

Natural Gas Usage & Submetering

Business times are tough and the competition is getting tougher. Costs are going up and the margins are getting thinner. In any industry, finding a better means to monitor and control your operating expenses is one sure way to improve your competitive position. **For most companies, the use of natural gas is an obvious choice for tracking consumption and for monitoring costs.**

Accurately tracking the natural gas usage within your facility, whether simply for seasonal heating or for critical production processes, will provide direct benefits to you by giving you the information you need to adjust for peak usage and to correctly assign costs when reviewing general operating expenses and specific product profitability.

Submetering

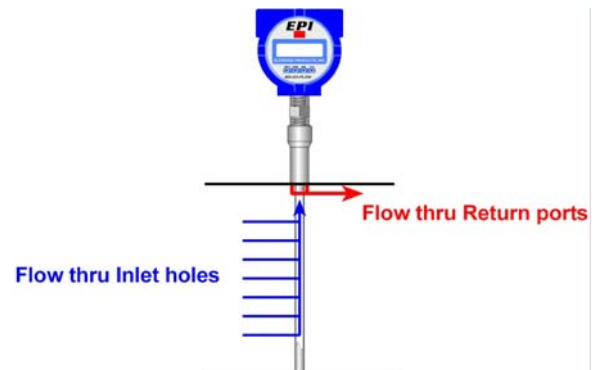
Natural gas is typically delivered to your facility through large lines at high pressure. The gas company meters it at this point for their billing purposes before it is distributed through the facility. This custody transfer metering typically requires an on-going series of temperature and pressure corrections to arrive at "standard" units of measure for flow rate and consumption monitoring, and your gas company only supplies figures for overall consumption. Beyond this single gross figure, how much do you know about your true consumption and how do you determine where you will find cost savings? Submetering your gas usage at strategically selected points in your facility will show you how much gas is used at each metered location or work area, and when the gas is used. This is the information you need to analyze your ongoing expenses and to optimize your usage.

Unfortunately, getting these accurate flow measurements often required the expense and complexity of multiple instruments as well as difficult and costly piping changes for suitable installation points in the gas lines. Eldridge Products, Inc. innovative, **patented Flow Averaging Tubes™** give you a simple, cost-

effective means of submetering — without the burden of high costs and complexity.

EPI's Flow Technology

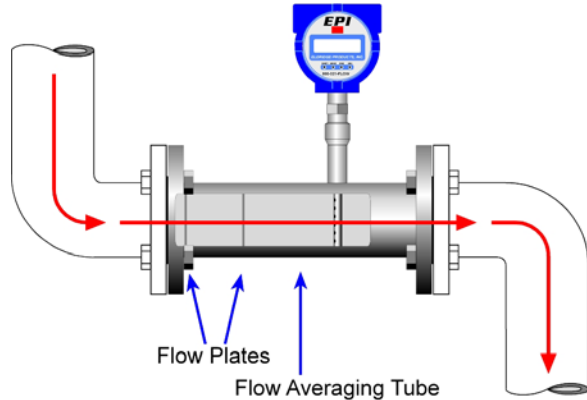
The Flow Averaging Tubes give a stable flow signal in applications where the flow profile is less than ideal, such as downstream of a bend, valve, or obstruction. The flow averaging tube has large diameter inlet ports along the length of the upstream impact surface. The pressure at each inlet port is averaged inside the tube to create the axial flow through the tube and across our thermal mass flow sensor. The gas flow then passes back into the main flow stream through the gas return ports.



Thermal mass flowmeters use the principle of convective heat transfer to directly measure mass flow. Our sensors consist of two resistance temperature detectors (RTDs). A forced null, Wheatstone bridge preferentially heats one RTD; the other RTD acts as the temperature reference. The natural gas flow dissipates heat from the first RTD, causing an increase in the power required to maintain a balance between the RTDs. This increase is directly related to the rate of gas flow. Our NIST-calibrated flowmeters report flow in standardized units so no additional instrumentation or correction calculations are required.

Reduced Straight Run

By itself, EPI's Flow Averaging Tube technology significantly reduces the traditional requirements for straight, unobstructed upstream piping. Depending upon the piping configuration, the traditionally required upstream straight run can



be 10, 20, even 50 diameters. By measuring the cumulative flow velocities across one or more inside diameters, the Flow Averaging Tubes are far more tolerant of flow profile problems than other instrument technologies. This allows the required straight run to be greatly reduced. When coupled with our Flow Straightening Plates, the upstream requirement can be reduced to as little as three diameters.

The Master-Touch Flow Averaging Tubes are available in configurations with integral or remote electronics, explosion-proof or NEMA4/4X enclosures, and AC115, AC230, or DC24 input power.



Specifications

Linear signal output	0–5 VDC & 4–20 mA
Relay Output	Two 1-amp, user-selectable alarm functions
Signal Interface	RS232 & RS485
Accuracy, including linearity (Ref.: 21°C) with ideal flow profile (C-Factor to be used for less than ideal flow profile)	± [2% of Reading + (.5% + .05%/°C of Full Scale)]
Repeatability	± 0.2% of Full Scale
Sensor response time	1 second
Turn down ratio	100:1 minimum (but not less than 150 SFPM)
Electronics temperature range	0°–50°C (32°–122°F), extended temperature optional
Gas temperature range	-18°–66°C (-0°–150°F), extended range available, consult factory
Gas pressure effect	Negligible over ± 10% of absolute calibration pressure
Probe pressure rating maximum:	Ambient to 15 PSIG, higher pressures, consult factory
Transmitter power requirements	5 Watts or less, select 24 VDC, 115 VAC, or 230 VAC power
Electronics enclosure(s):	NEMA 4, Class 1, Div 1, Groups B, C, & D, Std. / NEMA 4/4X
Wetted materials	316 Stainless Steel, Hastelloy and Monel optional
Standard temperature & pressure (STP) (Air .075 lb./cubic foot)	70°F & 29.92" Hg
NIST traceable calibration	Standard

SPECIFICATION NOTICE

The specifications contained herein are subject to change without notice. EPI cannot guarantee the applicability or suitability of our products in all situations since it is impossible to anticipate or control every condition under which our products and specifications may be used.

LIMITED WARRANTY

EPI warrants its products to be free from defects in materials and workmanship for one year from the date of factory shipment. If there is a defect, the purchaser must notify EPI of the defect within the warranty period. Upon receipt of the defective product, EPI will either repair or replace the defective product at its sole option. EPI MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, AS TO THE PRODUCTS. EPI MAKES NO WARRANTY THAT THE GOODS SOLD TO ANY PURCHASER ARE FIT FOR ANY PARTICULAR PURPOSE. FURTHERMORE, EPI MAKES NO WARRANTY OF MERCHANTABILITY WITH RESPECT TO ANY PRODUCTS SOLD TO ANY PURCHASERS. There are no other warranties that extend beyond the description on any brochure or price quote.

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