Well Flow Management

Well Testing | Measurement

Gas Metering

Accurate metering of gas flowed during well test operations is critical to providing concise flow data. This data is then input into a standard gas calculation model, the results of which can be used to evaluate reservoir properties, estimate field commerciality and plan production systems.

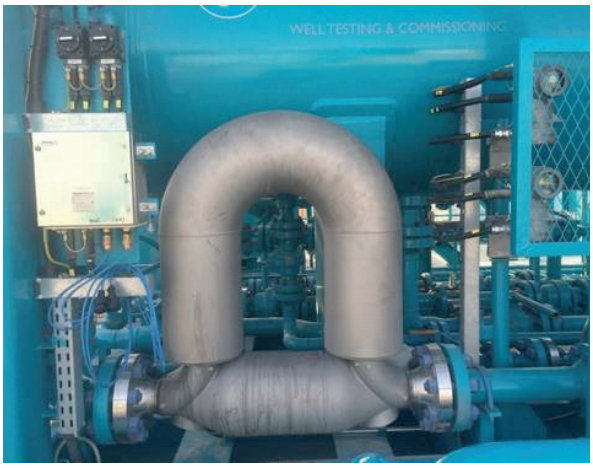
Extensive well testing experience has enabled Expro to select and design optimal systems to achieve the highest level of data accuracy. Gas metering has generally involved use of orifice type differential pressure meters.

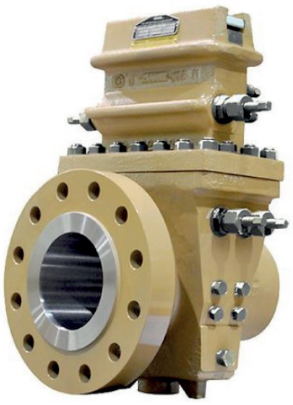
This meter type is still widely used and calculation procedures are those specified in AGA Report No. 3 except for the super-compressibility factor, which originates from the Dranchuk, Purvis and Robinson correlation. These procedures employ various base criteria and correction factor values to ensure that data output is to a consistent and accurate industry standard.

The recent development and availability of alternative technologies such as the Coriolis Mass Flow meter have meant their use becoming increasingly more prevalent, particularly due to their non-intrusive operating parameters.

The gas calculation for the Mass Flow (Coriolis) meter is based on mass flow measured at the meter being converted to volume using a calculated density which uses the universal constant of air as a reference and the density measured from the test separator.

The Expro data acquisition software will convert the mass flow at the meter to a volumetric value.





Applications

- Gas metering and measurement

Features and benefits

- Consistent standard use of AGA 3 for calculations
- Alternative use of various meter types and configuration
- No ambiguity in data produced

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Gas Metering

Technical specifications						
	Orifice meter	Coriolis mass flow meter				
Model	**Daniels senior**	**CMF300**	**CMF400**	**CMF 350P**	**CMF 400H**	**F300**
Nominal size inches	2 – 12	3	4-6	4	4 - 6	3
Gas accuracy % of flowrate		+/-0.35	+/-0.35	+/-0.25	+/-0.25	+/-0.5
Density accuracy g/cc		+/-0.0005	+/-0.0005	+/-0.0005	+/-0.0005	0.002, 0.001, 0.0005
Wetted parts	Carbon Steel (WCB and LCC) 316/316L SST, Duplex	316L SST	316L SST	Nickel Alloy C22/ 316L SST	Nickel Alloy C22	316L SST
Temperature range °F (°C)	-20 to 160 (-29 to 71)	-20 to 100 (-29 to 38)	-20 to 100 (-29 to 38)	-40 to 140 (-40 to 60)	-40 to 140 (-40 to 60)	-40 to 140 (-40 to 60)
Pressure rating psi (bar)	1,500 (103)	1,450 (100)	1,450 (100)	2,250 (155)	2,855 (197)	2,160 (149)
Typical bore size inches (mm)	6 – 5.761 (146.33) 4 – 3.826 (97.18)	3 to 4 (75 to 100)	4 to 6 (100 to 150)	4 (100)	4 to 6 (100 to 150)	3 (75)
Nominal flowrate lbs/hr (kgs/hr)		-	-	-	-	-
Maximum flowrate lbs/hr (kgs/hr)		0 to 78,000 (0 to 36,000)	0 to 198,000 (0 to 92,000)	0 to 138,000 (0 to 62,000)	0 to 198,000 (0 to 92,000)	0 to 104,700 (0 to 47,505)
ATEX classification		CE 0575 II 2G EEx ib IIB T1–T5 CE 0575 II 2G Ex ib IIB T1–T6 (F- Series)				
Service type	Sour Sour to NACE MR-0175					
Calculation in accordance with	AGA 3 [1]. API 14.3 [2].					

Note: The Expro Global Standard for Flow Calculations, **INS-006444**, details all relevant information regarding calculation standards and methodology.

For more information contact your local Expro representative or email **welltesting@expro.com**

1. American Gas Association Report No 3
2. API-AGA joint flow measurement code (API MPMS Chapter 14, Section 3, Part 2:2000(R2011) - also AGA Report No. 3, Part 2 and GPA 8185-00, Part 2)