DigiShot® Plus Allows Mine to Increase Blast Holes—Increasing Productivity

Project Summary

INCREASED PRODUCTIVITY BY INCREASING BLAST HOLES
A mine situated in the Timmins Ontario Porcupine gold mine camp was looking to remove as much higher grade ore from the mine as possible. The current approach the mine was taking was not allowing them to blast deep enough into the mine to access the quality ore at an efficient rate. The mine approached Dyno Nobel with its desire to increase productivity through increasing the volume of blast holes in order to reach the higher grade ore in these areas, were at the time, it could not reach.

Background

LONGHOLE BLASTING VS PRODUCTION STOPE BLASTING
Over the past 14 years the mine has been concentrating on taking more longhole blasts vs production stope blasts. However, using traditional pyrotechnic technology the mine was limited on the number of blasts. Dyno Nobel suggested the mine switch over to its DigiShot Plus electronic initiation system. This would allow the mine to increase the number of longhole blasts allowing for better access to the higher grade ore.

Project Goals

INCREASE PRODUCTIVITY
The mine wanted to increase the volume of blast holes along with the tons of rock being blasted all at one time. The idea of increasing the number of blasts would provide more energy and allow the blast to get deeper into the mine. The timing of the blasts were important as well because the rock being blasted needed to be fine in order to reduce mucking time.

Technology Applied

DIGISHOT PLUS ELECTRONIC INITIATION SYSTEM
Making the switch from preforming longhole blasts with pyrotechnics to longhole blasts with electronics would improve the mine’s variable timing sequence, dependability of the blast and overall safety.

Making this change required training for the mining crew on the new initiation system, because of the simplicity of the system the training time was minimal. DigiShot Plus has features such as easy to follow menus taking the blaster through step by step instructions that are very clear and simple to understand. The mine was pleased with how the training process went.

By switching to DigiShot Plus the dependability of the blast was improved because the blaster can test and check the status of the detonator using the hand held. The blaster can also check the blast pattern and compare it to the detonator list. This way if there is a missing detonator the system will give the blaster an error message and the location of the missing detonator.

The electronic timing sequence allowed the mine to program the needed timing to get the most out of each blast. DigiShot Plus allows timing from 0ms–20,000ms in increments of 1ms. With this wide variety of timing options the mine was able to take larger scaled blasts at once without the worry of choking or
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freezing the shot. This allows for better fragmentation from each blast helping to improve mucking operations. This greatly helps the mine cut down on its operating time.

Overall safety was also improved, with the mine being able to take larger blasts at one time. The DigiShot Plus system allows miners to work farther from the brow, in a safe location, while remote mucking. This is because the miners are able to cut out blind corners, which make mucking operations more efficient and safer.

Value Added

EFFICIENT TRAINING, IMPROVED SAFETY, TIMING AND DEPENDABILITY INCREASED MINE PRODUCTIVITY

DigiShot Plus was able to improve the overall productivity of the mine. This easy to use electronic initiation system allowed the mine to perform larger blasts, eliminating small blasts, which helped with rehab work in the stopes. It also helped to improve the overall safety of the mine. Goldcorp Dome Mine was happy with the results and were able to more effectively obtain the quality ore it was unable to reach before.

Results:

- Improved timing
- Increased tons per blast by 100%
- Improved safety
- Better fragmentation
- 50% reduction in mucking time
- Access to more quality ore
- Increased productivity

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