



THUNDERBOLT™
ELEVATING Platforms

THUNDERBOLT™
SKYPORT

Work smarter, faster and safer outside the mill

Portable, modular, safer – **THUNDERBOLT Elevating Platforms** and **THUNDERBOLT SKYPORT (SKYPORT)** help mine sites reduce risk and reline time during worn liner removal and activities outside the mill.

THUNDERBOLT Elevating Platforms provide reline crews with greater reach for faster nut removal and liner knock-in. Most importantly it provides an ergonomically safer means of doing so.

Advance processes even further with an easy upgrade to SKYPORT's semi-automated precision guidance of THUNDERBOLT Recoilless Hammers – the ultimate in hazard elimination and reline speed.



440+

Mine sites served by RME equipment and services.



1100+

THUNDERBOLT Recoilless Hammers sold.



550+

RUSSELL MRMs engineered, manufactured and delivered.



Reach higher. Eliminate risk. Reduce reline time. And start on the path to automated mill relining.

Introducing THUNDERBOLT Elevating Platforms and THUNDERBOLT SKYPORT



Reach more bolt rows without mill inching

Access up to 6 liner bolts rows which is 2x to 3x higher than humans can safely reach.

Ergonomic elevating operator platform

10-person capacity for shell configurations and 5-person for feed and discharge configurations.

Deploy as a safer work platform

Add booms for air tools, and right or left telescoping jibs for hammer suspension.

Integrated suspension

Multiple universal jib mounts for hammer suspension.

Works with existing site equipment

THUNDERBOLT *MAGNUM* Recoilless Hammers, Power packs and THUNDERBOLT Jibs. .

Crane-transportable

Easy connection to overhead crane makes for one simple lift to remove from side of mill to offline service area.

Portable across multiple mills

Increases asset utilisation and returns on asset usage.

Reliable hydraulic operation

All components are tested and quality certified for harsh site conditions.

Automation upgradeability in-the-field

Easy upgrade path to automated high-speed precision-guidance THUNDERBOLT SKYPORT knock-in technology.

Collapsible guard rails

For safe working at-height with in-floor anchors for a fall arrest system when rails are folded.

What are THUNDERBOLT Elevating Platforms?

THUNDERBOLT Elevating Platforms are a portable modular solution which integrates jib suspension, greater mill reach and an ergonomically safer way to work outside of the mill. Best of all it can be upgraded in the field for semi-automated THUNDERBOLT Hammer operation.



Remote operation

For semi-autonomous operation of THUNDERBOLT MAGNUM Hammers from safer vantage points.

Speed and precision with automation

Rapid moil alignment, firing and bolt-to-bolt movements.

Rapid set-up and easy to operate

With minimal or no modifications to the plant required.

High vertical lift

Simply raise the platform to reach more bolts without mill inching.

Horizontal side shift

500mm left and right carriage shift for reaching every mill shell bolt.

Custom-manufactured lengths

For fitment with the length and height of the mill shell, feed and discharge.

Industry-best safety systems

Guard rails, fall arrest system, work lighting, fail-safe platform locking systems.

Enhanced condition monitoring

CANbus system with fast and intuitive fault finding and equipment performance diagnostics.

Leverages latest knock-in power and performance

Powered by THUNDERBOLT MAGNUM, the fastest and hardest hitting hammers in the industry.

Flexible deployment

SKYPORT can be deployed as an automated solution right from the start or field upgradeable via THUNDERBOLT Elevating Platforms.



What is THUNDERBOLT SKYPORT?

THUNDERBOLT SKYPORT is a truly innovative technology. It takes THUNDERBOLT Elevating Platform's higher reach and portability and combines it with the field-proven automation capabilities of THUNDERBOLT SKYWAY. This significantly improves safety for workers outside the mill and speeds up relining.



BENEFITS

Improve mill relining safety

THUNDERBOLT Elevating Platforms provide higher reach and optimal ergonomics for activities outside the mill. This reduces fatigue, especially at high-altitude sites, and strain on the body, improving safety and reducing the risk of injuries. SKYPORT transforms risk rating even more with remote automated hammer control and the removal of workers from hazardous zones during certain relining activities.

Accelerate knock-in times

THUNDERBOLT Elevating Platforms give operators access to up to 6 rows of liner bolts without time-consuming mill inching. Upgrading to SKYPORT will further improve knock-in speed with automation which enables fast and precise bolt-to-bolt hammer movement and eliminates human variability.

Portable, modular and future-proofed for automation

The smart portable design of these advanced knock-in technologies not only offers increased versatility, but also the transition to automated knock-in is easy. An upgrade can be done in the field in manageable phases at the pace your mine site needs.

Field proven technology

These solutions compliment RME INSIDEOUT Technologies which enable safer relining from outside the mill and faster machine movements, consistently and repeatably. THUNDERBOLT Elevating Platforms are proven and used in concentrator plants worldwide. SKYPORT shares the same automated technology as THUNDERBOLT SKYWAY with the benefit of modular portability.

Increase mill availability – safely

Advanced knock-in systems reduce risk and reline time. RME conducted a MILL RELINE DIRECTOR (MRD) Desktop Study for a client's 32' AG mill and found that THUNDERBOLT Elevating Platforms or SKYPORT could create an additional 24 hours or 27.4 hours of annual mill availability respectively, providing a fast return on investment. This study also found SKYPORT could significantly reduce hazardous risk exposure by 131.6 person-hours during a single full-scope reline event.

Comprehensive support

Supported by RME's Mill Relining Optimisation Program, RME 24/7/ SERVICE and a collaborative systems engineering journey which leverages our 35+ year trusted evidence-based OEM expertise.

Applications

Ideal for mine sites with medium to large SAG, AG and ball mills or long-life mines seeking to achieve sustainable step-change improvements in risk, safety and mill availability.

Learn more

- THUNDERBOLT MAGNUM 1000 Recoilless Hammer Product Brief
- THUNDERBOLT MAGNUM 2000 Recoilless Hammer Product Brief
- THUNDERBOLT SKYWAY Product Focus
- THUNDERBOLT MAGNUM Mobile Jib Product Brief
- RME BOLTBOS Product Brief

Choose your advanced knock-in solution

Benefits	THUNDERBOLT Elevating Platforms	THUNDERBOLT SKYPORT	THUNDERBOLT SKYWAY
Portability between mills	Crane portable	Crane portable	Fixed
Mill size	24 ft and up	28 ft and up	36 ft and up
THUNDERBOLT integration	Hammer / Power Pack / Jibs	Hammer / Power Pack	Hammer / Power Pack
THUNDERBOLT automation	Guided suspension	Semi-automated	Semi-automated
Work platform operable when hammer in use	Yes	No. Due to autonomous hammer modules.	Yes. Work platforms are independent of autonomous hammer modules.
Integrated arm for tool suspension	Optional	Optional	Standard
Liner bolt reach	Up to 6 rows	Up to 6 rows	Up to 6 rows
Suitable for gearless mill drive (GMD) servicing	Yes	Yes	Yes
Plant installation method	Anchor points	Anchor points	Fixed foundations
Electrical safety interlocks	On handrails	On handrails	On work platform modules
Safety uplift	Ergonomically safer worn liner bolt removal and new liner bolt securing.	Semi-automated hammer operation removes crew from hazardous zones.	Semi-automated hammer operation removes crew from hazardous zones and enables safe concurrent crew and knock-in operations.



Creating the future of mill relining

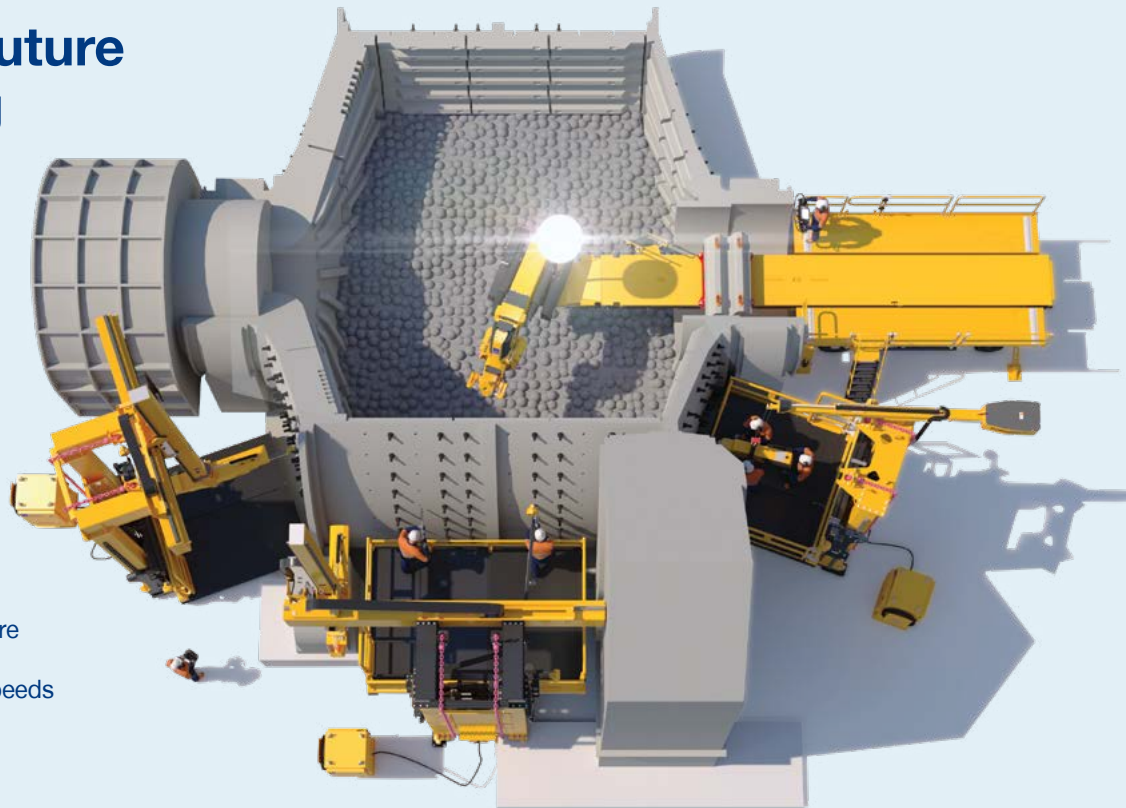
Mineral processors need to address issues that are more challenging and more urgent than ever.

On one hand they must reduce the risks that remain associated with hazardous mill relining. On the other, maximise mill availability for meeting the world's mineral needs.

It is this pursuit to improve safety and productivity that drives RME to innovate for our industry.

This has led us to envision a future where relining is performed with no one inside the mill at faster speeds than ever before.

And now this future is here.



ADVANCE YOUR MILL RELINING – SAFELY

For almost 40 years, RME has led the world in the engineering of fast, reliable, safe technologies and processes for every step on the mill relining path.

Today the integrated RME Mill Relining System has advanced to incorporate autonomous capabilities.

At its centre is the RUSSELL MRM with an expanded range, a modular future-proofed platform and RME *AutoMotion*™ optionality.

Supporting it, stands the industry-proven THUNDERBOLT worn liner removal solutions and innovative RME *INSIDEOUT*™ Technology, RME *BOLTBOSS*.

Together, they move operators out of harm's way and relining off the shutdown critical path.

Best of all, RME's carefully-staged systems engineering maximises current investments by enabling mine sites to adopt automation progressively at their pace, and as needs dictate.



RME's approach to mill relining automation prioritises safety at every step. First, we take mature and proven technologies and future-proof them with automated capabilities. Second, we take a systems approach to ensure no new risks are introduced inside and outside the mill. Third, we've developed a carefully staged and fully-supported implementation program which minimises technical and cultural change risks. Our approach is fast, reliable and ensures the safety of your reline crew.

Tarnya McBurney

Product Manager – RUSSELL Mill Relining Placement Machines & RUSSELL Feed Chute Transporters, RUSSELL MINERAL EQUIPMENT

WE ARE RME



RUSSELL
MINERAL EQUIPMENT

RME delivers innovation to the world

RUSSELL MINERAL EQUIPMENT (RME) is the global leader in the manufacture and supply of grinding mill relining technologies, services and support.

RME operates across 12 international Sales and Service Centres with a global reach of over 440 mine site locations.

RME's commitment to industry is to visibly, defensibly and sustainably improve our Customers' concentrator performance. We enable our Customers to remove fatal risk through innovative solutions.



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