

ABB MEASUREMENT & ANALYTICS | APPLICATION NOTE

ProcessMaster FEP500 electromagnetic flowmeter Hydrocyclone feed in the mining industry



ABB ProcessMaster improves production, saves cost of maintenance and downtime in large zinc and lead mine.

Measurement made easy

Using ABB's ProcessMaster in hydrocarbon inlet feed lines

Introduction

One of the world largest mines that produce zinc and lead concentrate with a high silver content, is located in Australia. Electromagnetic flowmeters are being used in the hydrocyclone inlet feed lines.

Hydrocyclones are used for the classification on particles in slurries. Light particles are removed with the overflow stream by an upward swirling flow through the vortex finder, while heavier particles are removed with an underflow stream by a downward swirling flow. The particle size of the cyclone feed slurry ranges from 250 to 1500 microns leading to high abrasion. In addition to this, the particles cause a high noise signal at the measuring electrodes resulting in a most challenging application for an electromagnetic flowmeter.

Application and requirements

The measurement of the cyclone feed slurries has to be reliable, accurate and responsive to changes in the plant load. This enables to balance the plant load and plant throughput.

In addition to this, the service life of the flowmeter is essential to minimize maintenance and replacement cost. The flowmeter sensor has to withstand major abrasive wear caused by this kind of slurry as long as possible.



ProcessMaster FEP500 transmitter and flowmeter

Solution

Appropriate liner and electrode material selection combined with application engineering, enabled ABB to reduce replacement intervals significantly. ProcessMaster had been choosen as the flowmeter system resulting in Best-in-Class measurement and service life performance.

The ProcessMaster sensor equipped with ceramic carbide liner and tungsten carbide electrodes meets the needs. The rugged liner material provides excellent abrasion resistance while the durable Tungsten carbide electrodes minimize signal noise.



Hydrocyclone feed line



....Solution

A protection ring at the inlet of the flowmeter maximizes service life of the sensor protecting the liner material from abrasion due to differences of the in inner diameter of the flowmeter and the connected pipe.

ProcessMasters most advanced filtering technology separates the signal from the noise without loosing responsiveness to changes of the flowrate. This results in a most stable flowrate reading of the cyclone feed slurry.

Customer benefits

Based on years of experience in the mining market, ABB provided the best in class solution. Maintenance and replacement cost have been minimized substantially. Material selection has allowed for an service life up to 3 years or longer.

Specified product

ProcessMaster

- Rugged, robust ceramic carbide liner, combined with a protection plate ensures excellent abrasion resistance
- Tungsten carbide electrodes minimize signal noise
- Remote installation of the transmitter avoids effects due to vibration



ProcessMaster's most stable flowrate reading (20 mA signal)



ABB Limited Measurement & Analytics

Oldends Lane, Stonehouse Gloucestershire, GL10 3TA UK Tel: +44 (0)1453 826 661 Fax: +44 (0)1453 829 671 Email: instrumentation@gb.abb.com

ABB Inc.

Measurement & Analytics

125 E. County Line Road Warminster PA 18974 USA Tel: +1 215 674 6000 Fax: +1 215 674 7183

abb.com/flow

ABB Engineering (Shanghai) Ltd. Measurement & Analytics

No. 4528, Kangxin Highway Pudong New District, Shanghai, 201319 P.R. China Tel: +86(0) 21 6105 6666 Fax: +86(0) 21 6105 6677 Email: china.instrumentation@cn.abb.com

ABB Automation Products GmbH Measurement & Analytics

Dransfelder Str. 2 37079 Goettingen Germany Tel: +49 551 905-0 Fax: +49 551 905-777 Email: vertrieb.messtechnik-produkte@de.abb.com



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