APPLICATION REPORT

Minerals & Mining

Measurement of Abrasive Fluids for Flocculent Dosing

- Concentration measurement of abrasive slurry in sand production
- Improved measurement accuracy gives savings on expensive chemicals

RÅDASAND

1. Background

Råda Sand AB is a Swedish producer and supplier of fine sand to various industries including concrete, filtration manufacture, etc. The fine sand is gained from sand/clay slurry which is the raw material for the process.

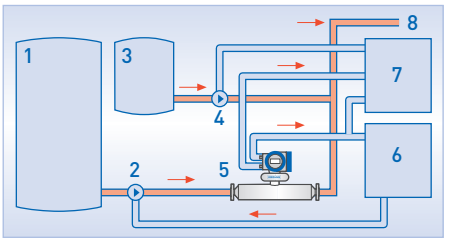
2. Measurement requirements

To be able to get the fine sand out of the water, they have to add the right amount of flocculent chemicals to settle the sand. Therefore, Råda Sand required an accurate measurement of the mass concentration of the sand mixture to provide an input to the controller which governs the ratio of flocculent addition to the mixture. The mass concentration controls the whole process in a ratio with the volume flow measurement of the highly abrasive slurry.

Process Parameters

Media:	Sand/Clay slurry (<10% Sand, >90% Water)
Pressure:	2 bar (29 psi)
Temperature:	15°C (Ambient) (59° F)
Flow capacity:	15000l/h (3963 gal/h)
Sand content:	800 kg/h (1763 lbs/h)

Principle of flocculent dosing in sand production



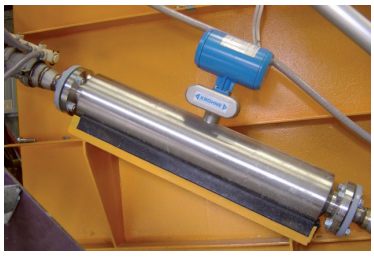
1 Sand/clay slurry tank
2 Valve to control flow of sand/clay slurry
3 Flocculent tank
4 Valve for dosing flocculent chemicals
5 OPTIMASS 7300 mass flowmeter
6 Process control of mass flow
7 PID controller to adjust flow of flocculent chemicals
8 Processing in belt filter press

KROHNE

3. KROHNE solution

For a direct mass concentration measurement, KROHNE suggested a Coriolis mass flowmeter. The only equipment suitable for the application was the OPTIMASS 7000 series due to its single straight tube, which is less susceptible to abrasion in comparison to a double straight or bent tube meter. In addition, the delivered DN 40 (1 1/2") meter featured a measuring tube made of Titanium.

Meter mounted on site



4. Customer benefits

With this measurement solution, Råda Sand was able to reduce the dosing of the high-priced flocculent (inorganic coagulant) and save costs due to improved accuracy. Furthermore, the improved efficiency in the process resulted in a better end product. Pressure drops were reduced due to the single straight tube meter and its design also allows for a high durability and long lifespan even with the abrasive medium.

5. Product used

OPTIMASS 7300 C

- The only mass flowmeter with a single straight measuring tube available in Stainless Steel, Hastelloy, Titanium and Tantalum
- Approved according OIML R 117-1 for mass and volume flow accuracy class 0.3
- Installation insensitive, no clamping or straight runs required
- Minimal pressure loss
- Easily drained and easy to clean
- Electronics with full functionality and diagnostics

Contact

KROHNE Ltd
34-38 Rutherford Drive
Wellingborough, Northants NN8 6AE
Tel.: +44 (0)1933 408500
Fax: +44 (0)1933 408501
Email: massflow@krohne.com

Please visit our website for a current list of all KROHNE contacts and addresses.

www.krohne.com