



SIKA AT WORK

CUKURALAN GOLD MINE, TURKEY

HIGH GRADE GOLD IN WESTERN TURKEY

BUILDING TRUST



HIGH GRADE GOLD IN WESTERN TURKEY



PROJECT DESCRIPTION

After acquiring Normandy Madencilik A.S. from Newmont Mining in March 2005, Koza Altın İşletmeleri A. Ş. (Koza Gold) has become the first domestic, Turkish gold producer in the Republic of Turkey. Since then, the company has operated several gold mining assets in Turkey, including the Ovacik Gold Mine and the Cukuralan mineralization, located in Bergama, Izmir. After mining ceased at Ovacik, Koza started to truck ore from Cukuralan to the Ovacik processing plant which is located around 40 km away. The ore is leached and doré produced at the site.

The Cukuralan gold mineralization consists of two main, epithermal, low sulfidation vein systems which are mined selectively, using cut and fill mining methods with cemented rockfill. The reserve/resource base is around 5 million tons grading around 5 g/t gold and some silver. Annual production is in the order of 1 – 1.5 million tons of ore. Primary underground support consists of in-cycle, fibre reinforced shotcrete and bolting. Sika was strongly involved with this project since the early stages and supported the transition from extensive mesh installation to the application of highly effective and time saving, in-cycle sprayed concrete. The specification and selection process for the shotcrete was demanding and Sika proved to provide the best cost performance and most efficient mix designs to the Koza Cukuralan mining team. Alongside the newly accessed Cukuralan deposit, Koza plans to significantly increase production at various other sites within the Aegean and East Anatolian region of Turkey in order to further strengthen its position as one of the leading gold producers in Turkey.

RAPID MINE DEVELOPMENT

The Cukuralan gold mine sources ore from an open pit and underground operation. The primary ground support consists of wet applied, synthetic, fibre reinforced shotcrete, applied as part of the regular mine cycle with the following requirements:

- High early and final strength
- High energy absorption (yielding) under dynamic loads
- Steady shotcrete production during winter and summer times
- Stable mix and low sensitivity to raw materials, environmental effects and operational fluctuations.
- A minimum dosage of accelerator
- Easy handling and dosage of fibres

Front image: Overview Cukuralan mine site

- 1 Evaluating concrete mix designs at the Cukuralan concrete batch plant
- 2 Shotcrete rebound trials underground at Cukuralan
- 3 Looking towards the Cukuralan portal



SikaFibre® Force-60 testing according to EN standard.

SIKA SOLUTION

In order to fulfill the specified requirements for the ground support, Sika undertook extensive laboratory testing using the Sika Minishot® evaluation system and finally succeeded with promising results which resulted in a tailor made Viscocrete®, SikaTard and Sigunit® solution, specifically designed for the needs of the Cukuralan mine. This was the precondition to proof the system full scale at the mine site. The performance of the Sika Fiber® technology had to be tested externally with an independent official body (request from the customer), which showed excellent load bearing capacity with a low fiber content in the sprayed concrete and strong resistance against acid attack and corrosion. Sika was selected as the most comprehensive solution provider which initiated many other innovative projects for Koza Gold with regards to underground construction, asset maintenance and repair.



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Shotcrete testing and shotcrete quality control underground.

SELECTION OF SIKA PRODUCTS

- Sika Viscocrete® Hi-Tech 3621: High range water reducer (HRWR)
- Sika Viscocrete® PC-15 HRWR: For high early strength
- SikaTard®-930: Consistency stabilizer
- Sigunit® L5402: AF Alkali-free, high performance shotcrete accelerator
- SikaFiber® Force-60: Polypropylene Macrofiber
- Many other Sika construction products

Our most current General Sales Conditions shall apply. Please consult the most current local Product Data Sheet prior to any use.



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