Rosemount Advantage

Steam

Dieterich Standard *APPLICATION NOTE*

The Mass ProBar® Flowmeter Aides in Generating Power for a Major Brewery

A major brewing company who has been brewing beer since 1873 currently produces a million and a half gallons of beer daily (approximately 800,000 cases). Mass flow measurement is an essential component in the brewing process where it is used to measure steam flow throughout the brewery.

Steam is used as a part of many industrial processes which the brewing company needs to control throughout the entire facility. Because of the number of variables in the brewing process, the brewing company needed to accurately measure the mass flow rate of the steam that is distributed to the many different areas of the plant.

Today, as customers are driven to improve efficiency and reduce production costs, utility steam flows are closely monitored and measured. In the generation of steam, piping leaks and condensation mean that some loss of billed steam is inevitable. In steam measurement, the density of steam changes due to variations in pressure and temperature which can affect the accuracy of the measured flow rate if it is uncompensated.

The Mass ProBar® provided greater accuracy and reduced operating costs for the facility through:

- ***Significant Energy Savings***
- ***Easy Installation***
- ***Fully Integrated Mass Flowmeter***

Customer:	Brewery
Product Line:	Mass ProBar® Flowmeter
Application:	Compensated mass flow measurement in steam service.
Details:	
Fluid	Saturated Steam
Temperature	450 °F to 700 °F (232 °C to 371 °C)
Pressure	62 psia to 412 psia (427.5 to 2840.7 KPa)
Line Size	6-inch to 24-inch (152.4mm to 609.6mm)

- ***Bi-directional Flow Capability***
- ***Highly Accurate Mass Flow Measurement***

Mass ProBar® flowmeter technology eliminated measurement errors caused by gas expansion and addressed all six flow rate measurement factors needed for mass flow measurement. The Model 3095 MV™ multivariable transmitter accounts for changes in the discharge coefficient, velocity, bore diameter and density in addition to changes in the flow rate due to variations in the gas expansion factor. The electronics also eliminate bias error through real time flow calculations to ensure the greatest DP flow accuracy across the widest operating range of any mass flowmeter on the market.

Unlike other compensated installations, the Mass ProBar® flowmeter handles all of the factors that affect mass flow measurement through a single tap into the existing pipe.

The Mass ProBar® flowmeter provides the lowest pressure drop and operating cost of any DP or velocity flowmeter. The aerodynamic shape of the Annubar® primary flow element does not restrict the flow like that of the bluff body of velocity meters or the restrictive opening of an orifice plate. This reduction in permanent pressure loss was converted directly into fuel savings.

The symmetrical design and the fixed separation point provided by the diamond shape of theAnnubar® primary flow element allows the brewing company to use two of these units for bi-directional flow with only one pipe penetration.

The Mass ProBar® flowmeter's method of calculating flow compensation enabled the brewing company to reduce bias error and gain efficiency. The accurate measurement of the multiple variables, flexible and less intrusive measurement and compact packaging made the Mass ProBar® flowmeter an easy choice for this mass flow measurement installation!

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