

Reducing Hazards to Tyre Changing Employees

A Case Study in Every Tyre Changing Operation

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Traditional Method

Most common areas of damage are shoulder and sidewall



- Tyre Change involves removal of 57 studs per wheel (342 per truck)
- Manual handling of heavy, vibrating and noisy wheel nut removing equipment
- Extremely hot area around wheel motor – real potential for burns
- Exposure of personnel to known hazards

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Sustained Injuries

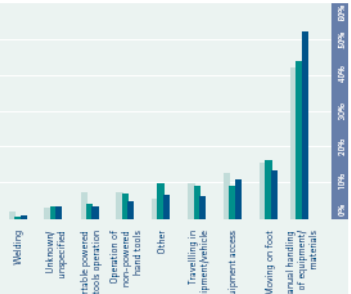
- Tyre Changing on Mobile equipment is viewed as potentially hazardous
- Muscular Skeletal injuries relate to tools utilised to facilitate tyre/wheel changes
- On a "Worldwide" basis – these types of injuries are common
- Goonyella Riverside has not been immune

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Figure 11
Classification of injury
1999-2010 (all) 2010-2011 (new) 2010-2011 (all) 2010-2011 (all) 2010-2011 (all)
Disrupting existing work or production



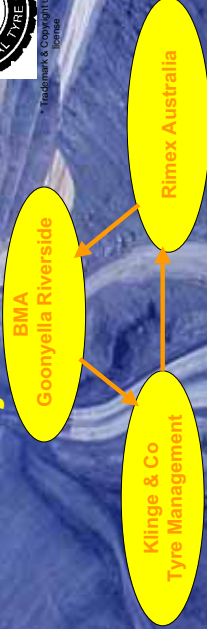
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- Old Mines and quarries Safety Performance and health report 2001-02
- Manual Handling injuries have steadily increased over last 3 years - to more than 50%, and is the direct result of manual handling

Project Committee



Objective: Key Safety Design Principal was Reduced

1. Manual Handling
2. Vibration
3. Noise Impacts

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Engineering the Solution

- Double Gutter wheels had never been done on all positions before
- Concept involved significant rim redesign work to suit truck requirements
- Pre requisites were; Standardisation and uniformity in components



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Introduction of Komatsu 930E Fleet



- February 2002 Komatsu 930E fleet introduced
- All wheel positions on fleet fitted with Rimex TSR Double Gutter Wheels

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Process in Action



- No wheel nuts have been removed for a tyre change since introduction of fleet
- No Hydraulic bead breaking tool required to be used while truck in for tyre change
- Nil exposure to hazards involving nut removing equipment for BMA Goonyella Riverside personnel
- Safe & Efficient tyre changes are now the norm

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Safety Lock System



- Lock Rings are held together with a strong easy to install retainer
- Added safety benefit is in case of tyre run flat – wheel assembly remains in tact

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Flow on Benefits



- Significant reduction in tyre maintenance times realised
- Reduced tyre change times, converts into productivity gains

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Comparison Dual Tyre Change

Task	Min Standard Wheel	Min Dte Wheel
Jacking & Stand Dual Wheels	10	10
Deflation Dual Tyres	20	40
Loosen Outer Nuts Using Torque Tool	45	0
Rattle & Remove Outer Nuts	15	0
Remove Outside Wheel	10	10
Loosen Inner Nuts Using Torque Tool	30	0
Rattle & Remove Inner Nuts	10	0
Remove Inside Wheel	10	10
Clean & Inspect Hub / Rim	5	20
Install Inside Wheel / Tyre	5	20
Install Nuts & Rattle up	15	0
Tension Up Inner Nuts	30	0
Install Outer Wheel / Tyre	5	20
Tension Up Outer nuts	15	5
Inflate Dual Tyres	45	5
Total Tyre Change Time	5 Hours	2.5 Hours

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Safe and Efficient Results

We at BMA Goonyella Riverside and Klinge & Co are proud of the innovation relating to the safer changing of Earthmover Tyres on the Komatsu 930E trucks

The concept was team driven, the results are there to be shared by all

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