Considering the potential of digital technologies: from laser profiling to EIS

Maine Drilling & Blasting’s quarry division has long been on the leading edge of available digital technologies to ensure the highest level of safety and quality in all its blasting operations. The most notable of these technologies is the Bore-Track/Laser profile system. The company uses it routinely to determine the quality of their drilling and the condition of the faces they are loading. It is a proven technology and recognized as being instrumental in the prevention of flyrock incidents and the improvement of the quality of our shots. Maine Drilling & Blasting is now advancing their position as an industry leader in the application of digital technologies by embracing yet another – electronic initiation systems, which have great potential for quarry applications. MD&B has been evaluating major electronic systems over the past 18 months. In some cases, the system is mandated by regulation or permit. There are, however, other sites into which MD&B is implementing the system with great success.

Electronic initiation systems

We all hear marketing claims everyday for products used in our daily lives. Some may be true, some are made simply to entice a purchase. Electronic initiation systems have their own marketing claims and, like any other claim, the personal question is, “do it deliver?” Based on what MD&B is learning from every electronic shot they’ve detonated, the system does indeed deliver. To date, they have employed the system in extremely challenging conditions that include weather, heavy use of blasting mats, proximity to structures, complex blast designs and multiple dequeue applications. According to Todd Harrington, MD&B’s blasting technical manager, “As this article is written, there is an extremely high confidence level in the ability for this type of technology to perform. Given what the system has been put through in the last couple of years, we are sure at a point where we are learning about a potentially valuable benefit not only to us, the user, but to our customers as well.” The benefit and value is known as production efficiency.

“We have had more than one customer tell us unsolicited they are seeing improved productivity from electronic shots that includes loader cycle times and through the plant crushing productivity,” according to Harrington. “Apparently the level of efficiency is such that it is offsetting the higher cost to deploy the electronic system. This concept is one of the primary marketing claims made by the electronic detonator manufacturers.”

While MD&B certainly doesn’t advocate the use of electronic detonators across the board to all their quarry customers, they are keeping eyes peeled for opportunities. Before any implementation, potential candidates are considered carefully to ensure total success and benefit to the customer, and supervisory and management approvals happen before approaching a quarry with the idea. In today’s economic climate, Maine Drilling & Blasting finds it is important to consider the potential benefit for the application of this technology to impact their customers’ production efficiency, so the use of an electronic initiation system is then thought out and planned by a company.

Considering

A case in point

One success story was a blast performed this summer by Maine Drilling & Blasting’s central quarry region at the Iron Industries Dracut, MA, quarry. The planning that went into this particular blast started about two years ago when it became apparent that quarry reserves that were available from an overburden removal standpoint, were running low and MD&B would need to shoot at least 600,000 tons right next to the new 515 million tonner complex.

As Todd Larain, blasting supervisor on the project, said, “At the previous shot, we were about 85 foot from the main face and could look down on the approach ramp from the face. Not a very pleasant situation to be in. To further complicate the blast plan, there is an asphalt plant 225 foot directly behind the quarry. By taking a shot at this size, Maine Drilling would put the quarry’s central region at the burning side of the main gate was so strict that the security guard would not admit to enter MD&B’s quarry division manager, Joe Taber! Once the shot had settled, there was just less than 130,000 tons on the ground, just about 90 percent crushable. Most importantly, there was no rock fall or vibration damage to the asphalt plant. All of the seismographs were well within limits, and there were no complaints from area residents.

Blasting from a regulatory standpoint. The quarry management could not have been more pleased with the whole process and most important, the end result.

Electronic detonator blasting machine

Electronic detonator blasting machine

Pre blast photo of the shot next to the crusher. The shot is not being fired. The security outside the main gate was so strict that the security guard would not admit to enter MD&B’s quarry division manager, Joe Taber! Once the shot had settled, there was just less than 130,000 tons on the ground, just about 90 percent crushable. Most importantly, there was no rock fall or vibration damage to the asphalt plant. All of the seismographs were well within limits, and there were no complaints from area residents.

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Bulk truck and electronic equipment at sunrise ready to load the shot.