

Advanced level control

Increase in production while reducing maintenance costs

**HILLGROVE
RESOURCES**

Hillgrove Resources Limited is the owner of Kanmantoo Copper Mine located in the Adelaide Hills region of South Australia. Hillgrove's goal to become a mid-tier gold and copper/gold resources group is expected to be mainly driven by growth at Kanmantoo. The location of the mine is one of the most under explored and prospective base metal provinces in Australia, and shows an outstanding potential for copper-gold and silver-lead-zinc mineral deposits.

"The Area of Incoupling diagnostic function will be a great maintenance tool for us, as we can trend and interpret the value and rate of buildup to schedule in cleaning for a planned shutdown day."

Owen Hocking
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Kanmantoo Copper Mine

Kanmantoo Copper Mine's use of the latest radar level technology has increased ROM bin capacity to increase production and reduce maintenance costs.

Level measurement in extremely dusty environments faces the formidable problem of dirt buildup. In ROM bins this is particularly prevalent with dirt covering everything in the surrounding area. Without increasing infrastructure or equipment, Kanmantoo Copper Mine in South Australia increased production capacity and plant availability using the unique diagnostic function of a radar level measurement transmitter.

Customer Requirements

- Increase production capacity at low cost
- Increase plant availability
- Reliable level measurements unaffected by dirt buildup
- Reduce maintenance requirement

Customer challenge

To increase production and storage capacity, Kanmantoo Copper Mine increased the fill height of a ROM Bin used to store unprocessed copper ore. To accommodate this increase, the existing radar level sensor needed to be relocated to a new position, where it unavoidably will get covered in dirt.

The strength of the measuring signal emitted and received by radar level transmitters is a critical factor for precise measurements. Dirt attenuates the measuring signal energy, and as dirt buildup increases, readings gradually become unreliable. Even a visual inspection of the amount of dirt buildup gives no measure of the degree of impaired performance.

So typically under these conditions, conventional radar and ultrasonic/ acoustic level transmitters would need to be regularly cleaned; sometimes every hour. Not only would this be a time-wasting activity for maintenance personnel, but more importantly the operation of the ROM bin would be stopped resulting in costly downtime.

Solution

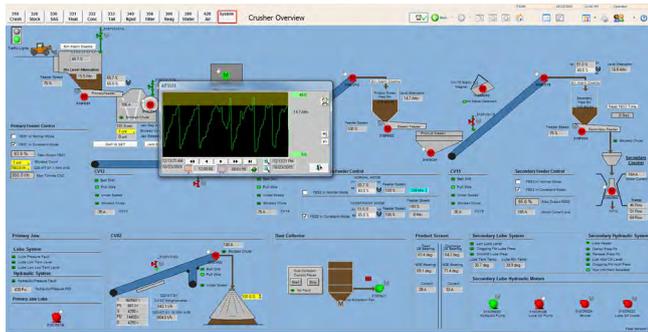
Fortunately the FMR57 radar level transmitter that was installed had an advanced diagnostic function called “Area of Incoupling”. This function monitors the extent of dirt buildup, and reports it back to the control room to alert personnel of the need to clean the transmitter. The FMR57 also features a PTFE horn protector that reduces the rate of buildup. This means cleaning is required less frequently.

Implementation

To increase the fill height of the ROM bin the mine’s engineering team relocated the transmitter to a recommended position. Endress+Hauser’s service engineers then assisted with the commissioning of the transmitter and setting up the “Area of Incoupling” diagnostic function.

How it works

The amount of buildup is graphically represented in the mine’s control room on the HMI system. The graph allows personnel to interpret the rate of buildup, and allows them to forecast the time when cleaning will be required.



Control room display representing the attenuation values measured by the FMR57’s “Area of Incoupling” diagnostic function.



Owen Hocking, Electrical Leading Hand, reviews the installation of the FMR57 in its new position

Benefits

- Expensive mechanical changes were avoided, as there was not need to reposition the transmitter where dirt buildup would be reduced.
- Unreliable readings from dirt buildup are avoided by early cleaning alerts.
- Effects on production are minimized with planned and scheduled cleaning.
- Plant availability is increased, since unnecessary cleaning is avoided.
- Maintenance costs are reduced due to less frequent cleaning.
- Overall operating costs of the ROM Bin’s level measurement are reduced.

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