MAPTEK™ I-Site™

CASE STUDY

Innovative low-cost enery company chooses Maptek I-Site™ technology

The Maptek I-Site™ 4400 laser scanning system has been implemented by Peabody Energy's North Antelope Rochelle Mine in the Wyoming Powder River Basin. Peabody Energy is the world's largest coal company and an innovative, growing, low-cost energy provider.

Panoramic image of a cast blast, captured simultaneously with scans using the I-Site 4400 integrated high resolution digital camera

HIGHLIGHTS

- I-Site system measures volume of cast blasts more effectively
- User-friendly features key factor in purchase decision

Peabody Energy is the world's largest coal company and an innovative, growing, low-cost energy provider, with 2004 sales of 227.2 million tons and US$3.6 billion in revenue.

Their products fuel more than 10% of all US electricity and more than 3% world wide. North Antelope Rochelle is North America's biggest coal mine, producing 82.5 million tons of coal in 2004. Peabody Energy operated three of the four most productive mines in North America in 2004.

North Antelope Rochelle Mine purchased the I-Site 4400 integrated surveying system to help measure the volume of cast blasts more efficiently.

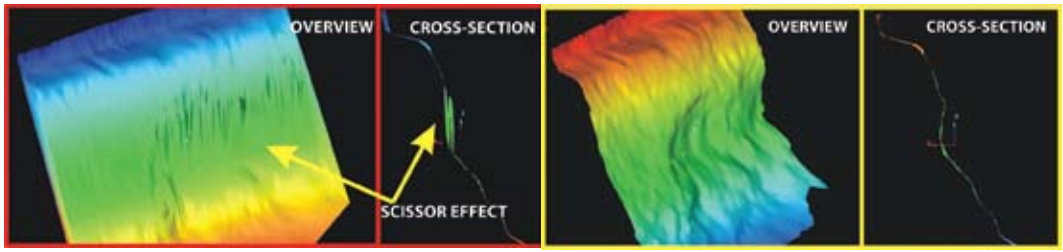
Cast blasts are designed to move large volumes of over-burden – a typical pickup from two setups previously took four hours of field time. With the I-Site 4400, this is now reduced to 30 minutes.

The I-Site 4400 was chosen by Peabody Energy for its user-friendly features.

The digital tilt compensator provides operator confidence in data integrity while backsighting and auto-registration make locating data into a mine coordinate system effortless. This means the surveyor saves time in the field and the office when processing collected data.

Using the I-Site 4400 reduced cast blast pickups from four hours of field time, to 30 minutes, measuring the volume of these blasts more efficiently then before.

The mine GPS system is used to locate the setup position and backsight for each scan. The text file is then imported into I-Site Studio™ software, which automatically locates the scans into the mine coordinate system.



A traditional 2D triangulation does not allow the overhang in the pit walls to be modelled correctly, resulting in a 'scissor' effect on the triangulation surface (above left). I-Site's fusion surface produces a triangulation that accurately follows the true topography (above right).

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Once a model is created, it is then exported into Vulcan as a triangulation file and the blast volume is calculated.

This entire process from field scanning to post-processing is completed in less than one hour, proving the I-Site system is effective and time efficient.

Once the scans are located in mine coordinates, a few simple steps are required to produce the final result. Scans are first filtered with I-Site Studio's minimum separation filter, allowing surveyors to decimate (reduce) the number of points without affecting data quality or integrity.

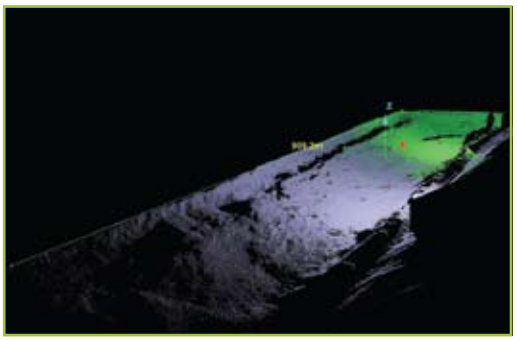
A large filter size will reduce the data too much, while choosing too small a filter will have no effect on the data.

Scans are filtered with I-Site studio so surveyors can decimate the number of points without affecting data quality.

I-Site 4400 scanner and GPS setup at Peabody's North Antelope Rochelle mine

A medium filter of 7 feet (just over 2 metres) between points was determined to be the best size for this type of data.

To model the data more effectively and accurately, I-Site Studio's fusion surface feature is used to create a triangulated surface.



Scanning with I-Site 4400 quickly captures the post-blast scene

A fusion surface takes several scans or triangulations (in this case spherical triangulations) and produces a triangulation that correctly follows the true, or real world, topography.

Once the model is created, it is then exported as a Maptek Vulcan™ triangulation file and the blast volume is calculated using Vulcan also. The entire process from field scanning to post-processing is completed in less than one hour.

Thanks to Peabody Energy