

Precious Metal Extraction Aided by Live Bin Screw Feeder

Customer

Earth Resources Company, DeLamar Silver Mine, Jordon Valley, Oregon. Producers of precious metals through chemical extraction from mined ores by the cyanide process.

Problem

Earth Resources Company operates a wet process cyanide plant in which precious metal is precipitated from a cyanide solution, put through filter presses, and then recovered and fed to a pyrometallurgical section of the mill where it is melted into gold and silver bullion.

A high-purity micronized zinc powder is used to precipitate the precious metals out of solution. The zinc has a bulk density of 124 lbs./cu. ft., and its particle size is less than 3/10 of a micron. Required feed rates are 100-150 grams/minute, on a 24 hr. per day, 7 day per week basis.

A characteristic of powdered metal is its tendency to stick, and the zinc is also difficult to meter accurately as it is discharged into the mixing chamber because of the small amounts involved.

Solution

Vibra Screw Live Bin Feeder, carbon steel construction, 3/4 inch screw diameter, with special 1 1/2-cu. ft. vibrated conical hopper.

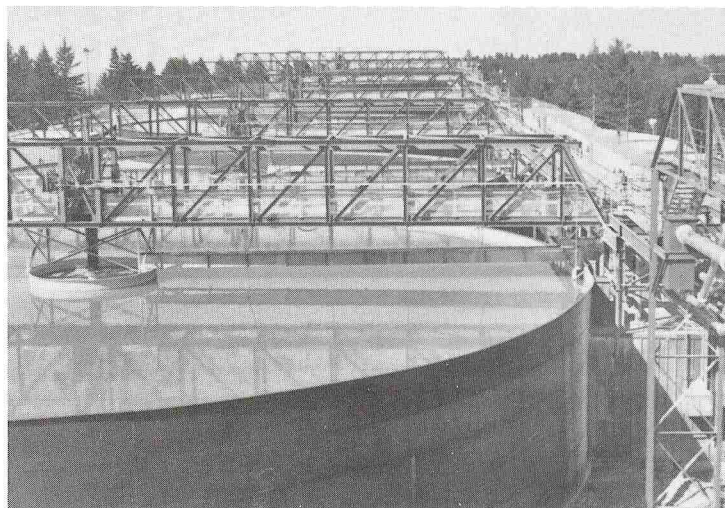
Earth Resources installed a Live Bin Feeder for this demanding heavy-duty application. A special vibrated hopper was needed to handle the heavy sticky zinc, which is loaded manually from 5 gallon airtight buckets. The hopper discharges to a rotating vibrating feed screw with rate range adjustment of 10 to 1. The controlled vibration of the feeder produces a steady, uninterrupted flow of zinc into the mixing chamber. Feeding accuracy is held to ± 1 to 2 percent, from hopper full to hopper empty.

Results

The difficulties of handling zinc have been resolved. The Live Bin Feeder is now delivering zinc in a steady flow, and it has also made possible a significant reduction in zinc consumption.



A high-purity micronized zinc powder is efficiently delivered by the Live Bin Feeder at DeLamar Silver Mine.



Precious metals are produced at DeLamar Silver Mine through chemical extraction from mined ores by the cyanide process.