



### The Application

Carbon black is used as an additive in many products. The most common use of carbon black is in the manufacture of natural and synthetic rubber. Carbon black is a black, fluffy powder that is either very conductive or a very good insulator. Carbon black is made from the solids taken from exhaust while burning low-grade diesel oil. It is a very fine powder that is slow to settle when dumped into a storage vessel.

Carbon black poses many problems for level detection devices – it is one of the most challenging applications in industry. Because it is either very conductive or a good insulator, contact-type instruments typically have difficulty tracking the level properly. These same properties make level detection with radar difficult. Some people have tried ultrasonic transmitters, but the typical product is too weak to detect level through the dust in a carbon black application. Carbon black also coats sensors, which blocks the signals of most ultrasonics.



### The Solution

A manufacturer of synthetic rubber building materials was having trouble detecting carbon black in their surge bins. They had tried ultrasonic transmitters with poor success. The bin had four paddle switches that told them the status in 25% increments, but the paddle switches were high maintenance and did not provide very good control of their process. For years they had been looking for a good, reliable level transmitter for this process.



SOR® had recently made a presentation to the corporate engineering people of this company regarding the echOsonix transmitter. We discussed how the high power and low frequency in this product penetrates through dust better than any other ultrasonic. The presentation also covered the adaptive gain it uses to adjust sensitivity according to the conditions in the vessel. These points convinced them this product had the best chance of working in carbon black, so the manufacturer bought one based on the recommendation of their corporate engineers.

### The Results

The customer purchased a U73/RKP for his 14-foot (4.3m) surge bin. The sensor was installed between the center inlet and the tank wall. The unit appeared to be operating properly after installation. SOR visited the site and saw that the output was bouncing around quite a bit due to the high dust levels. We tuned the unit to be a little more sensitive at normal times and react a little quicker when the adaptive gain kicks in.

The unit has now been operating for several weeks without fail or loss of signal. The old ultrasonic transmitters they used previously would fail when the bin was being filled, and they would have to remove them and clean the sensor about twice a week. The U73/RKP has never failed to detect the level in the surge bin and the sensor has not been cleaned since installation. Another tough application successfully monitored by the SOR echOsonix!

### Ordering Information

Electronics Model **U73-FL7J-00-15**  
Remote 110VAC/24VDC Line-powered transmitter  
4 x SPDT Relays adjustable over entire range  
NEMA 4X Electronics housing

Sensor Model **RKP-3A-00-75**  
15 kHz Transducer for remote unit  
3" NPT Process connection  
75-foot cable between sensor & electronics housing