

Petrochemical Plant Drives Energy Efficiency with Smart Wireless DP Flowmeters and Temperature Transmitters

RESULTS

- Higher efficiency
- Lower operations costs
- Lower capital costs
- Fast, easy installation

APPLICATION

Natural gas flow to a gas metering grid

CUSTOMER

Petrochemical plant in India producing Linear Alkali Benzene (LAB)

CHALLENGE

Energy efficiency is an important operations consideration in the process industries. Reducing energy cost is an imperative in today's environment. Operations personnel wanted to measure the plant's consumption of natural gas and have tighter control over the gas metering grid to drive efficiency and reduce operating cost.

To achieve this target, gas flow needed to be measured at the steam source and temperature measured at the gas metering grid respectively. The plant's layout resulted in some challenging physical limitations. For instance at the heater and boiler system, a traditional orifice plate could not be installed due to limited straight run availability. At the gas metering grid, it was not economical to layout cables to wire the temperature transmitter to the central control room. Furthermore, there were no available empty slots for additional analog input (AI) cards at the Distributed Control System or DCS, preventing additional data integration into the DCS without a capital expenditure. Without means to measure process parameters, engineers were unable to have tighter control of the process. They could not tell if the boiler and heater were consuming too much gas, resulting in an inefficient process and increased energy cost. Installing traditional measurement devices would incur high project cost and could affect the production schedule due to the need for pipe preparation and wire trenching.



The wireless solution brought critical operations data such as flow rate, gage pressure and process temperature, to the control room enabling engineers to tighten and improve process efficiency.



Wireless gas flow measurement with Rosemount 3051SFC and THUM was easily integrated into the plant DCS.

SOLUTION

The plant called on Emerson Smart Wireless capabilities to address the project limitations. Six Rosemount 3051SFC Conditioning Orifice Flowmeters with THUM adapters were installed to measure gas flow into the boiler and heater systems. The 3051SFC requires a shorter straight pipe run with its Conditioning Orifice Technology. It also has fewer leak points as it eliminates impulse lines, and is leak tested at the factory to ensure fast and easy installation between existing flanges. For the gas metering grid, two Rosemount 648 Wireless Temperature Transmitters were installed. This provided immediate temperature measurement without worrying about wiring costs. These field devices were wirelessly integrated to the existing DCS through a Smart Wireless Gateway.

The wireless solution brought data such as flow rate, gage pressure and process temperature to the control room which is critical to operations. This made gas consumption visible to the process engineers enabling them to make adjustments and make the process more efficient. The ease of installation also made the project easier to execute. And lastly, with the wireless network in place, the plant now has more flexibility to explore other measurement points.

RESOURCES

Emerson Process Management Chemical Industry

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

Emerson Smart Wireless

<http://www2.emersonprocess.com/en-US/plantweb/wireless/Pages/WirelessHomePage-Flash.aspx>

Rosemount Conditioning Orifice Flowmeters

<http://www2.emersonprocess.com/en-US/brands/rosemount/Flow/DP-Flow-Products/Conditioning-Orifice-Flowmeter/Pages/index.aspx>

Rosemount Temperature

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

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