



Application Case Study

Measuring Different Material Types

The Application

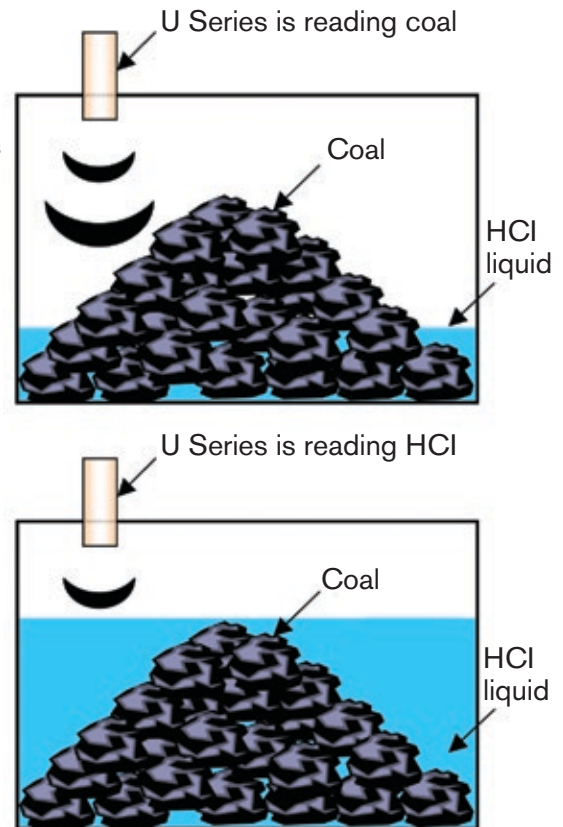
Charcoal filters are used in many manufacturing facilities to clean impurities out of water. In some plants, the need for these filters is so great they treat their own charcoal instead of buying it. Charcoal is made by soaking regular coal in hydrochloric acid for a period of time to activate the carbon in the coal. Activated charcoal is a very effective, inexpensive way to remove impurities from water for industrial use.

Charcoal is activated in an enclosed vessel. A pile of normal black coal is first placed into it. Hydrochloric acid is then poured onto it until it completely covers the coal. This mixture is then allowed to soak for a period of time to activate all of the carbon in the coal. The level of material must always be monitored for complete activation. This means that the level transmitter must be able to detect the highest level in the vessel, whether it is dry coal, liquid hydrochloric acid or wet soaked charcoal.

A magnesium plant in Canada makes their own activated charcoal in order to meet the clean-water needs of their process. As part of their control system, they must know the highest level in this vessel. They consulted with a popular European ultrasonics manufacturer and were told this would require two transmitters - one to be aimed and tuned for the coal and one tuned for the liquid acid. The control system would have to be able to ignore the one that was unable to read a level and take the proper level from the other unit. The user thought this was a bit excessive and unreliable so they went looking for a better solution.

The Solution

We presented this customer with the U73/RDP as a simpler, lower-cost solution. The echOsonix transmitters provide high-power signal and adaptive gain processing. This allows reading of different surfaces with the same programming setup. That means no aiming is required for solids and the unit does not have to be calibrated to a specific application. Competitive units use lower power signals and fixed gain processing, which means they have to be very carefully calibrated to a specific application and cannot usually do two or more surfaces with the same setup.



The Results

The U73/RDP was installed for this application and set to read solids, which is the most flexible of the three settings (liquids, slurries, solids). The vessel is about five feet deep, and as described above, the top level is either a pile of coal chunks or liquid acid. The echOsonix performs perfectly. There was no need for factory assistance on installation/setup, only one transmitter was needed, and no special PLC programming was required. The customer found their solution with only one device and negligible effort for commissioning. The U73/RDP is working flawlessly and the customer does not have to be concerned about poor quality charcoal due to an uncontrolled process.

Ordering Information

Electronics Model **U73-FL7J-ZZ-30**
Remote 110VAC/24VDC Line-powered transmitter
4 x SPDT Relays adjustable over entire range
NEMA 4X Agency-listed remote electronics housing

Sensor Model **RDP-3A-ZZ-50**
30 kHz Transducer for remote unit
3" NPT Threaded connection
Class A-G, Div. 2 Agency-listed transducer
50-foot transducer cable