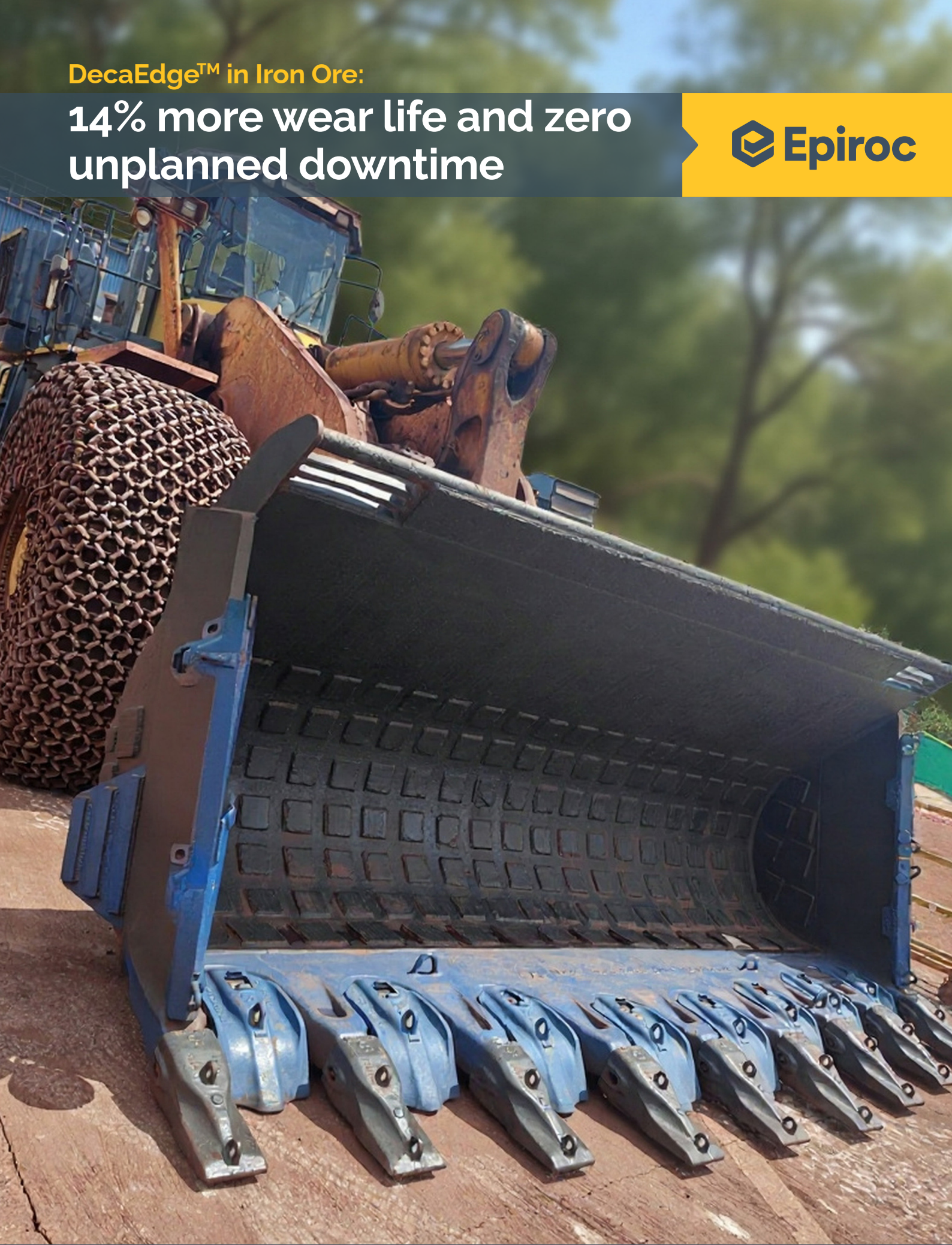
DecaEdge™ in Iron Ore:

14% more wear life and zero unplanned downtime

Epiroc



EPIROC GET CASE STUDY | 2026 | INDIA | IRON & MANGANESE



Meeting the Challenge: Why an Indian Iron Ore Mine Trialled DecaEdge™

Commodity: Iron Manganese | **Mining Method:** Open Pit | **Machine Type:** FEL | **Location:** India

The Challenge

As mining operations seek to improve productivity, equipment reliability and maintenance efficiency, wear performance plays an increasingly important role in overall operational outcomes. At an iron ore mining operation in India in, the site was evaluating advanced cast lip and Ground Engaging Tool (GET) technology for its wheel loader fleet, with the objective of supporting safer operations, higher productivity and more efficient maintenance practices.

The Solution & Framework

Working in partnership with Epiroc's Ground Engaging Tools team, the mining operation initiated a field trial to assess the performance of the DecaEdge™ Cast Lip System under real operating conditions. The system was installed on a WA900 wheel loader operating in the mine's abrasive banded iron formation environment, providing an opportunity to evaluate component durability in a demanding application.

The trial focused on the wear resistance and service life of the tooth points and lip shrouds, with a target of achieving 370 operating hours. To monitor wear progression, measurements were taken across nine tooth positions at four inspection intervals: 172, 303, 380 and 423 operating hours.

This structured monitoring approach provided the operation with data from its own site, allowing performance to be assessed using site-specific evidence rather than estimated outcomes. Beyond evaluating whether the target service life could be achieved, the trial was designed to provide insight into wear patterns, component consistency and the system's potential to support more predictable maintenance planning.

The trial numbers tell the story

The trial exceeded its primary performance benchmark. The DecaEdge™ tooth set achieved 423 operating hours before being proactively replaced as part of scheduled preventive maintenance, exceeding the site's 370-hour target by 14%. The wheel loader completed the trial period with no unplanned downtime. Final measurements across the nine tooth positions showed an average wear level of approximately 29% after 423 operating hours. Wear varied by position, with Position 1 recording the highest wear at 40.2% and Position 9 the lowest at 21.54%. This was also reflected in the wear rates, with Position 1 averaging approximately 0.0964% per hour, compared with approximately 0.038% per hour at Position 9. The higher wear recorded at the outer positions was consistent with greater digging forces and increased exposure to abrasive material during operation.

TOOTH LENGTH VS POSITION TREND

Wear progression at different hours with threshold limit (wear limit 280 hrs)

POSITION	INITIAL (MM)	172 HRS	303 HRS	380 HRS	423 HRS	WEAR % (423 HRS)
1	520	435	355.6	317.5	311	**40%**
2	520	475	381	355.6	353	**32%**
3	520	460	386	355.6	354	**32%**
4	520	460	386	360.6	355	**32%**
5	520	470	406.5	378.4	376	**28%**
6	520	460	406.5	378.4	374	**28%**
7	520	470	419	393.7	389	**25%**
8	520	475	432	401.3	399	**23%**
9	520	460	444.5	411.4	408	**22%**

The lip shrouds also retained substantial material throughout the trial, with the final assessment recording less than 12.1% wear after 423 operating hours.

Overall, the field trial demonstrated extended component service life, measurable and predictable wear progression, and uninterrupted loader operation in the abrasive conditions associated with banded iron formation. Importantly, the wear data also provided the site with practical information to support more informed inspection, maintenance and planned changeout decisions.

Mine site target: 370 Hours	**Achieved Life: 423 Hours 14% greater than target** ✓
GET Replacement	**Teeth changed at 423 hrs for preventative maintenance** ✓
Position 1 Wear	**40.2%, well above wear limit (46.15%)** ✓
Average Wear	**29%; Lip Shrouds <12.1%** ✓
Highest Wear Rate	**Pos 1 - 0.0964%/hr;** Note: Edge teeth degrade faster ✓
Customer Benefit	**No unplanned downtime, extended life reduces cost** ✓



Predictable Wear. Better Maintenance Planning

Extending component life was an important objective of the trial, but the operational value went beyond service hours alone. By exceeding the target service life and completing 423 operating hours without unplanned downtime, the DecaEdge™ system provided the iron ore operation with site-specific evidence of performance under its actual operating conditions.

The planned tooth-set replacement at 423 hours was also significant. Rather than responding to an unexpected component failure or production interruption, the maintenance team was able to complete the changeout as part of scheduled preventive maintenance. This highlights the value of predictable wear behaviour in supporting maintenance planning and loader availability.

Wear monitoring throughout the trial added another layer of insight. Measurements across the bucket identified differences in wear rates between tooth positions, with higher wear recorded at the outer stations. Understanding where wear occurs, and how quickly it progresses, can help maintenance teams focus inspections on higher-wear areas, track component condition and make more informed changeout decisions.

For reliability and operations teams, this combination of extended service life, measurable wear progression and uninterrupted operation provides a stronger basis for planning maintenance around actual component condition rather than relying solely on predetermined replacement intervals.

More broadly, the trial demonstrated the value of combining GET technology with structured field monitoring and close collaboration between the mine and Epiroc. The result was not simply longer component life, but site-specific data that could be translated into practical maintenance decisions and more predictable equipment performance in demanding banded iron formation conditions.



"The real success of this trial wasn't just the extended wear life. It was giving Tata Steel measurable, site-specific evidence that supports better maintenance decisions, sustained equipment availability, and a safer, more efficient operation."

Parla Thirupathi
Epiroc BDM | GET Business

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