

Derrick® Repulp Screen improves gravity circuit feed and eliminates foundation vibrational damage

- Improved feed to centrifugal concentrator
- Screen panels no longer blind
- Eliminated further structural and foundation damage due to vibrational shaking from screening

Background

The largest gold producer in Colorado is an open pit operation with head grades below 1g/t Au. Most of the gold is extracted by heap leaching. To accommodate sulfide ores, a mill was built focusing on gravity recoverable gold (GRG) and sulfide flotation/leaching. However, the mill has undergone an extended commissioning process, struggling to operate above 50% capacity. Several issues had to be addressed to rectify deficiencies in separation technology, equipment sizing, and construction.

One such issue was a horizontal vibrating screen from another manufacturer, approximately 8 ft x 20 ft. The purpose of the screen was to remove plus 2 mm particles from the feed to a centrifugal concentrator. However, greater than 90% of the screen was consistently blinded, resulting in improperly sized particles, inconsistent feed, and overground feed. Additionally, the screen was shaking so violently that the foundation and structural steel of the mill were compromised. The vibrations were so severe, computer monitors were nearly unreadable in the operations room.

Solution

In January of 2016, Derrick personnel visited the mill to assess the screening application. Derrick recommended a 4 ft x 10 ft downhill Repulp machine to size the feed to the concentrator. The machine was installed in May of 2016 and eliminated all harmful shaking of the foundation and structure and negated vibrations felt by workers.



Removed original 8 ft x 20 ft vibrating screen



Downhill 4 ft x 10 ft Derrick Repulp Screen with a Super G® Vibrating Motor mounted on a single motor linear motion (SMLM) motor mount.

The Repulp Screen currently operates using 1.7 mm opening Polyweb® non-blinding urethane panels at 4,800 Mtpd and shows no signs of blinding. Also, the Derrick Repulp machine has extra capacity to spare as the mill's team approaches the designed 6,000 Mtpd of the plant.

Conclusion

Derrick Repulp and Polyweb screening technologies were successfully implemented improving the concentrator feed. Replacement of the original screen stopped further damage to the foundation and structural steel while providing a safer work environment and efficiently sized feed to the gravity circuit. After successful results of the initial Derrick screen, the client is pursuing process improvements in both primary and regrind circuits as well as in trash scalping applications.



1.7 mm Derrick Polyweb urethane screen panel showing nonbinding surface.



Original screen screen surface showing blinded panels

For more information, please contact your local Derrick sales representative.

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