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## New Drilling, Blasting Tools to Beat Trending Challenges

By Jesse Morton, Technical Writer

A new generation of drilling and blasting solutions hit the market in H2 2024, and the suppliers have high expectations. And rightfully so. The newest detonators give customers more control and better results when blasting in extreme conditions. The newest rig automation solutions offer more uptime, better results, and reduced rig maintenance. The solutions were developed to meet specific customer needs, like the need to train-up new hires quickly, to drill a pattern rapidly, or to blast in active water or highly fractured geology. The suppliers said the solutions set precedents and raise standards, which is great news for drillers and blast engineers. The solutions all offer safety and sustainability benefits, which is even better news for the industry.

### **EMP-resistant Electronic Detonators**

At MINExpo, Dyno Nobel introduced DigiShot Plus XR wired electronic detonators for extreme shock and EMP resistance. An expert with the company told E&MJ that the solution drew “quite a bit of interest” from engineers and blasters because it meets some of their exact needs.

The detonators are ideal for highly fractured ground, seamy material, or saturated conditions. “For example a sump pump, or for when you are putting in a drop cut for a new pit, where the holes are closer together,” said Baron Fidler, general manager, coal and iron ore accounts.

“You’ve got water conditions that help with that blasting pulse from an adjacent hole travelling faster into an adjacent blasthole,” he said. “When a mine encounters extreme blasting conditions, DigiShot Plus XR may provide a solution.”

Compared to predecessor DigiShot solutions, the detonators feature “a more robust design internally,” Fidler said.

The detonators give blast planners more leeway. “The newest technology provides the blast engineers with more timing flexibility. There is a 30% increase in time delay, up to 26,000 milliseconds,” he said. “They’ve got more options, as needed, to have a longer time period in their blast design.”

Other benefits of use stem from reduced misfires. “DigiShot Plus XR prevents the detonator from failing in extreme blasting conditions. If a primer fails to detonate, it’s a misfire and the mine must deal with the primer that remains in a blasthole,” Fidler said. It gives “better blast outcomes where they don’t have to put equipment and or personnel back into a situation where they are dealing with a misfire or they are dealing with an area that wasn’t blasted properly or per design initially.” Better blast outcomes also means more uniform fragmentation.



DigiShot Plus XR wired electronic detonators give blast planners more timing options

“The biggest benefit offered is the safety component, making sure equipment is not in harm’s way going back in to dig out a misfire or an area that wasn’t properly blasted,” he said. “From the standpoint of efficiency and utilization, their equipment can be used to mine that material.” The detonators can be used with existing Commander and CE4 control equipment. “Operations don’t have to switch out the control equipment and the main control equipment,” Fidler said. “A change in updated and improved software provides the capability for the control equipment to communicate and initiate.”

Development of the DigiShot Plus XR was customer driven. “There was a need for a more robust electronic detonator,” he said. “And so we developed XR as a solution for customer requests, especially under challenging blasting situations.”

The detonators have been deployed to a U.S. operation with a site that “you could say is 100% saturated, where you are blasting underneath the water table and then they are mining with draglines,” Fidler said.

Even in normal operations, “the holes are closer together,” he said. The operation, however, was targeting reserves in exceptionally difficult geology and active water. Previously the site had experienced primer failure. And “it is not necessarily an application where you may switch over the entire mining or blasting operation.”

DigShot XR and DigiShot Plus XRS detonators offered “a solution to mine and recover those reserves,” Fidler said. “They are happy with it,” he said. “So far it has proven to be successful.” Dyno Nobel is currently seeing growing interest in DigiShot Plus XR detonators. Eventually, they could become the supplier’s standard offering, he said.

“Dyno Nobel is always looking for ways to provide continuous improvement to our electronic detonator product line,” Fidler said. “DigiShot Plus XR provides miners with the unmatched safety and reliability they have come to expect from Dyno Nobel.”

*The original Coal Age article can be found [here](#).*

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