

# Increased Drilling Accuracy Leads to Significant Improvement in Ore Recovery, Dilution and Tunnel Advance.

Author One<sup>1</sup>, Author Two<sup>2</sup> and Author Three<sup>3</sup> (initials and surnames only)

Note: Presenting author's name should be underlined.

1. R. Stimpson

Head of Engineering, Minnovare, Perth, WA, 6000. Email: rstimpson@minnovare.com

2. B. Johnson

Marketing Manager, Minnovare, Perth, WA, 6000. Email: bjohnson@minnovare.com

## ABSTRACT

Between FY2018-20, a series of trials were conducted to compare drilling accuracy using two different methodologies and the subsequent impact this had on stope performance (average dilution and recovery) and development tunnel advance.

Testing was conducted at a series of underground mines in Australia. The drill rig's existing alignment process was compared to a new technology system(s) with the following observations:

- The new technology was proven to limit rig alignment error, thereby reducing average blast-hole deviation, resulting in an increase in the number of holes drilled within tolerance by up to 160%.

The increased accuracy reduced stope dilution significantly by reducing over-break of subgrade ore, whilst also facilitating the capture of previously uneconomical stopes. For example:

- Stopes drilled using the new technology recorded up to 62% less average dilution.

A cost-benefit analysis extrapolated from each of the trials stipulated that the new technology, when applied to a full year's production and development drilling data, represented significant improvements in average dilution, recovery, stope turnover and tunnel advancement rate.

In one case, the mine reduced average dilution by net 45.4%, resulting in AUD8.2M (USD5.9) additional ore recovered, with AUD4.5M (USD3.2M) less spent on wasted cost of haulage and processing of diluted ore. In another, the mine reduced average bridged/stope tonnes ration by 54% for the year.