Reliable measurement of dilution steam

A large petrochemical company in the Middle East was able to overcome all challenges and reliably measure dilution steam going to the furnace in their olefins plant with a simple solution.

Endress+Hauser
People for Process Automation

Industry:

- Chemical / Petrochemical

Application:

- Measuring of dilution steam going to the furnace in the Olefins plant

Original installation:

- The customer had tried DP flow & even a Vortex flow meter of another make but still failed to get a reliable reading of the dilution steam.

Process description:

- One of the affiliates of a large petrochemical company in the Middle East was facing issues to measure dilution steam going to the furnace in their Olefins plant.

The Challenges:

- This was an important measurement as dilution steam is injected into the furnace to protect the pipe from coke formation.

- There was a frequent fluctuation in the reading of steam flow with the existing instrument as during low flow it trips the line which is connected to ESD system. Hence, it was a big safety concern.

- Research unearthed that this steam was not clean as it was mixed with a catalyst called DMDS – Dimethyl Disulfide (this is an anti-choking agent). This is done to avoid coke formation. This was causing a thick layer of deposit on the Orifice plate & shedder bar of the vortex flow meter.

Heartbeat Technology

Figure 1: Heartbeat Technology

The customer needed a solution to have reliable & correct flow measurement of dilution steam and to ensure the safety of the plant.

Our Solution:

A Vortex flow meter – Prowirl F 200, was suggested for this application because of its unique patented technology and construction. It has a DSC Sensor (Differential Switched Capacitance Sensor) which is extremely robust & tested in a very aggressive nature.

Benefits:

- No direct impact of steam on the sensor
- Integrated temperature measurement for mass/energy flow of saturated steam
- High availability – proven robustness, resistance to vibrations, temperature shocks & water hammer
- Long-term stability – robust drift-free capacitive sensor
- Convenient device wiring – separate connection compartment
- Safe operation – no need to open the device due to display with touch control, background lighting
- Integrated verification – Heartbeat Technology

Figure 2:Prowirl F200

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