

Cogeneration / Landfill Gas Measurement

Eldridge Products, Inc. (EPI) manufactures thermal instrumentation to measure and control virtually all gas flows. Built with over thirty years experience in thermal mass flow meter design and production, our Master-Touch™ flowmeters are accurate, economical and reliable tools for landfill gas reclamation and cogeneration plant operations.

Municipal landfills produce a mixture of gases that are required to be monitored and “recycled” through cogeneration plants to reduce environmental impacts and the overall facility operating costs. Accurately measuring these flows is critical to meeting process efficiencies, cost reduction goals and reporting requirements. Methane (60-70%) and Carbon Dioxide (30-40%) comprise the majority of most Landfill Gas (LFG) with additional trace amounts of Nitrogen, Oxygen and other gases. Our flowmeters are calibrated using CH₄/CO₂ gas mixtures for the best accuracy, support as many as four independent flow ranges for multiple gas mixtures, and provide onboard or PC/laptop data-logging.

Potential points of measurement between the landfill and the cogeneration plant are:

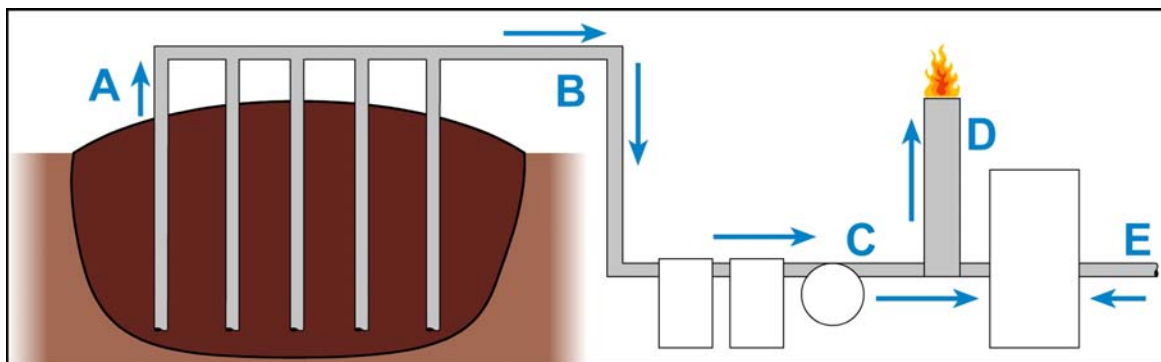
- A Individual collection lines;
- B Common header lines;
- C Process lines through sumps, knock-out pots, and blowers/compressors;
- D Oxidizer/flare stacks; and
- E The supplemental natural gas supply.



EPI's Flow Technology

Thermal mass flowmeters use the principle of convective heat transfer to directly measure mass flow. EPI's sensors consist of two resistance temperature detectors (RTDs). One RTD is heated; the other RTD acts as the temperature reference. The process 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 gas molecular rate of flow.

Our sensors are temperature compensated and insensitive to pressure changes, so the output signal is a true mass flow rate signal which can be directly interfaced with your data acquisition system without the need for further temperature and pressure instrumentation.



Master-Touch™ Advantages

The Master-Touch flowmeter provides you with a powerful set of features that include:

- Tracking of overall gas consumption over a turndown ratio of at least 100:1 with an accuracy of $\pm [1\% \text{ of Reading} + (.5\% + .02\%/\text{°C of Full Scale})]$;
- Repeatability of 0.2% full scale;
- Extensive diagnostics including time and date stamping of maximum and minimum flow rates;
- User-selectable high or low biasing to optimize long term tracking;
- A 2 line, 16 character display for rate, total, and Relay status;
- One to four independently calibrated ranges, and the ability to switch between the ranges without interrupting your production process.
- A wide variety of user-selectable engineering units that dynamically convert the flow rate and elapsed total to the new units.

Specifications

Linear signal output	0-5 VDC & 4-20 mA
Signal Interface	RS232 & RS485 ASCII or Modbus RTU (user-selectable) (HART and LightWIRE™ infrared optional)
Accuracy (including linearity)	$\pm [1.0\% \text{ of Reading} + (0.5\% \text{ Full Scale} + 0.02\%/\text{°C})]$
Repeatability	$\pm 0.2\% \text{ of Full Scale}$
Sensor response time (stainless)	1 second (time constant per step change)
Turn down ratio	100:1 minimum with 1500 SFPM
Electronics temperature range	-40 to 85°C (-40 to 185°F)
Gas temperature range	0 to 200°C (32° to 392°F), extended ranges available
Gas temperature effect	0.01%/°C
Gas pressure effect	Negligible over $\pm 20\%$ of absolute calibration pressure
Pressure rating maximum:	
Inline flowmeters	500 PSI Std., > 500 special
Insertion flowmeters .500 O.D.	125 PSI Std., > 125 special
" ".750 O.D.	55 PSI Std., > 55 special
Transmitter power requirements	5 Watts or less
Wetted materials	316 Stainless Steel (Hastelloy optional)
Standard temperature & pressure (STP)	70° F & 29.92" Hg (Air .075 lb./cubic foot)
NIST traceable calibration	Standard
MP Series —	
Certified to CSA, CUS, ATEX, IECEx and KOSHA requirements	
MPNH Series —	
For use in Ordinary (Non-Hazardous) area locations: Type 4X, IP66	

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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