

Steel Manufacturer Solves Emission Control Problem with Innovative Flowmeter

RESULTS

- Improved environmental compliance of blast furnace
- Increased reliability and measurement accuracy in difficult application
- Simplified installation in short piping configuration

APPLICATION

Coke Oven Gas measurement for Blast Furnace emissions

CUSTOMER

North American steel manufacturer

CHALLENGE

Most fully integrated steel manufacturers around the world use Coke Oven Gas (COG) as a fuel in Power House and Hot mill operations. COG is a by-product of the coke manufacturing process. Without this source of fuel, greater amounts of natural gas would be required, causing the price of steel to increase significantly.

At a major North American steel manufacturer, the benefits of using COG in blast furnace operations to solve an emissions control problem was realized. When the blast furnace is tapped to remove the molten iron, toxic fumes and particulate matter are released into the atmosphere causing environmental concerns and a potential safety violation.

A low cost solution to this potential environmental hazard is to blow COG around the blast furnace, which incinerates the toxic fumes and particulate matter. An accurate and reliable flow measurement was required to ensure the right amount of COG for proper incineration. This results in the blast furnace operating in compliance with environmental regulations.

In addition to addressing the environmental concerns, the problem of adequate pipe straight-run was an issue for achieving an accurate measurement. Previously, the plant was using a Thermal Mass flowmeter to measure the coke oven gas. This technology was not reliable or accurate due to the particulate buildup and need for installation in reduced pipe straight-run.



An accurate and reliable flow measurement was required to ensure the right amount of COG for proper incineration.



3095MFC Compact Orifice Mass Flow Meter installed two pipe diameters downstream from multiple 90-degree elbows

ROSEMOUNT[®]

For more information:
www.rosemount.com


EMERSON[™]
Process Management

SOLUTION

Emerson recommended the new Rosemount 3095MFC Compact Orifice Mass Flowmeter with the Conditioning Orifice Plate option for COG measurement. This solution allows installation within two diameters of the upstream flow disturbances. In this case, there were multiple 90-degree elbows upstream of the required flow measurement. The swirling conditions caused by multiple 90-degree elbows in the existing piping configuration posed no barrier to accurate flow measurement.

The steel manufacturer verified that the flowmeter allowed installation of two pipe diameters from multiple elbows. It also performed in difficult process conditions, making the measurement accurately and reliably and addressing environmental concerns.

This technology performed well under the conditions of dust particles ("Moon Dust") within the COG. The 3095MFC allows the particulate matter to pass through the flowmeter with no build up occurring. This type of dust particulate would normally result in reliability issues with other technologies.

With its wide offering of Rosemount DP primary elements and flow solutions, Emerson Process Management has the capability to meet almost any measurement need, even a process as difficult as Coke Oven Gas.

RESOURCES

Rosemount Compact Orifice Flowmeter Series

<http://www.emersonprocess.com/rosemount/products/flow/m405p.html>

The 3095MFC provided an accurate and reliable measurement in an emission control environment.



Compact Conditioning Orifice family (3095MFC, 3051SFC, and 405C Compact Orifice Primary Element)

Rosemount and the Rosemount logotype are registered trademarks of Rosemount Inc. All other marks are the property of their respective owners.

Emerson Process Management

Rosemount Inc.
8200 Market Boulevard
Chanhassen, MN 55317 USA
T (U.S.) 1-800-999-9307
T (International) (952) 906-8888
F (952) 949-7001
www.rosemount.com

Emerson Process Management

Heath Place
Bognor Regis
West Sussex PO22 9SH
England
T 44 (0) 1243 863121
F 44 (0) 1243 867554

Emerson Process Management

Emerson Process Management Asia Pacific
Private Limited
1 Pandan Crescent
Singapore 128461
T (65) 6777 8211
F (65) 6777 0947
Enquiries@AP.EmersonProcess.com

ROSEMOUNT[®]

For more information:
www.rosemount.com


EMERSON[™]
Process Management