Berm Monitoring System

Case Study

Continuous Berm Monitoring: Proactively Managing Risk in Dynamic Waste Dump Environments

The Risk Landscape

In mining operations, waste dumps evolve constantly as material is relocated and deposited. Edge tipping berms, which are critical safety structures along these dumps, are particularly vulnerable to change. Without constant attention, these berms may deteriorate, become non-compliant, and ultimately increase the risk of over-edge tipping incidents.

Traditional monitoring approaches rely on periodic measurements, which are unable to reflect the ongoing changes in windrow conditions. By the time a problem is detected, the risk may already be critical.

The Solution – Berm Monitoring System (BMS)

The Berm Monitoring System (BMS) was developed to close this gap. It offers continuous, autonomous, near real-time assessment of windrow height compliance, transforming how mines manage safety at the edge.

Rather than static, manual checks, BMS delivers a dynamic picture of windrow performance. This allows site teams to respond to emerging risks as they happen, reducing reliance on reactive interventions and significantly improving safety outcomes.

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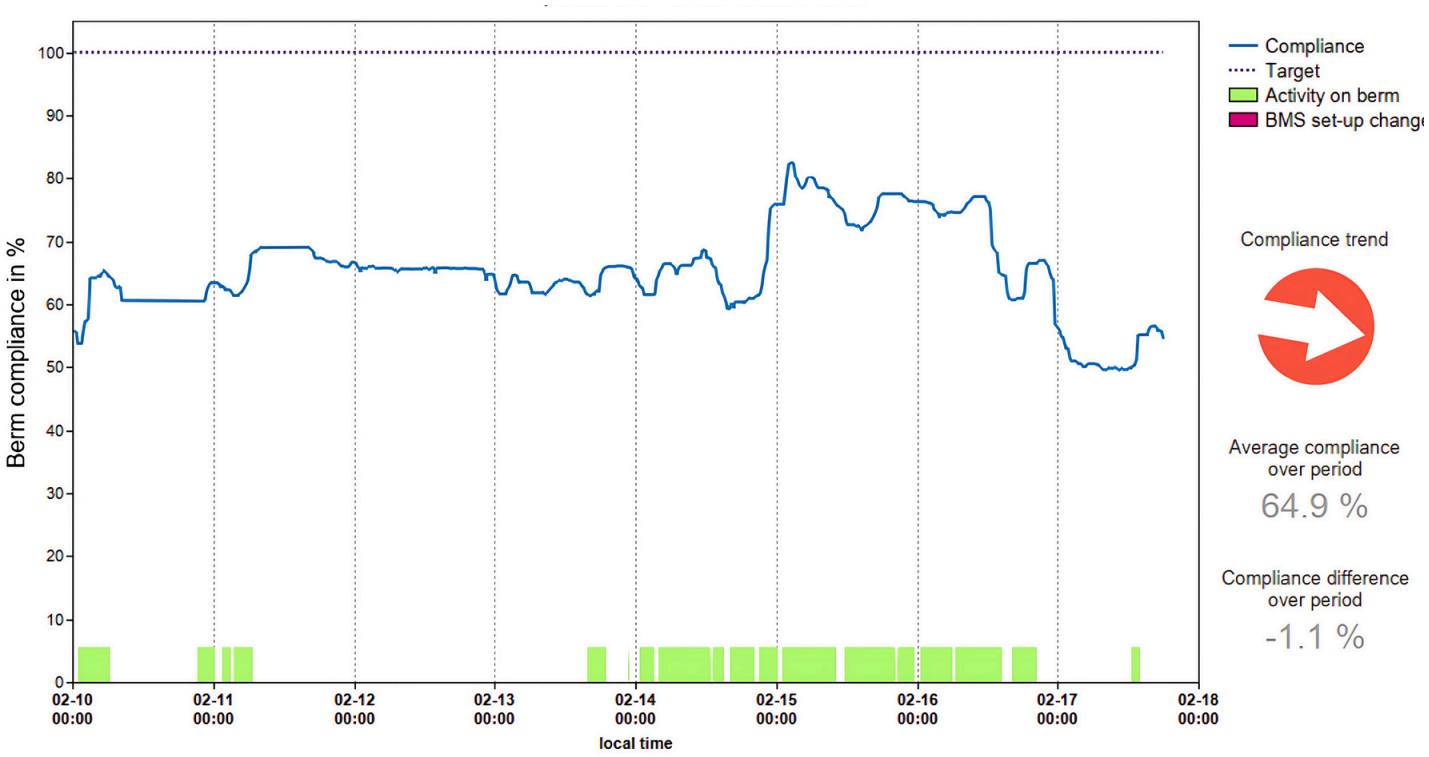
Why Continuous Monitoring Matters

- Proactive Risk Management: Identifying patterns over time helps prevent incidents before they occur
- Automated Compliance Tracking: Continuous assessment ensures that berms remain within regulatory standards
- Operational Insight: Granular data supports analysis of contributing factors such as material placement, visibility, and operator behaviour

Case Example 1: Detecting Decline Before It Becomes Dangerous

BMS trend data often reveals downward shifts in windrow compliance over time. These changes can trigger timely investigations into contributing factors such as equipment availability, operator visibility, material type, or training gaps. With this information, teams can implement targeted corrective actions before conditions become unsafe.



Declining Windrow Compliance

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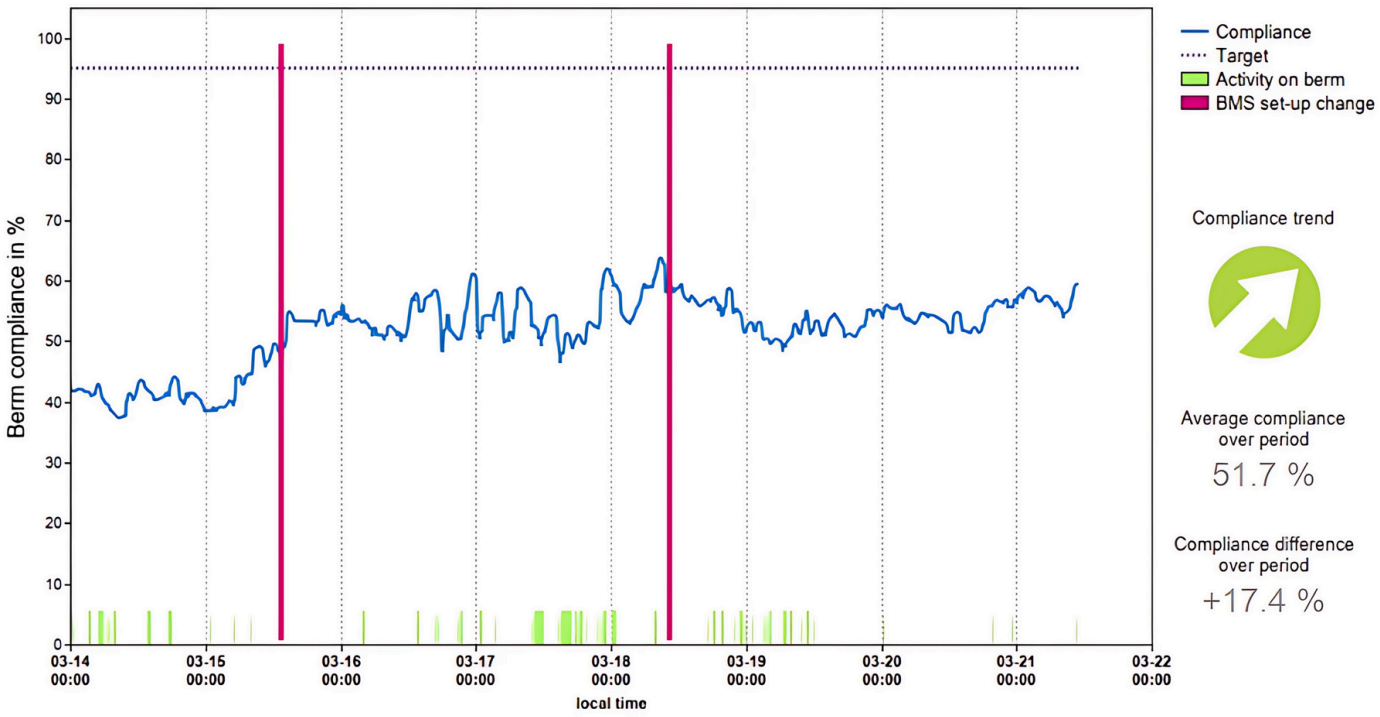
Case Example 2: Tracking and Reinforcing Positive Change

Upward trends in compliance, as recorded by BMS, can be linked to improvements such as better material placement, enhanced visibility, optimised equipment use, or effective training programmes. By understanding these positive drivers, mine operators can replicate successful practices across multiple sites to strengthen overall safety and efficiency.



Improving Windrow Compliance

Operational Benefits and Risk Reduction

Continuous risk assessment through the BMS provides significant advantages:

Enhanced Safety:

Proactive monitoring minimizes the likelihood of over-edge tipping incidents.

Regulatory Compliance:

Maintaining windrow height standards ensures adherence to industry regulations and best practices.

Data-Driven Decision Making:

Continuous analysis allows for targeted interventions and process improvements.

Conclusion

The Berm Monitoring System delivers more than data. It enables a strategic shift in how mines manage windrow-related risks. With real-time insights and trend analysis, teams can move from reactive fixes to proactive planning, ensuring safer, more efficient operations in an ever-changing mining environment.

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