# THE APPLICATION OF UNMANNED AERIAL VEHICLE TECHNOLOGY TO DETECT BLAST MOVEMENT

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## ABSTRACT

More than 100 mines use BMT® designed Blast Movement Monitors (BMM®s) to measure blast movement, so that ore polygons can be translated to an accurate post-blast digging location. By translating ore polygons to an accurate post-blast digging locations, mines minimise ore loss, dilution and misclassification, and maximise grade and recovered tonnes, which adds tens of millions of dollars to their bottom line.

As part of the monitoring process, mine personnel walk the muck pile to detect BMMs. At some mines, the muck pile can be dangerous because gas, voids and unstable ground create a range of safety risks that require administrative controls. To eliminate these hazards, BMT has equipped a drone with BMM detection hardware to locate BMMs post-blast. Mine personnel are not required on the muck pile, which reduces safety risks and potentially minimises production delays resulting from standoff periods.

This paper presents the UAV-BMM detection results from an Australian iron ore mine, where muck piles are treacherous and personnel safety concerns restrict Grade Control's ability to monitor blast movement.

This combination of technologies not only improves the lives and safety of mining personnel across six continents, but also enables organisations with strict off-the-muck pile policies to accurately account for blast movement and recover the full resource.