

Performance Study

No.: 22-001F

Commodity
Gold

Technology
**E-DUC® Autodilution Mechanism,
E-Volute™ Feedwell and Low
Profile Rake Mechanism**

Application
Tailings Thickener Upgrade

Study type
Customer Story

Country
Canada



12%
Reduction in
tailings water



4% w/w
Increase in
underflow density

How a Canadian gold mine reduced water to tailings for significant sustainability and OPEX benefits

Upgrading the thickener mechanism and feed system at a Canadian gold mine lowered the amount of water sent to tailings and improved overflow clarity. Raw water draw was thus reduced, as were cyanide losses to tailings, and costs associated with tailings water pumping. The upgrade also improved feedwell performance for optimised flocculant consumption.

The improvement work was undertaken to deliver on the miner's ambition to recycle more water back into its process. The objective was not only to improve water sustainability, but also to extend the operating life of the tailing facility by reducing the volume of water held in its tailings dam.

After extensive testing, we designed a solution to retrofit the existing third-party thickener with an E-DUC® autodilution system and E-Volute™ feedwell, drive and low drag rake mechanism. The side wall height of the thickener was also raised.

The E-DUC system uses feed stream momentum to dilute incoming feed before it enters the feedwell, thus helping to optimise flocculant consumption through improved mixing profiles and residence time. The E-Volute feedwell then provides an optimum environment to maximise floccule growth and provide an even distribution to the thickener tank.

As a result of the upgrade:

- Underflow density increased from 61% solids (w/w) to 65% solids (w/w).
- The amount of water to tailings fell by 12%.
- Overflow clarity improved from 400 NTU to less than 100 NTU.
- Flocculant consumption was reduced.

Our solution supported the mine on its journey to greater water sustainability, while also helping to reduce operating costs associated with water, cyanide, flocculant, and energy consumption. The capacity and stability of the mine's tailing facility has also been extended, due to the decrease in water in the tailings.

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