

Manufacturer Increases Silo Inventory Capacity and Efficiency

RESULTS

- Increased capacity by 60%
- More efficient timing of raw material deliveries
- Eliminated risk of inventory shortage



APPLICATION

Calcium carbonate powder silos

Application Characteristics: Dielectric constant 6.1-9.1, dusty, changing surface angle

CUSTOMER

ICP (International Coating Products), France

CHALLENGE

There are five silos - one 16 m (53 ft) and four 13 m (43 ft). The tasks are to:

- determine calcium carbonate powder level
- control available material in the silos
- trigger orders to supplier
- calculate volume and correlate to mass

Calcium carbonate powder is a challenge to measure because it produces large amounts of dust during emptying and filling. This makes it difficult to use traditional mechanical level gauges or ultrasonic technology. Another measurement challenge is the changing inclination angle of the material surface.

Previously, ICP used load cells for the larger silo. These gave inaccurate readings and were fragile. Replacing defective load cells is a complicated and costly operation that requires expensive crane rental or hydraulic leverage systems. Also, it is impossible to add load cells to a pre-existing silo.

In the smaller silos, three propeller-style point level gauges for low, middle, and high level were used. They were unreliable and sensitive to moisture and gave insufficient information as to when additional raw material was required. ICP did not want to risk running out of inventory so the supplier often spent hours waiting to deliver raw material to tanks that were still full.

Dusty spaces and angles are no problem for the Rosemount 3300. It can reliably measure the powder and the customer is very pleased with the solution.



ICP storage silos

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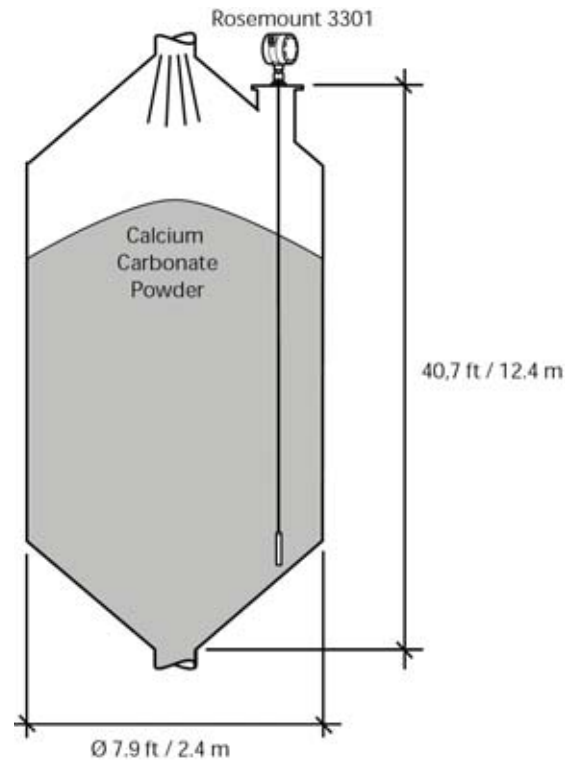
SOLUTION

With no moving parts and immunity to dust, the Rosemount 3300 Guided Wave Radar (GWR) was able handle the measurement challenges. Because the 3300 is a top-mounted device, it can be added to existing silos as needed. The more reliable measurement allows the smaller silos to be used to maximum capacity. The smaller silos can now safely supply to higher production levels. When the 3300 is used in conjunction with a remote stock management system, the annual tonnage increased to 6000 tonnes/silo. This represents a 60% increase over the previous capacity. Formerly, with the smaller capacity, this tonnage would have required a larger silo.

In addition, with the GSM remote communication system, raw material deliveries are more efficiently timed. Together with the two alarms for pre-determined levels, messages such as "space for one truckload now available" and "on average, silo will now be empty within 6 hours" are automatically sent by a GSM-modem to the supplier's computer. This generates an automatic email to the transport company and the deliveries are scheduled accordingly.

This information and two daily readings are available via internet to the bulk transport company, who can now plan their loading and transport schedule accordingly. As a result, ICP never runs out of raw material and their supplier never has to wait.

The reliability and the precision of the system are very satisfactory. Another silo will be equipped next year.



RESOURCES

Rosemount 3300

<http://www.emersonprocess.com/rosemount/products/level/m3300.html>

Emerson Process Management's Chemical Industry Page

<http://www.emersonprocess.com/solutions/chemical>

Rosemount Technical Note - Guided Wave Radar in Solid Level Applications

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