

Performance Study

No.: 22-001E

Commodity
Gold

Technology
**E-DUC® Autodilution Mechanism
and E-Volute™ Feedwell**

Application
Tailings Thickener Upgrade

Study type
Customer Story

Country
Australia

Maximising water recycling, while cutting flocculant use, at an Australian gold mine

Process water recycling is an increasing priority for miners around the world, but particularly in water-stressed regions such as Australia. In recognition of this challenge, a regional gold producer approached us with the twofold objective to increase both process water recovery rates and the quality of the recycled water.

The solution we designed involved upgrading the tailings thickener with E-DUC® autodilution and E-Volute™ feedwell systems. The E-Volute feedwell is designed to provide an optimum environment for flocculation and aggregate growth. Combined with the E-DUC feed dilution system, it results in lowest possible flocculant use and increased settling rates.

This was demonstrated at our Australian gold mining customer, where our solution achieved:

- An increase in tailings thickener underflow density from 35% to 50% solids (w/w).
- A 46% reduction in water going to tailings.

- A 40% reduction in flocculant consumption on a gram/tonne basis.
- Significant savings in cyanide lost to tailings.
- A reduction in pumping and energy costs.

The upgrade also significantly reduced particulate content in the recovered water. This improvement in overflow clarity has enabled the mine to cut use of scale inhibitor for process water treatment by 35%.

Cleaner process water also stabilises process water feed pressure in the Knelson® concentrator – which is responsible for about 60% of total gold recovery at the site – by reducing blockages in the concentrator capillaries. Gold recovery is therefore maximised and plant availability increased due to less unplanned maintenance and costs.

The end result is a more cost-effective and sustainable process. The mine now uses about 80% recycled water in its process, with fresh water draw restricted to a minimum; it has also successfully reduced consumption of flocculant, cyanide, scale inhibitor, and energy.



46%
Reduction in
tailings water



40%
Reduction
in flocculant



35%
Reduction in
scale inhibitor

Copyright © 2022 FLSmidth A/S. All Rights Reserved. FLSmidth is a registered trademark of FLSmidth A/S. This study makes no offers, representations or warranties of any kind (express or implied), and information and data contained in this study are for general reference only and may change at any time. FLSmidth does not guarantee or make any representation regarding the use or the results of the information or the data provided in the study in terms of its correctness, accuracy, reliability or otherwise, and shall not be liable for any loss or damage of any kind incurred as a result of the use of the information or data provided.

FLSmidth A/S
www.flsmidth.com