African gold mine realised
US$150,000 additional value
in one blast

Commodity | Ore Grade | Geology | Powder Factor | Flitches | Location
---|---|---|---|---|---
Gold | 2.2 g/t* | Structured | 0.85 kg/m³ | 4 | Africa

This gold mine is one of the top producing open-pit gold operations in West Africa.

- Mineralisation is shear-hosted in sedimentary deposits
- Blasts are fired in 10 metre (33 ft) benches and mined in four flitches (2.5 m)
- The site contains high grade (above 2.2 g/t) ore

**Challenges**

Polypipe solution failed to identify significant mid and bottom bench post-blast ore movement

- The site had tried to use polypipe (BVIs) to measure blast movement
- Recovery of the pipes was poor
- Polypipe data did not accurately measure the bulk movement of the blast because the surface moved much less than mid- and lower-bench
- The resulting ore loss contributed to a continued drop in reconciled head grade

**Solution**

BMM System accurately translated post-blast dig lines in all flitches

- Blast movement monitors (BMMs) were installed in monitoring holes throughout the shot
- Installation and detection as per site standard operating procedures
- BMM Explorer software calculated new dig lines for each flitch, and areas of ore loss and dilution that would have occurred without monitoring

**Results**

US$150,000 additional value by accurately accounting for blast movement after one blast

Significant movement occurs within all blasts. Variation of ±50% from the mean horizontal movement is common, and occurs in this blast.

- Measured horizontal movement ranged from 0.3 to 5.7 m (1 to 19 ft) and vertical movement of up to 3.5 m (11 ft)

As a result of accurately accounting for blast movement in one blast, this mine:

- Reduced dilution—1,500’ tonnes of waste were diverted from the mill, avoiding $20,000*** of unnecessary milling costs
- Maximized ore yield—recovered an additional 1,500 tonnes of ore, valued at US$130,000**

* Numbers are rounded
** Average grade of ore polygons
*** Calculated at a gold price of US$1,250/oz.
**** Based on milling costs of $16 per tonne

![Map showing blast movement](image)

Accounting for blast movement in one blast added US$150,000 of value

Post-blast ore loss and dilution varied from 35 – 40% in the top flitch to 40 – 65% in the lower flitches.