

CASE STUDY

ELECTRONIC DETONATORS TO INCREASE UNDERGROUND PRODUCTION RATES

PROJECT SUMMARY

INCREASING RATES WHILE REDUCING COSTS

Lac des Iles mine, in Canada, was wanting to expand its underground operations and increase its underground production rates. In order to reach this goal the mine opted to switch over to Dyno Nobel's DigiShot® Plus electronic initiation system for all of its production blasting. The mine switched to this system to help make the expansion a reality increasing production while decreasing operating costs.



BACKGROUND

LAC DES ILES MINE

The mine began as an open pit surface mine and expanded to an underground mine. The expansion of the underground mine was to access the Offset Zone and transition operations from ramp haulage to shaft haulage. Through the utilization of the shaft, operations are expected to benefit from increased underground mining rates and decreased operating costs, transforming the mine into a low cost producer with a rising production profile.

PROJECT GOALS

LONGHOLE BLASTING

The mining method at Lac des Iles is long-hole stopes with blast holes approaching 50m (164 ft) in depth. The mine required an electronic detonator with a high tensile strength down-line wire, precise delays, and flexibility both in terms of allowable number of detonators in any given blast and blast duration.

DigiShot Plus was an easy choice for the mine to make. The system met its tough downhole requirements while also providing an easy to use system with minimal

components both underground and on surface allowing users to conveniently tie-in blasts and assign delays. North American Palladium, parent company of the mine, chose DigiShot Plus for the mine expansion knowing it would best take advantage of economies of scale. This initiation system was what was needed in order to meet the mine's production needs while lowering operating costs.

TECHNOLOGY APPLIED

DIGISHOT PLUS ELECTRONIC INITIATION SYSTEM

Dyno Nobel's DigiShot Plus electronic initiation system utilizes a double-insulated down-line wire capable of withstanding tough loading conditions. It has water resistant connectors which provide a physical line of two-way communication. This two-way communication connects with each detonator's electronic chip allowing testability both locally and remotely.

DigiShot Plus allows for up to 7200 detonators to be fired in one to four blast locations with a blast life lasting up to 20 seconds. It also uses software that allows users to assign delays prior to loading for a quick tie-in at the base site.

CASE STUDY

The system is also capable of remote firing from the surface due to its capability to communicate via leaky feeder eliminating the need to run additional lead wire saving both time and money.

VALUE ADDED

GOALS REACHED

The mine was able to achieve its goal of expanding the mine helping to increase production rates while reducing overall production costs. The mine was pleased with the improvements brought by the DigiShot Plus system and look forward to continuing to use this system.

Benefits to the mine:

- Improved loading efficiency due to the tough down-line wire minimizing breaks, significantly improving fragmentation and reducing the need to re-blast oversize resulting in a cost reduction of around 5% in production blasting
- Ability to allow much larger blasts reducing the need for multiple blasts allowing the mine to benefit from economies of scale reducing costs by 10–15% in production blasting
- Simple tie-in and connection notably reducing set-up time by 5–10% in production blasting