

Natural Gas Measurement with the Mass ProBar® Flowmeter

Natural Gas is a colorless, odorless, fuel that burns cleaner than many other traditional fossil fuels. It is one of the most popular forms of energy today, with a variety of uses. It's distribution involves an enormously complex and specialized network of pipe lines and compressor stations.

Besides the use of natural gas exclusively as a fuel for power generation, there are several technologies available that involve its use, along with coal or other fossil fuels to reduce pollution. Gas fired boilers use less fuel than older methods and reduce heat waste by taking advantage of the heat energy at several points before it is released. A number of boilers are used in this technique to reduce harmful emissions.

As natural gas is a compressible fluid, it is subject to density fluctuation with changing temperature and pressure making it necessary to measure mass flow.

Due to Dieterich Standard's strong background and experience in flow measurement throughout the natural gas industry, the Mass ProBar® flowmeter was chosen as the flow solution to meet the customers needs. The Mass ProBar® flowmeter measured DP as well as pressure and temperature with a single-point penetration, offering significant cost savings.

Customer:	Orange & Rockland natural gas facility
Product Line:	Mass ProBar® mass flowmeter
Application:	Mass flow measurement used for natural gas in boiler lines and air measurement in the ducts.
Details:	
Fluid	Natural gas, air
Temperature	60°F (16°C)
Pressure	70 psi
Line Size	4-inch to 24-inch (102mm to 610mm)

The Mass ProBar® provided the following advantages:

- **High Accuracy**
- **Installation**
- **Operating Savings**
- **Ease of Use**

The multivariable electronics of the Mass ProBar® measured all process variables needed to calculate mass flow rate. The dynamic compensation provided a system accuracy of ±1.3% of mass flow rate over an 8:1 flow turndown.

The customer realized the significant cost advantages of the integrated electronics with insertion flowmeter technology of the Mass ProBar®. Installation costs were reduced by measuring three process variables through a small tap into an existing pipe. The elimination of plumbing between the electronics and sensing element also played a big part in reduced installation costs.

Due to the aerodynamic diamond shape of the Annubar® primary flow element, the Mass ProBar® provided low operating costs. The Mass ProBar has the lowest permanent pressure loss and operating cost of any DP or velocity based measurement device. The aerodynamic shape of the Mass ProBar® sensor did not restrict the flow like the bluff body of a vortex shedder or restrictive opening of an orifice plate.

Additionally, the customer was experiencing insufficient straight run resulting in measurement inaccuracies which can prove to be costly. The Mass ProBar® provided reasonable accuracy for their specific pipe installation. With the higher DP, flow measurements were more accurate and reliable.

The Mass ProBar® offered significant advantages to the customer and proved to be an economical mass flowmeter for their natural gas measurement.

Literature References

Literature Type	Publication Number
Value Proof	DS-7804: <i>Would You Like to Save \$3,916 Per Installation Point, While Receiving Extremely Accurate Mass Flow Measurement?</i>
Literature	DS-4011 (00813-0100-4762) <i>Mass ProBar® Flowmeter</i>