CASE STUDY

Maptek™ helps BHP improve efficiency at Saraji Mine

Maptek™ products help Saraji's operational and planning teams. Saraji Mine, one of 7 owned and operated by BHP Billiton Mitsubishi Alliance (BMA), is located on the western edge of the Bowen Basin coalfields of Central Queensland, 250 km southwest of Mackay.

HIGHLIGHTS

- Operations and planning teams now share accurate and up-to-date survey data
- Speed of I-Site 4400LR operation allows entire scenes to be captured in minutes
- Infrastructure scanned and modelled as part of routine mine survey

Saraji is a multi-seam strip mining operation producing metallurgical coal for export markets. The mine extends north-south over a strike of 30 km, with an average width of more than 4 km.

Saraji produces 6 mt of product coal each year, with enough mineable coal to operate for another 25 years at current rates. The coal seams at Saraji are within the Permian Moranbah Coal Measures and are low volatile bituminous in rank.

Saraji uses strip mining to progressively uncover the coal down dip. Each strip is excavated perpendicular to the dip of the coal to maintain a consistent waste:coal stripping ratio.

I-Site introduces efficiencies

The planning and operational teams at Saraji mainly use Maptek Vulcan™ software which was introduced in 2001. In 2005 BMA began using a Maptek I-Site™ 4400 laser scanner with I-Site Studio™ software to improve their coal reporting process to give a more accurate account of the coal movement from the pit floor through to the customer.

Improved accuracy

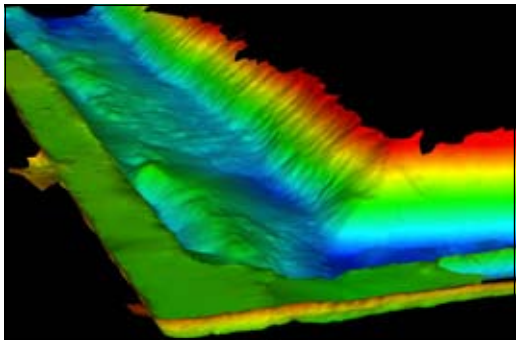
Laser scanning allows Saraji to accurately pinpoint the position of the highwall (opposed to traditional methods of GPS pickups with offsets).

The scanner provides an accurate x,y,z position of the coal interface - the point where the top of the coal seam intersects the highwall.

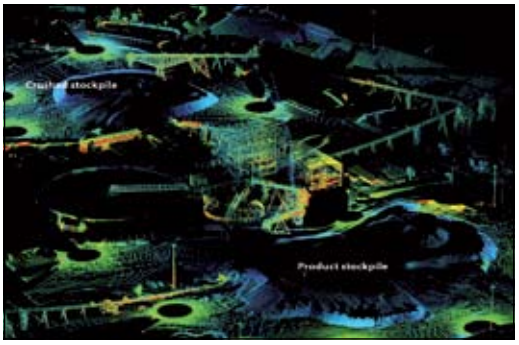
This interface can then be used in dragline designs for the next strip, as welll as to improve the accuracy of the geological model, and the volume calculations for that strip.

The I-Site scanner is used to locate the highwall of each strip once mining has been completed. The speed of the laser scanner, means that the entire strip - low wall, high-wall, end walls, and bench levels - is generally captured. The time difference between completing an 180-degree scan (highwall) and a 360-degree scan is only a few minutes.

An enormous amount of data is collected in a very short period, speeding up field work.



Modelled scans of topography dug by the dragline at Saraji's strip mining operation



The coal handling preparation plant was almost entirely scanned as a byproduct of capturing the crushed and product stockpiles

TESTIMONIAL

Laser scanning has been embraced by the entire Techncial Services and Operational Excellence teams at Saraji.

Engineers are using scans more often. Personnel whose primary task is to analyse data and statistics have observed the simple translation from scanned points collected in the field into usable data for strip designs.

The operator does not have to set up close to the high or low wall so is not exposed to any increase in risk while scanning.

Turning data into useful information

Collected data is very easily converted into usable information for all mine departments. The coal interface can be digitised and exported to Vulcan for the geologists. Along with highwall and low wall crests, the interface is digitised and passed on to the engineers.

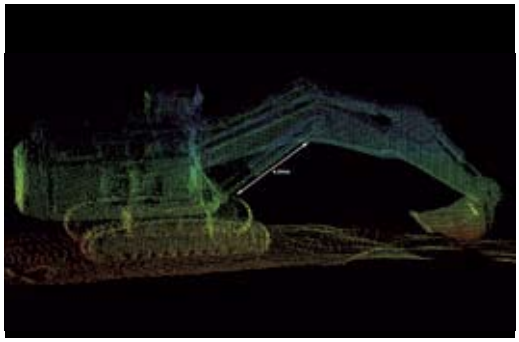
The data collected on the floor can be added into layers to complement survey GPS pickups. In some cases the scanner data is used entirely as the coal pickup. In addition, the low wall spoil can be added to current topographical data.

The speed of the I-Site scanner allows site operators to do a 360-degree scan as a matter of course.

The scanner has also been used for stockpile surveys, highwall and low wall failures, low wall spoil room, geological features (dykes, faults), equipment diagnostics (checking dimensions from difficult to access places), and pre and post-blast profiles.

Scanning the blast profiles allows Saraji to accurately and quickly get data on how effective a cast blast has been, which aids in future drill and blast designs.

Thanks to BMA



I-Site laser scanning allows measurement in difficult situations without increasing the risk to surveyors