

CONSTRUCTION INSIGHT

The Construction Segment Newsletter

Dozer 2000T System Increases Productivity at Blackwater Coal Mine

The BMA Blackwater Coal Mine in Queensland, Australia, recently concluded successful field trials of an innovative system integrating GPS based machine control and direct radio data link between the home office and the earthmoving machines on the minesite. The system, DOZER 2000T, was developed jointly by Leica Geosystems and Tritronics (Australia) Pty Ltd assisted by the Australian Distributor, C.R. Kennedy & Company Pty Ltd.

Without stepping out of the office, the mining engineer and surveyor have direct radio contact with the machine operator who is working with the bulldozer. Digital Terrain Models (DTM) are relayed directly to the machine, guiding and verifying earth grading by real time GPS and completing



Leica Dozer 2000T System

this task more efficiently, in less time, and with considerable savings across the entire project.

The successful trial by the mining giant BMA (BHP Billiton Mitsubishi Alliance) resulted in an order for 15 Leica DOZER 2000T systems for the Blackwater mine,

and another 19 units for three other BMA mines in Australia.

For some time, BMA have wanted to improve the

Leica
Geosystems

Leica Dozer 2000

The Leica Dozer 2000 combines a Machine Guidance GPS receiver with Computer Aided Design (CAD) software, to allow determination of the exact position of the vehicle in "real time". A screen display in the cab clearly indicates the position of the machine relative to the desired "design" surface, enabling the operator to move left or right, and to cut and fill accordingly.

For high accuracy, a GPS Base Station is established on site, consisting of a GPS receiver and radio transmitter to transmit differential GPS signals to any number of rovers within 10km range. The Rover is mounted on the Dozer, consisting of a GPS receiver (Leica MC500), a ruggedized touch-screen computer loaded with the Leica Dozer 2000 software, and a radio receiver.

Dozer 2000T System Increases Productivity... (continued)



The Leica Dozer 2000T system guides and verifies earthgrading by real time GPS

process of relaying instructions from the office to the various machine operators on site. After an assessment of all dozer systems on the market, BMA approached Leica Geosystems at the end of 1999 to further investigate the Leica Dozer 2000 machine guidance package.

Need for better data transfer

Although the Leica Dozer 2000 worked well during the trial, there was still a requirement for better data transfer.

The normal Leica Dozer 2000 setup meant that data had to be transferred via a PCMCIA card from the office computer to the on-site machine. On a big mine that stretches 64km, this can be very time consuming.

Integrated Mining System

The Blackwater Mine had already been using Tritronics' Fleet Management System, a communications network that allows mine production to monitor machinery throughout the whole mine by use of GPS receivers. After the assessment of the

machine guidance systems on the market, it was decided to incorporate the existing Leica Dozer 2000 package into the Tritronics Integrated Mining System (IMS), connecting the dozer into the reporting system and allowing for the automatic transfer of data back to the office.

Increased productivity and huge savings

The integration of the IMS and Leica Dozer 2000 has demonstrated a considerable increase in productivity, and according to Ian Rogers, Technology and Communications Manager for BMA, the company envisions considerable savings. Most of these savings are generated by eliminating the need for survey staking and reducing the rehandling of spoil.

The job is also made a lot easier for the operators. Information between shifts is shared, promoting more efficient work towards a common goal and eliminating time wasting. Work is also safer, especially at night when visibility is poor. There is now less need for

the operator to get down from the cab to check the equipment or stakes. The Leica Dozer 2000T also provides a warning alert when the design plan is not being followed correctly.

Working smart will also save machinery from wear-and-tear as well as reduce maintenance and fuel costs.

"Ultimately, this is part of a larger program," Andy Davidson, Engineer for the BMA Business Improvement Group said. "The Leica Dozer package is a key element of our long-term success strategy. Demonstrating real benefits from machine guidance technology promotes acceptance, which ultimately starts to change the culture of the business. This is a classic example of working smarter, not harder. You have to do different things, to get different results."

Geoff Baldwin of Tritronics considers the Leica Dozer 2000T project as the beginning of a long partnership with Leica Geosystems. "We are looking to forge a tighter alliance with Leica and hope to promote the use of GPS-based guidance products in the mining industry long into the future."



Mine design software is used to provide details of cut and fill.