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Fox Model 10A Thermal Mass Flowmeters

Offer Numerous Advantages in Gas Applications

FOX Model 10A Thermal Mass Flowmeters offer numerous advantages over other flowmeter technologies in gas applications. These advantages include better accuracy, rangeability (turndown), reliability and pressure drop. Several volumetric flowmeter technologies are available to measure gas flow rate including orifice plate/differential pressure, vortex, turbine and variable area. Although these flowmeters can be applied to gas applications with pressure and temperature compensation techniques, their performance cannot match the FOX Thermal Mass Flow Technology. FOX provides these advantages:

1. Direct Mass Measurement

Mass flow measurement is fundamentally more accurate than volumetric flow measurement because mass is not effected by changes in process conditions like pressure and temperature. The Fox Flowmeter measures gas flow directly in mass units including Standard Cubic Feet per Minute (SCFM), Normal Cubic Meters per Hour (NM³/Hr) or Kilograms per Hour (Kg/Hr). Pressure and temperature compensation is not required. It actually measures the molecule flow of the gas.

Changes in process pressure and temperature can cause significant measurement errors in volumetric flowmeters. A rule of thumb in many applications is that a 10 PGI change in process pressure will result in a 10 percent measurement error. **A direct mass measurement is your best solution.**

2. Accuracy, Repeatability, Turndown

The topic of turndown is combined with the discussion of accuracy and repeatability for an obvious reason. If a flowmeter is only accurate over part of the measurement range, the flowmeter is only giving you usable information part of the time. A flowmeter with wide turndown provides accurate and repeatable measurement over the entire range of interest. The high sensitivity of the Fox Flowmeter sensor provides accurate flow measurement at low and high flow rates. Turndown up to 100:1 is typical. Volumetric flowmeters cannot provide this wide range of flow measurement. The Fox Platinum Sensor achieves long-term stability because platinum is one of the most stable materials on earth.

3. Installation

Although typically overlooked when assessing the cost versus performance benefits of one flow technology with another, the effort required to install a flowmeter can have a significant impact on the “total installed cost” of a device. Installation of most flowmeter technologies typically requires cutting out a section of pipe and installing flanges and possibly support brackets. Alternatively, use of an insertion style device, such as the Fox Model 10A Flowmeter is easy and less costly. The insertion flowmeter is installed by drilling a hole in the pipe and welding on a 3/4” NPT coupling. The insertion flowmeter probe is inserted into the pipe and secured in place with a Fox supplied compression fitting. The pressure rating is 300 PSI.

Another issue related to installation concerns upstream and downstream straight pipe requirements. Typically most technologies, including insertion flowmeters, require 10 diameters of straight pipe upstream of the sensor and 5 downstream. However, for situations where 15 diameters of straight pipe are not available, Fox offers an in-line flowmeter that provides a solution. The inline flowmeter contains flow-conditioning plates that eliminate the need for upstream and downstream straight pipe runs.

4. Reliability

The Fox Flowmeter has no moving parts. The all-welded 316 stainless steel sensor construction was specifically designed for demanding industrial applications. The electronics housing is explosion-proof and NEMA 4X for reliable operation indoors or outdoors.

5. Safety

The Fox 10A Thermal Mass Flowmeter is delivered standard with an explosion-proof housing rated for Class I, Division 1, Groups B, C and D. It is FM and CSA approved for hazardous gas applications including natural gas, methane, and hydrogen. The stainless steel wetted parts can be cleaned for oxygen service.

6. Pressure Drop

There is virtually no pressure drop across the Fox sensor. Pressure drop across inline models is typically less than 0.2 PSI.

Common gases: Air, ammonia, biogas, butane, chlorine, compressed air, carbon monoxide, carbon dioxide, digester gas, ethane, ethylene, helium, hydrogen, methane, natural gas, nitrogen, oxygen, propane, and many more.

The Fox Model 10A – the right flowmeter for your gas applications!