



OPTIMIZING THE MINING SYSTEM IN **BREITENAU MINE**

The Chair of Mining Engineering assists Austrian underground mines in the rock mechanical design and optimization of their mining operations.

The Chair of Mining Engineering has been several years assisting Breitenau mine in the rock mechanical design and layout of the shallow as well as the deep mining areas. The applied mining systems comprise post pillar mining in the shallow sections and sublevel stoping with paste fill in the deep sections. In sublevel stoping long panel pillars divide neighboring stopes and up to four sublevels are mined in a stope. A weak layer of black shale followed by eventually water-bearing limestone formations form the hanging wall. For this reason mining activities must not disturb the shale regionally. Large interpanel pillars take over this task. Sublevel stoping was introduced about ten years ago. The ongoing rock mechanical monitoring as well as the stability analyses confirm the positive experiences, which have been made with sublevel stoping. However they also indicate that panel pillars do not carry significant loads





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and that the majority of stresses is redistributed into abutments and interpanel pillars. The above mentioned rock mechanical assistance as well as the experience form the basis for optimizing sublevel stoping by the following measures:

 \cdot changing the geometry and orientation of the stopes

 \cdot mining the panel pillars as so called secondary stopes

 \cdot changing the mining direction from up-dip to down-dip mining

Since these changes are associated with open questions related to rock mechanics as well as production issues, they will be tested in an experimental mining panel in the next two years. The Chair of Mining takes over the rock mechanical planning and monitoring. If the experimental section is successful, the considered changes will be implemented in all sublevel stoping areas.

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