

Differential Pressure Calculation for SDF-Sensors

Date October, 15 2012
 Customer Airlitec / Mr. Houllier
 Project
 Tag-No.
 Ref. procedure

Pipe and sensor data

Cross section shape round
 SDF sensor type no. SDF22
 Internal diameter (cold) 160.3 mm
 Wall thickness 4 mm
 Insulation 0 mm
 Pipe material 316SS
 k-factor (cold) 0.6245

Calculation base

Medium raw bio gas 1,51 kg/m³
 Calculation acc. to aktual volume flow

Process and state quantities

				Units
Temperature	10	20	15	°C
Absolute pressure	105	120	110	kPa abs.
Kinem. viscosity	0.0e+00	0.0e+00	0.0e+00	m ² /s
Actual volume flow	346	807	625	m ³ /h
Actual density	1.3	1.51	1.37	kg/m ³
k-factor (warm)	0.6245	0.6245	0.6245	
Internal diameter (warm)	160.3	160.3	160.3	mm
Expansion factor	1.0000	0.9998	0.9999	
flow velocity	4.76	11.11	8.60	m/s
Reynoldsnumber	0	0	0	

Results

Calculated diff.pressure	0.38	2.39	1.30	mbar
Remaining pressure drop	0.07	0.43	0.24	mbar