# Minnovare sets sights on development

After rewriting underground production drilling efficiency in the last few years, Hexagon Mining company Minnovare is now set to change underground development productivity with its latest innovation, the Development Optimiser®.

Minnovare has enjoyed enormous success with its Production Optimiser® system in the last five years, with more than 45% of long-hole stoping operations across Australia using the technology.

The system combines hardware and software to improve drilling efficiency and productivity in underground mines. Its OptiBox technology calculates optimum boom dip and dump angles independent of onboard inclinometer systems, reducing blasthole deviation.

Having originally modified the technology from exploration to production, Minnovare now finds itself adapting the system to development drilling as well.

"Where some technology groups develop products and systems in isolation, without speaking to the industry, we take the opposite approach," Minnovare director Mick Beilby said. "Our R&D is done from a market-driven perspective. We engage with our customers and that is what led us to adapt the technology from exploration to production and now into development drilling."

Beilby said discussions with Minnovare clients – which includes the likes of Northern Star Resources Ltd, IGO Ltd, Aeris Resources Ltd and Bellevue Gold Ltd – encouraged to apply the Production Optimiser® ethos to the underground development setting.

"Customers always highlight development drilling as a challenge," he said. "The process is very reliant on the operator's skills and experience. When you don't have both of those, it can lead to poor outcomes – over-breaking, under-breaking or slower advances – which leads to higher costs and slower development."

The Development Optimiser® works in a similar way to its production counterpart. A combination of advanced hardware and sophisticated digital platform enables the drill operator to set and maintain designed drilling trajectory with precision over every hole. The driller sets and locks in target alignment using the Optimiser® and its array of sensors and data analysis software. The system alerts the operator to any deviation, allowing the driller to make immediate necessary adjustments.

"I equate it to providing the scope for a rifle," Beilby said. "If the engineer has designed a heading in a particular direction, the Development Optimiser® ensures the hole is drilled in that exact direction."

Five separate trials have already been conducted on the Development Optimiser® with results surprising even Beilby.

"The trials demonstrated a few things, but in particular they showed a 35-50% reduction in over-break, which means less material movement and significantly quicker rates of advance," he said.

Mick Beilby

As well as the related cost savings and productivity gains, Minnovare believes the Development Optimiser®, like the Production Optimiser®, can deliver users environmental benefits as well.

"Miners are being compelled to meet increasingly high bars regarding ESG reporting so we started to think about how our technology could help our customers,:" Beilby explained. "We engaged ESG consultancy Super Smart Energy to assess and analyse the potential carbon reduction capabilities of the Production Optimiser®.

"That work showed that for the average West Australian underground gold mine, the increased efficiency achieved by using the Production Optimiser® could lead to a 1,000-8,000t carbon reduction. Just 1,000t is the equivalent of taking 300 Hilux's off the road each year. That was staggering to hear."

With the system's emission reduction potential independently verified, Minnovare and Super Smart Energy set about helping miners quantify it within their own operations.

"We have created an emissions reduction calculator for the Production Optimiser®," Beilby said. "Companies can go to the Minnovare website and enter tonnage, grade and a few other details to gather an estimate of the CO2 emissions abated by using the Production Optimiser®.

"There is a very similar value proposition for the Development Optimiser®. By definition, completing development faster with less waste will mean less diesel/energy consumed and a reduced carbon footprint."

As well as Super Smart Energy's assessment, Minnovare has found independent verification from customers themselves.

"IGO has said publicly that it has achieved increased accuracy and consistency at the Spotted Quoll nickel mine and also saw opportunity to reduce carbon emissions using the system. Bellevue managing director Darren Stralowe has said something similar and Aeris Resources has undertaken an in-depth study which showed they were able to reduce underground carbon emissions at the Cracow mine by 12.3%, or 6,200t."

The unveiling of the Development Optimiser® and continued success of the Production Optimiser® has come as Minnovare transitioned to a new era following its takeover by Swedish multinational technology group Hexagon.

While Minnovare now sits under a much larger company umbrella, Beilby said the rollout of the Development Optimiser® was proof the firm had retained its start-up spirit.

"It was something that was definitely a concern when we were negotiating the sale of Minnovare because it was that entrepreneurial spirit that got us to where we were and we didn't want to lose that," he said. "But if you look at Hexagon Mining, it has been built on a series of acquisitions over 10-15 years. They have done a good job building and integrating by keeping the entrepreneurial spirit alive. A lot of those entrepreneurs stayed with the company and if you go into the Hexagon Mining Perth office, many of them are still around, and the company is run like that.

"Being part of Hexagon has given us things we could never achieve alone, particularly the ability to get boots on ground, which was a bit of a barrier to international expansion.

"Overall, they have let us continue to run the business as we always have and the results have been phenomenal, with 70% year-on-year growth."