



LASE TVM-3D SYSTEM FOR SURFACE DUMP TRUCK VOLUME MEASUREMENT

LOCATION:

SURFACE MINING OPERATION

YEAR OF PROJECT:

SOLUTION:

2025

LASE TVM-3DM (Truck Volume Measurement - Motion)

INDUSTRY:

Mining - Load & Haul Operations



Accurate and reliable measurement of haul truck payload volumes is a

BACKGROUND

cornerstone of efficient open-pit mining operations. Many operations rely on estimated bucket counts and average fill factors, which can cause production reporting variances and inefficiencies.

The client required a robust, automated solution that would:

- Deliver precise volume measurements for every truckload in real time. Integrate with existing dispatch systems to improve reporting and
- Provide actionable insights for maintenance teams to reduce
- unplanned downtime and crusher blockages.

1. Inaccurate Volume Tracking: Manual calculations and estimates

CHALLENGES:

- were leading to significant discrepancies between mined and processed material. 2. Inefficient Operations: Overloaded and underloaded trucks were
- common, causing suboptimal cycle times and reduced productivity. 3. Maintenance Blind Spots: Truck buckets often sustained damage,
- with loose or peeling panels going unnoticed until they failed, risking damage to downstream equipment like crushers.

4. Safety Risks: Manual inspections exposed personnel to dangerous

conditions along active haul roads.

After LASE TVM-3D

The LASE TVM-3D system was installed along the main haul road to automatically scan every truck as it passed

SOLUTION IMPLEMENTATION

through.

3D LiDAR Scanning: Captures a full 3D profile of every truckload.

System Highlights:

- Real-Time Volume Calculation: Provides instant, highly accurate volumetric data.
- Automated Integration: Seamlessly links with the mine's dispatch system for live production reporting.
- Bucket Condition Monitoring: The detailed 3D scans highlight inconsistencies in bucket shape or liner wear, helping maintenance teams identify damage early.
- corrective actions.

Load Compliance Alerts: Notifies operators when trucks are under- or over-loaded, allowing for immediate

METRIC

RESULTS:

±10-15% (estimated) ±1% (real-time measured) Volume Accuracy Manual spot checks required Survey Requirements Fully automated, no field surveys Frequent surveyor presence near Safety Exposure Zero exposure - fully remote haul roads Visual inspections only, often Continuous automated monitoring Truck Bucket Health missed damage during every pass Bucket panels occasionally fell into Early detection significantly reduces Crusher Risk crusher, causing costly downtime risk of panel failures **ADDITIONAL BENEFITS: MAINTENANCE & SAFETY**

Before LASE TVM-3D

time:

Reduced Downtime: Proactive maintenance scheduling prevents unexpected breakdowns.

Early Detection of Damage: Scans reveal deformation, missing liners, or peeling panels before failure

Crusher Protection: Avoids catastrophic events where bucket panels fall into the primary crusher, reducing

One of the key advantages of the LASE TVM-3D system is its ability to monitor truck bucket health over

- repair costs and lost production time.
- Improved Asset Life: Identifying excessive wear early helps prolong the life of truck bodies and liners.

Higher Efficiency: Optimized truck loading and improved haul cycle times. Enhanced Maintenance Strategy: Data-driven inspections and reduced unplanned downtime.

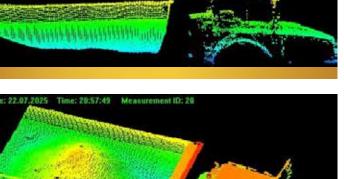
BUSINESS IMPACT:

Safety & Compliance: No need for manual inspections near active haul roads, reducing exposure. Lower Operating Costs: Fewer crusher shutdowns and maintenance callouts.

Improved Production Tracking: Accurate data for better reconciliation and planning.

CONCLUSION

The implementation of the LASE TVM-3D system transformed the client's surface haulage operations by combining precision payload measurement with real-time truck health monitoring. This dual benefit improved production efficiency, enhanced maintenance planning, and protected critical downstream assets like crushers, ultimately



leading to higher productivity and lower operating costs.

