EL TENIENTE – NEW ACCESS GALLERY

El Teniente-Copper Mine, New Infrastructure, Access Gallery, Santiago, Chile

El Teniente is the world's largest underground copper mine. It has more than 2'500 km mined cavities and approximately 2.5% of the worldwide copper production.

Scope

- Construction of new access tunnels
- 2x 8'850 m
- Diameter 11 m
- Service tunnel
- 1x 1200 m
- 48 m^2

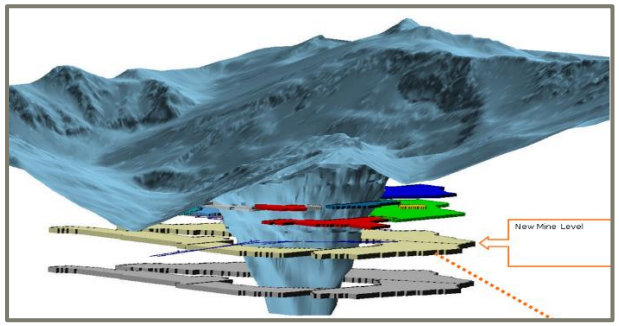
Challenges

- Difficult economic situation
- Remote location at plus 2'000 m altitude
- Variable geology, heavily tectonised rock
- Hazardous instable areas

Amberg Services

- Assessment of underground conditions
- Design services for consortia bid
- Client consulting

- Location of El Teniente Copper Mine



- 3D- view of mining areas

- Historical mine city Sewell

AMBERG FACTS

Contracted value Amberg
- Bsp.: Total Amberg CHF 150'000

Project Phases & Duration
- Design services for consortia bid 2009 – 2010

Project details
Tunnelling Method
- Gripper TBM
- Drill and blast in unstable areas

CLIENT FACTS

Overall costs
- Overall costs approx. 200 Mio. CHF

Overview Project
- Construction of two access tunnels enabling further development of a copper mine

Geology
- Vulcanite, partly highly altered and loosened
- High compressive rock strength
- Extreme acidic groundwater

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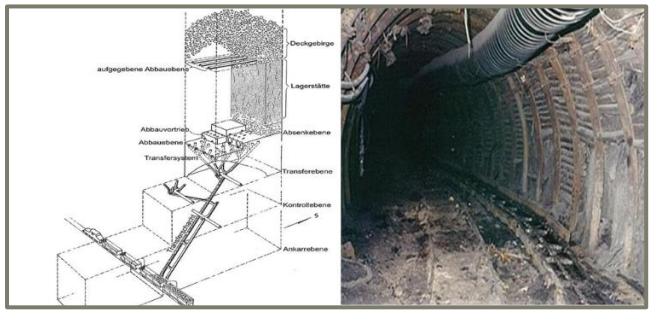
CHALLENGES



Mining with room and pillar system

Mining in deeper mine areas

- The mine shall be developed into greater depth
- The enlargement requires a new access to this level for both mine worker and material transports

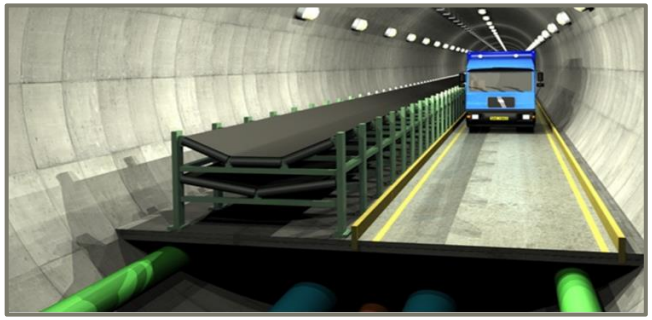
ENGINEERING APPROACH

Existing access gallery

New and more effective access infrastructure

- The mining company CODELCO has held a tender for the respective infrastructure works
- Amberg Engineering has supported one of the bidders with the design during the tender stage
- A combination of TBM and Drill and Blast (D&B) has been selected by the bidder with the assistance of Amberg Engineering

TECHNICAL SOLUTIONS



Proposed system for combined transport

Proposed new access tunnels with road for people bus transfer and with conveyor belt for mined material

- The proposed system enables material transport and access to the site
- Mined material is intended to be transported with the conveyor belt
- The transport road serves for transport of materials by truck and access of personal by busses