Title: Integrated 3D laser scanning implementation for monitoring tailings dams

Author: Patricio Monreal L., Senior Engineer Laser Scanning, Maptek
patricio.monreal@maptek.cl

Stream: Stability of tailings dams, and tailings run-out and impact

Tailings dam incidents in recent years have forced the industry to consider the associated risks regarding the efficient operational management, together with the environmental and safety impact that a collapse can trigger.

The impact of tailings dams failures has ramifications at any stage of a mining operation, including after remediation has been carried out, and makes it an absolute necessity to establish strict monitoring and control of the dam walls and fault alarming.

This paper will present how an integrated system, implemented through the application of 3D laser scanners and dedicated software, can deliver improved safety outcomes both in controlling the monitoring of the stability of tailings dams and in their operational management.

The 3D laser scanning approach provides a decision support system that aids professionals to manage geotechnical risk and monitor in real time, as well as report movements caused by slope instability that could interrupt mining activity and cause material and human losses.

The integrated hardware-software system captures and reports on data critical to slope stability monitoring. It can inform operations about millimetre deformations from baseline measurements at critical points of the dam wall, and allows geotechnical engineers and management to perform back-analysis and receive predefined alerts instantaneously. Operations can also monitor the changes in surfaces as remedial work is carried out, providing a risk management tool that ensures safety of equipment and personnel.