CASE STUDY

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CASE STUDY - SDM ECO IN THICKENER UNDERFLOW

Introduction

A major chrome beneficiation and PGM processing site on the Eastern Limb of the Bushveld Igneous Complex in South Africa depends on precise thickener underflow density control for stable production. With nucleonic meters creating increasing operational and compliance burdens, the site began evaluating non-nuclear solutions that could deliver equivalent performance.

Challenges

Density measurement on thickener underflow plays a vital role in production control at this facility. Historically, the plant relied on nucleonic (radioactive) density meters, which are widely considered the industry standard but come with substantial operational burdens.

The client raised several concerns regarding their existing nuclear sources. Each source requires extensive administration and compliance paperwork, alongside long and costly regulatory processes. In addition, the site must maintain a dedicated Radiation Protection Officer and perform periodic leak tests, adding recurring expense and internal workload.

Another important limitation was the permitting process when procuring or licensing additional nuclear sources. The client therefore began searching for a reliable non-nuclear alternative that could reduce these costs, remove unnecessary safety and regulatory complexity, and simplify future expansions.

Measuring task

The objective was to continuously measure the density of thickener underflow slurry with high reliability and fast response to process changes. The measurement needed to match the performance of the current nucleonic system while avoiding the safety risks, compliance requirements, and licensing delays associated with radioactive technology.

Our solution

Rhosonics proposed the non-nuclear Slurry Density Meter (SDM ECO) as a safe, dependable, and cost-effective alternative to future nucleonic installations. To demonstrate equivalence and build confidence within management, a Rhosonics SDM was installed in-line alongside an existing nuclear density meter for a direct performance comparison.

This parallel configuration allowed the plant to validate measurement accuracy under real process conditions and to evaluate how quickly each technology responded to operational changes.

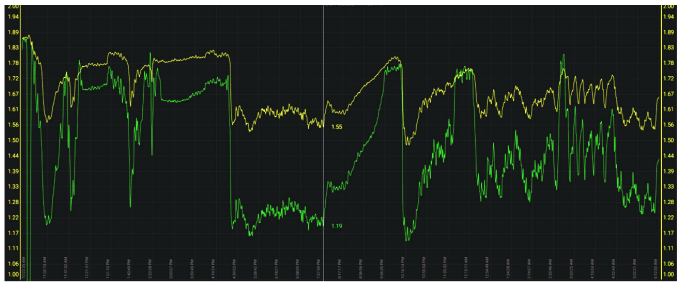
Results

The trended comparison data confirmed that the Rhosonics SDM tracks the process with the same accuracy as the installed nucleonic meter. In addition, the SDM responded noticeably faster to density fluctuations, giving operators more immediate visibility and enabling quicker process correction.

Following the trial, the client expressed strong satisfaction with the SDM's performance. Beyond measurement quality, they highlighted the unit's ease of use and the practical advantage of eliminating radiation-related administration, safety procedures, and recurring compliance costs.

Comparison data

The measurement data of both density meters were recorded and compared during the operation. The green line shows the measuring results of the Rhosonics SDM Slurry Density Meter and the yellow line represents the radiation-based technology. The trends are similar, but the Rhosonics SDM matched better with the reference of laboratory samples.



	Rhosonics SDM ECO
	Nuclear Density Meter

For further information

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