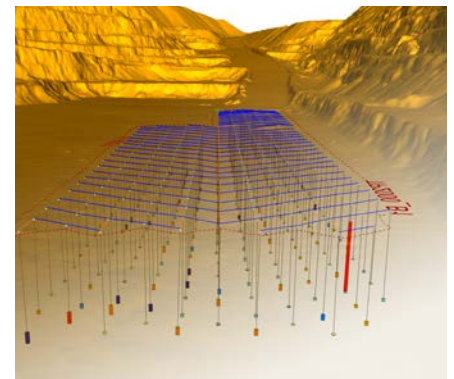
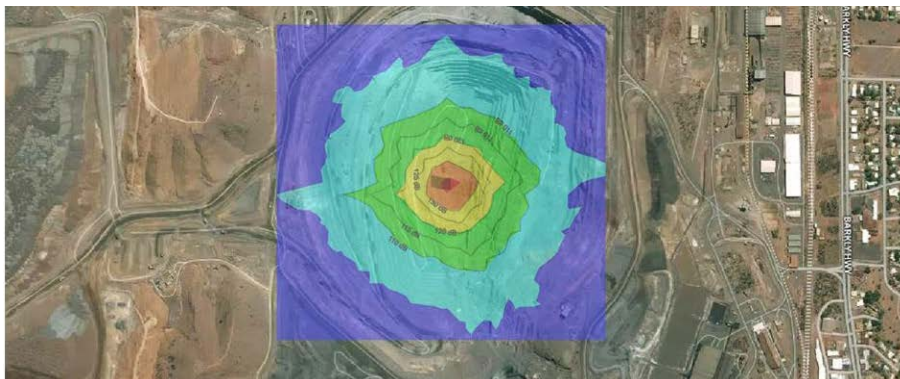


Addressing challenges in drill and blast

Maptek™ BlastLogic™ enhances safety and productivity and allows operations to achieve continuous improvement by integrating drill and blast routines.



The challenge

Increasingly mines need to produce more with less. Streamlining drill and blast routines can improve safety and productivity, and reduce operational costs.

It can be a challenge to disconnect from old methods, but the outcomes are worth the effort.

Paper-based spreadsheets make sharing data and analysing results difficult. Errors are perpetuated when formulas are changed, undermining data integrity.

There is often little time to record much detail, and the lack of flexibility prevents teams from working effectively.

Known issues

Sites know the common issues that are faced on every blast.

1. Difficult areas that are not blasted due to:

- > Holes not drilled to design, missing holes or short holes
- > Excessive fall back
- > Damaged or destroyed drillholes
- > Drillholes not loaded

2. Areas within a shot that are over or under blasted.

3. Powder factors that vary throughout the shot due to inconsistent hole depth and dipping strata.

4. Areas within parting shots or ramps that are not able to be drilled due to geotechnical reasons and/or safety restrictions.

5. Expected dig performance and areas of concern that are not readily identified and communicated, such as known hard sections or areas of toe that cause excavation issues.

6. Poor record keeping and imperfect reconciliation of parameters and performance resulting in fragmented data, tedious data collation and analysis, and ineffective collaboration.

Finding a solution

Finding a better way to address these issues can make a huge difference to productivity. Given the short time between drilling and loading, the system must withstand pressure, which may be extreme when staff numbers are down.

Mines require a responsive and flexible system to perform blast design, dynamically track execution accuracy and make changes on the fly from drilling through to firing.

Further, mines need a simple way to compare historical blasts across operations so that design, execution and outcome can be correlated to support continuous improvement.

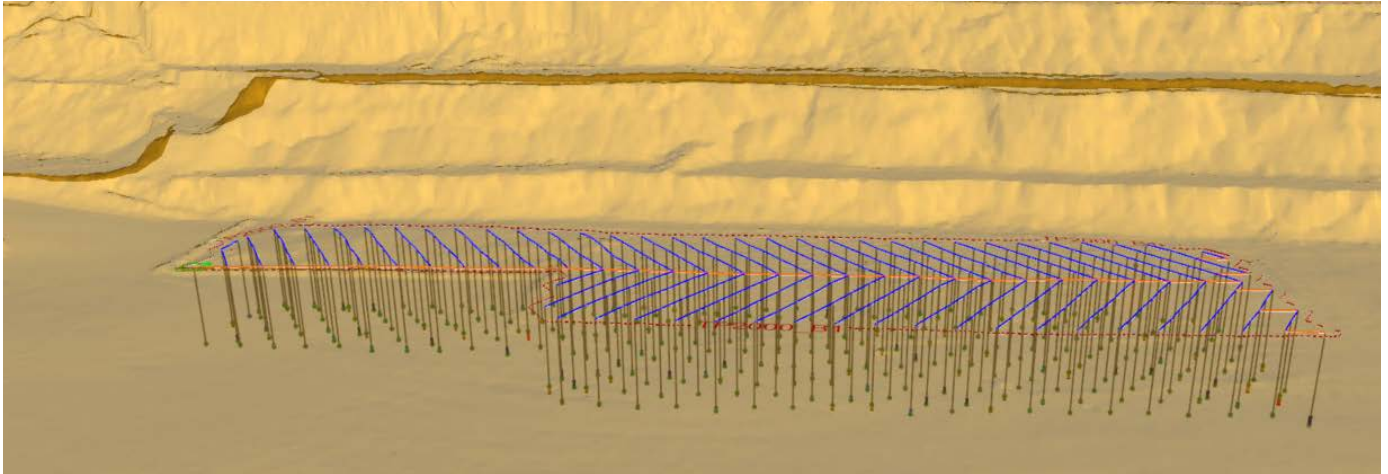
The results

For mining engineer Matthew Lawless, the transition to BlastLogic was the answer for his coal operation. This integrated system was able to drive improved drill and blast performance and accuracy.

Crucially, BlastLogic allows issues to be anticipated and productivity to be tracked in real time.

BlastLogic 3D visualisation and direct connectivity with site drill navigation systems allows engineers to track drill depth accuracy.

Easy reference to known material hardness means that broken ground and areas for re-drilling are immediately resolved before drills leave the bench.



Using the pre-split top of coal data, an accurate coal model for the production blast is quickly created and implemented.

Instant processing of dipping data saves significant engineering time. Reducing the turnaround for load sheets means blast crews are idle for less time. BlastLogic reduces the time between drilling and loading of holes in situations when loading is shadowing the drilling.

The wetness of shot and explosive product used is immediately passed on to blast crews to optimise dewatering and minimise product damage. Short holes which shot crews have decided to bypass remain on the dig plans so operational teams are aware of issues they may encounter during the dig.

Supervisors and operators now persevere in tight digging as they know its extent, reducing the need for secondary blasting.

A set of site-defined charge rules allows hole-by-hole load instructions to be readily created and checked.

Particular holes can be adjusted so that blasting minimises burden around uneven highwall faces.

Decks are automatically adjusted to known soft and hard digging bands, while the powder factor is optimised for all blasting types including through seam.

The actual explosives used are recorded in the field. The process of reconciling actuals to plan is accelerated, and reliable data recording ensures it is accurate.

All of the critical drill and blast parameters are stored in BlastLogic. In the event a blast does not perform as expected, this record provides instant insight as to whether the design was accurately executed.

Importantly, this information is accessible to all stakeholders for transparency and agreement on steps for improvement.

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