



Scanning
Summer 2010

654,921
642,759
636,678
630,596
624,515
618,431
612,353
606,272
600,191

Revised mine regulation prompts change in surveying approach



Lynell Early and Wes Bertoldi.

When forced to find an alternative method for how its customers' stockpiles of coal and aggregate could be verified, PERC Engineering supplemented its traditional surveying strengths with a GLS-1000 laser scanner from Topcon Positioning Systems. The result has been a new component to its business, additional market possibilities and, most importantly, a satisfied customer.

Changing their mines

PERC's need to seek out an alternative approach was prompted by a mandate from the Mine Safety and Health Administration (MSHA) that mine operators had to ensure the safety of personnel walking on piles of material with reclaim tunnels beneath them. According to Lynell Early, PERC's vice president of surveying, traditional surveying of a client's material piles—many of which did, in fact, have tunnels beneath them—couldn't be done without walking the piles.

Company: PERC Engineering, LLC

Location: Jasper, Alabama

Project: Verification of coal and aggregate piles

Location: Jasper, Alabama

Project Scope: Use laser scanning to provide an alternative method for verifying coal and aggregate volumes

Topcon Products Used:

Topcon GLS-1000 Laser Scanner

Topcon Dealer:

Earl Dudley, Inc.
Birmingham, Alabama
www.earldudley.com

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'In mining applications alone, we can now do the same amount of work with three men as we used to do with three crews.'

– Lynell Early, PERC's vice president of surveying

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"Fortunately for us, we'd been regularly attending seminars that Earl Dudley Inc. in Birmingham, had been putting on, several of which covered the use of Topcon's GLS-1000 Laser Scanner. We didn't know it at the time, but we were looking at the tool that would help us meet our customers'—and MSHA's—challenge."

Topcon's GLS-1000 was, indeed, a perfect fit for PERC Engineering's needs. The unit sends out a laser beam that captures data at 3,000 points per second at a range of 500 ft. to a typical surface, and can offer an extended range to 1,100 ft. for more reflective surfaces. The result of scanning is a dense "point cloud" that can be post-processed to yield three-dimensional [x, y, z] models of the object or surface being scanned

"It was exactly what we needed; we couldn't wait to get familiar with it and put it to work in the field," says Early.

Points for overkill

PERC's first real-time experience with the GLS-1000 can probably best be summed up as "too much of a good thing."

"The first time we went to an operator's site, we shot a 1,000 foot-long stone pile," says Early. "Standard surveying techniques would normally generate 1,500 to 2,000 points. Using the GLS-1000, and ten separate scans, we got more than five million. While that was impressive, we then realized we had to deal with managing that many points to create our model. We quickly found that there's no reason for millions of points when 400,000 will do just fine."

While Early acknowledges that there is more in-office time spent manipulating the data after the scan (compared to a traditional surveying approach), he says the laser scanner produces both a better product and real, measurable savings. "With the scanner



Lynell Early, vice president, PERC Engineering, collects data on stockpiles using a laser scanner.

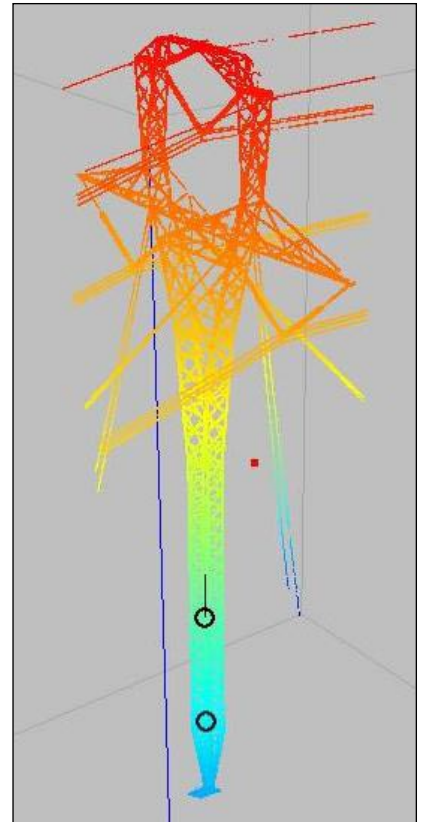
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AT WORK

Revised mine regulation prompts change in surveying approach



LEFT: ERC surveyor Wes Bertoldi opts to access the GLS-1000 via a wi-fi equipped laptop.
RIGHT: Scan of high-tension tower before and after sub-surface mining activity was taken to determine structure movement.



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the accuracy is far better than what we could do otherwise. We are actually getting the shape of the pile; if it gradually curves, we get that."

As to savings, he says that, in mining applications alone, they can now do the same amount of work with three men as they used to do with three crews.

Yes we scan

As impressive as PERC Engineering's experience with the GLS-1000 has been to date, Early says they feel they have only scratched the surface with regards to how they can benefit from it.

"We see a lot of different uses for the scanner in our future in addition to the work we already have. For example, we used it on a project in which a customer suspected that a high-tension tower was subsiding because of mining activities beneath it. Just to be able to give them a representative 3-D model of the results was really a feather in our cap."

He also sees the GLS-1000 as valuable in highway construction projects, utility installation projects, improvements in commercial properties and as part of a municipal GIS effort.

"Being the first in this area to use this technology, we've definitely raised some eyebrows. But we're glad to have gotten into it when we did!"

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Topcon's GLS-1500

Topcon's GLS-1000 has been upgraded to the new GLS-1500 so data can be collected even faster than before.

- 30,000 precise points per second.
- Precise Scan Technology for industry-leading clean point cloud data
- Lens array optics technology to maintain distance accuracy from 1-150 meters
- Additional ranging past 330 meters
- Onboard scan control software stores scan data and images to a standard SD card for easy download
- Eye-safe and invisible Class 1 laser.

