

Application note

Panametrics gas meter helps a Steel Mill in India to better control its LD Converter gas output

Benefits:

- Bidirectional flow measurement
- Cost effective and accurate measurement for large pipes.
- Wide rangeability,
- Ability to handle difficult gases (CO_2 / CO / H_2)
- Works up to 100% CO_2
- Local support in India

Summary

A major Steel Mill in India operates one of the most advanced production lines in the country. Its high precision Cut To Length line is able to process steel coils of up to 25 mm thickness and perform edge trimming.

Recognizing an opportunity to further optimize its operations, the customer wanted to install a bidirectional gas flowmeter in its Linz-Donawitz gas (usually named LD gas) holder. The 100,000 Nm³/h LD gas holder retrieves the gas from the SMS (Steel Melt Shop) converter and exports it to customers via the export system, which includes two DN1000 (40") lines. Each line operates at approximately 1000-1200 mmWC pressure when its booster is active. These lines connect to the DN1600 (64") booster fan gas (BFG) network, running at 900-1100 mmWC pressure.

The customer's goal was to introduce LD gas into the BF gas network. However, from a safety point of view, if the booster motor failed to keep the line pressure higher than the one of BFG network at 900-1100 mmWC during spillback, there was a risk of BFG flowing back into the LD gas holder. If undetected, this posed a safety concern to the LD gas holder setup.

Application

Pipe size and Material:	64inch (DNI600) Sch 40, Carbon Steel (API 5L)
Gas Flow range:	0– 100000 Nm3/hr
Gas Temperature:	amb – 70°C
Gas Pressure:	atm – 1600 mmWC
Gas Composition:	Sample Gas composition ~13–15% CO ₂ / ~50–70% CO / ~0.4–1.2% O ₂ / ~2–3% H ₂ / ~Dust 5–20 mg/ Nm3 / Wetness

Challenges

The plant had previously tried measuring the flow using a differential pressure device, plus many other flow technologies. Due to the low operating pressure, the bidirectional flow, the large rangeability (almost zero flow in case of reverse flow to max flow) and dust content, all these potential solutions failed in this application. However, ultrasonic flow meters can handle the listed challenges, even the difficulties of measuring CO₂ due to the signal absorption.

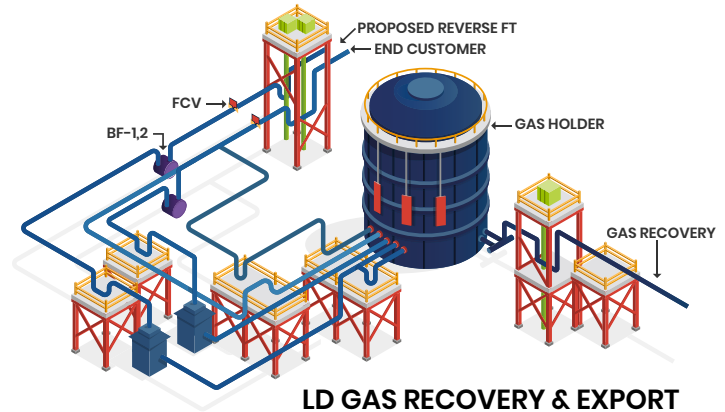


T5 Bias 90 installation with XAMP preamplifiers on the 64" (DNI600) line

Solution

Panametrics sales and application team reviewed the process conditions and the customer requirements. Based on their extensive experience in steel mills gas applications, the Panametrics Team proposed its XGM868i electronics with T5 (100Khz) Bias 90 orientation. The flowmeter was successfully installed and commissioned by the Panametrics Services Team.

The customer was very happy with the solution. The data matched expectations. As a result, Panametrics ultrasonic flow meter technology has now been deployed across other LD gas lines in the same plant.



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Experts in flare management, Panametrics technology also reduces flare emissions and optimizes performance.

With a reach that extends across the globe, Panametrics' critical measurement solutions and flare emissions management are enabling customers to drive efficiency and achieve carbon reduction targets across critical industries including: Oil & Gas; Energy; Healthcare; Water and Wastewater; Chemical Processing; Food & Beverage and many others.

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