



ENHANCING SALT MATERIAL VOLUME MEASUREMENT WITH LASE TVM AT BOTASH



MINE/PROJECT LOCATION:
Sowa Pan in northeastern Botswana

YEAR OF PROJECT:
2022

CLIENT:
Botswana Ash (Pty) Ltd (Botash)

ORE TYPE:
Soda ash and Salt



LASE
Industrielle Lasertechnik GmbH

CHALLENGE:

Botash faced challenges with the accuracy and reliability of measuring salt volumes transported by trucks. Traditional mass-based measurement methods were affected by environmental factors such as humidity and heat, causing fluctuations in weight readings. The client needed a contactless, real-time, and accurate system to measure truckload volumes under demanding site conditions.

SOLUTION:

Dwyka Mining Services introduced the LaseTVM-3D M system—a LiDAR-based volumetric measurement solution. The scanner was mounted on a mobile trailer and configured to evaluate:

- Ease of use
- System ruggedness
- Real-time and accurate volumetric data
- Contactless, queue-free measurement
- Suitability for extreme environmental conditions

METHODOLOGY:

The POC followed a structured three-phase approach:

1. Pre-Scanning

- Conducted a risk and site assessment to determine safe and effective deployment.
- Positioned the LaseTVM trailer and temporarily installed RFID tags on three trucks.

2. Scanning

- Performed calibrations for the LiDAR scanner and OCR cameras.
- Collected live volumetric data as tagged trucks passed through without stopping.
- Captured visual fill images and LiDAR point cloud scans for comparative analysis (empty vs. full).

3. Reporting

- Compiled data into structured outputs including CSV files, visual records, and LiDAR models.

CLIENT IMPACT:

By shifting from mass to volume-based measurement, Botash gains reliable, weather-independent data and strengthens its material accountability and logistics efficiency.

RESULTS:

Truck Identification

- RFID provided reliable truck ID; OCR was challenged by dusty conditions.
- Trucks were successfully identified as they moved through the scanner.

Volumetric Accuracy

- LiDAR scans precisely calculated the load volumes by comparing before/after scans.
- Real-time CSV outputs allowed integration into Botash's database systems.

Operational Robustness

- The system operated uninterrupted during sunny, rainy, and nighttime conditions, validating its rugged design.

Visual Insights

- Overhead images of each truck provided loading pattern insights, useful for optimizing fill efficiency.

CONCLUSION:

The LaseTVM system proved to be a valuable tool for Botash, offering:

- More consistent and accurate volume-based stock tracking.
- Improved operational efficiency through contactless and real-time monitoring.
- A system that is scalable and adaptable to harsh mining conditions.

