

EDITION 1

2023



DATA & EXPERIENCE

The synergy of data, drawn from the well of historical performance.

PREDICTIVE POWER

Changing minds and mindsets, using data and analytics.

RELM

The practice of 'Residual Equipment Life Management'.

RELM

EXPERIENCE. APPLICATION. ADAPTATION. CONTROL.

"UNDERSTANDING AND ACTIVELY MANAGING RESIDUAL EQUIPMENT LIFE IS A STRATEGIC IMPERATIVE AND OPERATIONAL DISCIPLINE THAT IMPACTS THE ENTIRE BALANCE SHEET."



UNLOCKING HIDDEN VALUE

MANAGING RESIDUAL EQUIPMENT LIFE IN THE MINING INDUSTRY

In the mining industry, the efficient operation, management and maintenance of equipment is central in maximizing productivity. However, understanding the actual versus prescribed remaining life of equipment, remains a relatively unknown, yet crucial aspect of both cost and revenue-side management. In this way, for mining industry progressives, the practice of 'Residual Equipment Life Management' (RELM) has become a new balance sheet essential - instrumental in both maximizing capital utilization while minimizing risk associated with unexpected shutdowns due to equipment failure.

"Understanding and actively managing residual equipment life is not a mere academic exercise; it is now a strategic imperative and operational discipline that impacts the entire balance sheet."

says veteran mining industry project manager Raamias Hernandez, CEO and founder of RaamCore Equipment and R-05 Management Group.

Understanding the formal practice of RELM - a results-driven strategy only recently 'named' for an executive audience - has always been inherent in daily mine operations. In this discussion document, we attempt to more fully introduce the subject and explain why understanding RELM is a priority for senior management and how third-party equipment assessments or audits can be instrumental in maximizing capital equipment utilization and minimizing the risk associated with unexpected (and often catastrophic) shutdowns due to equipment failure.



The Challenge of Equipment Reliability

Mining companies invest heavily in acquiring and maintaining equipment, which represents a substantial portion of their capital expenditure. Equipment breakdowns and unexpected failures result in costly downtime, lost production, and safety hazards. "An asset's residual life can impact the success of the entire operation, so the

importance of this data and knowledge should not be underestimated. While maintenance is traditionally based on predetermined schedules or reactive measures, a more proactive approach... considering residual life... can significantly enhance operational efficiency," Hernandez said.

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Understanding "RELM"

Simply put, residual life in the context of mining equipment, is the assessment of the remaining operational life of a specific asset before it becomes inefficient, unreliable, or obsolete. Equipment will come from a manufacturer with a prescribed life, but depending on the manner of actual usage and documented maintenance, there can be quite a gap between the two lifespans. And given that capital investments in heavy machinery and equipment are substantial ledger entries in the

mining industry - reliable predictions are critical in both maximizing overall capital utilization (value) and in avoiding catastrophic failure, unplanned downtime, and often massive associated cost. Despite this reality, and beyond the glare of acquisition and operational costs, the concept of residual equipment life management (RELM), often remains uncharted territory for many in senior management.

The Role of Expert Equipment Assessments

Expert third-party equipment assessments or audits play a pivotal role in unraveling the mystery of residual life. These assessments involve comprehensive examinations conducted by specialists with a deep understanding of mining equipment.

“The detailed third-party process offers a predictive lens into the future, and that enables companies to chart a course that avoids the treacherous waters of unplanned downtime. It saves time. It saves money. And in the end, it makes money” - Raamias Hernandez

Expert Equipment Assessments Include

01

Thorough Inspection

02

Data-Driven Insights

03

Predictive Analytics

04

Risk Mitigation

05

Optimized Maintenance Strategies

06

Capital Allocation

07

Sustainability and Efficiency



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RAAMIAS HERNANDEZ



The Confluence of Data & Experience

The synergy of data, drawn from the well of historical performance, maintenance records, and operational environments, coupled with the insight of experts who can predict the twilight of machinery life, creates a powerful predictive tool. This confluence arms management with the foresight needed to ensure that investments in maintenance and equipment are both timely and judicious. ***"You can save the client money by coming in as a third party with data that they don't possess because you are tapping into your vast experience from other projects around the world. Worldwide experience across projects, mining types, and equipment types, facilitate unbiased opinions that can identify problems that could otherwise go unnoticed. The expert, objective eye becomes an invaluable essential."***

Predictive Power & Strategic Planning

This is all about changing minds and mindsets, using data, and having a clearer and altogether different lens across the business in order to 'stop putting out fires', which drags down many operations. The predictive insights gleaned from these assessments feed into strategic planning, allowing for a proactive stance on maintenance, resource allocation, and capital investment. It is a shift from a reactive 'don't fix it if it ain't broken' mentality to a mature, forward-thinking approach that values pre-emptive action and continuous upkeep as a means to safeguard operational continuity.

"Too many organizations and even managers are obsessed with putting out fires. As a result, their resources are dedicated to firefighting which makes it nearly impossible to get ahead of the flames with respect to equipment breaking down," said Hernandez. "It takes a certain level of maturity and foresight for management to say 'we are going to invest more into the asset before it's broken because we believe that keeping it in a good state is a more manageable cost than unplanned shutdowns to put out a fire.'

If you want to maximize the value of your expensive equipment, stop putting out fires," - Hernandez.

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The Economics of Prevention Versus Repair

The economic rationale is compelling. Investing in the asset's health before it falters is not only a mark of operational prudence, it's also a strategic financial decision. It is a choice between the manageable cost of planned maintenance and the hefty price tag of emergency repairs and operational outages.

"Organizations tend to get into trouble when all of their major equipment begins breaking down at the same time. Unfortunately for them, it's a predictable event that could have been avoided, and that's why third-party assessments are so valuable," advises Hernandez. "Once you assess the lifespan of a piece of equipment and replace it, instead of waiting for critical breakdown, then you have predictability. This gives you the power and the confidence to make other investments, applying replacement strategies and components across the operation."

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Final Perspective

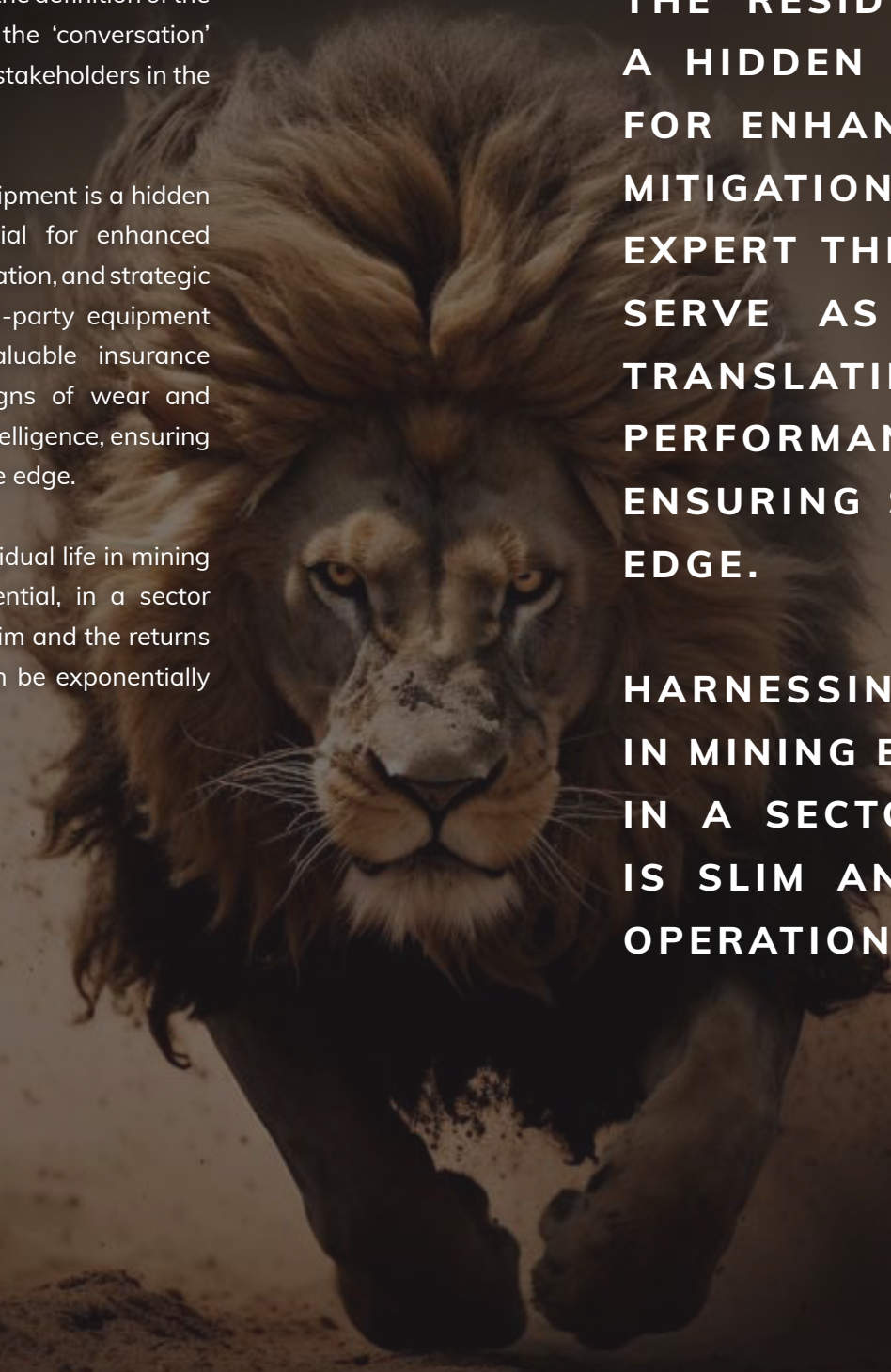
RELM, Residual Equipment Life Management, is an emerging discipline with quantifiable results and a strong ROI. As such, the practice (that can and should be led by 3rd party partners who are able to operate without bias or risk of oversight) provides an essential tool for mining management to maximize overall value and minimize risk associated with unexpected shutdowns due to equipment failure. It is increasingly being accepted as a senior management priority that is not just worth investigating – but worthy of investment.

RaamCore is a Canadian company that operates worldwide and is at the forefront of purpose-built commercial equipment for the mining sector. The company's 'boots on the ground' experience and practical insights have fueled its evolution as a leading services firm. RaamCore has been advocating for the application of active RELM and

is widely credited with shaping the definition of the practice, along with initiating the 'conversation' with some of the most notable stakeholders in the industry.

"The residual life of mining equipment is a hidden key that unlocks the potential for enhanced operational efficiency, risk mitigation, and strategic capital allocation. Expert third-party equipment assessments serve as a valuable insurance policy, translating obscure signs of wear and performance into actionable intelligence, ensuring sustainability and a competitive edge.

Harnessing the potential of residual life in mining equipment is a business essential, in a sector where the margin for error is slim and the returns from successful operations can be exponentially profitable." - Hernandez.



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