

MORE s.r.l. Optimizes Furnace Efficiency with Rosemount Vortex Flowmeters

RESULTS

- Reduced energy consumption while optimizing steel quality
- Improved furnace safety and reduced environmental pollution
- Enhanced Overall Equipment Efficiency (OEE) through +99% instrument reliability



APPLICATION

Oxygen-fuel ratio control of injector feed to Electric Arc Furnace (EAF)

APPLICATION CHARACTERISTICS

- High-temperature (up to 3000 °C / 5400 °F)
- Vibrations

CUSTOMER

MORE s.r.l., Gemona del Friuli (UD) - Italy

More s.r.l. is world-leading supplier of a wide range of technologies related to chemical energy packages (oxygen, carbonaceous fuels, lime and other fines injection) and auxiliary equipment for electric arc furnace and steel-making industry.

CHALLENGE

In any Electric Arc Furnace (EAF) application, optimizing the oxygen-fuel ratio is critical to guaranteeing optimum steel quality, minimizing conversion costs, minimizing oxygen and fuel consumption, and avoiding rework.

Increased demand for highly accurate oxygen-fuel ratio control, higher process temperatures, and harsher environmental conditions rendered the previously used Differential Pressure (DP) technology insufficient. The DP Flow technology was not meeting the demands for accuracy and flexibility on the measurement range and MORE decided to install Vortex meters. MORE first used other manufacturer vortex meters however, the instruments were susceptible to vibrations, resulting in an un-reliable measurement and, consequently, an improper control of the oxygen-fuel ratio.

In case of excess oxygen, the phenomenon of over-oxidation (decarburization) occurs, which requires expensive re-work to obtain

“By implementing the Rosemount 8800 vortex technology, we have been able to build EAF solutions that guarantee optimum furnace efficiency for users.”

Roberto Urbani

Purchasing Manager



Installed Rosemount 8800 Vortex Flowmeters to control the injector feed of oxygen supply for a more accurate oxygen-fuel ratio.

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steel of suitable quality. Moreover oxygen excess in the furnace creates over-heating which can damage the furnace. On the other hand, if there is too little oxygen, production slows, resulting in decreased efficiency for the plant.

SOLUTION

In order to make this critical measurement and accurately control the injector feed oxygen-fuel ratio, MORE has implemented the Rosemount 8800 Vortex technology and has experienced how this technology benefits this application.

First of all, the Rosemount 8800 Vortex is capable of eliminating the impact of vibrations on the measurement thanks to judicious signal filtering (Adaptive Digital Signal Processing-ADSP) and mass-balanced sensor design, maximizing measurement reliability and oxygen-fuel ratio control.

Secondly, the 25:1 rangeability of the Rosemount 8800 Vortex helps to optimize gas heaters and is an improvement from the previously used traditional DP Flow technology. Also, compared to DP technology which exhibits up to 30 leakage points, the Rosemount 8800 Vortex technology drastically reduces the number of leak points thanks to a gasket-free all-casted design, enhancing safety in the furnace and reducing environmental pollution. Another advantage of the 8800 Vortex is its non-wetted sensor design that allows maintenance, if needed, without pulling the meter out of the pipe and stopping the process, maximizing instrument process availability.

MORE has installed more than one thousand Rosemount 8800 Vortex flowmeters over the past decade and has experienced optimum performances (+99% reliability) that contribute directly to the Overall Equipment Efficiency of the furnace. With the use of Rosemount 8800 Vortex meters, MORE and its users have been able to optimize furnace efficiency in terms of productivity and steel quality. Over-oxidation is no longer an immediate concern, extending the furnace life cycle. Energy consumption and ambient pollution have been reduced.

RESOURCES

Emerson Process Management Metals and Mining Industry

<http://www2.emersonprocess.com/en-US/industries/metals-mining/nonferrous/Pages/index.aspx>

Rosemount 8800 Vortex Flowmeters

<http://www2.emersonprocess.com/en-US/brands/rosemount/Flow/Vortex-Flowmeters/Pages/index.aspx>

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Rosemount 8800 Vortex Flowmeters installed to monitor natural gas flow.



Rosemount 8800 Vortex Flowmeter.

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