



Application Case Study

Powdered Clay Silo

The Application

Powdered clay is used as raw materials for many products – porcelain, china, some heavy paints, and even synthetic rubber. The clay is dried and pulverized into a powder that ranges from the consistency of sand to fine dust. It is normally stored in tall silos that have no internal braces or structures – perfect for mounting an ultrasonic transmitter.

Unfortunately, the clay itself does not allow most ultrasonics to operate well. The clay absorbs sound very well and there is always a great deal of dust in the atmosphere. These two factors make it difficult for an ultrasonic transmitter to work properly. When there is dust in the atmosphere and the material measured tends to absorb sound, it can be very difficult to receive an echo. If an echo cannot be received, an ultrasonic transmitter won't work.



The Solution

There is a plant in the southern U.S. that makes synthetic building materials. They use powdered clay as bulk filler in their product. There are two 64-foot (19.5m) storage silos at the plant and several surge bins for processing. These storage vessels were all using capacitance probes to give level indication at the 25% points, but even these were unreliable and required maintenance.

The echOsonix U73/RBP was proposed for the storage silos. This product can penetrate the dust more effectively than other ultrasonics due to low-frequency sound and a high-power sensing signal. The adaptive gain in the U73/RBP allows it to compensate for the sound-absorbing properties of the clay. As the clay absorbs more sound, the unit makes itself more sensitive to allow continued service.

The Results

The U73/RBP was installed in one silo as a test unit. Initially, it seemed to have trouble keeping up with the process when filling. However, on investigation, it was discovered that the unit was not set up to track the process as fast as it needs to. There is a "Speed" setting in the Setup menu that is to be set to the speed the process is expected to move. This value was too low so the device could not keep up with the clay. This value was set to the proper setting and the unit has had excellent performance ever since.

Ordering Information

Electronics Model **U73-FL7J-00-10**
Remote 110VAC/24VDC Line-powered transmitter
4 x SPDT Relays adjustable over entire range
NEMA 4X Electronics housing

Sensor Model **RBP-GC-00-100**
10 kHz Transducer for remote unit
10" 150# Flanged process connection
100-ft. cable between sensor and electronics housing