Rosemount™ solids switches application success stories

Learn more about our portfolio of bulk solids level measurement solutions

EMERSON™

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Solids level detection in mixed animal feed

Rosemount vibrating fork solids level switches are ideal for applications under high mechanical stress such as low level indication in very large or tall silos. The compact design is suitable for installation in tanks with very limited space or where access to the tank wall is limited. A variety of tube extension lengths are available to suit different tank geometries and mounting options, and ensure correct switching point.

The Rosemount 2511 Solids Level Switch offers:

- Short response time to suit applications with fast product flow
- Adjustable high/low sensitivity for perfect media detection
- Compact design - ideal for installation in silos with very limited space
- Tube extension models available to suit multiple mounting requirements

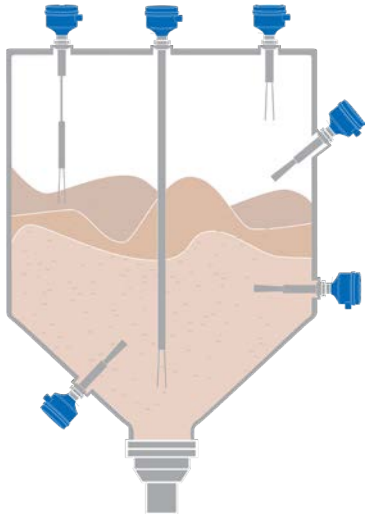
CHALLENGE

A major supplier of compound feed needed to control material at various steps in the production chain. The site wanted to install instrumentation into their animal feed hopper for automated high and low level limit control. The high filling and emptying rate, the tight space, and the heavy dust concentration posed the main challenges in this application. The sensor also needed to withstand the high mechanical load from the mass of the process media, and process temperatures of up to 176°F (80 °C).

SOLUTION

The Rosemount 2511 Vibrating Fork Solids Level Switch provided the perfect solution for the application. With its compact, robust aluminum housing and stainless steel fork, the device was able to withstand the high mechanical load and dust levels, and provide reliable media detection. The adjustable sensitivity and fast response time enabled reliable filling and emptying control of silos, despite the challenging conditions.

Rosemount 2511 installed on the animal feed hopper. Conditions are very dusty



Installation example

Further information: www.Emerson.com/RosemountSolidsLevel

Solids level detection of plastic powder in pre-holding vessels

Rosemount rotating paddle level switches are for full, demand or empty detection for all bulk media in all types of vessels. The simple electromechanical measuring principle withstands heavy loads and extreme temperatures. They are ideal for applications which involve dust, electrical charges, adhesion, and extreme temperatures and pressures. They are particularly suitable for small process vessels and most bulk solids.

The Rosemount 2501 Solids Level Switch features:

- Self diagnosis – device fault alarm
- Adjustable switching delay prevents false switching
- Patented mechanical hysteresis for extended product lifetime
- Performance unaffected by dust, electrostatic charging and caking
- Ability to withstand heavy loads and high temperatures
- Rotatable housing for easy installation
- Mechanically stable shaft bearing design

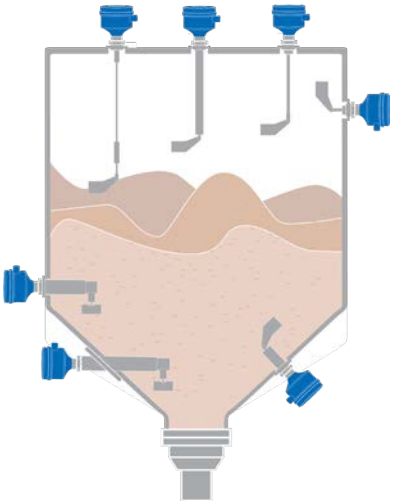
CHALLENGE

A window frame producer needed to monitor the level of plastic powder in several extrusion pre-holding vessels. The measuring device needed to be able to detect the fill and emptying levels in a very dusty environment. The powder had a low dielectric constant of less than 2.0 and a density of about 43.7 lb/ft3 (700 g/l).

ROSEMOUNT 2501 SOLUTION

The Rosemount 2501 Rotating Paddle Solids Level Switch fulfilled the requirements of the window frame producer. The configurable sensitivity of the switch enabled reliable measurement in different media. The paddle switch is unaffected by the dielectric constant of the material and has an optimal sealing, which isolates the mechanics from dust particles.

Rosemount 2501 is installed on the pre-holding vessel



Installation example

Further information: www.Emerson.com/RosemountSolidsLevel

Solids level detection of cereal level

Rosemount vibrating rod level switches are particularly suited for full, demand and empty detection of fine grains and powders in storage and process vessels. They handle light solids and powders with ease and are suitable for use in hazardous and dusty environments. The simple design makes them reliable, maintenance-free and less prone to clogging.

The Rosemount 2535 Solids Level Switch features:

- Performance unaffected by grain size or bridging
- Approvals suitable for use in hazardous/ explosive and dusty environments
- All wetted parts from stainless steel
- Good resistance to caking and clogging
- Reliable, simple and maintenance-free measurement principle
- Small process connections

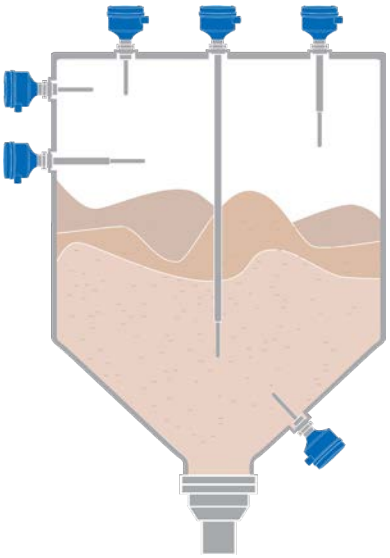
CHALLENGE

A large producer of dairy products, desserts, beverages and baby food needed a sensor capable of reliably measuring the presence of cereal.
The cereal in the hopper had created problems with previously installed devices. The texture of the cereal caused damage to the surface of the installed devices which generated false signals in the system and involved costly stoppage of the machines.

ROSEMOUNT 2535 SOLUTION

The Rosemount 2535 Vibrating Rod Solids Level Switch was installed to control the level of cereal. The switch has a stainless steel body, which meant that it was able to withstand the abrasion created by the cereal without any damage to the switch surface, and the sensitivity of the device enabled easy detection of the cereal level in the hopper.

The Rosemount 2535 Solids Level Switch has a stainless steel body, which withstands the wear caused by the cereal



Installation example

Further information: www.Emerson.com/RosemountSolidsLevel

Solids level detection in animal feed process hoppers

Rosemount capacitance switches are suitable for all bulk materials in all applications. They operate by measuring the capacitance between the probe and container wall and can be used for full, demand, or empty detection. They are designed for low dielectric media and extreme conditions such as high temperatures, high mechanical stress, and high tensile forces.

The Rosemount 2555 Solids Level Switch features:

- Active Shield Technology that protects against media build-up or caking
- Approvals suitable for use in hazardous/ explosive and dusty environments
- Ability to withstand heavy loads and high temperatures
- Simple calibration via push button
- Continuous self-diagnostic probe function
- Easy to access parameters via local display and buttons
- Measurement of low dielectric values (from 1.5)

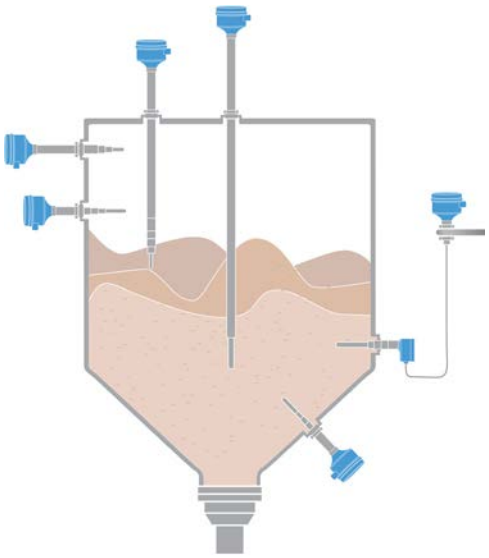
CHALLENGE

A major manufacturer of animal feed needed a sensor for level measurement in two hoppers where the concentrated product was dosed. The main challenge in this application was the strong vibration in the hoppers. The continuous movement in the hopper caused damage to the electronics of previously installed devices. The product also had a low dielectric constant.

SOLUTION

The Rosemount 2555 Capacitance Solids Level Switch provided the solution for the application. The Rosemount 2555 is robust and includes remote electronics, so the vibration was not an issue. The device has a sensitivity high enough for a dielectric constant value of around 1.5. It was also simple to install and commission.

The Rosemount 2555 can be configured with remote electronics, which made it the perfect solution for this application involving heavy vibration



Installation example

Further information: www.Emerson.com/RosemountSolidsLevel

Solids level detection in dusty holding hopper

Rosemount vibrating fork solids level switches are ideal for applications under high mechanical stress such as low level indication in very large or tall silos. The compact design is suitable for installation in tanks with very limited space or where access to the tank wall is limited. A variety of tube extension lengths are available to suit different tank geometries and ensure correct switching point.

The Rosemount 2511 Solids Level switch features:

- Compact design - ideal for installation in silos with very limited space
- Adjustable sensitivity (high/low)
- Short extension and tube extension models available
- Wetted parts from stainless steel

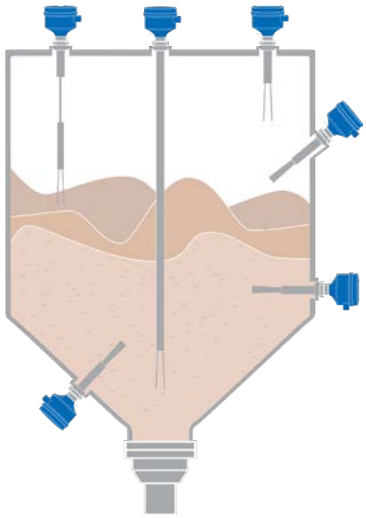
CHALLENGE

A company reclaiming carbon from carbon fiber panels required level measurement in a holding hopper. During the process, the carbon fiber sheets are sent through a furnace where the resins are burnt off and the carbon fiber is reduced to a fine dust. The carbon dust is transferred to a holding hopper before being bagged. The company needed a level switch which could provide reliable measurements even in this very dusty environment where there was also the risk of dust build-up.

SOLUTION

The company installed a Rosemount 2511 Vibrating Fork Solids Level Switch with a set sensitivity of 150 g/l (9.4 lb/ft3). The Rosemount 2511 worked well in the harsh environment and ensured that the hopper would not overfill. It was also unaffected by dust build-up.

The Rosemount 2511 Solids Level Switch works well in harsh, dusty environments



Installation example

Further information: www.Emerson.com/RosemountSolidsLevel

Solids level detection in Rotopack packaging machines

Rosemount capacitance switches are suitable for all bulk materials in all applications. They operate by measuring the capacitance between the probe and container wall and can be used for full, demand or empty detection. they are designed for low dielectric media and extreme conditions such as high temperatures, high mechanical stress, and high tensile forces.

The Rosemount 2555 Solids Level Switch features:

- Active Shield Technology that protects against media build-up or caking
- Approvals suitable for use in hazardous/ explosive and dusty environments
- Ability to withstand heavy loads and high temperatures
- Simple calibration via push button
- Continuous self-diagnostic probe function
- Easy-to-access parameters via local display and buttons
- Measurement of low dielectric values (from 1.5)

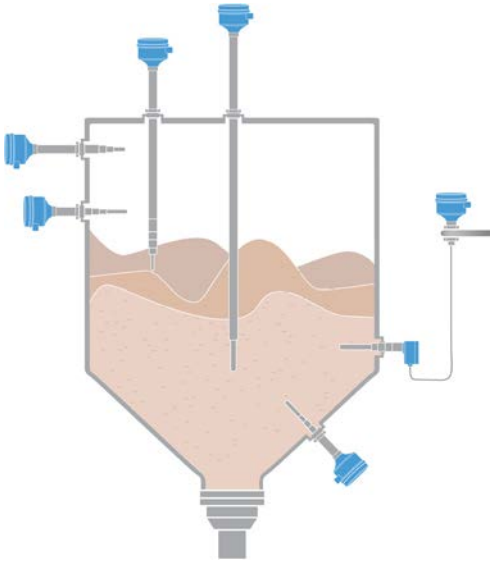
CHALLENGE

A building material manufacturer needed an indicator for its Rotopack packaging machine. The Rotopack continuously filled bags with cement and other materials and high reliability was therefore crucial. The level measurement was also required to give reliable measurements despite product changes.

SOLUTION

The Rosemount 2555 Capacitance Solids Level Switch solved this challenge by guaranteeing secure filling. The switch is easy to calibrate and is a high-quality sensor which ensures that product changes do not affect the reliability.

The Rosemount 2555 Solids Level Switch is installed in the Rotopack



Installation example

Further information: www.Emerson.com/RosemountSolidsLevel

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Solids level detection in wet sand bunker

Rosemount capacitance switches are suitable for all bulk materials in all applications. They operate by measuring the capacitance between the probe and container wall and can be used for full, demand, or empty detection. They are designed for low dielectric media and extreme conditions such as high temperatures, high mechanical stress and high tensile forces.

The Rosemount 2555 Solids Level Switch features:

- Active Shield Technology that protects against media build-up or caking
- Approvals suitable for use in hazardous/ explosive and dusty environments
- Ability to withstand heavy loads and high temperatures
- Simple calibration via push button
- Continuous self-diagnostic probe function
- Easy-to-access parameters via local display and buttons
- Measurement of low dielectric values (from 1.5)

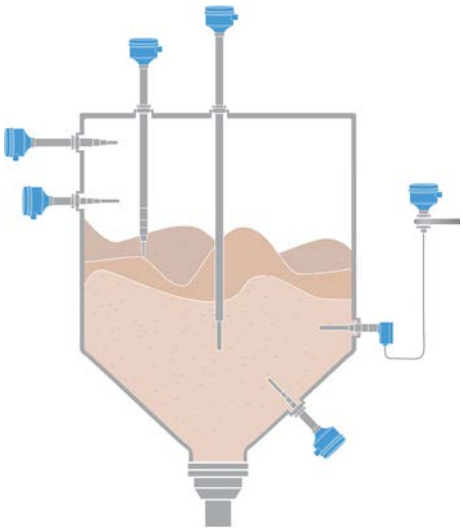
CHALLENGE

A producer of cement and lime needed a high-level detection device for a wet sand bunker. They required a device that would prevent overfilling when new loads of sand were being loaded off. Wet sand tends to cake slightly and shows signs of high abrasion, so the measurement device needed to be able to handle caking.

SOLUTION

The Rosemount 2555 Capacitance Solids Level Switch solved this problem with its simple construction and reliability. It is unaffected by caking and the stainless steel body was not affected by the abrasion of the sand.

The Rosemount 2555 is unaffected by wet sand in the silo and provides reliable measurement



Installation example

Further information: www.Emerson.com/RosemountSolidsLevel

Solids level detection in unpolluted lime storage silos

Rosemount vibrating fork solids level switches are ideal for applications under high mechanical stress such as low level indication in very large or tall silos. The compact design is suitable for installation in tanks with very limited space or where access to the tank wall is limited. A variety of tube extension lengths are available to suit different tank geometries and ensure correct switching point.

The Rosemount 2511 Solids Level switch features:

- Compact design - ideal for installation in silos with very limited space
- Adjustable sensitivity (high/low)
- Tube extension models available
- Wetted parts from stainless steel

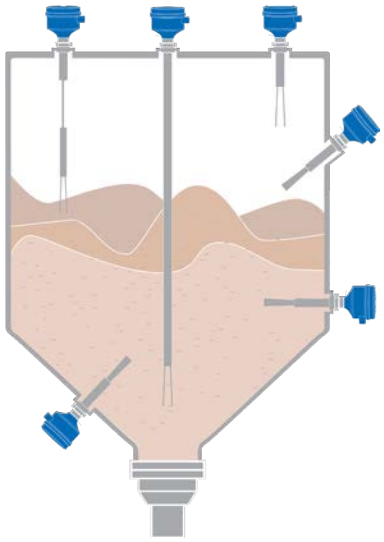
CHALLENGE

A customer needed to control the filling of silos used to store unpolluted lime. The main challenges in this application were the high levels of dust in the silo and the mechanical wear of the measurement device. During filling, the device is exposed to powerful forces when lime builds up in the silo.

SOLUTION

The measurement challenges in this application were solved by installing the Rosemount 2511 Vibrating Fork Solids Level Switch with a probe length of 39.4 in. (1000 mm). The robustness of the sensor and its ability to withstand high mechanical loads ensures a reliable measurement, and the device is unaffected by high levels of dust.

The Rosemount 2511 Solids Level Switch has a short extension length, which makes it capable of withstanding high mechanical loads



Installation example

Further information: www.Emerson.com/RosemountSolidsLevel

Solids level detection in fertilizer filled dosing tanks

Rosemount capacitance switches are suitable for all bulk materials in all applications. They operate by measuring the capacitance between the probe and container wall and can be used for full, demand, or empty detection. They are designed for low dielectric media and extreme conditions such as high temperatures, high mechanical stress, and high tensile forces.

The Rosemount 2555 Solids Level Switch features:

- Active Shield Technology that protects against media build-up or caking
- Approvals suitable for use in hazardous/ explosive and dusty environments
- Ability to withstand heavy loads and high temperatures
- Simple calibration via push button
- Continuous self-diagnostic probe function
- Easy-to-access parameters via local display and buttons
- Measurement of low dielectric values (from 1.5)

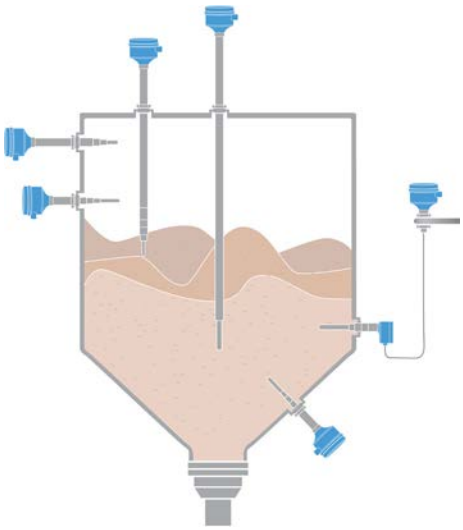
CHALLENGE

A soil processing company required reliable low-level detection for all its dosing tanks which are filled with different varieties of soil. The application was challenging with caking and high mechanical exposure.

SOLUTION

The Rosemount 2555 Capacitance Solids Level Switch solved this challenge with its simple construction and reliability.The switch is independent of changes in product properties and provides reliable measurements despite changing material. The high mechanical exposure does not affect the reliable measurement of the switch.

The Rosemount 2555 Solids Level Switch provides reliable measurements despite changing material



Installation example

Further information: www.Emerson.com/RosemountSolidsLevel

Solids level detection in a coffee bean packing machine

Rosemount vibrating fork solids level switches are ideal for applications under high mechanical stress such as low level indication in very large or tall silos. The compact design is suitable for installation in tanks with very limited space or where access to the tank wall is limited. A variety of tube extension lengths are available to suit different tank geometries and ensure correct switching point.

The Rosemount 2521 Solids Level switch features:

- Enhanced version with extra sensitivity options
- Compact design - ideal for installation in silos with very limited space
- Adjustable sensitivity (high/low)
- Short extension and tube extension models available
- Suitable for hygienic applications - polished forks and wetted parts made from stainless steel

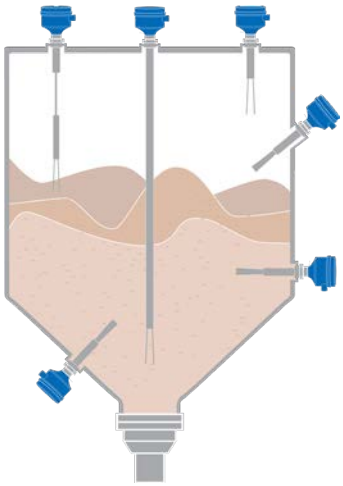
CHALLENGE

A specialist in the production of roasted coffee beans, including roasted ground coffee, instant coffee, and cacao was looking for a reliable solution to control the level of solids in a packaging machine. The material that the device needed to measure constantly changes. It was therefore a requirement that the sensor was reliable and worked with several types of material. Another challenge is that the solids are sticky and must not be affected by the measuring device so the soft granules are not damaged, which would destroy the quality of the instant products.

SOLUTION

The Rosemount 2521 Vibrating Fork Solids Level Switch has a high sensitivity which does not affect the quality of the granules. Its self-cleaning function ensures that caking caused by additives such as milk powder or sugar are avoided. The stainless steel vibrating forks work well with food applications and provide reliable measurements.

The Rosemount 2521 functions in several types of material



Installation example

Further information: www.Emerson.com/RosemountSolidsLevel

Solids level detection in wood gasifier reactor

Rosemount rotating paddle level switches are for full, demand or empty detection for all bulk media in all types of vessels. The simple electromechanical measuring principle withstands heavy loads and extreme temperatures. They are ideal for applications which involve dust, electrical charges, adhesion, and extreme temperatures and pressures. They are particularly suitable for small process vessels and most bulk solids.

The Rosemount 2501 Solids Level Switch features:

- Self diagnosis – device fault alarm
- Adjustable switching delay that prevents false switching
- Patented mechanical hysteresis for extended product lifetime
- Protection against dust, electrostatic charging and caking
- Ability to withstand heavy loads and high temperatures
- Rotatable housing for easy installation
- Mechanically stable shaft bearing design

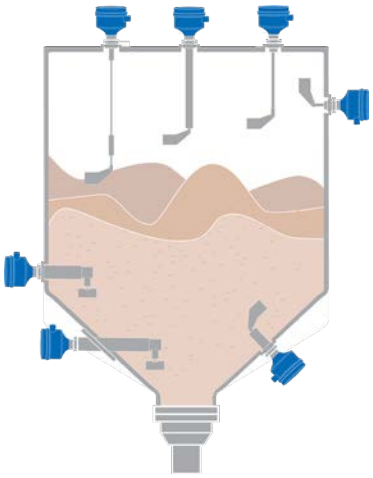
CHALLENGE

A vendor in the power sector required full level detection in a wood gasifier reactor. The core of the plant is a reactor that produces the gas for conversion into electricity by cooking wood chips. The particular challenge is the temperature which can reach 1112 °F (600 °C). Moreover, tar condensation can damage the functionality of the measurement devices.

SOLUTION

The Rosemount 2501 Paddle Solids Level Switch meets all the extreme requirements. The sensitivity of the switch can be adjusted for the bulk density of the wood chips and the sticky tar condensate. The rotating paddle switch is designed to withstand high temperatures and includes a seal to isolate the mechanics from ashes and dust.

The Rosemount 2501 is able to withstand high temperatures



Installation example

Further information: www.Emerson.com/RosemountSolidsLevel

Solids level detection in silo mixing plant

Rosemount capacitance switches are suitable for all bulk materials in all applications. They operate by measuring the capacitance between the probe and container wall and can be used for full, demand, or empty detection. They are designed for low dielectric media and extreme conditions such as high temperatures, high mechanical stress, and high tensile forces.

The Rosemount 2555 Solids Level Switch features:

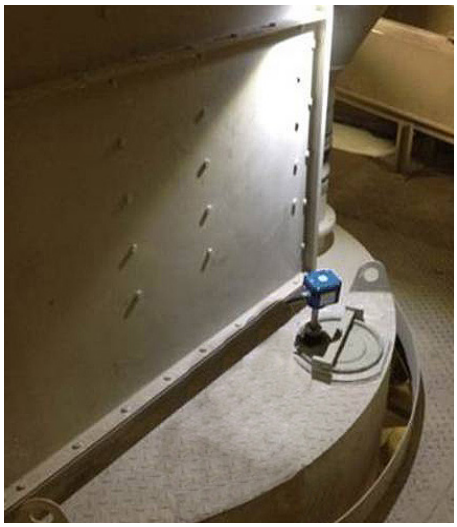
- Active Shield Technology that protects against media build-up or caking
- Approvals suitable for use in hazardous/ explosive and dusty environments
- Ability to withstand heavy loads and high temperatures
- Simple calibration via push button
- Continuous self-diagnostic probe function
- Easy-to-access parameters via local display and buttons
- Measurement of low dielectric values (from 1.5)

CHALLENGE

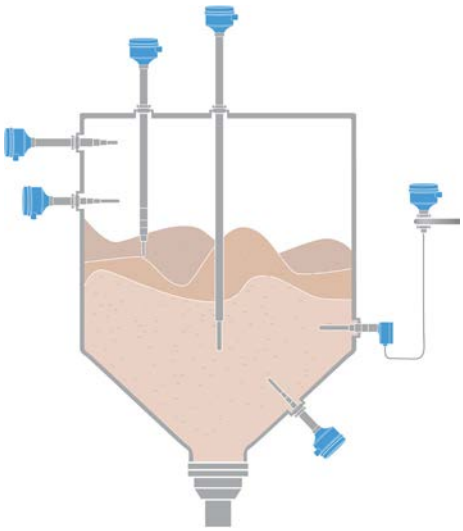
A producer of cement and lime needed to control the level in their silo mixing plant. The plant required reliable detection to provide alerts when the silo is full. The environment was very dusty and the materials in the silo were very abrasive; these posed the main challenges in this application.

SOLUTION

The Rosemount 2555 Capacitance Solids Level Switch solved this problem. The device is not affected by the dust and its stainless steel body is unaffected by abrasion.
The device is easily calibrated via a simple push button.



The Rosemount 2555 capacitance switch is installed on the silo



Installation example

Further information: www.Emerson.com/RosemountSolidsLevel

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