CASE STUDY

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Case Study - Granny Smith Mine

Introduction

Gold Fields Limited did a trial to compare nuclear and non-nuclear technology at the Granny Smith mine in Australia. In February 2022, the Rhosonics Slurry Density Meter (SDM) was fitted on the overflow pipe from the fine grind concentrate cyclone leading to the first leach tank in the circuit. It was expected that the reliability of the instrument, real-time process monitoring, and consistency of density feedback will be comparable to the existing radiation density meter.

Customer

Gold Fields Limited is a South African mining company and is one of the world's largest gold mining companies. Gold Fields was formed in 1998 and now is a globally diversified gold producer with nine operating mines.

Challenges

The current density measurement was done through a radiation density gauge and manual Marcy scale readings. But the company wants to reduce or eliminate radiation sources on-site.

Measuring tasks

Pipe diameter:	100 mm (4 inch)
Pipe material:	Mild Steel
Solids:	10 - 40 wt%
Temperature:	0°C - 50°C

Instrument used

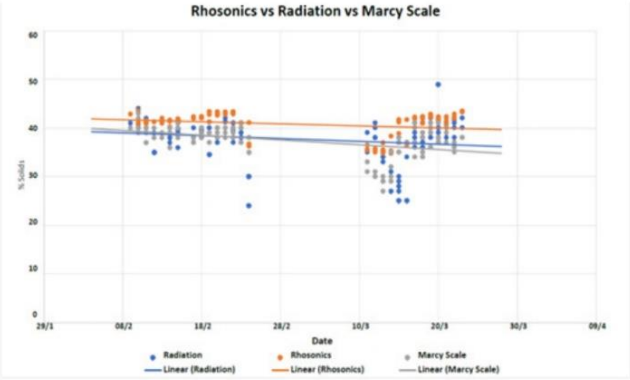
The Ultrasonic Slurry Density Meter (SDM) is fitted on the fine grind cyclone overflow to the leach feed line.

"The SDM has performed without any issues since installation. During plant start-up too, the SDM seemed to work without any issues. If, due to the Rhosonics SDM, we could reduce or eliminate radiation sources on-site, then it's a bonus."

Omesh Bharatiya, Gold Fields Limited

Our solution

As part of the two-month trial, the density readings from the Rhosonics SDM were compared to the readings from the existing radiation density gauge and manual Marcy scale readings. A custom spool piece was fabricated to allow for the installation of the SDM in series with the radiation density gauge. This was commissioned by InstroWest (Rhosonics' partner in Australia). The SDM was calibrated with a digital weighing scale using process water, whereas the radiation density gauge was calibrated to a reading from the Marcy scale.



Trendlines (Rhosonics vs Radiation vs Marcy Scale)

Application

Results

The SDM was trialed for two months to determine if it was a suitable replacement for the radiation density gauges on site. The density values from the SDM, radiation gauge, and the manual reading from the Marcy scale were compared. A few of the radiation density gauges on-site are reaching the end of their half-life and pending a successful trial, the Rhosonics SDM is identified as a possible alternative.

The major benefit of replacing the radiation density gauge is the reduction in the number of nuclear radiation sources on-site, which has several statutory and regulatory rules. Apart from that, nuclear sources are cumbersome to transport and store and require special training and licenses which takes much time.

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Proven Process Insights

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