

Mining's Chain Reaction

How to reduce downtime and operator risk during tyre chain fitment



Introduction

Wear and damage to earthmover tyres through excessive abrasion and punctures or sidewall cuts has always been a costly problem for mines.

Now as the worldwide earthmover tyre shortage continues to push tyre costs up, and focus is drawn towards improved productivity and reduced downtime, pro-longing the use of a \$100,000 a piece tyre¹ can have a significant impact on productivity and operational costs.

In response to this, more and more miners are fitting protection chains in order to protect and preserve the

performance and lifespan of expensive and hard to replace tyres.

However as is detailed in this whitepaper, the consequences of fitting heavy duty chains to large tyres leads to an increase in downtime and creates hazards for workers who are manually involved in the fitment process and in dangerously close proximity to heavy boom arms.

A solution which allows for more efficient chain fitment is sought industry wide.



Weak link in tyre chains

Protection chains are able to extend a tyre's useful life by a factor of ten², saving miners millions of dollars every year. However the process of fitting the chains is an expense in itself.

Given that the average production capacity of a WA 1200 loader is 1,900 tonnes per hour and the usual downtime to fit tyre protection chains can take anywhere between 2.5 to 10 hours (depending on the vehicle)- the total lost production costs in the worst case scenario is \$95,000³.

This figure doesn't include the cost of having a forklift and numerous operators available to meet the vehicle when it comes in to be fitted, or the risk of additional downtime should equipment needed for the change not turn up on time.

Another consequence that occurs when fitting chains to heavy mining vehicles is operator safety. Whilst changing heavy industrial tyres and wheels has always been a tough and demanding job with obvious physical risks to the tyre maintenance crew and the machine itself, adding in an additional process creates new hazards.

As recent studies show, most incidents in mining involving heavy tyres and rims are nearly always fatal, with 68% of all incidents reported over a 19 year period reported as fatal or potentially fatal⁴.

Safety is always a priority in mining, even if it comes at the cost of lower productivity. Unfortunately with the costs of downtime weighing down on miners, and the significant safety implications which arise as a consequence, the return on investment for many is unsubstantiated.



Tyre chain savings

In surface mining applications using Iron Ore again as the example, the average protected tyre life can be increased by 2500 hours⁵, with other benefits such as improved machine availability, productivity, better traction and lower fuel burn .

As the mining industry continues to tighten its budgets and cut costs, savings in areas like this- where productivity has a high value attached to it- will have a significant impact on bottom line figures.



“The unique system leads to **improved personnel safety** as the spindle eliminates accidental contact.”

And there is more good news for safety...

In response to market research and an obvious need in mining for a more efficient and safe process, Westate Mining Supplies have developed a system* for the safe and fast fitment of tyre chains to heavy earthmoving wheel rims.

The tyre chain spindle system has been proven to reduce the risk of injury, whilst significantly reducing downtime due to chains being fitted and tyres stored ready for use, whilst the machine is out working in the field.

The unique system leads to improved personnel safety as the spindle eliminates accidental contact of body parts with the boom arms due to workers being inside the footprint of the machine, and also gives the fitter more space to work in.

As only two people are required for the task -which takes one to two hours- worker efficiency is greatly improved as well as downtime, as there is no need for machines to be sitting idle whilst chains are being fitted.

The Westate Tyre Chain Spindle System means loaders can be put back into operation quickly and safely, helping to prolong tyre life without excessive downtime.

* Westate has the IP Rights over the Tyre Chain Spindle System Apparatus and Methodology



REFERENCES

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- ⁵ RUD Chains, media release, 'How long will these chains last?', February 2007, <http://esvc000853.wic022u.server-web.com/rN010407.htm>
- ⁶ Ibid



www.westatemining.com
Phone: 61 (08) 9274 4443
Email: info@westatemining.com.au