

Augmented Reality System for Mining Industry



Maptek, the Australia-based provider of innovative software, hardware and services for the global mining industry, has introduced its PerfectDig software. The solution brings together 3D modelling, laser scanning and handheld communication devices, allowing operations to effectively monitor excavation progress by comparing actual surfaces against designs.

PerfectDig automatically combines mine plans and design information from Maptek Vulcan with laser scans of working areas. Detailed 3D visual and spatial analysis information is provided in near real time, directly to production managers and mine crews. This streamlines communication between surveyors, mining engineers, supervisors and equipment operators.

Pit or shift supervisors can access PerfectDig via smartphone, tablet or laptop, creating a real-time decision support and quality control system for mining. Adjustments can be made before problems arise to ensure efficient overburden removal and maximum mineral recovery.

How this it work?

A Maptek I-Site laser scanner captures surfaces while mining continues - there is no need to stop equipment to scan an area. PerfectDig automatically determines the location and registers the scan data against the mine survey grid. The data is geospatially accurate and up-to-date.

The user then pulls up PerfectDig on a tablet and compares scanned surfaces against the design imported from Vulcan. Different layers can be selected for display so the user can instantly view detailed sections, photos, volumes and other data. Based on specified tolerances, the degree of conformance to plan can be assessed, the excavation can be adjusted and the design updated.

Overlays showing the conformance to plan parameters are then made available via secure online server to others in the organisation - production operators, pit designers, managers and more. In less than 10 minutes the visually rich spatial feedback is conveyed to mine production.

According to Maptek there are immediate safety benefits with PerfectDig. First, there is significantly less need to access working areas by foot for survey and set out of planned works. Second, the high level of detail and measurement accuracy will help ensure wall design batter angles are met and any non-conformities are managed during construction - reducing the risk of problems later.

PerfectDig is a solution to a universal challenge, said general manager for Maptek in Australia, Peter Johnson. How can the accuracy and understanding of mine operations be improved, and conformance to mine design assessed so that production efficiency is optimised from the first cut? This product closes the loop and provides all stakeholders with the detailed information required to track the excavation design conformance at each stage. Better decisions can then be made, when and where they will be most effective, Johnson continued.

PerfectDig makes it easy to quickly review critical data in the field and act in a timely manner to keep mining operations on track. Without PerfectDig, the information to achieve this is either not available, or requires a lot of effort and time to prepare and is presented too late for effective decision making, he claimed. Extensive field trials at major Australian mines have provided hard evidence of the measurable benefits of the system, he added.

Presenting the information on a handheld device, in virtual real time, puts the evidence in front of operations staff in the pit. The augmented reality of PerfectDig allows them to choose what information they see - layers, depths, overdig or underdig, with volumes and measurements at the touch of a button. They can immediately see what needs to be done to conform to design, or where to change the design.