



Radar transmitter provides essential level measurement in asphalt storage tanks

Situation

Asphalt is a heavy, black/brown mixture of hydrocarbons called bitumens. It is a strong, versatile weather and chemical-resistant binding material which adapts to a variety of uses. Asphalt can be used to bind crushed stone and gravel into firm, tough surfaces for roads, streets, and airport runways. It can be obtained from either natural deposits such as native asphalt or brea, or as a byproduct of petroleum (petroleum asphalt).

Rubberized Asphalt, also known as Asphalt Rubber, is pavement material that consists of regular asphalt concrete mixed with crumb rubber – ground, used tires that would otherwise be discarded or take up space in landfills. Asphalt rubber is the largest single market for ground rubber in the United States.

A critical component of asphalt production is bitumen storage. Bitumen presents a distinct

challenge – high temperatures and a viscous, sticky nature have defeated many level measurement instruments. Reliable level measurement is critical to the safe handling of the product and is essential to better inventory and process control.

Ensuring that sufficient quantities of base materials are available to meet the daily demand is key to asphalt production. Raw material is often en route from sub-suppliers, so it is important to know the storage capacity on site. Insufficient capacity can result in the costly rejection of sub-supplier loads. Reliable level measurement in the storage tanks is essential to better inventory management and process control.

An asphalt production plant in the Southwest US uses level control devices in their storage tanks to monitor the amount of product they have available. The measurement is also important when filling the tanks so they do not overflow.

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Challenge

The customer had been using a competitor's TDR-type (Time Domain Reflection) instrument, but they were not satisfied with the performance. Those instruments were not accurate and several instruments needed replacement when the sensors got caught in the mixers and were pulled out of the electronics.

A combination of delivery temperatures higher than 180 °C (356 °F) and the thick viscous nature of bitumen make traditional measurement methods unreliable. Contacting technologies can suffer from high product buildup, due to the adhesive nature of bitumen. This eventually leads to false or unreliable readings on continuous level measurement and, ultimately, failure of contacting devices.

Solution

The local Siemens sales representative convinced the customer to install the Siemens Sitrans LR250 non-contact radar level transmitter.

The Sitrans LR250 instrument is a 2-wire, 25 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, to a range of 20 m (66 ft). It includes a graphical local user interface (LUI) that improves setup and operation by including an intuitive Quick Start Wizard, and echo profile displays for diagnostic support. Startup is easy using the Quick Start Wizard with a few parameters required for basic operation.

The 25 GHz frequency creates a narrow, focused beam allowing for smaller horn options and decreasing sensitivity to obstructions. The LR250 transmitter's unique design allows safe and simple programming using the Intrinsically Safe handheld programmer without having to open the instrument's lid.

The customer also had a tank that was 180 ft across with no communication capability. The sales representative was able to provide a wireless solution and a local Integrator to perform the work.



Benefits

- **Cost savings**
Save money on maintenance of older technology instruments that break and wear out. There is no need for continuous replacements. Startup is quick and easy; this saves on time and manpower.
- **Dependability**
The instrument's high signal and low noise yields high performance. Advanced echo processing provides unparalleled performance.
- **Local Support and Service**
Siemens instruments are sold and serviced by highly qualified, factory-trained, independent sales engineers for local support. Regional factory support is available as needed.

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