Measuring Asphalt in the Manufacture of Roofing Shingles

Challenge
A company on the West Coast manufactures roofing shingles for residential construction. The plant has four tanks to store the hot liquid asphalt at a temperature of 300°F. Trucks bring in the asphalt, and the operator fills the tanks. In the past, operators had no way of knowing exactly how much asphalt was going into the tank, and experienced occasional tank overfills.

Solution
The manufacturer tried several different instrumentation companies and technologies during their search for a solution. At one point they had even tried a radar level device, but the horn antenna design became covered in asphalt and failed.

Siemens presented a solution that applies two level measurement technologies for accurate measurement, backup fail-safe for overfill prevention, and pump control.

Case Study • Level Measurement Solution

process INSTRUMENTATION

SIEMENS

Siemens SITRANS LR200 rod-type radar transmitters are used to continuously monitor the level in the tanks. The SITRANS LR200 instrument is a 2-wire, 6 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). Its unique design allows safe and simple programming using the intrinsically-safe, handheld programmer without having to open the instrument's lid. It also features a built-in, alphanumeric display in four languages.

Siemens Pointek CLS300 capacitance units are used for redundant, high-level alarm indicators so that in case of a primary measurement failure, no overfills will occur. The CLS300 point level device is an inverse frequency shift capacitance level switch with optional rod/cable choices and configurable output. It is ideal for detecting liquids, solids, slurries, foam, and interfaces in demanding conditions where high pressure and temperatures are present. The digital version (with PROFIBUS PA) includes a display and provides additional diagnostic features. The robust design of the CLS300 instrument makes it specifically applicable for heavy solids and slurry applications where abrasive materials occur.

To gather information on the level measurements, provide relays for overfill shutdown, and pump control, the manufacturer also installed a MultiRanger 200 controller, and fed the signals from the level measurements to the controller. Using the local display, the operator can view the level while the tanks are filling. The Siemens MultiRanger unit is a versatile short- to medium-range, single- and multi-vessel level monitor/controller for virtually any application in a wide range of industries. It can be used on a wide variety of materials and offers true, dual-point monitoring, digital communications with built-in Modbus® RTU via RS-485, as well as compatibility with SIMATIC® PDM, allowing PC configuration and setup.

Benefits

Siemens provided a total solution for the company's requirements. The SITRANS LR200 continuously provides accurate level measurements, the Pointek CLS300 provides redundant alarm indicators for overfills, and the MultiRanger 200 controller allows for convenient system monitoring.The customer now has a reliable measurement with no more overfills.

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