IDENTIFYING INSTABILITIES AUTOMATICALLY
USING TIMINING TANGRAM

Mine:
Sierra Gorda SCM
Owners:
KGHM International, Sumitomo Metal Mining & Sumitomo Corporation
Location:
Antofagasta Region, Chile
Production:
COPPER 120kton (2018) **MOLYBDENUM** 15M Lb (2018)

OVERVIEW

Identifying and predicting the formation of instabilities is essential at Sierra Gorda SCM for boosting safety and operational continuity. During the first half of 2019, the mine was trying to find a way to fine-tune this process because manually selecting structures and visually identifying instabilities was very time consuming. This was also preventing the company from conducting more in-depth stability studies and obtaining timely information.

SOLUTION

With support from TIMining, Sierra Gorda's geomechanics team began applying TIMining Tangram software to its processes in order to automatically detect georeferenced instabilities. It was then possible to:

• Centralize structural information in a database that combines historical structural data with new survey information from Timining Tangram.

• Have a 3D view of the different zones in the pit, broken down by structural domain, and then spatially select the structures they wanted to study.

• Automatically detect georeferenced instabilities and study them in terms of the mine's criticalities and SF.

• Assess different design alternatives by increasing the berm width of key zones in order to contain instabilities.


ANALYSIS BY STRUCTURAL DOMAIN

IMPACT

By automatically detecting georeferenced instabilities you are able to reduce your worktime by **90%,** e.g., **from one week to half a day.** This frees up the geotechnical engineers' time for other tasks, such as:

• Centralizing all the site's structural data in one tool.

• Identifying the structural sets associated with unstable blocks in each zone.

• Identifying future instabilities by simulating key structural sets.

• Increasing the probability of identifying instabilities.

• Boosting operational continuity by not having to come across instabilities that have not already been identified.

REDUCE WORK TIME BY 90%
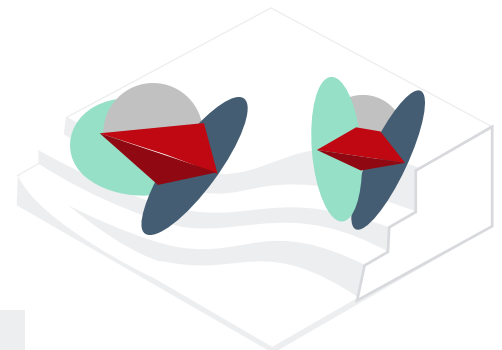
AUTOMATICALLY DETECT INSTABILITIES

" Timining Tangram provides so much versatility in terms of selecting structures for instability analysis, zone by zone, that I have saved a considerably great deal of time."

- Rolando Ballesteros, Senior Geologist at Sierra Gorda SCM

"By being able to automatically detect and predict instabilities we can now increase berm width in certain areas that are key for containing instabilities."

- Yang Villalobos, Structural Geologist at Sierra Gorda SCM

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