Cost savings by flocculant dosage optimization

Ultrasonic sensor assures better control of the thickener operation

The thickening process in mines can be improved significantly by an effective bed level measurement.

Benefits at a glance

- Better control and monitoring of the thickener operation.
- Potential cost savings through optimization of the flocculant dosing.
- Extremely reliable measurement with no loss of signal occurring during normal operation.

Bed level measurement in a Canadian mine ensures continuous monitoring of the tailings thickener performance and helps to identify the areas of improvement.

Customer challenge A Canadian service provider for metallurgical technologies and testing services collaborated with Endress+Hauser in a Canadian mine. This involved the application of an ultrasonic sensor to monitor the level of solid bed in the main tailings thickener. The sensor should replace the manual measurement for which a “sludge judge” (sludge sampling device) had been used. This manual measurement was time consuming and not as reliable as an automated measurement.

Our solution The Endress+Hauser bed level measurement system consists of a Turbimax CUS71D ultrasonic interface sensor that is submerged 20-25 cm (8 – 10”) below the water surface of the thickener and connected to a Liquiline CM442 multiparameter transmitter. The transmitter processes the signals from the sensor, and can display an echo profile on its LCD screen. Moreover, it provides outputs using various protocols for remote monitoring. In this case a traditional 4 – 20 mA output was wired to the thickener PLC to allow monitoring through OSIsoft’s PI system.

After the installation, product application specialists from Endress+Hauser attended the site to set up the instruments, together with the mine’s maintenance and technical personnel. The set up

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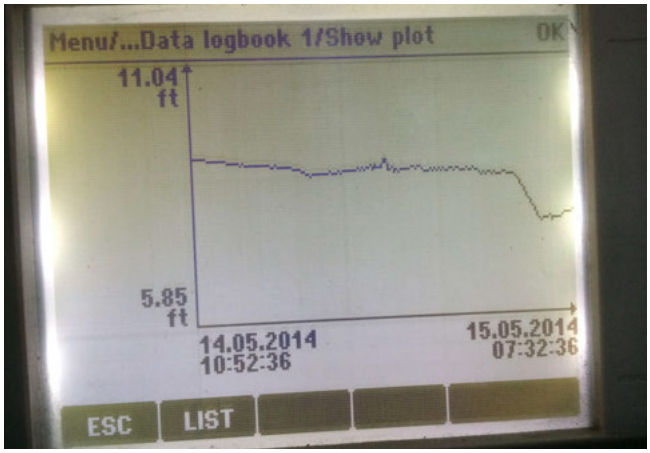
Manual measurement using the “sludge judge”.



The ultrasonic interface sensor Turbimax CUS71D continuously monitors the thickener, ensuring safe, economic and efficient sedimentation processes.

was very simple, and the measurement was verified by the simultaneous use of a common “sludge judge”.

Proven solution

The bed level measurement has been monitored for several months and has proven to be extremely reliable – with no loss of signal occurring during normal operation. Long-term trends show certain variations in the measurement signal that can generally be explained by changes in the thickener operating parameters. It was apparent that within the thickener different operating regimes exist that are well correlated to the routine operational changes made in the concentrator.

The ultrasonic sensor provides significantly better information than the so far used “sludge judge”, and allows better control and monitoring of the thickener operation.
In particular there are potential cost savings by using the measurement for optimizing the flocculant dosing. This can only be achieved if a robust measurement is available.

Components:

- Ultrasonic sensor Turbimax CUS71D – AA1A
- Liquiline CM442 transmitter
- Flexdip CYA112 immersion assembly

Turbimax CUS71D provides you with reliable measuring values in real-time, for quick control of valves and actuators.

Instruments International

Endress+Hauser Instruments
International AG
Kaegenstrasse 2
4153 Reinach
Switzerland

Tel.: +41 61 715 81 00
Fax: +41 61 715 25 00
www.endress.com

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