CASE STUDY

The SDM is tested against a nuclear densimeter **to control the speed of the screw feeder** for managing the concentration of fly ash slurry

CASE STUDY - SYNERGY, MUJA POWER STATION AUSTRALIA

Introduction

The Muja power station, operated by Synergy is located in the Collie region of Western Australia. The plant operates by using coal to power steam turbines and boilers, to generate an output of over 800 megawatts of electricity. Initially, the power station had radioactive density meters installed to manage the concentration of fly ash slurry. The key goal of the process is to control the speed of the screw feeder that contains fly ash to keep an optimum pumping performance while minimizing water usage.

Challenges

A fundamental by-product of the coal-fired power plant is fly ash, which is present in flue gases when exiting the chimney stack. By using electrostatic precipitators, fly ash dust particles are extracted from the gases before entering the chimney. Next, the dry fly ash is stored in a silo. The main challenge involves effectively managing the fly ash, which includes a series of steps: moving it from silos to tanks, blending it with brine water to create a slurry, and then pumping this slurry to a designated fly-ash disposal dam. The Rhosonics Slurry Density Meter's capabilities are tested alongside that of an existing radioactive density meter to determine the accuracy and reliability when measuring fly ash slurry.

Measuring task

The SDM is used to control the fly ash screw feeder speed to maintain an SG of around 1.5 in the tank which ensures optimum pumping performance while minimizing water usage.

Our solution

The Rhosonics SDM can provide real-time readings on the densities of the fly ash slurry, done in a reliable, stable, and environmentally friendly way through the precision of acoustic soundwaves. The Rhosonics SDM is installed using a weldolet fitting that is welded on the side of the slurry mixing tank.

Client statement

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> The SDM offered an innovative solution, allowing us to install it directly onto the tank. Traditional density meter installations necessitate a spool piece between the pipe, which wasn't feasible. When calibrated with slurry, the Rhosonics SDM is more precise than the nuclear densimeter which is only calibrated through water. The Rhosonics SDM has proven to be reliable and accurate and has now replaced the existing radioactive which were costly to maintain and eliminate the associated safety risk. Overall we are happy with these instruments and would recommend them to anyone thinking of using them.
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> Dean Whiteley,
> Lead E,C & I Asset Engineer.

Fig. 1: The Rhosonics SDM installed alongside a radiation-based density meter

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Results

Throughout the performance period, the SDM demonstrated concrete reliability and accuracy in its measurements. The successful integration of the device enabled the customer to replace their existing radioactive density meters that previously had carried out density measurements on the slurry mixing tanks while cutting maintenance and safety expenses drastically.

Some of the experienced benefits are:

- Ability to directly detect changing process conditions and control the speed of screw feed
- Easy calibration and monitoring of the device
- Eliminate the nuclear density meters on-site

Comparison data

The measurement data of both density meters were recorded and compared during the operation. The red line shows the measuring results of the Rhosonics SDM Slurry Density Meter and the blue line represents the radiation-based technology. The trends are similar, but the Rhosonics SDM matched better with the reference of laboratory samples.

For further information

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	RHOSONICS – SDM
	NUCLEAR DENSITY METER

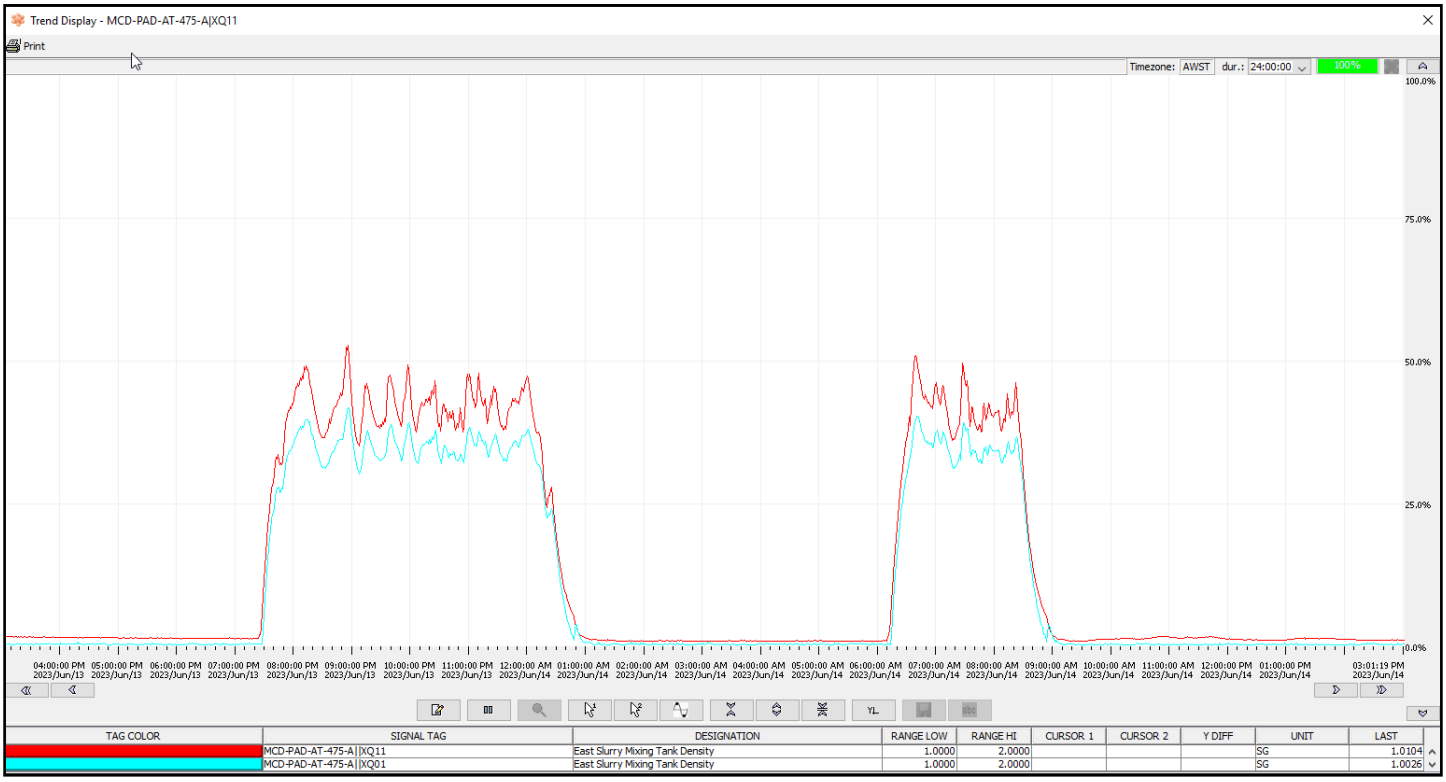

Fig. 2: Trend showing the Rhosonics SDM results versus the radiation-based density meter

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