

Disseminated gold mine increased value by US\$440,000 in one blast

CASE STUDY

Commodity	Ore Grades	Geology	Powder Factor	Location
Gold	0.6 g/t**	Disseminated	1.3 kg/m ³	Latin America

This operation is one of the top-producing open-pit gold mines in Latin America.

- Polymetallic, producing gold, silver, lead and zinc
- Mines 15 m (50 ft) benches in a single pass
- Mineralisation is contained in quartz porphyries

Challenges

Substantial movement of ore during blast resulted in ore loss and dilution

- Very high powder factors are required to achieve sufficient fragmentation
- Significant displacement of ore during blasting led to poor ore yield
- Large power troughs and heave measurements indicated that the bulk movement of ore contributed to the mine's overall dilution and ore loss

Solution

The BMM System accurately measured blast movement and translated post-blast dig lines

- 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, and areas of ore loss and dilution that would have occurred without monitoring
- Ore polygons were translated based on the measured movement, and the new polygons were provided to the shovels

Results

Value of one blast increased by US\$440,000 through less dilution and more ore recovery

Significant movement occurs within all blasts. Variation of $\pm 50\%$ from the mean horizontal movement is common and occurs at this mine.

- Measured horizontal movement ranged from 14.5 m to 18 m (47 to 58 ft)

By accounting for blast movement accurately, this mine:

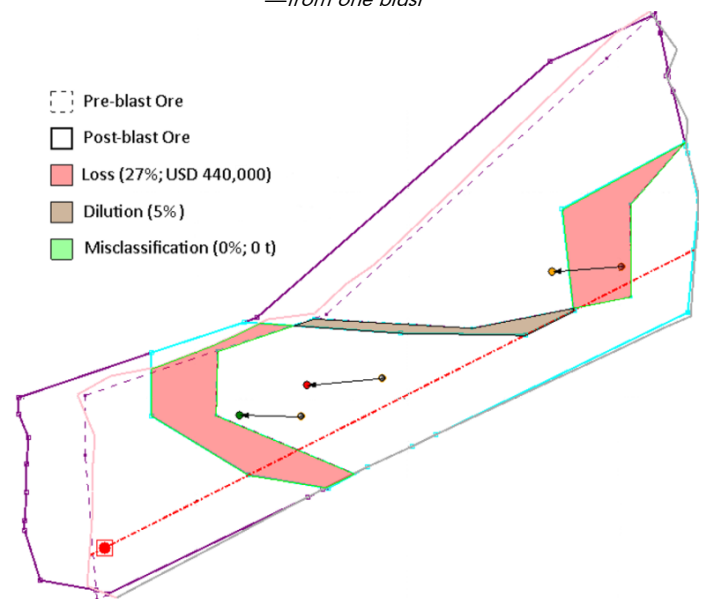
- Reduced dilution by 5%—as 2,500[†] tonnes of waste was not treated as ore
- Increased recovery of gold ore by 27%—32,000 tonnes of ore was not sent to the waste pile. This one blast increased value by US\$440,000^{***}

[†] Numbers are rounded

^{**} Average grade of ore polygons

^{***} Calculated at a gold price of US\$1,250/oz.

*Accounting for blast movement added US\$440,000 of value
—from one blast*



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