

Industry: Minerals Processing

- Concentrate Thickener Flow

CiDRA[®]

Minerals Processing

Application Note

SONARtrac[®] SOLUTIONS

Magnetite Concentrate slurry causes variability in magnetic flowmeter signal. SONARtrac flowmeter is not affected by magnetic properties of slurry.

Benefits

- Flow reading not affected by magnetic properties of the slurry
- Improved measurement accuracy and reduced process variability
- Eliminate potential shutdown costs related to magmeter replacement
- Installs in one hour without process shutdown

Application

- **Magnetite and Hematite flow from the concentrate thickener; water-based 70% solids in water.**

The customer's goal is to improve product quality with a more accurate flow signal to achieve more uniform blending.

Process

This customer mines hematite and magnetite and processes it to produce high-grade iron ore pellets which are sold as raw material for steel production. One step in the refining process of the iron ore occurs in thickener tanks. Iron particles, heavier than the waste material, settle into the bottom of these tanks and are recovered in the underflow. The concentrated iron ore slurry (approximately 70% solids, by volume) is pumped from the underflow, mixed with calcium oxide (CaO), and further processed into pellets.

Controlled CaO addition is important to achieving uniform product quality. Monitoring flow rate on the thickener tank underflow is critical in order to control the amount of CaO added.



Challenge

The flow reading provided by the mag-compensated magnetic flowmeter showed significant variability and developed an offset during magnetite production. It is assumed that the magnetic properties of the magnetite are the cause. It is suspected that this variability in reported flow rate can cause variation in the uniformity of CaO addition.

SONARtrac Solution

The SONARtrac Flow Monitoring System clamps on to the existing piping and is not affected by the magnetic properties of the slurry. In this application, the SONARtrac flowmeter shows less variation in measured flow from the thickener tanks compared to the mag meter. The customer was particularly concerned with higher than expected flow readings reported by the mag meter at the upper end of the flow range. The SONARtrac flowmeter reported a lower flow rate at the upper end of flow range, which is consistent with the customer's expectation of actual flow rate.

Over time, this customer hopes to improve product quality by controlling CaO addition using the SONARtrac Flow Monitoring System as the control feedback in the CaO injection process.

SONARtrac[®] Technology

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