

## Technical Article-3 Best Practices in improvement of tyre life

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### Background :

Tyre support the load of the vehicle by retaining the inflation pressure. Provide traction, braking and control the direction of travel. Tyre is the third important cost element after Diesel and Explosives in any open cast mines. The life of tyre is primarily affected by Tyre management practices, Haul Road condition and operational practices, i.e. Loading pattern, driving pattern, Tyre condition etc.

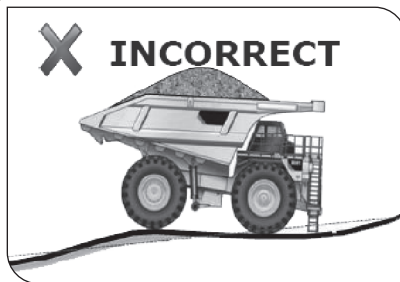
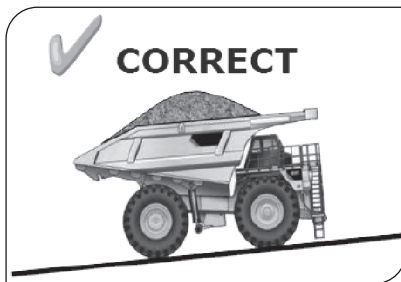
### Tyre management includes:

Tyre selection, Tyre storage, inflation medium, Tyre pressure monitoring, Tyre dismantling and assembling procedure, Tyre matching, Tyre rotation etc. Here we will do comparative study of tyre management practices in Joda East Iron Mine to identify scope for improvement and horizontal deployment of best practices.

### Major Reasons for Tyre Failure:

1. Poor haul road condition
2. Improper loading face
3. Uneven Load
4. Overload
5. Stone trapping
6. Tyre mismatch

1. Haul Road condition:  
Gradient of haul road is a key factor.



2. Loading face should be free of undulations, spillage and boulders



3. Uneven Load



4. Overload



5. Stone trapping: Stone trapping will penetrate up to tyre casing when tyre in running condition, caused tyre failure



## 41<sup>st</sup> Annual Mine Safety Week Celebration - 2023

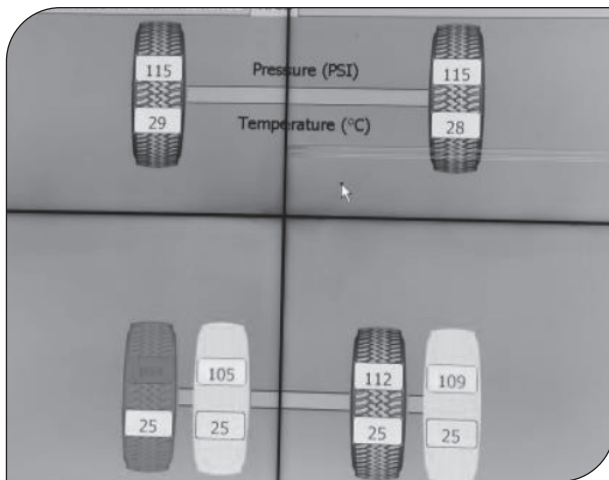
6. Tyre mismatch: It is recommended that tyres fitted on same axle have same RTD and pattern.

### **BEST PRACTICES IN TYRE MANAGEMENT**

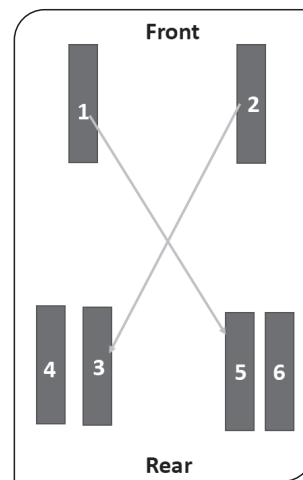
Use of Tyre handler



**Tyre Pressure Monitoring System**



**Tyre Rotation**



- New tyres fitted in front are being rotated to rear inner side after RDT (remaining tread depth) is in range 40 45 mm.
- Tyres in rear are being used till RTD is 20 25 mm after that tyres removed and send for re-treading purpose
- Re Tread tyres are being used at rear side only.

### **Highest Tyre Life achieved at Joda East Iron Mine**



- Tyre Make Bridgestone
- Tyre Size 27 00 R 49
- Tyre No S 7 M 004120
- Application
- Komatsu HD 785 Dumper
- Total Life 17205 Hrs