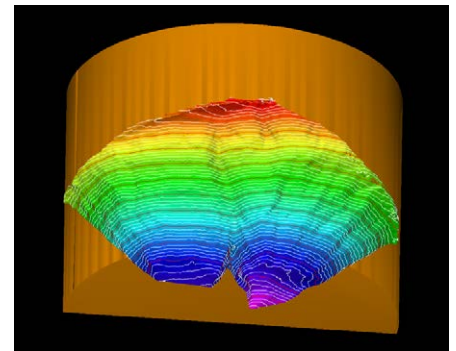
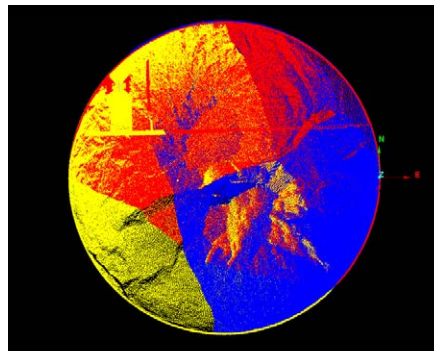
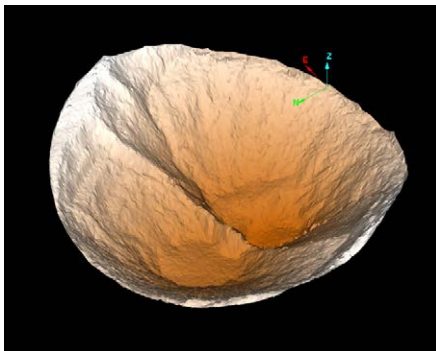


## Modelling cement silo profiles

Surveyors often need to tackle tricky assignments such as measuring volumes of stockpile bins and silos, where physical access is limited.



A consulting project for a manufacturer of cement products resulted in the construction of a mounting bracket so the Maptek I-Site™ scanner could be suspended over a precipice or through narrow openings.

Maptek was called to the Melbourne Cement Facilities site to profile cement inside a silo in order to understand how the silo was emptying.

At the same time, the modelled surface was used to quickly calculate accurate volumes for stocktake.

The silo was 30 m in diameter and 20 m high. The only access was from two hatches 0.75 m square in the roof of the silo. The scanner was mounted horizontally and lowered 0.8 m below the silo roof to gain 100% coverage of the cement surface.

Over three scans, 1.2 million data points were collected. Two were taken from the first hatch, and one scan was required from the second hatch to fill in small data shadow areas.

I-Site technology was used to understand how the silo is emptying and calculate volumes.

The point cloud data was translated and rotated together, and merged using the I-Site Studio scan surface registration tool. Unwanted data (walls and roof) was filtered and a surface was created.

The data was then contoured and the silo shape was created to display the cement surface inside the silo. This data was then sectioned as shown above.

Within two hours Melbourne Cement had a detailed model of how the silo was emptying, demonstrating that a significant amount of material remained on the silo walls and chute. Accurate volumes were easily calculated from the modelled surface.

The brackets are now used alongside vehicle-mounted methods for safe, remote laser scan survey of difficult to access areas.

*First published April 2009*

### Highlights

- Construction of a mounting bracket to overcome site access issue
- Scanner can be suspended over a precipice or through narrow openings
- Safe, remote survey of difficult to access areas
- Accurate stocktake reporting for product reconciliation