# OPEN PIT MINE MONITORING SYSTEM

A laser-measurement-based monitoring system for long-range profiling of

- **open pit mines** (volumes computation, rock movements, worker safety);
- **natural hazard areas** (rock falls, landslides, debris flow, glaciers);
- **construction sites** (infrastructure deformations, workplaces).

OPMMS automatically performs **continuous remote scanning** from designated permanent sites, comparing the obtained scans to a reference one and identifying **displacements and changes**.

Within the inspected region, manual on-the-fly analysis and output (statistics, inspection maps, classification charts, displacement and displacement rate graphs across time intervals) are possible. **Alerts and customisable notifications** are sent via Email and SMS.

OPMMS is a monitoring solution consisting of processing software built into a dedicated control unit. OPMMS works with long-range terrestrial laser scanners[1].



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OPMMS is a **monitoring solution** that works with long-range TLS[1] and consists of a rugged control unit incorporating powerful processing software.

OPMMS compares the acquired scans to a reference one and detects **displacements** and **changes**. Full control of acquisitions frequency.

OPMMS gives you the possibility to create a **permanent setup** with multiple regions of interest (ROIs) at different resolutions.

OPMMS allows further data investigations, such as **volumetric computations** or planning and analysis of excavation processes.

# BENEFITS

**Keep under control movements of surfaces**
Customize monitoring frequency and set notification thresholds, identify trends and watch multiple areas. Automatic notifications via Email and SMS[3].

**Manage risk and safeguard workers, underlying potential dangerous areas**
Safely survey pit high walls, rock falls, landslides, and glaciers. Risky areas are reported to the supervisors who can plan further onsite analysis with geotechnical teams, engineers and topographic surveyors.

**Check mines productivity**
Compare accurate volumes and get the areas' 3D models.

**Reliability**
Maintain 24/7 surveillance in harsh situations to ensure safe mining operations.

# STRENGTHS

- Automatic slope monitoring.
- Alert notifications via Email and SMS[3].
- Intuitive monitoring parameters setting.
- No reference targets required.
- Setting of multiple ROIs to analyze multiple areas.
- Free reference scans setting by an interactive timeline of previous acquisitions.
- Comprehensive dashboard with statistics of changes and trends.
- Safe storage of monitoring 3D data.
- Direct connection with tools for deferred analysis (volumetric computations, profiles, cross-sections).

# MAIN FEATURES

- Easy setting of scanning agenda.
- Automatic identification of changes in multi ROIs[2] based on user defined thresholds.
- Display the changes of the areas over the time.
- Email and SMS[3] alert notifications when changes overcomes the user-defined thresholds.
- Remote access to the changed areas display[4].
- Mask function to exclude areas where moving objects can interfere with the change detection.
- Customizable scheduler function to perform periodic lidar acquisitions.
- Possibility to select intermediate reference scans along the time sequence.
- Possibility to review the monitoring sequences in time.
- Possibility to setup multi monitoring ROIs.
- Configurable thresholds and alerts.
- Automatic alignment between sequential scans (control points not required).
- Post processing analysis by Reconstructor software.
- Reliable storage of internal database and 3D scans.

(1) For TLS compatibility, please contact us.
(2) ROI: region of interest, rectangular viewpoints where the lidar periodically acquires 3D data.
(3) Email alerts included. Alert text messages are provided on-demand and subject to the availability of a text messaging local service provider. Subscription fees and traffic costs are not included.
(4) Possibility to set up remote access to the OPMMS control unit to display the changes from remote PCs connected to the same subnet.

# MAIN APPLICATIONS

Automatic Long-range Profiling | Automatic Alerts
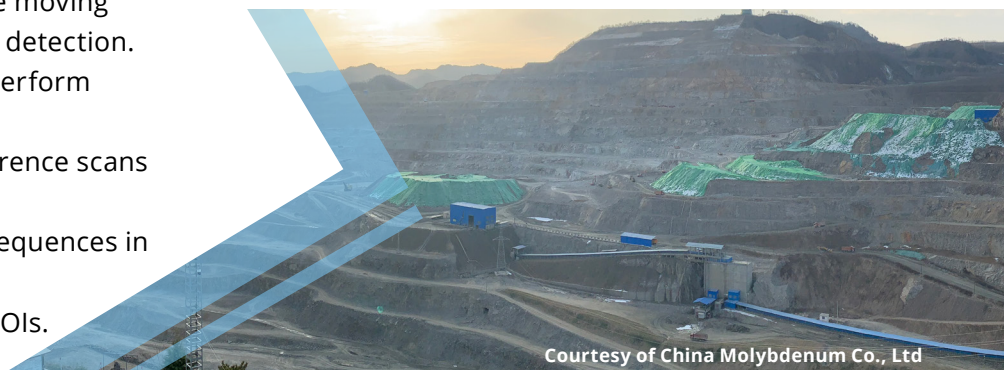
Production Planning | Landslides Monitoring

Rock Falls Control | Volumetric Computations

Workers' Safety | Blasting Analysis | Rock Movements



**Courtesy of China Molybdenum Co., Ltd**

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**Reconstructor®** ADD-ON
**Advanced 3D point cloud analysis software**

You can add Reconstructor to your OPMMS and get:
- Complete post-processing workflow for Lidar data from tripod, handheld, mobile sensors and UAV 3D point cloud.
- Powerful automatic target-less scans registration.
- Data export in several standard formats.
- Full compatibility with several third-party software and cloud platforms.
- Point cloud editing, color camera calibration, mesh and DTM generation, volume/cut&fill volume calculations, cross-sections and profiles extraction.

Official distributor contact:

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