3D Laser Scanning Technology

Rugged hardware and powerful software combined with streamlined workflow for all mine measurement applications.
Maptek systems are the only long range terrestrial laser scanners rated to IP65 to withstand the tough mining environment. Streamlined setup combines with powerful software to deliver the most advanced acquisition of survey grade scan data.
I-Site XR3 laser scanner

The I-Site XR3 laser scanner represents the latest laser imaging technology in a smaller and lighter extra long range survey system. Faster scan acquisition and selectable multi-point returns make this the system of choice for surveyors, geologists and engineers.

The system includes a new, improved high dynamic range panoramic camera. It produces imagery that is ideal for high resolution geotechnical analysis and visualisation. Snapshot imagery is another new feature.

Maptek laser scanners provide the fastest field to finish performance. Acquired scans can be reviewed in the field, so there is no need to repeat work to fill in gaps. Multiple scans can be queued for maximum efficiency. Surface, point and global scan registration ensure accurate results.

The XR3 is compatible with I-Site Drive, Maptek Sentry and Maptek PerfectDig. Modular design allows you to order a configuration to suit your applications.

**Applications**
- Open pit and quarry survey
- Topographic survey
- Stockpile volumetrics
- Monitoring and rockfall analysis
- Design conformance
- Pre/post blast analysis
- Geological mapping
- Geotechnical/kinematic analysis
- Erosion and deformation studies
- Civil engineering survey
- Architecture and heritage mapping
- Agricultural and erosion studies

**New features**
- 25% improved range (2400m max.)
- 25% lighter
- 30% smaller
- 50kHz, 100kHz, 200kHz acquisition rates
- High dynamic range panoramic camera
- Snapshot imagery
- Selectable multi-point returns

**Hallmark features**
- Range accuracy of 5mm and repeatability of 4mm
- Automated, streamlined survey registration
- IP65 protected for tough conditions
- Ergonomic industrial design
- Integrated standard controls
- Flexible system configuration
- Production facility with ISO 9001 quality certification
The I-Site LR3 is 30% smaller and 25% lighter, with 2.5 times faster data acquisition than the earlier I-Site 8800 series. The system is protected to IP65 for reliable operation in rugged environments.

The system includes a new, improved high dynamic range panoramic camera for better digital panoramic imagery. This produces high resolution images for geotechnical analysis and visualisation.

The I-Site LR3 laser scanner possesses the hallmark survey workflow that helps boost productivity for mines, quarries and civil engineering projects. Matched with dedicated software it generates accurate survey deliverables for civil, forensic, architectural and infrastructure applications.

Integrated software and hardware provide the optimal workflow, tailored for mining, civil engineering, bulk handling and quarry operations. Fast, accurate processing provides the deliverables for stockpile reconciliation, CAD drawings, as-builts and 3D modelling.

Maptek laser scanning systems can be set up on a tripod or mounted on a vehicle for stop-go or continuous survey. The LR3 laser scanner is ideal for stockpile and infrastructure survey.

A modular design allows sites to order a configuration to suit their application.

**Applications**
- Medium and small open pit survey
- Quarry survey
- Topographic survey
- Indoor stockpile volumetrics
- Civil engineering survey
- Architecture/facade mapping
- Agricultural and erosion studies
- Design conformance
- Geological mapping
- Geotechnical/kinematic analysis
- Forensic applications

**New features**
- 25% improved range (1200m max.)
- 25% lighter
- 30% smaller
- 50kHz, 100kHz, 200kHz acquisition rates
- High dynamic range panoramic camera
- Snapshot imagery
- Selectable multi-point returns

**Hallmark features**
- Range accuracy of 4mm and repeatability of 3mm
- Automated, streamlined survey registration
- IP65 protected for tough conditions
- Ergonomic industrial design
- Integrated standard controls
- Production facility with ISO 9001 quality certification
The I-Site SR3 is a dedicated laser scanner for underground survey and monitoring applications. The optional internal 147MP HDR panoramic camera produces superior digital imagery for geological and geotechnical analysis and high impact visualisation.

Software tools and hardware accessories have been developed alongside the scanning equipment, allowing operations to accurately report 3D survey data for voids, drives and tunnels. The SR3 is ideal for geological and geotechnical applications, with the 80° field of view camera window beneficial for close range wall imaging.

The SR3 can be set up on a tripod, mounted on mine vehicles or equipment, or attached to a custom boom for extension into stopes, caverns and hard to reach places. It is rated to IP65 for reliable operation in wet, corrosive conditions underground.

A wide scan window captures roofs and walls in tunnels and underground drives without the need for complicated configurations. Whatever the orientation of the scanner, integrated levelling automatically corrects scans before processing.

The wirelessly connected tablet PC allows users to define scan parameters, resolution and scan rate, as well as create and name files using standard survey conventions.

Applications
- Underground survey of stopes, drives, tunnels, voids, stockpiles
- Pick up development headings and map faces and backs
- Reconcile stockpile volumes
- Survey of shotcrete and rock bolt installations
- Geological face mapping
- Geotechnical analysis

New features
- Range up to 600 metres
- 25% lighter and 30% smaller
- 100kHz, 200kHz acquisition rates
- High dynamic range panoramic camera
- Snapshot imagery
- 130° vertical scanning aperture
- Selectable multi-point returns

Hallmark features
- Range accuracy of 4mm and repeatability of 3mm
- Rated to IP65 for reliable operation underground
- Range of mounts for mobile scanning
- Extendable carbon fibre boom for scanning difficult to access areas
- Integrated software for fast results and accurate models
Maptek I-Site Studio offers all the tools to successfully apply laser scanning to survey, geotechnical and engineering tasks within the mining, civil, quarry and forensic industries. The software improves efficiency, productivity and workflow.

I-Site Studio integrates data from high performance laser scanning instruments with conventional survey and mapping. Surveyors can complete tasks efficiently, with a workflow matching many common survey applications.

I-Site Studio combines a user friendly interface with 2D and 3D modelling options. Outstanding processing power handles large datasets with ease and ensures fast and accurate deliverables for mining applications.

**Features**
- Generate high resolution images of data
- Global registration registers multiple scans and objects together
- Repeated acquisition and averaging to improve data accuracy
- Fully interactive rotation, zoom and pan of view
- End-of-month pit update tool integrates new scan data
- Intuitive CAD tools for working in 2D and 3D
- Easily register data to coordinate systems, including local mine grid coordinates
- Common formats for seamless export to other packages

**I-Site Void**
Modelling and CAD tools for underground survey applications

**Applications**
- Calculate volumes between surfaces, within a void, and between solids
- Register, model and extract CAD from surveyed drives
- Visualise, map development headings
- Create solid triangulations, check and fix triangulations, join drive intersections

**Tools**
- Locate scans from GPS
- Design points, lines and polygons, create contours and section lines
- Topographic, minimum separation and range filtering
- Apply colour schemes to highlight areas of interest
Geotechnical Module
Powerful tools for analysing structures and performing kinematic analysis

- Extract discontinuities and analyse persistence across structural domains
- Customisable, interactive stereonet
- Waviness tool for stability analysis
- Full kinematic analysis for planar, wedge and toppling failures

Reporting Module
Automated workflow and fully customisable templates for productive reporting

Volumes
- Apply base surface, stockpile surfaces and polygons
- Generate volumes for multiple regions
- Attach photographs, documents

Design Conformance
- Compare design surface to as-built and other surfaces
- Summarise sections, report on underdig, overdig and percentage of volume variance by block

Resource Recovery Module
Report on loss and dilution volumes for strip mining

- Report on loss and dilution and compare to actual surfaces
- Export and report on thickness
- Report on tonnages
- Summarise sections with summary of results

Geology Module
Intuitive tools for defining geology directly from 3D point cloud data

- Split surfaces into separate facet networks
- Apply pattern to denote rock types
- Extract new surface based on digitised polygon
- Colour surface by polygon to define geology

Underground Reporting Module
Compare design solid with an actual surveyed solid to identify overbreak and underbreak

- Apply to development drives, stopes or cross cuts
- Improve grade dilution and highlight unstable areas
- Reduce costs by identifying unnecessary development and pre-blast issues
- Summarise over/underbreak as volumes, mass, thickness and area
Flexible site survey
Mobile laser scanning improves efficiency of survey tasks and reporting of results.

Mobile survey

I-Site Drive allows the continuous acquisition of laser scan data, using a Maptek laser scanner mounted on a moving vehicle. Mining, quarry and civil operations can quickly measure stockpiles for reporting and comparing daily or weekly volumes.

The Inertial Navigation System (INS) allows the laser scanner to acquire data continuously and automatically assigns real world coordinates to the data, ready for processing. Continuous or stop-go survey modes can be deployed.

Captured data can be viewed on the tablet PC in real time. Easily identify missing scenes and re-survey the area while in the field.

Maptek laser scanners can also be mounted and transported on common site vehicles for stop-go scanning without the INS.

More efficient use of time and resources, faster setup and greater coverage over undulating ground combine to increase survey productivity and safety.
Maptek Sentry is a risk monitoring solution for slope stability and underground convergence measurement and assessment.

Sentry combines a Maptek laser scanner with sophisticated software to cost-effectively monitor, analyse and report on rapid and gradual movements that have the potential to interrupt mining projects.

Sentry is quick and simple to setup and operate. Users can easily define monitoring frequency and alarm thresholds to meet strategic design and operational planning needs, allowing critical information to be sent to geotechnical staff or mine managers for managing site safety.

Periodic wide area monitoring using a laser scanner set up on a tripod, wall mount or bollard allows operations to quickly capture large scenes to identify dedicated monitoring requirements.

Continuous monitoring can then be deployed where conditions pose the greatest risk, providing real-time accurate data to guide safety management programs.

The high resolution laser scan data can also be modelled and analysed in I-Site Studio, offering a comprehensive suite of tools for geological mapping, geotechnical analysis, volumetrics and mine survey applications.

**Advantages**

- IP65 rated hardware to handle harsh mining environments
- Simple and intuitive software user interface
- Highly modular hardware for changing deployment needs
- Flexible operation, power and mount options
- Easily defined alarming rules and notifications
- Co-registered photographs and infrared image overlays
- Use high-resolution 3D point cloud data for geological mapping, geotechnical analysis, volumetrics and other mine measurement applications
- Access to experienced, Maptek global technical implementation and support
Maptek PerfectDig is intuitive software for evaluating and supporting design conformance. It takes 3D digital image data and compares it with a mine design to generate scenes that clearly show areas of conformance, underdig and overdig.

PerfectDig Field works with ‘real time’ data from an I-Site laser scanner. A ruggedised tablet has an easy to use interface for immediately comparing mining to design in the field and creating conformance reports.

PerfectDig Office uses existing I-Site laser scan or surface data and compares this with the mine design on a desktop computer. Users can create conformance reports with an easy-to-use wizard interface and share results online.

**Advantages**
- Actively monitor excavation and increase mineral recovery
- Scan and view scenes while excavation continues
- Access to real-time conformance of designs to as-builts
- Capture digital history and review to understand mis-conformance
- Increase highwall, bench safety from improved wall stability
- Set thresholds to review progress and better manage resource
Industry Leading Global Solutions

Maptek is the leading global provider of innovative software, hardware and services for the mining industry. More than 2000 customers in 75 countries rely on Maptek.

Our solutions help reduce operating costs and improve performance, productivity and profitability. Maptek provides expert consulting, training and support services to ensure you get the most from your investment in our products.

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