

Petrochemical Company Improves Ethylene Cracker Performance Using Dual Vortex Flowmeters

RESULTS

- Reduced the cost of decoking operations by \$310,000 per year
- Improved process efficiency and availability
- Reduced maintenance cost
- Meets SIL-3 proven in use rating



Rosemount Dual Vortex improved plant performance while meeting SIL-3 requirements.

APPLICATION

Feedstock and steam flow to Ethylene cracker

CUSTOMER

Major Petrochemical Plant located in Southern China

CHALLENGE

Many ethylene plants are experiencing increasing costs of raw materials and stiff competition, which have made margins in ethylene production slim. This petrochemical plant was experiencing less than ideal performance of their ethylene steam cracker unit.

The plant was using a traditional DP flow installation to measure the steam and feedstock flow to the cracker. In this application, coke fines accumulate resulting in plugged impulse lines and poor flow measurement performance. Without a reliable measurement, it was difficult to maintain the correct steam to hydrocarbon ratio control and coil outlet temperature, which resulted in periodic process trips.

As a result, the plant experienced increased maintenance cost due to periodic back flushing of the impulse piping in order to maintain the measurement. The regular maintenance led to reduced throughput and low cracker efficiency. Furthermore, materials needed to be recycled and reworked in order to meet specification reducing profitability.



A Rosemount 8800 Dual Vortex installed in a steam line.

SOLUTION

Based on Emerson Process Management's recommendation, this petrochemical plant decided to replace their traditional orifice installation with 52 Rosemount 8800 Dual Vortex Flowmeters. The dual meter installation was selected to satisfy a SIL-3 proven in use rating. In addition, Rosemount Vortex Flowmeters are the only vortex meters designed with an all cast and welded design without any ports or crevices to clog, eliminating poor measurement performance due to coke accumulation. Lastly, the vortex meter installation provided better accuracy over a wider turn-down giving them better control of the process.

With better control of the process, the plant was able to improve their steam to hydrocarbon ratio control. This resulted in increased throughput and process efficiency resulting in a \$310,000 reduction in the cost of decoking operations. Finally, by eliminating the need to flush the impulse lines, maintenance costs were reduced.



The Rosemount 8800 Dual Vortex

RESOURCES

Emerson Process Management Chemical Industry

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

Rosemount 8800 Series Vortex Flowmeter

<http://www2.emersonprocess.com/en-US/brands/rosemount/Flow/Vortex-Flowmeters/8800-Series/Pages/index.aspx>

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