

CASE STUDY

ANTAM PONGKOR, INDONESIA

Increase gold recovery and throughput in a CIL gold process with Pionera BioPolymer.

ABSTRACT

In an effort to reduce the impact of declining head grade, a biopolymer was evaluated as an additive in the gold leaching operation at Antam Pongkor in Indonesia. Laboratory testing revealed that biopolymer usage led to an increased gold recovery without an apparent negative impact on the other parts of the process. Further plant trials revealed both a recovery increase of 1.3% and a throughput increase of 9% in the presence of Pionera L-800.



INTRODUCTION

The ability to increase recovery and throughput in leaching circuits is critical as the average grades at many mine sites are declining and the financial viability of numerous mining operations is challenged. Because of declining gold head grades, Antam Pongkor decided to evaluate the Pionera L-800 Bio-Polymer. Preliminary laboratory tests and full scale plant trials were conducted to determine if the use of Pionera BioPolymers would improve throughput and gold recovery. The test and trial work were conducted by the metallurgical staff of Antam Pongkor on epithermal low sulfide and clay ore with a gold content between 2 and 8 g/t ore.

RESULTS

In the preliminary lab trials important trends were observed. Figure 1 shows an increase of gold recovery of more than 3% at a biopolymer dosage of 800 mg/L.

Figure 1: Bottle roll test results with and without Pionera L-800

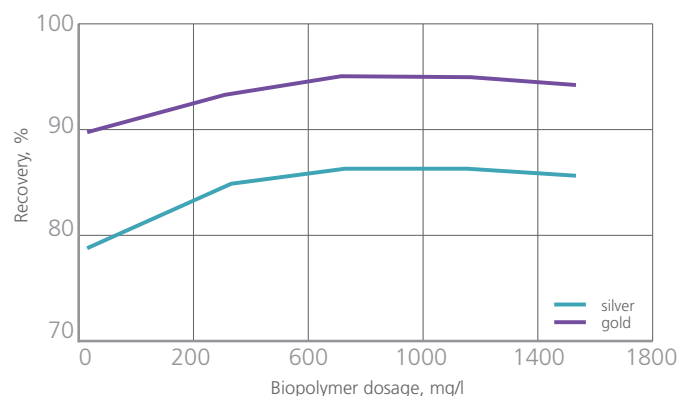
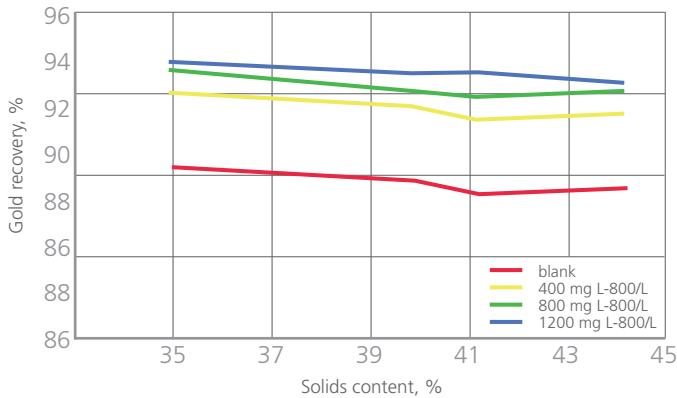


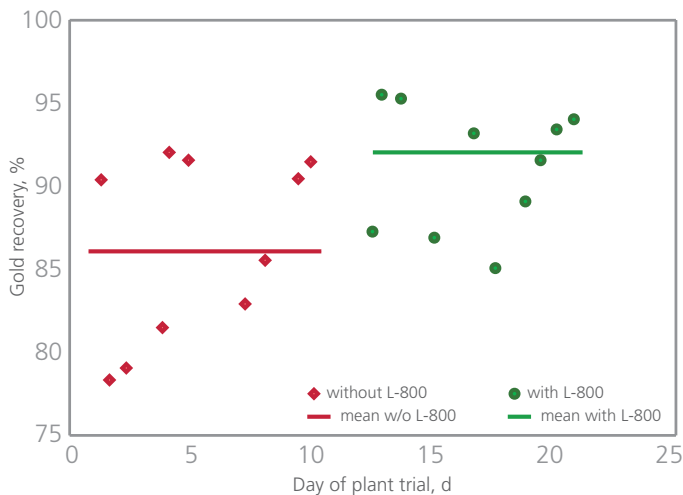
Figure 2 shows that slurry solids could be increased while maintaining high gold recovery levels.

Figure 2: Bottle roll tests with and without Pionera L-800



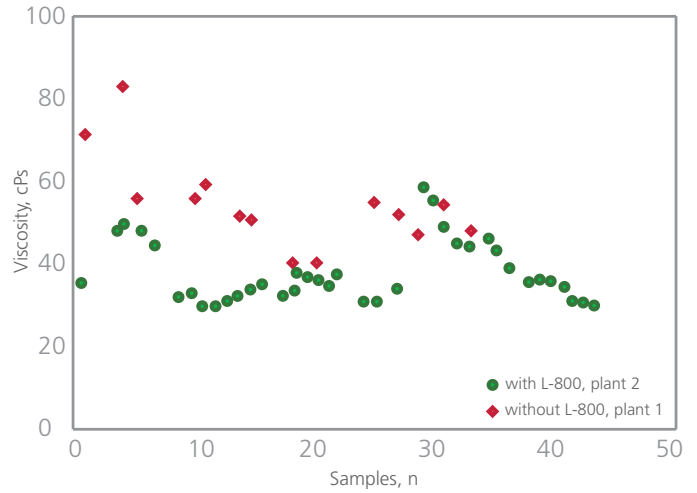
These positive results led to a 10 day plant trial with Pionera L-800. The results of the plant trial were a 3.9% gold recovery increase with a 96% confidence level as shown in figure 3.

Figure 3: Gold recovery in plant



A second, three month plant trial was later performed on one of two production lines to confirm the findings over a longer period of time and to collect extensive data. The second production line was fed with identical feed ore and used as a reference.

Figure 4: Plant trial results – viscosity differences



A difference in the viscosity of the leach slurry between the two processing lines was observed. The viscosity in the line with Pionera L-800 was about 30% lower than the reference. Over the extended period of the three month trial, the metallurgical staff of Pongkor observed, on average, a 1.3% increase in gold recovery and a 9% throughput improvement due to the addition of biopolymer.

Figure 5 shows the results of the plant trial with a focus on gold recovery improvement and figure 6 shows the combined results of gold recovery and throughput. The addition of Pionera L-800 counteracts the tendency of lower gold recovery at higher solids content in the CIL.

Figure 5: Plant trial results – gold recovery vs head grade

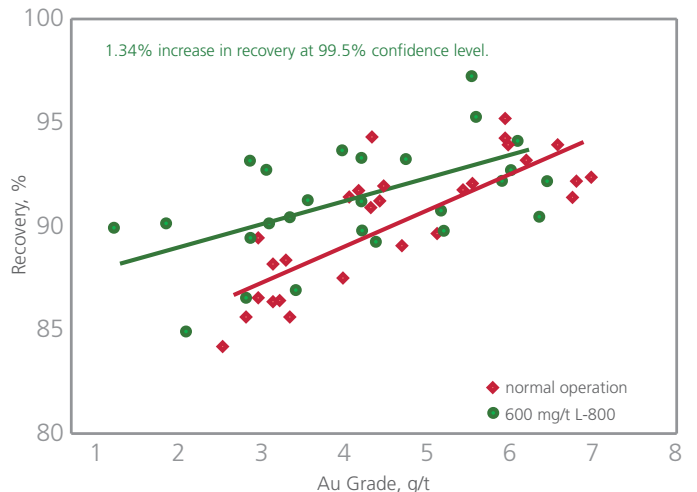
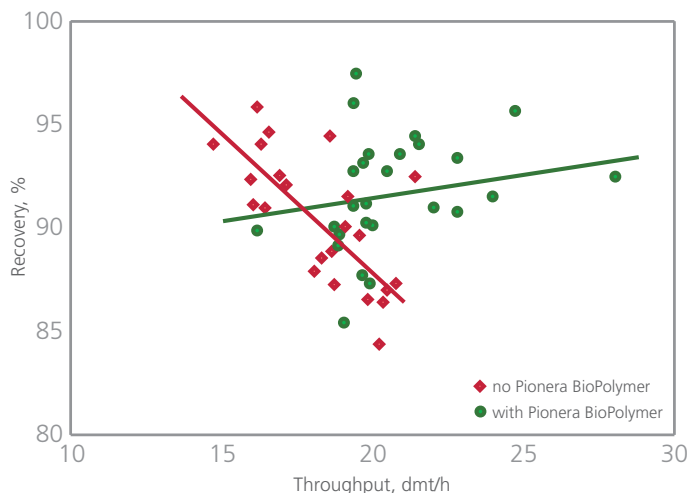


Figure 6: Plant trial results – gold recovery vs throughput



The combination of increased throughput and increased recovery improved gold production significantly.

CONCLUSIONS

The results from the plant trial conclude that the use of Pionera L-800 enhances gold recovery by 1.3% in the CIL. Pionera L-800 also allows for higher solids content in the leach process improving throughput by 9%.

The use of Pionera L-800 significantly improved the process and provided an excellent Return On Investment to the Antam Pongkor operation.

The capital to apply Pionera L-800 is not large. Also, because the product is non-toxic, regulations for storage and handling of the material are not stringent.

These facts led to the continuous use of Pionera L-800 on both CIL production lines at the Pongkor operation. While using the product, there were no negative downstream effects observed. This includes the carbon circuit as well as tails processing.

REFERENCE

“BioPolymer Addition to Boost Recovery and Throughput in Gold Leaching Process. A Case Study From Antam Pongkor, Indonesia”
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