Perth and the Goldfields, we are well-positioned to meet any drilling requirement.

iDrilling Australia is supporting the Australian mineral resources sector with their extensive drilling exploration services – a safe and reliable offering that has cemented the company as the partner of choice for the nation's miners.

With highly competitive pricing and value, the industry leader has pledged quality outcomes on time and on budget, leveraging their comprehensive in-house capabilities.

Lead by a management team with more than a century's worth of collective experience, the Western Australian company services mineral exploration projects throughout the country with customised drilling solutions.

The innovative and value-adding techniques include reverse circulation, diamond, air core, RAB, mud rotary and auger drilling for applications including exploration scout drilling, environmental, geotechnical and water boring.

iDrilling Australia Business Support Manager and Director Barry Seaman said the company's drilling applications were widespread and the techniques were designed to provide high-quality samples using the safest and most cost-effective methods.

He also said iDrilling Australia considered environmental protection a top priority when providing exploration services, with the team constantly working to lower their environmental footprint.

"We work hard to exceed all environmental standards and find new ways to incorporate sustainable outcomes.

"iDrilling Australia's Rigs are versatile and will take on difficult terrain whilst maintaining a substantially lower environmental impact than other machinery with the same capacity.

Mr Seaman said iDrilling Australia's 6x6 LandCruiser Drill Rigs range and ancillary equipment were part of the company's environmental promise, with the solution having low environmental impact and capacity to drill up to 100m vertical.

The machines are very cost-effective for first-pass drilling, are capable of slimline RC hammer work utilising auxiliary air and are ideally suited to RAB or Aircore application.

Meanwhile, other iDrilling Australia's team, drill rigs and ancillary equipment provide RC, Aircore and Diamond Drilling capabilities.

Mr Seaman said the fit for purpose fleet was a contemporary showcase of innovative technology that provided clients with efficient and reliable outcomes.

"Our team drives the future of the company in Mineral Exploration, Water Well Drilling and Geotechnical applications," he said.

"As we understand our clients have unique needs, we develop drilling and exploration processes without compromising standards.

"iDrilling's rigs are compact with the capability of drilling to various depths with on board and auxiliary air while our Diamond Rigs have the capacity of up to 1600m.

"We are a leading option in Perth due to our ability to competitively quote and complete various projects outside these drilling methods because of the extensive experience within the team and our associate consultants.

"We also have the ability to drill water wells





on most sites in Perth and select sites across Australia for expanding infrastructure, such as proposed mine sites, camps, communities etc."

A SOLID TEAM

With services available throughout Australia, the iDrilling Australia team is uniquely placed to understand and accommodate each remote and challenging environment throughout the country.

The dedicated and highly trained specialists have also previously executed drilling projects overseas and have experience navigating some of the world's most difficult and inaccessible landscapes.

Meanwhile, equipment is supported by a team of highly experienced maintenance personnel based in Western Australia, with capacity to be deployed nationally to service remote exploration sites.

They are an extremely mobile and efficient arm of the business.

Aside from extensive operational knowledge, Mr Seaman said the iDrilling Australia team understood the value of a collaborative approach when undertaking exploration work and looked to create beneficial long-term relationships with every project.

"We are committed to continually improving the way we conduct our operations and outcomes, and strive for best practices performance at all times," he said.

"We recognise the expertise of the geologists we work with and work closely with them to meet their needs while providing the best possible sample for them to work with.

"We don't just drill holes."

He said these were just some of the things keeping iDrilling Australia ahead of the exploration curve and the partner of choice for the domestic exploration and mining industry.

"We also constantly monitor availability, utilisation and reliability of our drill rigs, which in turn monitors our team performance allowing us to constantly strive for best practice outcomes.

"We understand our clients have individual needs and therefore our approach is to customise a service to adapt to your company's business objectives.

"While relatively new in name, iDrilling Australia is already highly recognised within the resources sector, having successfully completed in excess of 150 exploration projects. "Our objective is to deliver a complete service to our clients in any location with a highly professional team that is committed to providing professional expertise with cost-effective outcomes, on time and on budget." ***AMR***

Contact the iDrilling Australia team today.

SOURCE
iDrilling Australia
P (08) 9206 0604
E admin@idrilling.com.au
W www.idrilling.com.au

OUR FLEET

- HYDCO RC 40 – 6x6 UD Nissan DR7
- HYDCO 350 Mounted on a Tatra 8x8 DR14
- SCHRAMM T450WS – mounted on tracts DR15
- Truck mounted DR16
- HYDCO 350 – 8X8 Tatra DR17
- HYDCO 350 – 8X8 Actross DR18
- HYDCO – 8X4 Fuso DR19
- L1500 Platform Rig – 8x4 Volvo FM9 DR25

WE DON'T JUST DRILL HOLES

Environmental

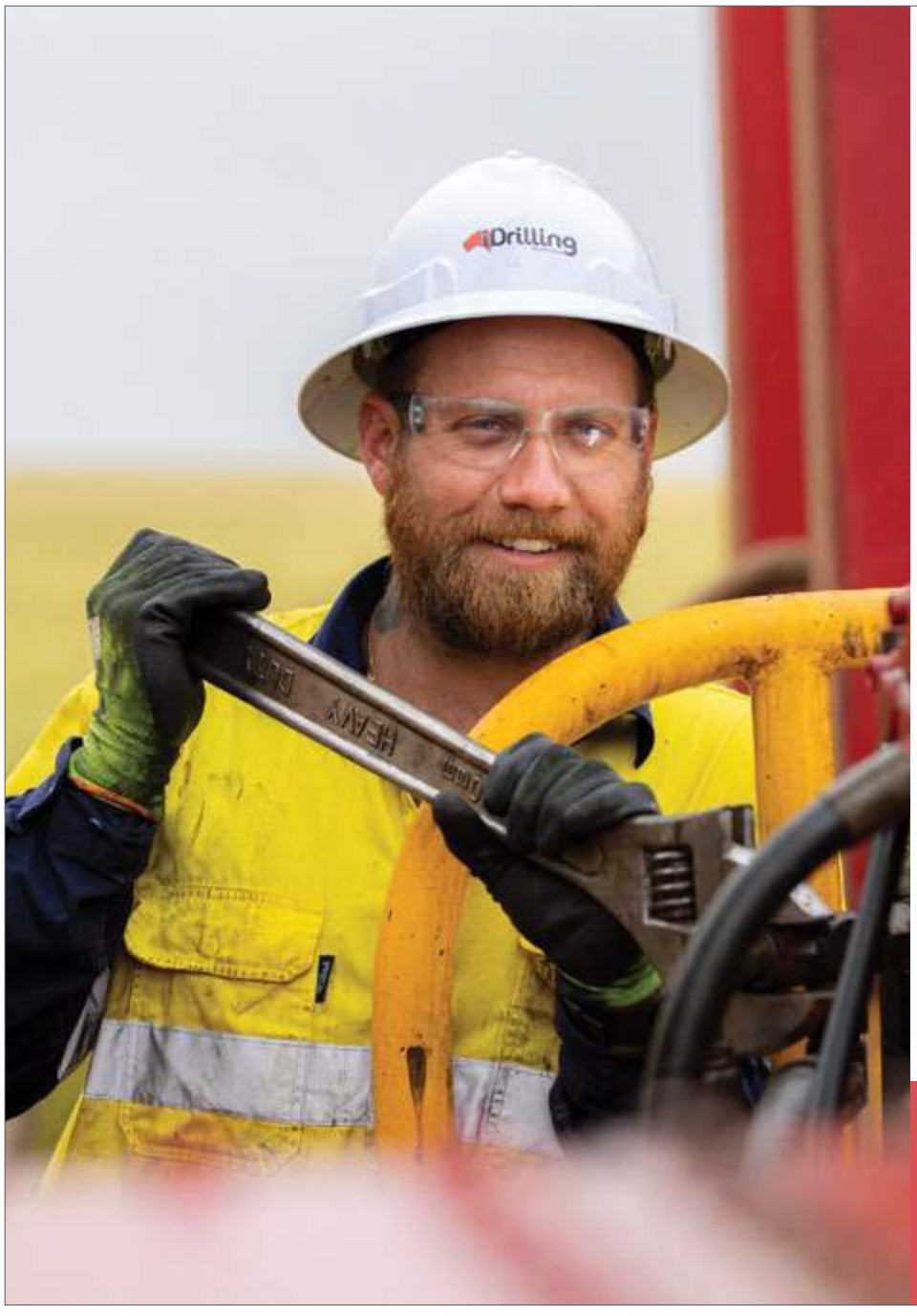
We are committed to exceeding environmental and safety standards and finding new ways to incorporate sustainable outcomes for future generations. Our Rigs and support vehicles are designed to significantly reduce ground and vegetative disturbance and to minimise the instances of any environmental impacts from our activities.

Training

Our ongoing efforts are to involve all suitable members of our Exploration Drilling Crews in the Nationally Recognised Training Program Certificate II, III & IV in Mineral Exploration Drilling.

Safety

iDrilling Australia's operations and activities are conducted in accordance with all legislative Occupational Safety and Health requirements as a minimal standard. Through a cooperatively developed Safety Management Strategy, iDrilling Australia is continuing to nurture a positive safety culture throughout our operations. iDrilling Australia's dedication toward Safety and Health initiatives are led by highly experienced HSE, Training and Risk Specialists.



LEADING
THE WAY IN
EXPLORATION

iDrilling offers reliable turn-key drilling solutions to the Australian mining industry.

✓ INNOVATIVE TECHNOLOGY
✓ EXTENSIVE FLEET
✓ COMMITMENT TO SAFETY

iDrilling Australia

GET IN TOUCH:
(08) 9206 0604
admin@idrilling.com.au
www.idrilling.net.au



MITCHELL SERVICES

HELPING TO TAKE AUSTRALIA'S MINERALS EXPLORATION SECTOR TO ANOTHER LEVEL

There is no doubting that Australia is in the midst of a mining exploration boom. High commodity prices, easy access to funds, strong support from governments and a number of exciting discoveries opening up new mineral plays across the country, have all led to unprecedented levels of drilling.

Of course, one industry that is riding high on this mineral exploration wave is the drilling services industry.

The *Australian Mining Review* recently caught up with Andrew Elf, the CEO of drilling sector powerhouse Services, to obtain his view of where the exploration industry is currently at and where it is going.

AMR: What is your forecast for exploration moving forward?

AE: It is going to remain strong. There has been a lot of money raised in the equity markets and junior explorers are well funded and are in good shape financially to undertake the drilling that they want to do. It appears that good drilling results are being recognised by the market and this helps continue the momentum.

At the same time, there are some explorers that haven't been able to obtain rigs and spend that money, so that will drive demand for drilling services as well. I certainly think that on the junior explorer side of things we have a good roadway ahead.

From a Tier 1, global mining company perspective, they are obviously producing at high levels at very good prices and making very good returns. Their budgets are increasing materially for drilling of all kinds. Importantly this is where 90% of Mitchell Services revenue comes from.

So, as far as we can see, we are in for a very strong period ahead. The demand for services is strong, the utilisation levels are good, the rigs are contracted, and all the signs are there for what is going to be a good period for our business and for the industry as a whole.

AMR: Mitchell Services has certainly shown its faith in the strength of the Australian market with the significant addition of a number of new rigs to its fleet. Could you provide us with an update on how that is progressing?

AE: Over the past financial year we have worked on implementing a material organic growth strategy, which has included the purchase of 12 new LF 160 rigs. This strategy has been well managed and we expect it to generate some strong returns for us. We placed the order at the right time for those rigs based on the view that we believed the market would keep strengthening and demand for drilling services would continue to increase.

Traditionally the lead times for delivery of drill rigs increase as demand increases and this has been exacerbated by the conflict in Ukraine, COVID and related supply chain challenges. We placed our order early and negated some of the lead time and supply chain challenges.

We will take delivery of the last of those rigs just after the 30th of June and critically, the rigs started arriving into Australia as the balance of our existing surface fleet was being deployed. So, it's worked out well from a timing perspective that as markets kept improving, we've had these rigs getting delivered.

As it stands now, all the new rigs are either contracted or have a customer's name against them pending, signing of contract documents. So, it's fair to say that, subject to some formalisation of contracts, that they are all booked out.

As a capital investment we have also benefitted from being able to take advantage of the ATO's instant asset write off programme and that is going to help us from a cash tax perspective in the future.

AMR: Can you tell us a little more about the Boart Longyear LF160 Surface Coring Drill Rigs and the advantages your customers will receive from selecting them?

AE: They have a number of state-of-the-art aspects, but the one standout for me is that they remove the need for the operator's hands to touch steel. They are safer and require significantly reduced manual handling.

One of the other key outcomes is that you can go from a three-person crew to a two-person crew. This allows us to redeploy those people across the business in a tight labour market. It also allows us to manage our costs which is critical when labour costs make up such a significant portion of our cost base. Importantly, automation and reduced manual handling will allow us to recruit more females into the business. Traditionally it has been difficult to recruit females into drilling so this is a big step forward in the right direction.

On the safety side there is less hands exposure and less risk as a result of the automatic handling. Many safety incidents in this industry - not just in drilling but in the mining industry as a whole - involve hands. These rigs really do help reduce that risk, reduce the manual handling, reduce the crew size and make it a much safer and more efficient operation overall.

AMR: Over its 50 years of operation, Mitchell Services has built a reputation for innovation, is there anything new you are working on?

AE: We have recently released a service to the market called MPD, or Mineral Performance Drilling – www.mpdrilling.com.au. With MPD we have taken leading technology that we used previously in the oil field and applied that technology to the minerals sector. This new service is designed specifically for companies who are looking to explore deep under sedimentary cover.

With new deposits being deeper and further under cover, MPD makes it so much more cost effective to explore in these types of geological settings. Based on the areas in Western Australia and Queensland where we've applied MPD, our clients have received


Mineral Performance Drilling in the Paterson Province, Western Australia.

production levels 5 to 10 times faster than traditional mineral exploration techniques. That's a huge reduction in cost per metre and time saving.

Notably, the holes are directionally steered as well. We can hit a bullseye drilling through over 1,000m of cover. Once the basement formation is reached, this then allows for the diamond drilling portion of the hole to be completed much more efficiently as well. It's got huge applications throughout Australia and the results speak for themselves.

On another note, we have also commissioned a state-of-the-art Schramm TXD130 E-Drill. The rig is tailored for the Mine Services market, with capacity to drill hole diameters greater than 24 inch.

The rig is operated via 'Cyber' chair with fully remote operations for driller and offsider. It's a best-in-class package and can be used across minerals and energy.

To now have a material number of our circa 100 rig fleet fully hands free is very exciting.

AMR: We have heard some exciting news about your current developments, can you provide us with a bit more information on the company's history?

AE: The Mitchell Services brand has over 50 years of history. The brand itself is very well regarded within the industry and we have a very good reputation as a large diversified, ASX listed, drilling services provider, with around 100 rigs.

Roughly half the rigs are underground rigs, with the other half being surface rigs.

We work all over Australia and 90% of our revenue comes from servicing global, Tier 1 mining companies.

We employ over 700 people in the business, and they do a fantastic job and we expect the headcount to increase to well over 800 in the year ahead.

Brisbane is where our head office is located and we have another large office in Bendigo. We have yards across the country so that our state-of-the-art fleet is strategically positioned in key exploration and mining centres, including Queensland, Victoria, New South Wales, Western Australia and Northern Territory.


Mitchell's new Schramm TXD130 E-Drill with 'Cyber' chair operations.





From these locations, Mitchell Services conducts drill programs in all States and Territories.

AMR: With a growing fleet and people power, Mitchell Services is perfectly placed to help Australia maintain its rating as a global mining powerhouse.

AMR



AUSSIE MUD PUMPS... DRILLING'S UNSUNG HEROS

Mud pumps have become such a vital part of exploration drilling, but these days they tend to be taken-for-granted. Some drillers think that all mud pumps are created equal!

"We've seen Honda powered lightweight aluminum pumps out on sites pumping their heart out but just waiting to fail for any one of a number of reasons", said Pumps Mining Industry Manager, Mood Ellahi.

"It was only working with Australia's leading drilling equipment manufacturers that gave us an insight into mud pumps and what they're required to do and therefore, how they should be equipped", said Ellahi.

THE JOURNEY TO BUILD THE WORLD'S BEST MUD PUMP

Beginning from a position of a complete ignorance, we started asking more questions about mud pump applications with drillers in a wide arena. It wasn't just exploration rigs, but we found application in directional boring, even water well drilling.

Fortunately, we were able to team with Australia's most progressive drilling industry players who helped us to understand the disadvantages of cavitation and corrosion and how it can affect the working life of a mud pump.

MUD PUMP DOWN, EVERYTHING STOPS

Aussie also found that many drillers weren't particularly familiar with the flow or pressure they required. They just knew they weren't getting enough of one or the other. Working with the industry taught Ellahi a lot. That information is being compiled into a document pack which will soon be freely available to the industry with a view to maximizing efficiency and minimizing downtime.

SELECT THE RIGHT PUMP

Originally the industry drove Aussie rather than vice versa. The company discovered their range of Aussie GMP shaft and later, hydraulic drive portable 2" pumps were infinitely superior to the aluminum engine drive units that have been used in the past. The aluminum pumps even with their cast iron impellers simply couldn't handle the abrasion and corrosion that comes with the mud pump's life.

"What gave us the inside view was watching cast iron pumps with cast iron impellers having their impellers replaced on a regular basis, sometimes even every three months, obviously indicating a problem.

When we started getting impellers back for evaluation, we found the problem was absolutely one of abrasion, sometimes tinged with corrosion as well", said Ellahi.

"We started experimenting with different materials. For example, if it was a corrosion problem, we would have replaced those cast iron impellers with nickel aluminum bronze, also part of the package. When it appeared to be abrasion, we began replacing them with 316 cast stainless steel impellers with great results", he said.

Today, many dealers are specifying the Aussie GMP product range with either cast iron bodies with stainless steel impellers, or nickel aluminum bronze bodies with 316 stainless impellers.

"When we do the stainless steel impeller change out we have to be sure the mechanical seals provided are also compatible", he said.

The company offers not just standard ceramic mechanical seals, but also silicon carbide and even tungsten carbide options.





AUSSIE'S HYDRAULIC DRIVE SEMI TRASH MUD PUMPS ARE IDEAL FOR WATER CARTS.

"All we know is, these products need to work, day in day out and nothing should stop or slow the drilling process", he said.

WHY HYDRAULIC DRIVE IS BETTER

Since those early days, only 3 years ago, the company has made huge progress and now produces big high pressure semi trash pumps with cast iron bodies and stainless steel impellers that will handle flows of up to 2200 litres a minute and heads as high as 55m.

"There are loads of combinations in between that you can specify that we can match with a hydraulic drive high pressure pump in those material specification options", said Ellahi.

Best of all for operators, the pump range is a compact, hydraulic drive configuration. The irritation of refuelling petrol or diesel engines, servicing and oil checking those same engines and even replacing air filters becomes a thing of the past. Their range of pumps extends now from 2" ports all the way to big 4" ports. With cast iron versions having the advantage of a stainless steel wear plate built into the body, and silicon carbide seals as standard equipment. A front opening port on the pump mounted below the suction port, enables the pump to be cleaned out with an Aussie pressure cleaner in the event of the impeller getting clogged.

The hydraulic drive Aussie GMP pump range are just a sample of this extraordinary line developed by Australian Pump Industries. The company produces 316 stainless steel pumps in self priming configuration that go right up to their big 4" 2200 lpm unit.

BIGGER PUMPS TOO

Bigger pumps, in semi-trash configuration are available in 6" and 8" lines either as bare shaft or with integrated electric motor drive. Made in heavy duty cast-iron construction, convenient front opening ports for clean out without disrupting pipework and recently the introduction of 316 stainless steel impellers with appropriate seals to handle abrasive applications.

"It's been a great learning processes so far but even now, we are still learning every day and understanding how to turn what we've learnt into information back to the industry. Drillers know far more than we know about drilling! We think we probably know a bit more about pumping then they do so it's a fair exchange", he said.

The team at Aussie is working on a driller's manual, focused on mud pumps and will no doubt have this out for the drilling industry sometime before Spring.

"We thank the industry for the tremendous contribution you made, helping us to develop these great products for mining exploration. We know that this is key for the development of the country and certainly for the economy", he said.

Further information available from Australia Pump Industries aussiepumps.com.au or authorised distributors. ***AMR***



Mood Ellahi,
Senior Product Manager at Australian Pump Industries.

A typical 79 Series Landcruiser used on mine sites across the country. This one has been fitted with a full complement of Tough Dog suspension components, including their fully approved GVM upgrade kit.

MINING MUSCLE

Most light vehicles on mine sites across Australia are used in applications that are far more demanding than OEM manufacturer intended. Continuous use in dry, dusty conditions that turn into wet and muddy conditions with the onset of the rains and a high degree of salinity at all times push suspension components to their limits. Many OEM components fail in less than 15,000km, which causes costly down-time for mine operators.

Durability by Design

That is where Australia's world-leading aftermarket industry comes into its own. Australia designs, tests and manufactures some of the best four-wheel drive components on the globe and that translates directly to hugely improved durability for these overworked vehicles, greater safety for their occupants and significant cost savings for companies trying to keep every asset in their fleet operational at all times.

Suspension components can often be overlooked but their significance can never be underestimated. For example, a shock absorber is designed to limit the compression, rebound and resonance of a spring to keep the tyre in contact with the road as much as possible to provide drive, cornering and braking performance. It does that by transferring kinetic energy from the up and down movement of the wheel assembly into heat, through gas pressurised oil flowing through very complex valve systems.

It is heat that eventually kills shock absorbers but shaft thickness, seal design and overall build quality are also critical factors. Heavy impacts and dust that turns to grinding paste also take their toll. This is why companies like Tough Dog suspension spend countless hours and millions of dollars building and testing components that are designed to withstand all the punishment life on a mine site can dish out to a 4WD's suspension system.

Foam Cell Shock Absorbers

A perfect example of a product engineered to simply do its job and withstand the harshest treatment is Tough Dog's 41mm Foam Cell shock absorbers. These shocks feature a twin-tube design and come with valving tuned for rough terrain conditions but also providing a smooth ride on the bitumen. The key advantage of these shock absorbers is a foam cell which encircles the inner tube. Micro cells in the foam trap the pressurised gas and separates it from the shock's oil to reduce both cavitation and oil foaming – both significant factors that contribute to reduced performance and shock fade. Heat is dissipated quickly due to the larger surface areas provided by the 41mm internal bore and the even larger 60mm external bore.

Tough Dog's Foam Cell shock absorbers are just one reason why their products are sold to over 43 countries around the world and used by military units, mining companies, corporate fleet operators and 4WD enthusiasts alike.



Tough Dog's suspension kits use only the highest quality materials and are manufactured in Australia. They will outlast most OEM suspension components several times over in mining applications.



This Toyota Hilux is mine spec compliant and has a Tough Dog GVM upgrade kit to allow for the extra weight of a bull bar, tray and several tool boxes.



The 300 Series Landcruiser is part of Tough Dog's latest R&D program. A comprehensive range of suspension upgrade components is now available for these vehicles.

GVM Upgrades

The allowable payload on most modern 4WDs seems great on paper but this limit can be easily exceeded when vehicles are brought up to mine spec and fitted with bull bars, trays, tool boxes, equipment and passengers.

If a fleet vehicle loaded beyond its factory Gross Vehicle Mass (GVM) is involved in an incident, or a component in the vehicle fails as a result of over loading, a business could be exposed to claims of breaches in occupational health and safety legislation or employee negligence. There is also a strong possibility that the company's insurance protection and vehicle warranty will be void, which could result in costly component repair.

GVM upgrades are very popular but they must be correctly engineered to meet state and federal legislation and built with the right components to provide a long service life in the notoriously demanding environments.

All components fitted to these vehicles – including springs, shock absorbers, bushes and link arms must be built to OEM or better standards and must also be engineered and comprehensively tested to function without fail under higher load conditions than stock components.

This is where Tough Dog's GVM program can assist. Tough Dog provides suspension solutions for owners and managers of 4WD vehicles who have a need to carry loads which exceed the manufacturer's specifications, while simultaneously meeting practical on-site applications and regulatory compliance.

Tough Dog offer GVM upgrades for all popular 4WDs including Toyota Hilux, Toyota Landcruiser, Ford Ranger, Isuzu D-Max, Mazda BT-50 and many other vehicles found on mine sites around the country.

The *Australian Mining Review* spoke with Tough Dog's Commercial Manager, Blake Jones about the company's ongoing R&D program, their heavy duty suspension components and their GVM upgrade kits.

"We're particularly enthusiastic about our Fleet Advantage program, which has a strengthened focus on providing tailored suspension solutions for mining, fleet, government, and commercial clients," Mr Jones said.

"These solutions are purpose-built and Australian tested, ensuring they can withstand the unique working conditions and terrains of the domestic mineral resources sector."

Tough Design

Mr Jones said each before every suspension system is released to market, it is supported by a rigorous testing process in both the company workshop and outside terrains to give a complete picture of its capabilities.

Systems are checked for suitability, longevity, and heat testing, as well as performance on a variety of road surfaces.

Brake testing is carried out on all Tough Dog GVM vehicles, both laden and unladen, as well as testing under partial system failure.

Vehicles also undergo electronic stability control testing to ensure a stable or improved system response.

Tough Dog is also a recognised Second Stage Manufacturer (SSM), enabling their experienced development teams to create and federally certify vehicle components and increase a vehicle's GVM.

This Federal approval allows Tough Dog to maximise a client's allowable vehicle payload on site without adversely affecting its ability to drive on the public roads.

Mr Jones said these were just some of the reasons that made the 38-year-old company the partner of choice for the mineral resources sector.

"The structural safety of an automobile's suspension is crucial because it plays an important role in the vehicle's safety, stability and handling performance," Mr Jones said.

"We undertake finite element analysis to predict the structural performance of our suspension designs and to check the vehicle's factory axle load ratings to ensure they can safely operate within a new GVM."

"Safety and regulatory compliance are at the core of our business."

"Our comprehensive research and development programs, computer aided design, exhaustive testing and Australian manufacturing processes mean we can offer a three-year, unlimited kilometre warranty for all our commercial suspension kits and components," Mr Jones added.

A Little History

Based in New South Wales, Tough Dog has been "making tracks across the world" since 1984 and has grown rapidly because of their commitment to both safety and innovation.

The industry leader in 4WD suspension systems is in high demand across the world, with a global distribution network spanning 43 countries including nations in Africa, Middle East, and the Philippines.

The 38-year-old company boasts combined team experience of more than a century, uniquely positioning them to offer custom fleet service, GVM programs or tailored suspension packages that have been expertly crafted in Australia.

Mr Jones said in 2018, Tough Dog Suspension moved their headquarters to Sydney's Marsden Park, marking a new chapter in their mission to push the boundaries of the 4WD industry.

With dedicated facilities for research and development, design and manufacture and bulk production, Mr Jones said Tough Dog has become a one-stop-shop for commercial vehicle upgrades that can tackle just about any application.

"With some of the harshest conditions right here in Australia to test out products, the gear we take to the market is a cut above the rest," Mr Jones said.

"Our pioneering attitude has also meant we have gained industry recognition and lead the way with several unique products.

"Just remember, setting up a 4WD suspension system isn't all about the added gains on the tape measure.

"Setting up a vehicle's suspension can be a minefield of pitfalls, misinformation and wrong turns.

"When it comes to kitting out a vehicle for the toughest environment on the planet, it certainly pays to speak to Tough Dog to find out how they can make you the toughest in town." ***AMR***

SOURCE
Tough Dog Suspension
P +61 2 9672 8899
E fleetadvantage@4waysuspension.com.au
W www.toughdog.com.au



One of Tough Dog's technicians assembling a strut with high quality coil springs wound from German alloy steel and an extremely durable 41mm Foam Cell shock absorber.

Australian Mines and Services Handbook 2023



DON'T MISS OUT on 2023!

Let them find you in **the Bible** of the **Australian mining industry.**

BOOK NOW!

australianminingreview.com.au/amr-handbook

TERRAIN TAMER HEAVY DUTY PARABOLIC SPRINGS

Traditional 4WD leaf springs are often thick, heavy and clunky, adding to the weight of vehicles that are often dangerously close to meeting their GVM limit. In modern 4WD applications, this excess weight is better utilised for towing heavy loads, carrying tools or touring with the family.

These heavy leaf packs can also be uncomfortable and loud and can create a safety issue, as they offer little to no flex, meaning that when a driver hits a bump, or finds themselves in a rough offroad situation, the rigidity of the leaf pack will cause the opposite wheel will lift, spinning and losing traction, ceasing drive and effectively endangering the driver.

In response to this, and committing to an investment of 50 tonnes of special grade steel before a prototype was even fully complete, Terrain Tamer worked to develop a range of Parabolic Leaf Springs, applying their own carefully researched design and modern technology to an already well-established idea from the trucking industry.

The popularity of these springs was such that in 2020, the brand were able to expanded the range to include both Heavy Duty and Extra Heavy Duty Parabolic Spring Designs, which utilise all of the same features as the original range of Parabolics springs, but are designed for more robust capacity vehicles, such as those used in military and mining applications, where a load of up to 700kg might be required.

Terrain Tamer's Parabolic Springs contain fewer leaves than regular leaf springs and get their name from their tapered 'parabolic' design, meaning the spring is thicker in the centre and thinner toward the ends, rather than the usual linear style. This design directly addresses the GVM issue, eliminating the weight of often heavy, thick, traditional leaf packs and dramatically reducing the unsprung weight of the vehicle, essentially freeing up the weight needed for practical use.

This makes them both safer on the road, and in the workshop where a two-man-lift to fit a heavier leaf spring might prove to be impractical, or impossible. This lower unsprung weight also acts to create a more comfortable right when the vehicle is unloaded, addressing the varying and ever-changing applications that the modern day 4WD is used for and ensuring it is comfortable whether empty or loaded.

Effectively coupling a more comfortable ride with a strength not afforded to traditional springs, the Parabolic design also helps the spring to flex while still providing the strength needed to bear the weight of heavy loads.

This is particularly useful in 4WD applications that carry excessive load on the driveline, or when challenged with difficult terrain, as the flex afforded with a Parabolic Spring allows the spring to give a little when the driver hits a bump in the road, allowing the differential housing to rotate with the springs and effectively providing a smoother ride, reducing the shock transferred to the crown wheel and pinion, stopping the wheel from spinning and maintaining safety and drive. The same force with a standard leaf pack would almost certainly cause more shock to the vehicle and driver.

As well as these advantages, Terrain Tamer have found, through extensive research and development, that the new shape provides better axle articulation, as well as almost no interleaf friction, allowing the spring to compress or extend with ease without touching each other until there is a reasonable load on the vehicle. This feature means that the springs are not only quieter, but it also acts to help minimise any issues with rust build up, which can be a major cause of failure in standard leaf springs.

Since the release of the Parabolic Springs in 2020, demand has seen the range grow from two initial part numbers, to now include a catalogue that caters to a range of leaf sprung vehicles, including the Toyota Hilux GUN/GGN and KUN models, Landcruiser 70/73/75/76/78 and 79 Series models, Ford Ranger, Mazda BT50 and Mitsubishi Triton.

The springs are inserted into existing Suspension Kits at no extra cost, where required or requested, and Terrain Tamer are the only brand to offer Parabolic Spring options for GVM Upgrades, with Ford Ranger, Landcruiser VDJ78/79 and Hilux kits all available with the upgrade.

In the short time since Terrain Tamer's Parabolic Springs have been released, they have proven to be one of the most popular, best-selling and widely praised innovations available, catapulting the brand's Suspension range to new heights with no sign of slowing down, and providing an overall safer, quieter more comfortable ride. ***AMR***



Don Kyatt Group
1300 888 444
skye@donkyatt.com.au
www.donkyatt.com.au



Waterline Keeps Conveyors Optimised

When it comes to materials handling issues, Waterline likes to leave no stone unturned in its efforts to provide the ultimate in conveyor optimisation solutions.

The Australian Mining Review recently spoke to Waterline Senior Mechanical Engineer, Martin O'Driscoll, about what goes into a conveyor optimisation project.

AMR: There is a lot more that goes into conveyor optimisation than most people think. Can you explain some of the activities involved in a Waterline conveyor optimisation project?

MO: We provide operational engineering support to our clients and that covers various service offerings. At the most basic level, we undertake conveyor reliability assessments. We do conveyor power and tension reviews, we also undertake bulk conveyor operation and loading optimisation studies, and also investigate product flow.

AMR: Is this something you can only do on a Brownfield operation, or is it also used in the planning stage for something like a new mine?

MO: We can do both. Predominantly we do Brownfield work because we like to provide that operational support to the sites. But we're certainly capable of doing Greenfield reviews, or the planning and concepting and the design.

AMR: For Brownfield projects are you required to visit the sites, or do you obtain the data from the companies themselves?

MO: We can do it either way, depending on the clients' requirements. We do prefer to complete a site visit, allowing us to physically inspect the equipment thoroughly and have a chat to the client and other stakeholders. That can comprise the job owner, asset owners, maintainers and operators.

To achieve the best outcome for the client, we like to get a full picture. If we are doing a conveyor optimisation for the client and perhaps they have reliability issues with it, we talk to the maintenance team. By collaborating with the team, we can collect relevant data (service sheets, delay data, major failures, etc) and by completing a physical inspection, we are able to perform a very thorough analysis.

AMR: What are the most common issues that you come across?

MO: In a fairly broad sense, one element we have been looking at recently is tracking issues. That can be related to some conveyors that are ageing and are not functioning in the way they are intended to.

What we do is identify the issues that are potentially making the belt not track properly. Sometimes the client might be seeing increased downtime due to certain issues related to equipment failure. It could be issues with their pulleys, such as pulley bearing failures, or it could be idler issues. There can be a wide range of aspects affecting the optimal running of their conveyor.

While the problem can be very particular to a client, there are also common issues that relate to equipment reliability. That could be maintenance, it could be design, it could be the type and frequency of inspections, any number of factors come into account.

Our aim is to thoroughly review every part of the system. We can then analyse the problem that the client has given us. We work out the root cause and provide recommendations to improve productivity.

AMR: Can the issues be commodity related? Like coal conveyors may have more problems than a gold operation?

MO: It tends to be more dependent on the environment they are operating in. So underground mining for coal may see different issues to what occurs with iron ore or gold mining above ground. If it's wet and it's dusty, and the system is exposed to the elements, you are going to see a lot more issues and therefore it doesn't matter what the material is you are moving.

AMR: What are the major benefits of having an optimisation review or overhaul?

MO: The major benefit and the thing that we aim for, is improved reliability and improved conveyor uptime. Essentially, we want to reduce that downtime so that the conveyor is operational when the clients need it to be operational. Because obviously, if the conveyor is not running, they're not producing, which means they're not making money.

AMR: Has there been much change in conveyor technology in recent years?

MO: There are always slight improvements in different areas. Perhaps the idlers are getting better. It just comes down to the OEMs (original equipment manufacturers) and their efforts to deliver better ways to do it. Purchasing pressures have led to changes in design and reduction in cost of some consumable components. Conveyors, essentially, are still made up of the same components, but with incremental optimisation of design over time.

AMR: Where are the majority of your conveyor optimisation clients located?

MO: The majority of our conveyor optimisation clients are in the mining industry, with a significant portion of those in Queensland. However, we do service clients along the East Coast, such as New South Wales, and expand our footprint when asked by our supportive clients.

AMR: How long has Waterline been providing its conveyor optimisation offering?

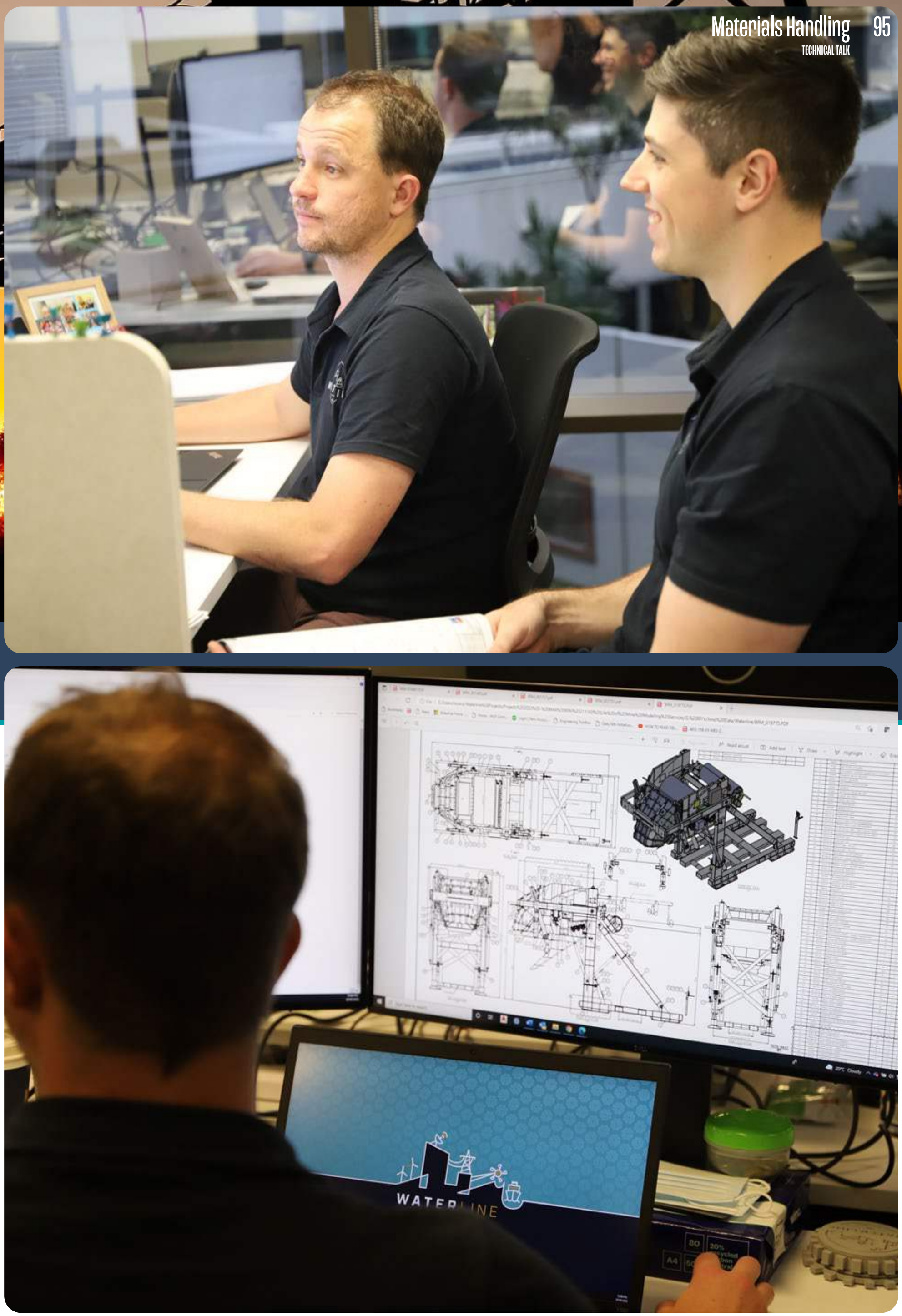
MO: It is something that has always been there since our inception in May 2011. It's part of our core offering. Recently it has come more into focus and become more popular with clients as they realise the benefits our services can offer them.

24/7 Support

When you need operational and engineering support, Waterline's Mechanical Engineering team can support mining operations with all aspects of modelling, new plant design, upgrading existing assets, installations and commissioning - protecting mining operations 24/7 against unscheduled downtime, delays and productivity losses—on site or remotely.

Waterline's site-experienced engineers will provide you with the peace of mind you need to ensure your site is efficient, safe and compliant. ***AMR***

SOURCE
Waterline
P 1300 957 111
E info@waterlineprojects.com
W www.waterlineprojects.com


WATERLINE

BREAKING NEW GROUND

Total Rockbreaking Solutions (TRS) have plugged a gap in the rockbreaker market with their new HD Boom Systems – equipment carefully crafted to reduce costly downtime.

The full-service engineering and hydraulic maintenance company supports some of Australia's most challenging industries, including the mining, quarrying, construction, and demolition sectors.

With an extensive workshop and site services capabilities, Total Rockbreaking Solutions has become the partner of choice for industrial operators looking for materials processing support.

Their recently launched heavy-duty pedestal mounted boom system range has raised the bar for the market with increased performance and reliability, as well as several contemporary enhancements, including single touch DEPLOY and PARK commands.

These advancements ensure routine movements at the start and end of every operation are carried out at maximum speed and without risk of collision with surrounding infrastructure.

In harmony with BoomSafe® Smart Limits® protection, the automated movements have greatly improved the ability of operators to use TRS HD Boom Systems faster and more effectively without risk of damage.

Total Rockbreaking Solutions Engineering Manager Paul Ingleson described pedestal mounted boom systems as a key part of mining crushing plants that clear blockages or break oversized material in order to maintain plant throughput.

He said these systems must be simple to operate, robustly designed and most importantly reliable – qualities he said were delivered by the new TRS HD Boom Systems.

"In response to feedback from various clients with large, hardworking boom systems, coupled with our knowledge of industry trends towards remote operation and functional safety, we believed there was a gap between what was available and where the industry needed to go," Mr Ingleson said.

"With over 25 years of experience in designing, manufacturing and servicing boom systems, our engineering personnel worked with operators and maintainers to develop a 'Requirements List' which formed the basis of development for the TRS HD range of boom systems.

"This list shaped our design strategy and allowed us to finalise a product range that was high quality and in line with the needs of mineral resources operators.

"This is what we have come up with – a line of heavy duty pedestal mounted boom systems that are specifically designed for large scale mining and high demand rockbreaking applications.

"The TRS HD Booms operate faster, have longer reach and carry larger hammers than previous generations of boom systems."

Mr Ingleson said the range was 7-models strong and proudly Australian made, spanning from 22.5 to 25.8 tonne, with reaches up to 17.8 metres.

Meanwhile, the TRS XD Series Booms were designed with capacity to carry extra-large hammers and were most suitable for longer reach applications.

The newly launched range includes the TRS BoomSafe® Control System fitted as a standard feature to provide reliable, proven automated movements and collision prevention

The systems can be enabled with remote operation capabilities, which allow multiple rockbreakers to be controllable from a single workstation.

Operators can rely on improved safety features to reduce risk in the workplace, including energy absorbing mechanical slew stops and safety rated slew limit sensors.

Torsional strength has also been enhanced within the heavy duty boom structure to reduce operating stresses and over-sized pivot pins and bushes have been used to reduce bearing stresses, improve lubrication effectiveness and achieve a much longer wear life.

Mr Ingleson said these features and complementary products were designed to improve maintenance efficiency and safety, as well as to meet the needs of a dynamic and demanding mineral resources sector.

He said innovation was a core strength of



Performance

Increased movement speeds and longer reach booms means the HD range can cater for even the most demanding applications. The TRS 'Zero-Tension' hose support; 'Clean-Fill' lubrication system; and TRS BoomSafe® features are a powerful combination, providing reliable boom control and automation. The TRS HD Booms will also ensure that significant increases in availability and reliability can be achieved whilst maximising the overall life of the asset.



Easy to Maintain

Induction hardened, hard chromed pivot pins with built-in extraction facilities, and standardised components across the HD range are just some of the ways TRS has designed the Boom Systems to keep maintenance costs to a minimum. Operational downtime is also reduced thanks to the company's extensive library of proven stands or frames for safe and efficient hammer and hammer tool changing.



Total Rockbreaking Solutions, a quality he believed differentiated the Western Australia based company from the competition.

"Through innovative product development and new product ideas for servicing and maintenance, we have added significant value to our client's operations," Mr Ingleson said.

"Our focus on continuous improvement has also led to Total Rockbreaking Solutions being awarded an exclusive 3-year contract for the supply of boom systems and support services with one of the Pilbara's largest iron ore companies.

"As an authorised Rammer dealer, TRS focuses on providing innovative solutions and products for clients, starting from early engineering and design support through to routine site service and maintenance.

"We offer a full range of fixed pedestal mounted boom systems, that cover a variety of client needs.

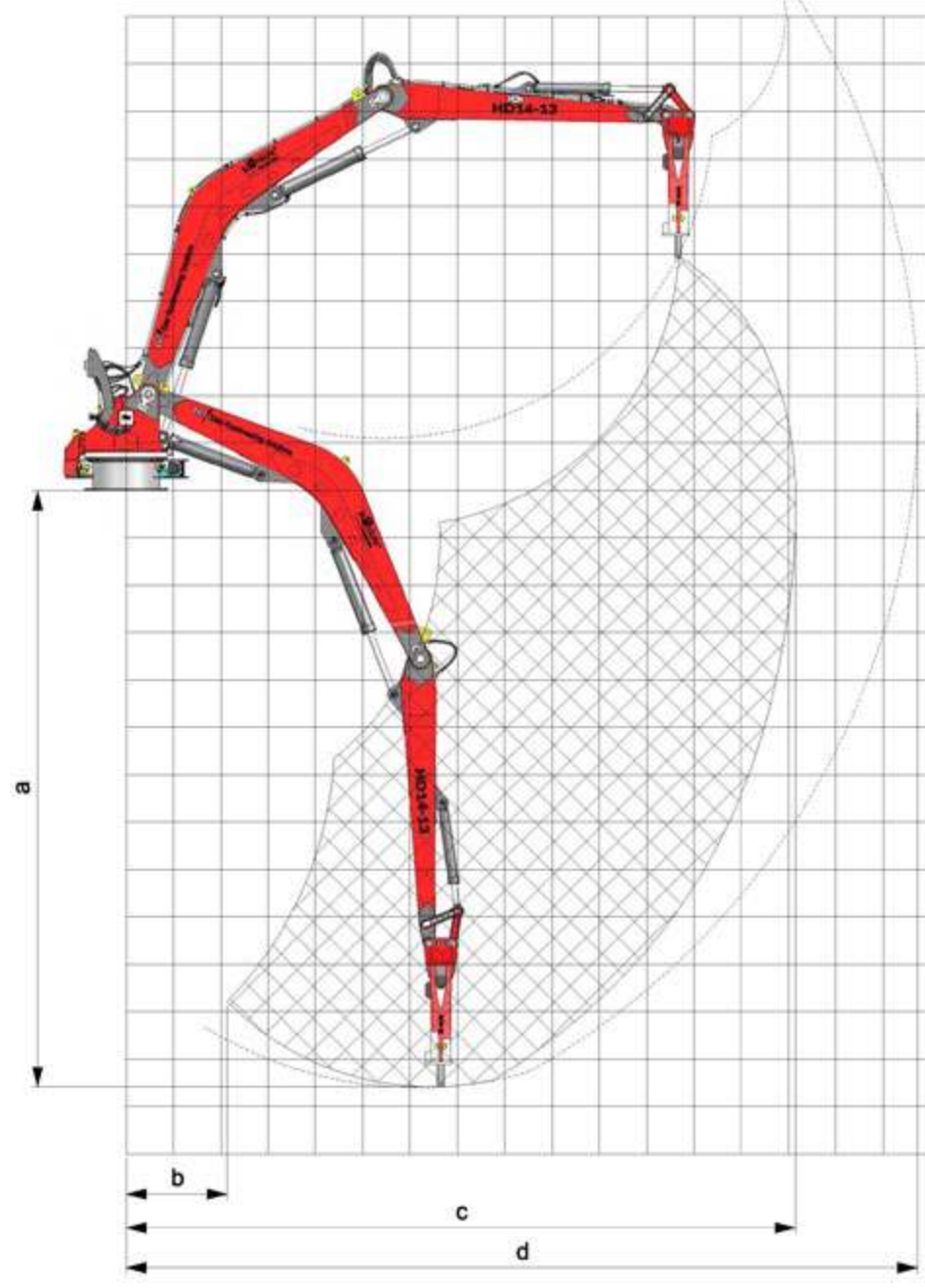
"This spans from proprietary Rammer boom systems through to high duty, remotely operated TRS booms with premium hydraulic power units, clean-fill lubrication systems and tool change facilities.

"Increasingly, what also interests operators is our commitment to local industry.

"At TRS we proudly support Australian manufacturing.

"All TRS boom systems and hydraulic power units are designed and manufactured in Australia under the strict supervision of our experienced personnel to achieve the highest possible quality of workmanship." ***AMR***

SOURCE
Total Rockbreaking Solutions
P 1300 921 498
E sales@trswa.com.au
W www.totalrockbreaking.com.au







MTS & FORCE ONE

THE PERFECT DRYVAC SYNERGY

When Force One (Aust) ordered its first MTS DryVac Suction Excavator back in 2015, it was the beginning of a highly successful relationship that continues to flourish.

The two companies are now at the forefront of suction excavation in Australia. MTS Australia is the local representative of German firm Mobile Tiefbau Saugsysteme (MTS), the innovative developer of new suction technologies. Force One, now a major supplier to the local mining and civil construction sectors, counts companies such as Santos, Glencore and Rio Tinto amongst its customers.

Together, they continue to promote the benefits suction excavation offers as a safer, streamlined solution for civil construction and mining services challenges while reducing their environmental impact.

How transformational is it?
For many years, vacuum excavation has been acknowledged as a safe excavation technology and rewarded for its success by being widely accepted, and at times mandated, by industry and regulators. A challenge has been how to apply these benefits in a cost-effective way during construction projects.

The MTS fleet of DryVacs have markedly improved the vacuum excavation industry. They use significantly different technology for creating and sustaining the airflow that is critical for the fast removal of materials.

Using high-pressure air to break up the ground enables an efficient and waste free process, while the large on-board debris storage container with its side tipping function is more practical for site operation.

A simple parallel to the use of suction excavation technology can be explained when reflecting on the difference that Dyson has brought to domestic vacuum cleaners. The Hoover had been around homes for many years performing a single task: sucking up dirt.

When James Dyson came along, he looked at how that task could be performed better, i.e. improved suction power, easier access to difficult to reach areas and easier dirt storage and removal.

He changed the air flow technology, developed a detachable and reusable dirt bin, removed cables and added a variety of accessibility options. What, at its launch, was written off as an overpriced gimmick, is now dominating the domestic vacuum cleaner market. And that was based on the premise that even the simple function of sucking up dirt can be significantly improved.

Easy as
The MTS DryVac fleet are all fully remote control operated. The units are intuitive and easy to operate. The minimal physical effort needed to complete a job using a MTS DryVac compared to manual excavation make it suitable for workers with less physical ability. Being able to keep wise heads and seasoned operators on site is a great asset to any project.

The remote-control system gives the operation of the suction excavator a 'PlayStation' feel. This plays to the strengths of younger workers giving them an ability to enter the civil construction industry.

Removing the physical risks from a workforce greatly reduces the health and safety risks of your teams.

The extension hose on a MTS DryVac can reach 150m and still have a powerful suction ability. This reach makes it flexible to deal with tight spots and keep up an enviable speed for removing materials from a worksite.

It's used successfully to clear debris from the second level of a building or down an alley inaccessible to large vehicles. The MTS DryVac easily sucks up the layer of contaminated soil on a rehabilitation site and sludge from a tank. It keeps waste like this contained to its dumping destination.

No need for water while working eco-friendly;

Suction excavation does not require the use of water. Traditional Hydrovacs use water to create a slurry. Water is a precious and limited resource that should be used sparingly and not wasted in construction. Slurry is not reusable and can be costly and problematic to dispose of.

It is a waste of spoils which impacts the environmental footprint of your project. Importing infill materials adds to the cost and time of your job.

The use of air to break up the ground is beneficial especially in a sensitive civil construction area where you can work carefully around existing plant roots, therefore reducing the risk of damage to existing plants and trees – the environment will thank you! This also reduces rehabilitative work after the project.

Lean excavation
The MTS DryVac can be used for so many



functions that it's often called the 'Swiss Army Knife' of lean excavation. The term suction excavator can be misleading in that the DryVac can perform many more tasks other than just excavation.

It replaces different pieces of equipment, saving time and adding efficiency to a project.

- Locating and exposing cables and pipes is commonly the first step when excavating in areas with existing in-ground services to ensure that these services are not damaged. The DryVac uses vacuum technology that is approved for safely exposing services. As this is done as part of the main excavation process it is more efficient thus saving time and money.
- A traditional excavator will either deposit the material next to the trench or load it onto another truck. A DryVac removes the material and stores it in the on-board debris container. It is an excavator and truck at the same time. The DryVac can then dispose of the debris in several ways, either by tipping at the work site, into storage bins or into another truck. This process allows for less use of labour and equipment, less downtime and a smaller site footprint resulting in time and cost savings.
- The DryVac provides power for auxiliary tools that otherwise would require additional equipment to operate. This reduces the costs and the footprint of the worksite.
- Any tasks that involve removal of material like removing pipe blockages, cleaning blocked hoppers or bogged conveyors or removing spend media from regrind boxes are just some of the tasks that a DryVac can perform.

It is also about the money
With its excavation production rates and reduced use of labour and other equipment, the MTS DryVac provides a cost effective and safe solution, particularly when working in areas with existing in-ground infrastructure or in difficult to access areas.

Reducing the worksite footprint minimises traffic management and site reinstatement costs. Combining several pieces of equipment into one lessens the requirement for labour. Being able to perform several tasks with the same equipment reduces construction time and costs.

With its 250mm diameter suction tube the amount of material that can get removed in an hour makes the MTS DryVac a highly productive tool.

With the use of air as a major part of the excavation process, the MTS DryVac provides a non-destructive digging (NDD) solution that greatly reduces the risk of damage to existing in-ground cables, pipes and other infrastructure. Production rates are significantly improved while reducing the need for team members to perform strenuous physical tasks

This ensures that projects can be delivered on time and budget while minimising health and safety concerns.

Suited to the Australian environment
While the MTS DryVacs are operated globally in challenging locations including Canada and Scotland, the sand and clay soils prevalent in large parts of Australia make it particularly suited to the local environment.

The MTS DryVac operates as a self-propelled four-in-one unit which allows for easy deployment in rural and remote areas without the need to mobilise multiple pieces of equipment.

The four-in-one configuration allows for a minimal footprint when operating in city and urban environments. It reduces the impact on traffic at business and residential sites and around construction projects.

With its 250mm diameter hose and suction capacity of 30+ kg, the MTS DryVac makes simple work of heavier soils and rocks.

Since water is not used in suction excavation, the construction process preserves this precious resource. It also reduces the disposal of excavated materials which can be re-used as backfill.





MTS Australia Developments
Offering the highest levels of suction performance and a carefree filter system, the new generation of MTS DryVacs have expanded their applications beyond the traditional civil construction into areas including environmental, industrial, mining services, building renovation and rail maintenance.

Product development and improvements are responsive to customer needs and requirements. MTS takes clients' workplace challenges and collaboratively develops solutions quickly and efficiently. MTS's suction technology has numerous international patents in place.

MTS Australia, based in Western Australia, distributes and supports MTS equipment as well as assisting its local partners, such as Force One, with identifying construction solutions relevant to their individual circumstances.

Force One Focus
Force One Australia's management team has been involved with suction/vacuum excavation DryVac technology since 2004.

The company has a wealth of expertise in the uses of its technology across many industries and projects, so when you talk with any of the Force One team, you will receive the benefits of this knowledge and your questions will get straight answers.

Force One is proud to declare that no other company involved with this technology can provide you with the knowledge, advice, service and technical support that comes from the depth of experience that Force One Australia has.

Force One has been engaged by many major mining, construction and oil & gas companies including Santos, Glencore and Rio Tinto who have realised the value and safety of suction excavation.

Having established operations in Queensland, Northern Territory and South Australia, Force One is now setting up a presence in Western Australia. ***AMR***

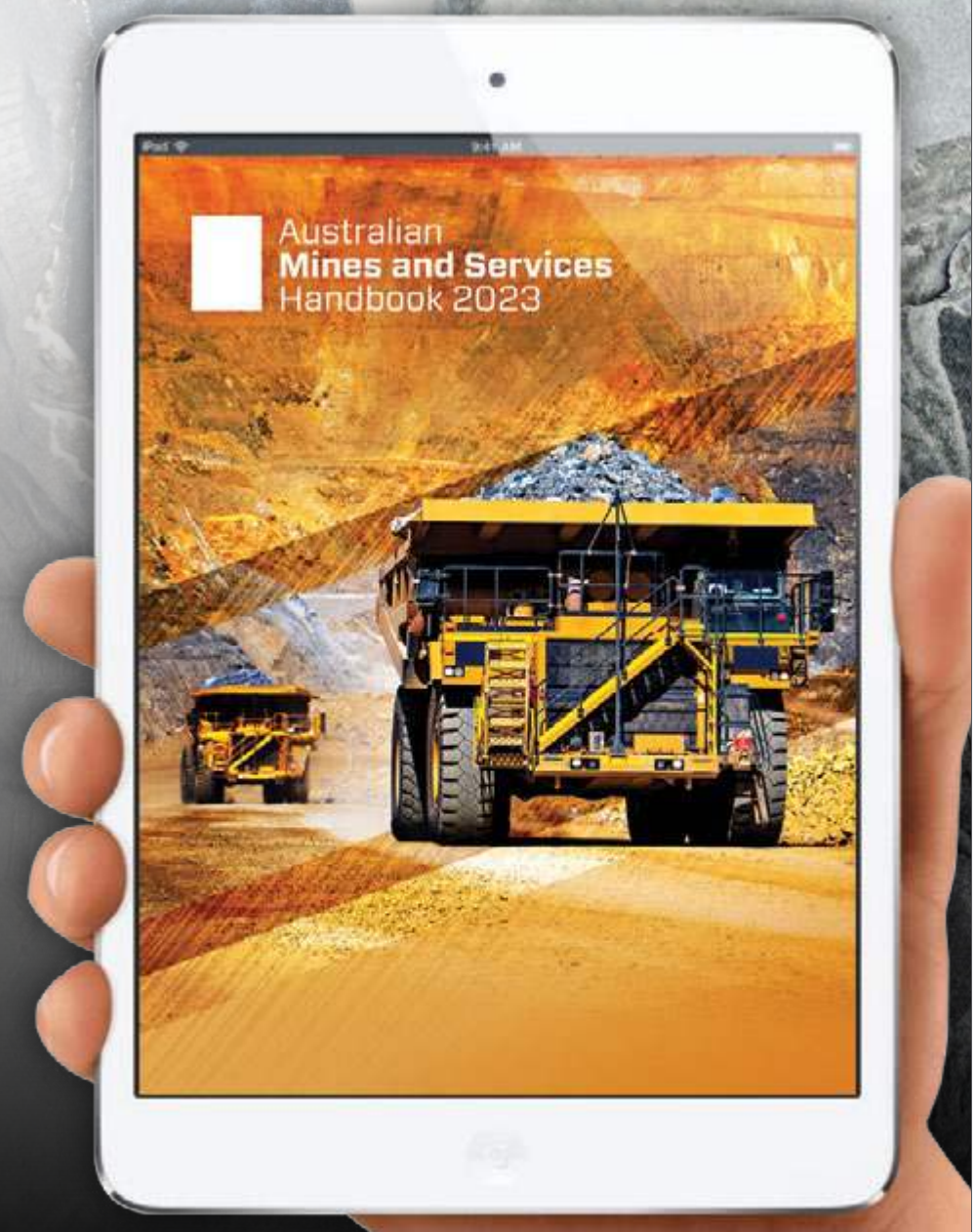
SOURCE
Mobile Tiefbau Saugsysteme MTS Australia
P +61(0) 43 424 9350
E info@mtsaustralia.com.au
W www.mtsaustralia.com.au

SOURCE
Force One Australia
P 0438 076 606
E spiro@forceoneaus.com.au
W www.forceoneaus.com.au

Australian Mines and Services Handbook 2023

DON'T MISS OUT on 2023!

Let them find you in **the Bible** of the **Australian mining industry.**



BOOK NOW!

australianminingreview.com.au/amr-handbook

MAXIMUM STRENGTH FOR GREATER IMPACT

TOP HAMMER DRILLING TOOLS

Achieve optimal tooling performance with Boart Longyear's rugged and reliable top hammer drilling products. The new DriftMaster™ line of rods and bits boasts increased load handling capability for maximum endurance.

Make an impact on your drilling results. Visit:
www.boartlongyear.com/driftmaster



INCREASED STRENGTH

Featuring premium carbide inserts, heat-treated, high-grade steel bits and RazorBack™ reamers pack a punch enabling more drilling time and more productivity.



BUILT TO LAST

Designed with a unique tapered thread profile and deep case hardening, DriftMaster rods maximise resistance to wear, reduce stresses, and offer superior rod-bit make-up and breakout characteristics.



EXCELLENCE IN SERVICE

Boart Longyear's service team is dedicated to supporting your production drilling requirements. Backed by a global workforce, you can count on the right technical experience and expertise to maximise your productivity.

BOART LONGYEAR™

Keep your plant, pipe and valve infrastructure strong with Field Machine Tools

www.fmt.com.au

Established in 1995, Field Machine Tools has thrived as a privately owned Australian company **supplying portable maintenance machines and engineering solutions** to clients across Australasia.

The business aims to flatten production downtime by providing operators with the most complete scope of products and accessories for industries across Australia and beyond.





Modec Portable Actuator Pumping Station



Modec Easy Duty Electric Portable Actuator (in operation)

MELBOURNE
A Unit 1, 53-57 Rimfire Drive, Hallam VIC 3803
P (03) 9703 2250
F (03) 9703 2285
E sales@fmt.com.au

BRISBANE
A Unit 2, 5 Percy Drive, Brendale QLD 4500
P (07) 3889 7622
F (07) 3889 7621
E sales@fmt.com.au

PERTH
A Unit 3, 48 Hardey Road, Belmont WA 6104
P (08) 9470 6088
F (08) 9470 6388
E sales@fmt.com.au

FMT Field Machine Tools