



Siemens HydroRanger Controller monitors open channel flow effluent for cold steel rolling plant

Background

In metalworking, rolling is a metal forming process in which metal stock is passed through a pair of rolls. Rolling is classified according to the temperature of the metal rolled. Cold rolling occurs with the metal below its re-crystallization temperature (usually at room temperature), which increases the strength via strain hardening up to 20%. It also improves the surface finish and holds tighter tolerances. Commonly, cold-rolled products include sheets, strips, bars, and rods.

Situation

A cold steel rolling facility in the Upper Midwest has a four-stand, continuous cold rolling strip mill, annealing furnaces, two finishing mills, and other ancillary equipment for further processing of cold-rolled steel coils. The plant uses water in its process which is then treated and released back into a river. The customer needs to monitor the flow, pH, and the temperature of the effluent water as required by government agencies.

The customer was already using a Siemens HydroRanger 200 to monitor the open channel flow of the plant's effluent water, flowing through a 24 inch Parshall flume. The 4-20mA output from the HydroRanger is scaled to correspond with the amount of water going through the flume, in units of millions of gallons per day, or MGD. The 4-20mA output from the HydroRanger is then sent to a Siemens' SIREC D200 chart recorder, which records the flow, the temperature, and the pH of the effluent water.

Challenge

The HydroRanger 200 controller, with an XRS-5 transducer, had been installed by an outside environmental engineering firm and connected to the SIREC D200 chart recorder. The chart recorder also monitors pH, and temperature of the effluent water. During a rain event, increased volume of water would flow through the flume and the readings would become erratic and unpredictable. In addition, the D200 recorder was reading differently than the HydroRanger 200 display.

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Solution

The customer called on the local Siemens representative to help him with the problem. At no charge to the customer, the representative went to the customer's site to see if he could help solve the problem. On arrival, the Siemens representative noticed that the XRS-5 transducer looked like it was mounted too low for the required blanking distance of the transducer. If the flume were to fill up during a rain event, the water would come too close to the transducer for a reliable measurement.

The customer remounted the transducer at the required distance from the flume and the representative proceeded to re-program the HydroRanger 200 unit and the D200 recorder. Using PDM software, he cleared the memory of the HydroRanger 200 controller so it was set back to the factory default. After that, he plugged in all applicable parameter values that would coincide with that specific flume, with the transducer mounted at the correct height. At this point, the HydroRanger 200 controller appeared to be operating correctly.

Next, the representative checked on the Siemens D200 recorder. He was a little apprehensive at first because he had never programmed a recorder in the field before. As he was reprogramming the analog input, he noticed that the 20 mA value was set to 5 million gallons per day, when it should have been up to 24 million gallons per day. After he made that correction, he reprogrammed the pen option on the recorder for the values that coincided with the corrected installation and hit "save". The problems were corrected, and after several months, no more problems have been reported.

Benefits

Ease of use:

Even with very little training, both the HydroRanger 200 controller and Sirec D200 recorder were easy and quick to reprogram.

Non-contacting:

The ultrasonic transducer is immune to problems caused by suspended solids, harsh corrosives, grease, or silt in the effluent, making the measurement more dependable.

Sonic Intelligence®:

Siemens field-proven echo-processing algorithms guarantee the most reliable performance available.

Siemens global network:

Sales and support are available in your neighborhood. Our extensive global coverage means you get sales and support when and where you need it.

About the HydroRanger 200 Controller

The HydroRanger 200 ultrasonic level controller can be used for up to six pumps and provides control, differential control, and open channel flow monitoring. It offers single point monitoring with all models, and optional dual-point monitoring with 6 relay model. It also has digital communications with built-in Modbus RTU via RS-485.

The standard 6 relay HydroRanger 200 controller can monitor open channel flow, and features more advanced relay alarming and pump control functions, as well as volume conversion. It is compatible with SIMATIC PDM, allowing for PC configuration and setup. Sonic Intelligence® advanced echo-processing software provides increased reading reliability.



The SIREC D200 recorder has a 5" color display.



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