

# **Burden Velocity Measurement in Cast Blasting Operations at Mount Thorley Mine Using POWERWAVE Face Velocity Radar.**

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## **Abstract**

Cast blasting has become one of the most efficient ways to move waste rock in open cut coal mining. It is used at Mount Thorley Mine in conjunction with a dragline to move some of the overburden onto the spoil dump.

Measurements on cast blasts are often used to improve blasting techniques, and one parameter which is a good indicator of blast performance is burden velocity. Burden velocity may affect important operating figures such as per cent throw and rehandle. In order that velocity measurements be helpful in achieving more efficient blasts, results must be available fast enough to be incorporated in subsequent blast design. The most common current method of measuring burden velocity is high speed cinematography, but this technique requires much time and effort spent before and after the blast.

POWERWAVE radar has been used to measure burden velocities in cast blasting operations at Mount Thorley Mine. Nine measurements were taken on six consecutive cast blasts over a period of two months, and throw profiles and per cent throw were calculated for these blasts by mine personnel. POWERWAVE was set up on the spoil dump and targeted on various areas of the free face.

Velocity data interpretation was carried out in association with photographs and high speed film, and gave burden velocity results in the form of a velocity distribution graph. This can be analysed to give mean, modal and standard deviation velocities.

This paper describes the method used for measuring and interpreting the velocity distribution. Per cent throw figures and high speed film measurements are compared to POWERWAVE results.