



## Primed for innovation

August 2022

*The blasting sector continues to move closer to autonomous operations as sophisticated hardware and software combine, Dan Gleeson observes*

By Dan Gleeson, Technical Writer

### DIFFERENTIAL detonating

Dyno Nobel, an Incitec Pivot Ltd business, has achieved a number of wireless detonator milestones, including blasts using its CyberDet I® solution.

Dyno Nobel Asia Pacific President, Greg Hayne, said: “The CyberDet I technology has been a great success and it’s been really pleasing to hear customer feedback that CyberDet I delivers improved safety and efficiency.”

CyberDet I is designed to allow operators to work in a safer environment during the blast loading process. The technology also facilitates a shorter blast cycle, providing the potential to increase the number of tonnes mined.

“CyberDet I is Dyno Nobel’s through-the-earth wireless detonator offering, developed on the back of customers telling us it’s technology they need,” Hayne said.

Incitec Pivot Ltd Chief Technology Officer, Robert Rounsley, said CyberDet I highlighted the group’s commitment to advanced technology development. “One of the key advantages of our wireless offering is its portable design,” he said. “The flexible nature of our communications antenna provides significant operational advantages for our users.”

The next step for CyberDet I will be further trials in Australia, with several customers already interested in the wireless technology, according to the company.

CyberDet II® is also in the works at Dyno Nobel, as readers of last year’s explosives and blasting feature will know. This “wireless-from the- collar” technology provides both high speed data transfer and no surface tie-in.

All these wireless innovations leverage the DigiShot® platform, which, in 2022, was updated with the new Ranger electronic initiation system.

The diagram illustrates the Ranger Deployment process in four steps:

- VIEWSHOT® BLAST DESIGN**: Download plan to tagger via USB or Wi-Fi.
- ON-BENCH TAGGING**: Assigning time delay to detonator.
- TAP TO ARM**: Pressing the button on the tagger.
- BASE COMMANDER**: Operating the system from a distance of 1.86 miles. Includes a repeater option for areas without line of sight.

Additional features shown include a grid of holes with a 'MAX. 400 DEITS' label and a 'REPEATER' option for areas without line of sight.

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The Ranger system, having a potential application in small-scale mines, comes with a flexible tagging option that allows the user to assign both hole location and delay time at the hole or assign delay times at any time the user prefers. This feature, the company says, enables the user to efficiently adjust the process to their needs, speeding up the tagging process. The user can also change the delay with the press of a button.

The Ranger offers a “tag by plan” option, which provides a pre-designed pattern; the user only needs to align the correct hole with the valid hole number on the tagger. This feature significantly reduces the potential for user error, according to Dyno Nobel.

“Eliminating misfires is crucial to ensuring safety and productivity,” Braden Lusk, President, Dyno Nobel Americas, said. “The Ranger delivers the safety and reliability that customers need by providing both automatic detonator detection and voltage verification in an easy-to-use unit.”

The Ranger system seamlessly integrates with the DigiShot tagger and ViewShot®, providing a complete system for blast optimisation, Dyno Nobel says.

Back in Australia, Dyno Nobel has extended its relationship with Fortescue Metals Group with a six-year performance-based contract to supply the Iron Bridge Magnetite Project in Western Australia’s Pilbara region with DIFFERENTIAL ENERGY™ blasting technology.

The contract commenced in February 2022 and, by mid-decade, could see Dyno Nobel provide 25,000 t/y of DIFFERENTIAL ENERGY emulsion to Iron Bridge.

Dyno Nobel says DIFFERENTIAL ENERGY tailors the explosives energy to the rock properties in a blast hole, resulting in higher energy blasting for harder rock types – such as magnetite – and less intense blasting for softer orebodies, waste and overburden.

In 2019, Fortescue operations managers visited Dyno Nobel’s operations in the Iron Range of Minnesota and Michigan, in the US, where DIFFERENTIAL ENERGY emulsion technology is being used successfully on hard taconite deposits like Iron Bridge’s magnetite orebodies.

Hayne said: “Customers are increasingly coming to appreciate how DIFFERENTIAL ENERGY can reduce downstream capital and processing costs, whilst improving productivity and reducing emissions from blasting.”

**View the entire feature here:**

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