

TITAN® XL 1000 G Used to Eliminate NOx



Project Summary

VISIBLE NO_x GENERATION WITH EVERY CAST BLAST IS A CONCERN

Cast blasting is used in all areas to assist with overburden removal in this Western surface coal mine. Emulsion/ANFO blends are used and severe NO_x generation is produced in all cast blasts.

Most shots use a 50/50 or 40/60 Emulsion/ANFO blend, depending on water conditions. The mine operator would like to find alternative products that will not produce NO_x.

The goal is to provide value to this customer by reducing NO_x generation while maintaining cast performance.

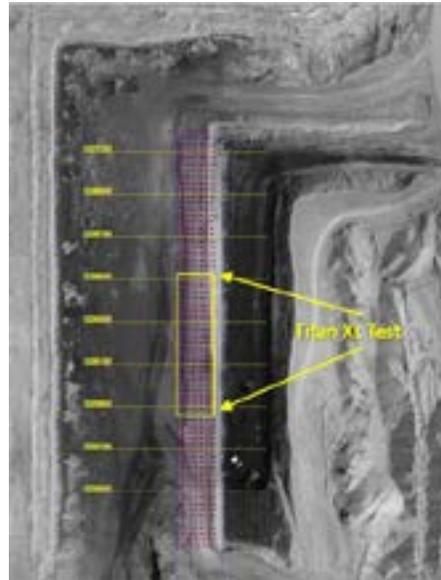
Products that have shown to reduce NO_x generation are typically lower density products than what is often used for cast blasting. The lower density results in less energy and the effective cast benefit is reduced. The goal is to find a product that will shoot clean and evaluate the cost vs cast benefit.

Technology Applied

TITAN XL 1000 G WAS CHOSEN TO REDUCE OR ELIMINATE VISIBLE NO_x

TITAN XL 1000 G is a pumped emulsion explosive that is not blended with ANFO as the density is controlled by chemical gassing. The product is delivered through a hose placed near the bottom of the borehole thus eliminating the need to de-water wet holes prior to loading. TITAN XL 1000 G also prevents water entrapment in the explosive column.

A cast was divided into three sections, with TITAN XL 1000 being loaded in the center section and a 50/50 blend on each end. The cup density of the emulsion was lowered to 1.07 gm/cc, compared to a 50/50 Emulsion/ANFO blend at 1.28 gm/cc. The pattern dimensions were not changed to compensate for the lower density. A drone was used to video the shot so a comparison of the NO_x cloud could be made.



288 Full Cut
Total Prime: 1,169,959
Effective Cast: 491,834 – 42.0%
Total Cast: 955,021 – 47.4%
Rehandle: 65,187 – 5.4%
Average Depth: 78
Total XL Test portion
Total Prime: 508,004
Effective Cast: 189,577 – 37.3%
Total Cast: 222,846 – 43.8%
Rehandle: 35,270 – 6.3%
Average Depth: 78

Results

CAST RESULTS WERE LOWER THAN NORMAL BUT THERE WAS NO VISIBLE NO_x CLOUD FROM THE TITAN PORTION OF THE SHOT

The effective cast was 42% with the 50/50 blend, and 37.3% with the Titan product. This decrease was expected due to the energy/density decrease. This shot was considered a complete success based on a comparison with another product that had been tried in the past.

Next Steps

MORE TESTING WILL BE DONE IN THE FUTURE TO DETERMINE THE COST VS CAST RESULTS OF TITAN XL 1000 G

The drill patterns will be modified to compensate for the lower density. The goal is to determine what pattern would give acceptable cast results with no NO_x cloud, and an acceptable cost.



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