

Theofanis Rentzelos

Geomechanical Engineer

Expertise Rock Mechanics, Mining Engineering, Numerical Modelling

Education M.Sc. Civil Engineering (Rock Mechanics and Geotechnical Engineering), 2019
Luleå University of Technology, Luleå, Sweden

M.Sc. Mining Engineering, 2017
National Technical University of Athens, Athens, Greece

Honors Academy of Athens Scholarship (2018)
NordMin Scholarship (2018)

Professional Experience

2021 – Present *Itasca Consultants AB, Luleå, Sweden*
Geomechanical Engineer

2019 – 2021 *WSP AB, Stockholm, Sweden*
Rock Mechanics Engineer

2017 *Hellas Gold S.A., Chalkidiki, Greece*
Summer Internship, Mining Engineer

Project Experience

Infrastructure projects:

Model setup and three-dimensional discontinuum analysis (*3DEC*) for new railway tunnel and station for the Korsvägen station in Gothenburg.

Design and documentation of rock reinforcement in various parts of the TUB-A (new metro in Stockholm) and Högdalens depå projects. The analyses were conducted with the use of both the Finite Element and the Limit Equilibrium Methods. The projects also required the development of detailed bill of quantities as well as regular coordination with the contractors and the different technical disciplines involved.

Design and documentation of rock support of a rock slope used as foundation for Essingebron (the Essinge bridge). The project also involved the inspection of the old rock support as well as a geotechnical investigation of the slope.

Mining projects:

Analysis of alternative resumption options for the LKAB Kiirunavaara mine after a significant mining induced seismic event including determination of safe dimensions for the Kiruna mine barrier pillar.

Mine-scale continuum analysis and caveability study (*FLAC3D-MassFlow*) of the LKAB Kiirunavaara mine to evaluate the impact of the Kiruna mine barrier pillar on the ground surface deformations.

Mine-scale modelling of impact from alternate production sequencing at the LKAB Kiirunavaara mine using hybrid-mesh models in *FLAC3D*. Caveability study of remnant SLC pillar at the Kiirunavaara mine using coupled (*FLAC3D-CAVESIM*) model.

Three-dimensional continuum analysis (*FLAC3D*) of mine design layouts for LKAB Kiirunavaara mine. The work contained evaluation of six different mine design layouts with the purpose of deciding on the most favorable design from a rock mechanical perspective.

Coupled cave flow-mechanical analysis using *FLAC3D-CAVESIM* aimed to evaluate different mining sequences and methods for future mining at LKAB Malmberget mine.

Three-dimensional continuum analysis (*FLAC3D*) of the LKAB Malmberget mine with aim to identify high risk areas where the development of future mine infrastructure should be avoided.

Three-dimensional continuum analysis (*FLAC3D*) and caveability study (*FLAC3D-CAVESIM*) of the LKAB Malmberget mine to investigate the effect of mining the potential new orebody Evalina on the mine infrastructure and ground surface.

Coupled cave flow-mechanical analysis using *FLAC3D-CAVESIM* aimed to produce guidelines and recommendations for the mine planning in areas with level overlap at LKAB Malmberget mine.

Two-dimensional numerical analysis (*FLAC*) and evaluation of slope stability at the Aitik mine. Analysis of slope stability during water storage in Salmijärvi pit after closure of mining operations.

Three-dimensional continuum analysis (*FLAC3D*) in Master Thesis project of rock support arches in Garpenberg mine. The scope of the analysis was to investigate safer and more productive mining sequences.

Estimation of the ore reserves and the remaining life of mine of "Mavres Petres" underground mine, in northern Greece. Part of the project was also the regular inspection of the drifts and the production practices.

Field work:

Geomechanical core logging (*RQD*-, *RMR*- and *Q*-characterization) for Kaunis iron with the purpose of developing a design for a future open pit mine.

Geomechanical core logging (*RQD*-, *RMR*- and *Q*-characterization) at Buksefjord, Greenland with the purpose of developing a design for a future hydropower tunnel.

Geotechnical field investigation at a rock cavern at the Ågesta powerplant. The project included also a three-dimensional discontinuum analysis (*3DEC*) to assess the long-term stability of the cavern.