Industry: Mineable Oil Sands

- **Froth Stream After Deaerators**

CiDRA® Oilsands

Application Note

SONARtrac® SOLUTIONS

SONAR Array-Based, Non-Contact Process Flow Monitoring Systems Provide Reliable, Volumetric and Entrained Air Measurements in One of the Most Challenging Non-Newtonian Fluid Streams

Benefits

- Provides accurate, reliable volumetric flow measurement in froth applications where conventional flow technologies have difficulty making a measurement - or cannot provide one at all
- Provides on-line measurement of entrained air enabling the customer to monitor and assess the effect of changes on process efficiency and quality
- Provides on-line monitoring of the effectiveness of deaerating systems
- Clamp-on feature enables quick, simple installation without process down-time
- Eliminates risk of leakage associated with flanged, in-line flowmeters thereby resulting in safety and environmental benefits

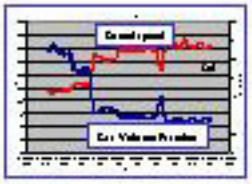
CiDRA's SONAR array-based process flow measurement systems are ideally suited for aerated, non-Newtonian flows

Process

The primary froth generated from the separation vessel is a complex mixture exhibiting very high viscosities and non-Newtonian behavior. Typically, the froth composition is 60% bitumen, 30% water and 10% solids by weight. The froth generated from the separation vessel goes through a deaerator, which produces a stream with an air content ranging from 1% to 12%. Removal of air is necessary to ensure efficient transport and processing downstream. After the deaerator, depending on the process, the froth is then diluted to facilitate water and solids separation and moves on for further processing through inclined plate settlers and centrifuges.

Challenge

Because the primary froth stream is a complex, aerated non-Newtonian mixture, most process flow lines after the deaerators cannot employ instrumentation to measure volumetric flow. In addition, there is no other current method or instrument device available that can provide an on-line, real time, accurate measurement of the amount of entrained air in froth streams.



SONARtrac Solution

CiDRA's SONAR array-based process flow measurement systems are well suited for aerated, non-Newtonian flows. These innovative systems provide the customer with the ability to accurately measure volumetric flow - and for the first time - deliver a real time, precise measurement of entrained air in the froth. *The SONARtrac* VF-100 flow monitoring system and the GVF-100 gas volume fraction meter utilize patented SONAR array processing techniques to passively "listen" to acoustic fields generated by the flow of the froth and the naturally occurring sound in the process line.

Having the capability to precisely measure the amount of entrained air and volumetric flow of the froth stream will enable the customer to correlate these measurements to key process variables and parameters. This capability will give the customer the ability - for the first time - to utilize these critical measurements to optimize their process and enhance operating efficiencies and product yields.

SONARtrac process flow systems clamp on to the existing pipes and have no wetted parts, thereby maintaining the full integrity of the piping system. *SONARtrac* process flow system's ability to clamp on to the line eliminates the possibility of leakage associated with conventional flow instruments, thereby enhancing safety and environmental benefits and increasing process uptime.

SONARtrac® Technology

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