



Application Case Study

Measuring Powdered Limestone



The Application

Powdered limestone has many uses. Water treatment and agriculture use it to reduce acidity, when it is baked with powdered clay it makes cement powder, and it is a raw material for making glass, flooring materials, and a wide variety of other everyday products. One common industrial use is to treat the by-products of a power plant to meet environmental regulations.

A power plant was having difficulty measuring level in their limestone silo. They had another ultrasonic transmitter in place, but it was intermittent and would not work when there was dust in the silo. Powdered limestone is very fine and creates huge amounts of dust. In fact, it is so dusty that respirators must be worn when working around it. This dust absorbs sound and causes most ultrasonic transmitters to fail.

The plant technician was at a loss on how to solve this problem. The existing ultrasonic transmitter was worthless, his budget couldn't afford radar or load cells, and powdered limestone is too abrasive for any probe-type instrument. He was afraid that there might not be a feasible solution to this problem.

The Solution

The local SOR® rep had recently sold an echOsonix level transmitter to this customer to solve a foaming problem in a sump pit (see SOR Form 1181). During a routine sales call, the technician mentioned his limestone silo problem. Since the echOsonix worked so well in the sump pit, he wanted to know if it would read powdered limestone also. The rep assured him that yes, it would, and we already had successful limestone applications at waste water, alumina refining and building materials sites.

The SOR rep quoted a U73/RCP for this application. He explained how the low frequency and high power of the echOsonix allow it to penetrate through thick dust in applications like this. The adaptive gain allows the unit to adjust its sensitivity according to the amount of dust present. These features are what allow the U73/RCP to excel where other ultrasonic transmitters fail.

The Results

A U73/RCP was purchased and installed into the limestone silo. The main problem with the original transmitter was loss of signal during filling. When the U73/RCP was initially installed, it was reading correctly – but the silo was not being filled at the time. The technician planned to personally monitor it the next time a truck came and filled the silo.

The next day he returned from lunch to see the limestone truck leaving the plant! It turned out that the delivery was made while he was away. He checked the readout on the unit and it looked about right. Curious, he went and checked the history for this unit on his DCS system, expecting to see a loss of signal during filling. What he found was the unit tracked during the entire filling cycle and was reading exactly correct based on what was originally in the silo and what had been added. Once again, the echOsonix solved a chronic problem in a tough application.

Ordering Information

Electronics Model **U73-FL7J-ZZ-00-20**
Remote 110VAC/24VDC Line-powered transmitter
4 x SPDT Relays adjustable over entire range
NEMA 4X Agency-listed electronics housing

Sensor Model **RCP-4C-ZZ-100-FC**
20 kHz Transducer for remote unit
4" 150# Flanged connection
Division 2 Explosion-proof, Agency-listed transducer
100-foot remote cable
Focusing cone option for extremely dusty conditions