

Performance Study

Ref. No.: 22-001A

Commodity
Gold

Technology
**P-DUC Autodilution Mechanism
E-Volute™ Feedwell**

Application
**Leach and Tailings Thickener
Feed System Upgrades**

Study type
Customer Story

Country
Australia

How we debottlenecked throughput, increased gold recovery and saved water at an Australian mine

A thickener upgrade project at an Australian gold mine achieved payback in under 12 months with a 9% increase in throughput. This was delivered without increasing flocculant consumption on a gram per tonne basis, and with an 11% reduction in tailings water.

We first upgraded their leach feed thickener some years earlier with the installation of an E-DUC autodilution system and E-Volute feedwell. This served the mine well for several years; however, over time, it again began to bottleneck the process. The mine proposed swapping duties of the 34 metre leach feed thickener and 44 metre tailings thickener, and asked us to analyse if this was possible.

During our evaluation, we observed faster settling rates and compaction times in the tailings thickener. This would allow the tailings to be treated in the smaller thickener without impacting performance and meant the larger thickener could be utilised for the leach feed.

We also recommended P-DUC powered autodilution mechanisms on both thickeners

and adding an E-Volute feedwell to the tailings thickener. The P-DUC system maintains ideal feedwell solids concentration to deliver optimum settling conditions when feed rates and density vary. E-Volute feedwells provide optimal shear profiles to maximise floccule growth and provide even feed distribution into the thickener tank.

As a result of the upgrade:

- Thickener throughput rose from 1060 tph to 1160 tph, with no increase in flocculant consumption on a gram/tonne basis.
- Leach feed thickener underflow density increased from 54% to 56% solids (w/w). This improves CIL residency time and thus gold recovery, with no increase in the amount of material mined.
- Tailings thickener underflow density increased from 54% to 57% solids (w/w), resulting in an 11% reduction in water reporting to the tailings dam, and thus lowering the freshwater draw. Less water is also lost to evaporation and seepage.

Overall, the upgrade has reduced the fixed cost per ounce of gold produced, while also contributing to a more water-sustainable operation in an area of water scarcity.



11%
Reduction in
tailings water



9%
Increase in
throughput



<12
Payback under
12 months

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