



Ultrasonic Clamp-On Flowmeter Used for Water Reclamation at Power Plant

The Problem

Flue gas desulfurization (FGD) technology, commonly referred to as a “scrubber”, is an effective method for removing sulfur dioxide (SO₂) emissions from the exhaust of coal-fired power plants. To remove the SO₂, the exhaust from a coal-fired power plant is bubbled through a mixture of lime or limestone and water which reacts with the SO₂ to remove it before the exhaust gas is released to the atmosphere.

In a Midwestern power plant they use one of these scrubbers, not only to eliminate the SO₂ but also to produce gypsum, which can be used to make wallboard. To collect the gypsum from the scrubber, it is routed to a collection area where the water can run off. This runoff is then led to the pump house.

The largest part of the water consumed by the scrubber is evaporated into the air. The remaining water is pumped back to the scrubber or bypassed into the holding pond below the pump house where it is recycled back into the scrubber process to. This reduces the costs associated with chemical treatment because the water with the residual carry over does not have to be treated. In addition, there is no need to use other water sources.

Since the reclaimed water has some acid carry over, the power plant is using FRP pipe in place of steel due to the corrosive nature of the process water. For the same reason, they did not want to use an intrusive-type flowmeter to measure the amount of water being pumped back into the scrubber. For this solution to work properly they would have had to have an exotic liner or alloy to prevent corrosion.

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The Solution

As an alternative to an intrusive meter, the local sales partner suggested the customer use a SITRANS FUS1010 clamp-on flowmeter from Siemens to monitor the reclaimed water flows and assure scrubber performance.

The SITRANS FUS1010 flowmeter has a lower installation cost than an insertion-type meter. There is no flow tube to corrode, and since all clamp-on transducers are clamped onto the outside of the pipe, installation is quick and easy; no need to cut the pipe or stop the flow. The transducers are not in contact with the media and therefore, are not subject to any wear or fouling, they also do not require any periodic cleaning, resulting in minimal maintenance.

The Product

The major benefit of the Siemens clamp-on flowmeter is that it is non-intrusive and there is no contact with the flow product.

The SITRANS FUS1010 is the most versatile clamp-on ultrasonic flowmeter available. Clamp-on meters from Siemens have dual mode capabilities making them suitable for measurement of both homogeneous liquids as well as liquids with aeration; a feature that usually requires two separate meters. They can operate in either WideBeam transit time or Doppler mode. The meter is available in single, dual and optional four channel configurations. It also comes with choice of IP65 (NEMA 4X) standard wall mount, IP65 (NEMA 7) compact and IP66 (NEMA 7) wall mount hazardous area enclosures.

SITRANS FUS1010 features

- Pipe sizes ranging from DN 6 to DN 9140 (0.25" to 360") and virtually any pipe material
- Suitable for a wide variety of liquid applications
- The internal datalogger holds 1 MB of data which can be extracted and downloaded to a PC via the standard RS232 cable
- Dual path allows for two sets of transducers to be set up on one pipe and averaged for higher accuracy
- Optional four channels allow measurement of four independent pipes at the same time, reducing overall ownership costs

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