Petrochemical Plant Improves Steam Transport and Distribution Network and Saves 200,000 Euros per Year Using Rosemount® Vortex Flowmeters

RESULTS

- Steam transport and distribution improved by 3%
- Fuel savings of more than €200,000 per year
- Total investment recovered in just 25 days of operation
- Maintenance needs reduced by 300 man hours per year

"Emerson's Vortex technology enabled me to become a true Energy Manager and bring added value to my company."

Energy Chief Engineer

APPLICATION

Thermal boilers for the production of superheated steam used in all the production units. Steam is transported to the petrochemical plants using a 3.5 km pipe network.

CUSTOMER

A multi-purpose industrial petrochemical (butadiene, MTBE, LPG Synthetic rubber) plant in Europe. It comprises production and storage facilities, and a fully equipped and operational terminal for the storage and distribution of road bitumen. The site also has a transportation infrastructure for petroleum and petrochemical based products.

CHALLENGE

This petrochemical plant has nine thermal boilers for the supply of steam to the butadiene, MTBE fuel additive and synthetic rubber production units. Product quality and composition depend on the boilers delivering steam at a constant pressure.

The flow of superheated steam was being measured using three orifice plate flowmeters but these devices suffered a number of leakage problems in the pulse lines. Each meter needed a minimum of ten hours per week maintenance during winter and a minimum of two hours maintenance per week in summer. On average, the three meters were receiving a total of around 300 hours of maintenance each year.

Although the process could continue while the instruments were being maintained, valuable measurement data was lost during this time. In addition, the leakages were causing steam losses, which added to costs and presented a safety risk to workers.

This unreliability meant that it was not possible to adjust the delivery of steam in response to the user's requests. As well as losing operational efficiency, the clear need to apply optimization technologies on the boilers was limited by the lack of precise measurements.

To resolve these issues, the plant needed to replace the orifice plate flowmeters with the best technology for superheated steam measurement.

EMERSON™
Process Management

SOLUTION

Following discussions with Emerson™ engineers, the petrochemical plant installed three Rosemount 8800D Vortex Flowmeters with integral temperature sensors in each line. The flowmeters were installed with Rosemount pressure transmitters and a flow computer. The 8800D Vortex Flowmeter was chosen due to its all cast body - this results in improved plant safety, process availability and efficiency, and measurement reliability. Emerson's innovative design features flow and temperature sensors located outside the process-enabling maintenance without stopping the process.

Following installation, the improvements were immediately evident and after one year of use the results have been quantified by the plant. For example, the steam losses around 1 - 1.5 tonnes per hour have been eliminated; This has improved the steam system efficiency by 3%. Based on current fuel cost this equates to a saving of more than 200,000 Euros per year. Using these savings, the initial investment was recovered in just 25 days of operation.

Based on these impressive results, the plant is planning to install additional 8800D Vortex Flowmeters to further optimize their distribution system. The plant is also planning the implementation of Emerson's Vortex technologies for new projects including one new (C4 fraction) hydrogenation plant.

"Emerson's Vortex technology has enabled fuel savings of more than 200,000 Euros per year allowing our total investment to be recovered in just 25 days of operation."

Energy Chief Engineer

RESOURCES

Emerson Process Management Chemical Industry - Petrochemical

http://www2.emersonprocess.com/en-US/industries/Chemical/Petrochemical/Pages/Petrochemical.aspx

Rosemount Vortex Flowmeters

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

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