

“ Using Minnovare’s Production Optimiser™ technology we saw a 75% decrease in blast-hole deviation at the collar. We increased drilled metres by 17%, with the highest average stoperecovery recorded in the life of the mine. ”

Rob Parsons, General Manager (pictured).
Northern Star Mining Services.



NORTHERN STAR RESOURCES

Northern Star Mining Services (NSMS) is the internal contractor for Northern Star Resources Limited; a leading Australian-based gold producer with world-class assets in Western Australia, the Northern Territory and Alaska. NSMS implemented Minnovare’s Production Optimiser system at one of their Kalgoorlie operations in Western Australia in 2018. NSMS General Manager, Rob Parsons, talks us through the case study.



LOCATION: **KALGOORLIE, AUSTRALIA**

YEAR: **2018**

INDUSTRY: **UNDERGROUND MINING**

CLIENT: **NSMS (NORTHERN STAR)**

FOCUS: **LONG-HOLE PRODUCTION
DRILLING**

RIG TYPE: **FLOATING BOOM**

SOLUTION: **PRODUCTION OPTIMISER
SYSTEM**

ISSUES IDENTIFIED ON SITE:

Rob Parsons: “The collaboration with Minnovare initially stemmed from the observation that too much time was being spent redrilling holes. That was one of the issues I saw, and we did some hole surveying that showed the percentage of error increased as the dump of the drill holes increased.

“The other problem we had was the difference between the drills on-board ‘clinios’ (inclinometers). When one drill followed another in a stope, the drill holes could be 2-3 degrees different when the output on the clino read the same. This was the case for drills that were the same make as well as different makes. The drillers would then add or subtract 2 or 3 degrees compared to the plan, based on which machine last drilled in the stope.”

All of a sudden you didn’t know what was actually being drilled because the drillers didn’t trust the output from the on-board system. We were seeing CMS’ that were almost always 12-13 degrees when we were designing them at 10.

“It was most visible looking at the final stope pick up – the actual shape didn’t line up with what you had designed. The drill and blast guys would say ‘do I design my next stope based on the actual shape, do I design it based on the previous hole design’ or ‘do we drill a probe hole to check what the dump is?’ So we were doing extra work to validate where things really were, instead of having it confirmed and recorded by the on-board system.” Rig setup times, bridging and re-drills were other issues that were identified to be affecting.

THE SOLUTION:

Working in close collaboration with NSMS, Minnovare implemented the Production Optimiser system at one of their Kalgoorlie operations - running three long-hole production rigs. The Production Optimiser technology works independently of the rig's on-board systems to deliver greater speed, accuracy and reliability in rig setup. Meanwhile, the Minnovare CORE mobile interface mounted on the rig, automatically records drill data via the inbuilt digital drill plan and plod feature.

THE RESULTS:

"We achieved, on average, 100 additional drill metres per day in the two months immediately after implementing the new technology, due to reduced rig setup time and redrills. **In terms of stope ore recovery, those two months combined were the highest average for the life of the operation.** The increased drill rate and stope ore-recovery, equates to an approximate **3.5% reduction in stope turnover time.** This may not seem like a lot, but if we can maintain **that rate over a 12 month period, that represents about 5,000 additional ounces and ~AUD\$8.4M additional revenue at the current gold price.**"

FUTURE IMPLEMENTATIONS & DEVELOPMENTS:

Following the successful implementation of the Production Optimiser, Minnovare signed a wider 'Technology Collaboration' agreement with Northern Star in August 2018 - laying a pathway for future implementations and the development of new Minnovare technology that will deliver further operational efficiencies. "One of the things we push for at NSR is to be an innovator, and adapt to new technology and change in order to stay at the forefront. When we see technology that can benefit us, we'll say; 'This is it, we're running with it - let's make it work and work with you [Minnovare] to improve and implement it.' That's the culture we reinforce at Northern Star Resources - we do what we say we are going to do."

**REDUCED RIG
SETUP TIME,
IMPROVED
ACCURACY**

**= OPTIMAL BLASTS
= MORE METRES
= LESS RE-DRILLS**

**ADDITIONAL
100 METRES
PER DAY,
ON AVERAGE**

**3.5% REDUCTION
IN STOPE TURNOVER
TIME**

**17% INCREASE
IN DRILLING
PRODUCTIVITY**

**INCREASED
STOPE RATE ADDS
~11 STOPE INTO
THE FY19 PLAN**

**ORE RECOVERY THE HIGHEST IN THE LIFE
OF THE OPERATION. IF OVER 12 MONTHS:
= 5,000 ADDITIONAL OUNCES,
~AUD\$8.4M (USD\$5.9M) REVENUE**

 **PRODUCTION™
OPTIMISER**

