

CS Mining makes the grade with the Derrick[®] Stack Sizer[®]

- Production rate increased
- Recovery increased
- Product grade achieved

Background

CS Mining purchased the previously owned Western Utah Copper mine in Milford, Utah with the expectation of producing copper and magnetite concentrates. The previous owners had built a new mill on the site that was to be capable of processing 2400 tons per day (t/d). At startup, the mill was only able to run at 1680 t/d and could not make saleable grades of copper concentrate. Total copper production would not meet the budget for profitable output. At these levels, a finely disseminated high grade ore body would require fine grinding to supply the flotation plant. An estimate showed that the grind size should have a P80 of 70 microns to achieve adequate recoveries.

The grinding circuit consisted of two parallel ball mills in closed circuit with hydrocyclones. Each milling circuit was able to process at a rate of 35 t/h at a P80 of 120 microns.

Solution

To improve the grind size fed to flotation, the cyclones on number 2 ball mill were replaced with two 5-deck Stack Sizers[®] and 100 micron panels. The ball mill closed with the screens was able to process 50 t/h with a P80 of 75 microns.

Having only one milling circuit closed with screens gave the mill its first



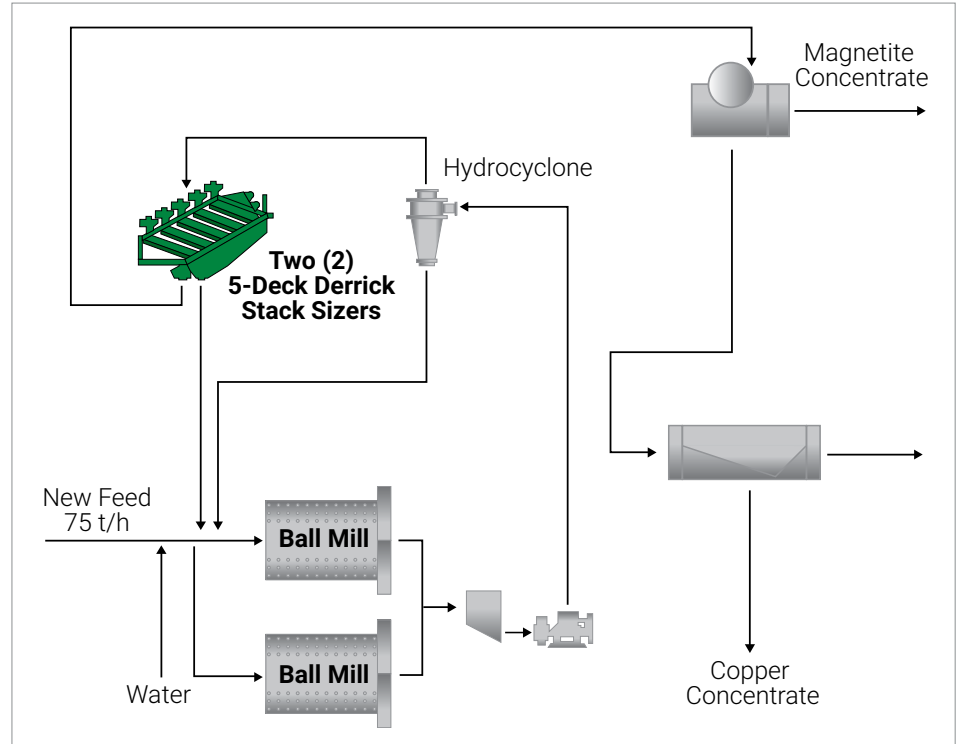
day of meeting both the recovery and grade budgets. The grinding circuits were run in this fashion until panel life was determined to be too short.

A recommendation was then made to return to the cyclones and use the screens to handle the cyclone overflow. When put to a test, it was found that panel life was extended to over six months, and the mill was still achieving the required recovery and grade goals in flotation. Production rose to 1750 t/d with the two Stack Sizers. A third ball mill has been

installed along with two additional Stack Sizers to increase production to 3700 t/d. The third ball mill will operate in closed circuit with four Stack Sizers as a secondary grinding circuit to feed the flotation plant.

Conclusion

Using the Derrick® Stack Sizer as a pre-flotation classifier can impact grade and recovery in a significant way. By knowing their process, CS Mining used the liberation point to determine the cut point of the screen. These screens optimized the grinding circuit to fully liberate the valuable copper minerals.



New flowsheet with Derrick Stack Sizers

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

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