



METHOD OF CALCULATING GAS FLOW RATES

BASED ON A.G.A. REPORT NO. 3

446270

OEC-863-B

$$Q_g = C \sqrt{h_w P_f}$$

WHERE

C = Fpv X Fb X Fg X Ftf X Ftb X Fpb X Fr X Y2 X Fm X UNIT CONVERSION FACTOR

- Qg = CORRECTED GAS FLOW RATE
- C = ORIFICE FLOW CONSTANT
- hw = DIFFERENTIAL PRESSURE ACROSS ORIFICE IN INCHES WATER @ 60°F
- Pf = ABSOLUTE STATIC PRESSURE IN psi

AND

- Fpv = SUPERCOMPRESSIBILITY FACTOR (CORRECTED FOR N₂, H₂S, AND CO₂ EFFECTS ON FINAL REPORT, (IF DESIRED))
- Fb = BASIC ORIFICE FACTOR
- Fg = SPECIFIC GRAVITY FACTOR
- Ftf = FLOWING TEMPERATURE FACTOR
- Ftb = TEMPERATURE BASE FACTOR
- Fpb = PRESSURE BASE FACTOR
- Fr = REYNOLDS NUMBER FACTOR = 1
- Y₂ = EXPANSION FACTOR FOR DOWNSTREAM PRESSURE TAP
- Fm = MANOMETER FACTOR = 1
- UNIT CONVERSION FACTOR = FACTOR CHANGING FLOW RATE UNITS

WE CAN UNITE Fu = Ftb X Fpb X UNIT CONVERSION FACTOR

(Fu FACTORS ARE GIVEN IN TABLE BELOW FOR DIFFERENT STANDARD CONDITIONS AND FLOW RATE UNITS)

C₁ = Fu X Fg (THEORETICALLY CONSTANT DURING TEST)

C₂ = Fpv X Fb X Ftf X Y₂

THEN C = C₁ X C₂

TABLE OF Fu FACTORS

STANDARD CONDITIONS	RATE OF FLOW UNITS	Cu Ft/			
		HOURS	DAY	M ³ /HOUR	M ³ /DAY
14.65 psi	60°F	1.0055	24.1311	0.0285	0.6834
14.73 psi	60°F	1	24	0.0283	0.6797
760 mm Hg	0°C	0.9483	22.7604	0.0269	0.6446
760 mm Hg	15°C	1.0004	24.0094	0.0283	0.6799
750 mm Hg	15°C	1.0137	24.3295	0.0287	0.6890