

The Siemens logo is displayed in a bold, teal, sans-serif font. It is positioned in the upper right corner of the image, within a white rectangular box. The background of the entire image is a photograph of several tall, cylindrical industrial storage tanks at a facility during sunset or sunrise. The sky is a mix of blue and orange, with scattered clouds. The tanks are illuminated from below, creating a warm glow. In the foreground, the rear portion of a large white concrete mixer truck is visible on the left, and another similar truck is partially visible on the right. The overall scene is industrial and captures a moment of quiet activity in a large-scale operation.

SIEMENS

Ingenuity for life

Siemens radar level transmitter

Provides the answer to accurate Frac Sand inventory monitoring

usa.siemens.com/shale

Challenge

A company in the Southwest US provides “Fracking” Sand for the shale oil industry.

They have 19 sand storage silos, and needed a more reliable and accurate means of monitoring the inventory in those silos. They had been using ropes with weights to determine the levels in the silos. That process was crude and not very accurate. The undesirable results were bin shortages, inventory inaccuracies and product overflow.

Moreover, the need for instrumentation was necessary since any time manual measurements are made, workers get exposed to the undesirable effects of silica dust. As OSHA standards or rules have evolved not only to protect those in direct contact to dust, but also individuals in the surrounding areas, automation improvements also help to meet regulations.

Solution

The local Siemens Partner recommended the SITRANS LR560 radar level transmitter to provide more accuracy and reliability in their inventory control. The radar level monitoring system includes a SITRANS RD500 remote data manager to provide integrated web access, alarm event handling and data capture for instrumentation.

By connecting the radar level transmitters to the remote data manager, plant management now has reliable information on which to base their production plans. With the Siemens radar level monitoring and data manager system that is now installed, the customer can accurately measure their inventory and implement their billing processes more efficiently.

Benefits:

• Time and cost savings

By having an automated level measurement system, the customer is able to reduce the amount of trips to the top of the bins, reducing time and labor costs. The RD500 monitoring system provides remote inventory monitoring via web access to field instrumentation, thereby eliminating unplanned inventory shortages.

• Improved personnel safety

Because there is no longer a need to send anyone to the top of the bins to verify the inventory amounts, there is less risk of injury or silica dust exposure to personnel.

• Improved process reliability and accuracy

By replacing the older manual method, with the continuous signal output provided by the LR560 radar level transmitter, the customer has increased the accuracy and reliability of their inventory control.

Granular material, such as silica sand, tends to create signal skipping or deflection due to its spherical shape. The wavelength resulting from the operating frequency of the SITRANS LR560 yields dependable level measurement. Level measurement of materials like sand were considered challenging to carried out using traditional radar level transmitters for solids level applications. The task required extensive instrument setup and performance reliability was not consistently repeatable.

• Easier to use

The SITRANS LR560 radar transmitter requires no custom configuration and is easy to install and startup. Nineteen



LR560 radar transmitters were up and running and their performance verified in just a matter of hours.

• Unique product features

The LR560 transmitter’s 78 GHz high frequency can provide a very narrow beam. That allows the instrument to be mounted virtually anywhere on top of a silo. This narrow and focused signal provides optimal reflection from sloped solids.

About the SITRANS LR560 radar level transmitter

The SITRANS LR560 2-wire, 78 GHz FMCW radar level transmitter for continuous monitoring of solids has a plug-and-play performance that is ideal for most solids applications, including those with extreme dust and high temperatures to +200 °C (+392 °F). The unit’s unique design allows safe and simple programming, using the intrinsically-safe, handheld programmer, without having to open the instrument’s lid.

The SITRANS LR560 transmitter includes an optional, graphical local display interface (LDI) that improves setup and operation using an intuitive Quick Start Wizard and echo profile display for diagnostic support. Startup is easy using the Quick Start Wizard, with a few parameters required for basic operation. SITRANS LR560 measures virtually any solids material to a range of 100 m (328 ft).

About the SITRANS RD500 remote data manager The SITRANS RD500 remote data manager provides integrated web access, alarm event handling, and data capture for instrumentation. It is easy to use and employs web-based application and hardware modules. The unique modular approach allows a variety of process signals to be monitored, while the serial ports allow data to be collected from any Modbus RTU device.

Alarm notifications are communicated through email and SMS text messages to one or more recipients to ensure that appropriate actions are taken by personnel.

Siemens Industry, Inc.
Process Industries and Drives
100 Technology Drive
Alpharetta, GA 30005
1-800-365-8766

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