Industry: Minerals Processing

- Copper Production – PLS / Raffinate Line

CiDRA® Minerals Processing

Application Note

SONARtrac® SOLUTIONS

Copper Processing Plant Improves Up-Time and Lowers Costs with the *SONARtrac* Flow Monitoring Systems

Benefits

- Rapid return-on-investment demonstrated with clamp-on *SONARtrac* flowmeters
- *SONARtrac* flowmeters provide robust and repeatable flow measurement, immune to scaling
- Eliminates maintenance for electrode and flowtube cleaning/replacement
- Clamp-on installation enables installation without process down-time or pipe penetration
- No coupling gels or alignment required

***SONARtrac* flowmeters clamp onto the existing pipeline and eliminate maintenance problems affecting ultrasonic and magnetic flowmeters**

Process

The processing of copper oxide ore is performed by a hydrometallurgical process called solvent extraction/ electrowinning (SX/EW). The first step, leaching, starts with sprinkling a low concentration of sulphuric acid and water solution on a stockpile of low-grade ore. The liquid percolates through the stockpile dissolving copper minerals, producing a copper-laden liquid called “pregnant leach solution” (PLS). The PLS flows to a collection reservoir, and then to a solvent extraction plant where it is mixed with a diluent designed to extract the copper. The leach solution minus its copper, called “raffinate”, is replenished and returned to the leach pile for reuse, completing the solution stream cycle. Volumetric flow measurements are required for process control and efficiency.

Challenge

The magmeter has typically been used for volumetric flow measurements on PLS lines, but they are sensitive to scaling of electrodes and flowtubes. This results in measurement non-repeatability, increased maintenance, and costly process down-time.

Clamp-on and invasive ultrasonic flowmeters are also used, and suffer from similar scaling problems, which change alignment and attenuation of the ultrasonic beam, causing gradual measurement degradation and eventual failure. Additionally, clamp-on ultrasonic flowmeters require a coupling gel to achieve acoustic coupling between the transducers and the pipe. These gels tend to degrade over time, particularly in this harsh environment, requiring frequent replenishment. Although all these problems can be overcome, the maintenance required is usually unacceptable.

SONARtrac Solution

SONARtrac flowmeters clamp onto the existing pipe, eliminating the severe scaling that affects magmeters. The customer has installed *SONARtrac* flowmeters, replacing the existing magmeters. The *SONARtrac* flowmeters clamp onto the stainless steel and high density polyethylene pipe without process shutdown. The *SONARtrac* flowmeters have delivered a more robust and reliable measurement versus the existing magmeters. This has resulted in improved process control and efficiency.

The customer’s investment in *SONARtrac* flowmeters is expected to deliver financial and operational benefits associated with increased production efficiency and up-time, as well as decreased maintenance costs.

SONARtrac® Technology

CiDRA Minerals Processing, Inc.
50 Barnes Park North
Wallingford, CT 06492
Tel. +1.203.265.0035
www.cidra.com

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