SUPERIOR FILTRATION

CASE STUDY

GRAVIFILTER: SELF-CLEANING NON-PRESSURISED SCREEN FILTER

KLIPFONTEIN TAILINGS RETREATMENT PLANT, RUSTENBURG

Client: Sion Industrial Solutions for Sibanye-Stillwater
Industry: Mining and Mineral Processing
Region: Rustenburg, North-West, South Africa
Product: GraviFilter – 1 x VA4, 100 m^3/hr
Installation: 2024

Challenge

- Sibanye-Stillwater has been managing the Klipfontein Tailings Retreatment Plant since 2016
- These operations focus on retreating tailings to recover platinum group metals (PGMs) and other by-products like chromite
- During tailings retreatment, a mixture of finely ground leftover ore and water is mixed to form a slurry for easier handling
- Slurry pumps transfer the thick, abrasive mixture from the reclamation site or stockpile to processing units
- The plant relies heavily on these slurry pumps that require an uninterrupted supply of clean gland service water (GSW)
- Recycled process water (thickener supernatant or other) used as GSW often contains high levels of suspended solids. Dirty GSW or an interrupted water supply cause the slurry pump seals to seize rapidly, damaging the shaft, stuffing box, gland packing and follower – and possibly also the bearing unit
- The result is expensive downtime, additional labour and parts replacement costs.

Application

- Final Filtration – **Filtration of Gland Service Water** to protect multi-stage, high-pressure pumps and slurry pumps.

Solution

- Upon seeing the successful installations and smooth operation of our GraviFilters at other tailings retreatment facilities (Harmony Gold, DRD Gold, etc), Sibanye-Stillwater chose GraviFilter for their Klipfontein operation, relying on its established performance in similar critical environments
- GraviFilter is a uniquely designed, **non-pressurised**, gravity feed screen filter – the ideal filtration solution where solids loads are variable and where solids are prone to blind standard media, or pressurised screen filters
- The built-in continuous self-cleaning mechanism offers long, uninterrupted filter runs with limited operator intervention
- **1 x VA4 GraviFilter** was installed with a processing capacity of 100m^3/h @ 250µm.

Results

- After installing the GraviFilter, the client reports a significant decrease in breakdowns. Fitters and other maintenance personnel are freed up to focus on other areas
- Our GraviFilter safeguards the multi-stage and slurry pumps by reducing wear from abrasive particles and **extending operational life**. This means **less maintenance, more uptime**, and, ultimately, **a more efficient and cost-effective operation**
- GraviFilters are now critical components in slurry pumping systems, enabling these to perform as designed in extremely challenging conditions. No breakdowns. No downtime.

Client experience

"Our experience with Superior Filtration has been excellent during and after sales. Their team takes the initiative by visiting sites post-installation, provides ongoing support, and continuously improves their products with thoughtful modifications based on feedback."

Jurie Boshoff – owner, founder and Managing Director at SION Industrial Solutions. Jurie is a specialist on GSW systems and often provides technical consulting services to mining engineers.

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