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Application note

Low pressure steam flow measurement with MV82 Vortex on 24” and 18” lines

Main benefits:

- Steam mass flow with live P & T data
- Installation with minimum disruption
- Insertion type allowing online retraction without process interruption
- Reliable performance

Overview

A Petrochemical complex in the Middle East producing Ehtylene, Ethylene Glycol, High Density PolyEhtylene (HDPE), Low Linear Density PolyEthylene (LLDPE), Polypropylene (PP), MTBE, etc. was willing to improve their steam measurement reliability and performance. The plant had Annubar differential pressure flow meters installed to measure low pressure steam flow in 24” and 18” lines respectively. The flow meters were unreliable and required frequent maintenance due to fluctuation in the readings.

Since pressure and temperature compensation in the DCS for mass flow calculation was made using static values, it resulted in additional uncertainties in the measurement. With growing steam demand and in order to better control the energy conservation and minimize downtime they couldn’t rely enough on the installed meters.

Application

Measuring LP steam flow in Bisphenol A (BPA) and phenol plant.

Challenge

Mechanical pipe modification was not possible and downtime had to be reduced to the strict minimum.

The solution

To address the customer challenges, Panametrics Insertion Multivariable Vortex flow meter MV82 with built in pressure and temperature sensors was recommended to solve the problem.

The meter was installed using the same nozzle as the Annubar without any pipe modification. The **MV82** with built in temperature and pressure sensors provides the customer a **real time dynamic compensated mass flow** from the analog 4-20 mA output. The additional capability of the MV82 for **energy measurement** was an

additional benefit to the customer on **tracking steam quality**.

The real time display of the temperature and pressure on the electronics **gives site operators great confidence** on the process parameters and flowmeter readings.

Process conditions

- Fluid: LP steam
- Minimum - maximum flow rate: 19,682 kg/h – 107,600 kg/h (43,391 pph – 237,217 pph)
- Temp max: 300 °C (572°F)
- Pressure max: 10 bar (145 psi)
- Viscosity: 0.52 cP
- Accuracy: ±2% of reading for mass flow rate

Panametrics, a Baker Hughes business, provides solutions in the toughest applications and environments for moisture, oxygen, liquid and gas flow measurement.

Experts in flare management, Panametrics technology also reduces flare emissions and optimizes performance.

With a reach that extends across the globe, Panametrics' critical measurement solutions and flare emissions management are enabling customers to drive efficiency and achieve carbon reduction targets across critical industries including: Oil & Gas; Energy; Healthcare; Water and Wastewater; Chemical Processing; Food & Beverage and many others.

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