

# Cement Factory Successfully Measures Level in Silos with Radar Level Transmitter

## RESULTS

- Provides reliable measurement in a dusty, unfriendly environment
- Provides efficient use of silo capacity
- Reduced maintenance
- Installed without removing silo from service



## APPLICATION

Powder Cement Silo

**Application Characteristics:** Heavy powder, dusty, long distance, uneven surface, low dielectric

## CUSTOMER

Cement Factory, USA

## CHALLENGE

At this cement factory, the level measurement for cement silos has traditionally been Load Cells or radioactive technologies. Load cells are difficult to set up and radioactive technologies can be harder to operate in the environment.

The cement powder contains the primary components limestone and clay, as well as mineral compounds such as calcium carbonate, silica, alumina, magnesia and Ferric Oxide. The particle size is around 200 microns.

Cement produces large amounts of dust during filling and emptying of the silo. This makes it difficult to use traditional level transmitters that are in contact with the product; probes and gauges suffer from problems due to wear and product coating. The weight of cement can cause probes to break.

Ultrasonic gauges also had difficulties measuring in the dusty atmosphere. Other difficulties are the silo height (82 ft (25 m)), the low dielectric properties, and the large inclination angle of the cement surface.

Without a reliable level measurement, there is always a possibility of over- or under-filling the silo, which affects productivity.



*The parabolic antenna and a Teflon (PTFE) cover to protect against dust.*

## SOLUTION

A non-contacting level technology was a desired solution for this application. Radar works well in a dusty environment and the Rosemount 5600 non-contacting radar transmitter has the power to handle the characteristics of cement silos. The 5600 was installed on available top flanges without taking the silos out of service.

A parabolic-style antenna and a flexible PTFE dust cover were chosen for these silos. The parabolic antenna design concentrates the radar beam and focuses the beam over the full height of the silo. The flexible nature of PTFE dust cover prevents dust buildup on both the antenna and the PTFE cover itself, eliminating any maintenance due to dust buildup.

The 5600 has a unique, highly sensitive receiver, which enables the transmitter to work well on demanding solids applications with low dielectric properties and dusty environments like cement. It is also supplied with Rosemount Radar Master, a configuration and troubleshooting software. The extra power of this receiver combined with the focused beam of the parabolic antenna and the easy-to-use configuration software tools provide a robust and reliable level measurement.

The cement plant now has a level measurement that is low maintenance and reliable with no risk of over- or under- filling silos.

## RESOURCES

### Rosemount 5600 Series Radar Level Transmitters

<http://www.emersonprocess.com/rosemount/products/level/m5600.html>

### Measuring Solids With A Rosemount 5600 Non-Contacting Radar

See Document Number 00840-0100-4024

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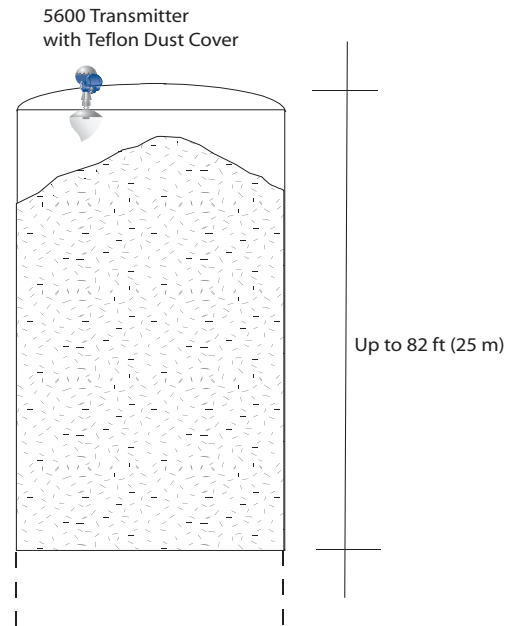
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*A Rosemount 5600 with a parabolic antenna allows better reflection on a cement silo.*



*Rosemount 5600 with a parabolic antenna and a PTFE (Teflon) dust cover*