

THE AUSTIN ADVANTAGE

LIMESTONE QUARRY
BLASTING OPTIMIZATION
SAVES 24,000KG OF ANFO



GENERAL INFORMATION

Location: Antofagasta, Chile

Industry: Surface Limestone Quarry, Calcium Carbonate

Products Used: E*STAR, Apacord 5p and 10p, Emulex 1 ½16”, Emuline 1 ¼*20 m, and ANFO.

Project Lead & Author: Rafael Díaz – Contract Administrator.

THE HISTORY

The mining operation, owned by Cementos Bío Bío, is based on limestone extraction for cement, aggregates, and lime production. Austin Powder has been responsible for blasting services and managing explosive storage facilities since 2017, achieving a record of zero accidents throughout the years of service.

THE GOALS

1. Study the behavior of the rock mass affected by blasting, with changes introduced by switching to electronic detonators.
2. Standardize fragmentation in the blast pile.
3. Evaluate the performance of KPIs, such as drilling rate, loading factor, and particle size distribution.

THE RESULTS

1. Increase in drill pattern size by 24% to 57%, achieving a theoretical savings of approximately 24,000 kilograms of ANFO during testing.
2. The drilling rate index improved by up to 42%, resulting in an approximate savings of 4,000 meters to be drilled.

CUSTOMER CHALLENGE

To make the final switch in bench blasting from pyrotechnic detonators to electronic detonators.

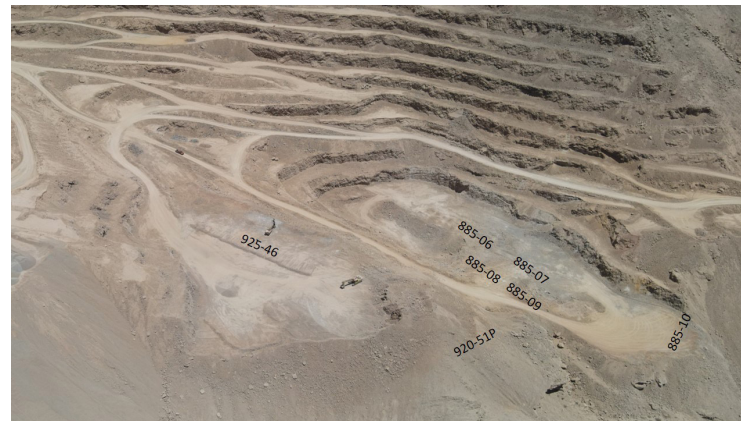
THE AUSTIN SOLUTION

A study was conducted to propose methods that would maintain or reduce the costs associated with explosive consumption while enhancing safety by using an electronic initiation system.

THE OUTCOME

The testing phase concluded with the adoption of an electronic initiation system as the primary method for bench blasting. The final analysis indicated an:

- Increase in drill pattern size by 24% to 57%, achieving a theoretical savings of approximately 24,000 kilograms of ANFO during testing.
- The drilling rate index improved by up to 42%, resulting in an approximate savings of 4,000 meters to be drilled.
- The reduction in loading factor, due to decreased drilled meters, has provided the mine with operational flexibility, allowing shorter turnaround times for drill patterns and reducing the number of scheduled maintenance events on drilling equipment.



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