manas

a name that spells trust.....

An ISO 9001 : 2008 Company

COMPACT STEAM FLOW METER

SFMc-150

Compact Steam Flow meter.

INTRODUCTION:

The SFMc-150 flow meter is applicable for measuring flow rates of saturated and superheated steam in closed conduits. It is best suited for applications where affordability, reliability and ruggedness are of prime concerns.
In conventional system of measurement, the differential pressure generated by orifice plate is measured by DP transmitter. The output of from DP transmitter after square rooting is accepted as proportional to flow rate. This assumption is true only when the density is constant.
Unfortunately density of compressible fluid is never constant. The density of compressible fluid changes with line pressure and line temperature. Thus, introducing errors in flow rate measurement.

PRINCIPLE OF OPERATION:

As per BS 1042 / ISO: 5167 standard, the equation for mass flow when measured with orifice states:

$$Qm \propto \sqrt{\rho}.\sqrt{\Delta P}$$

Where, Qm = mass flow rate.
ρ = instantaneous density.
ΔP = differential pressure.

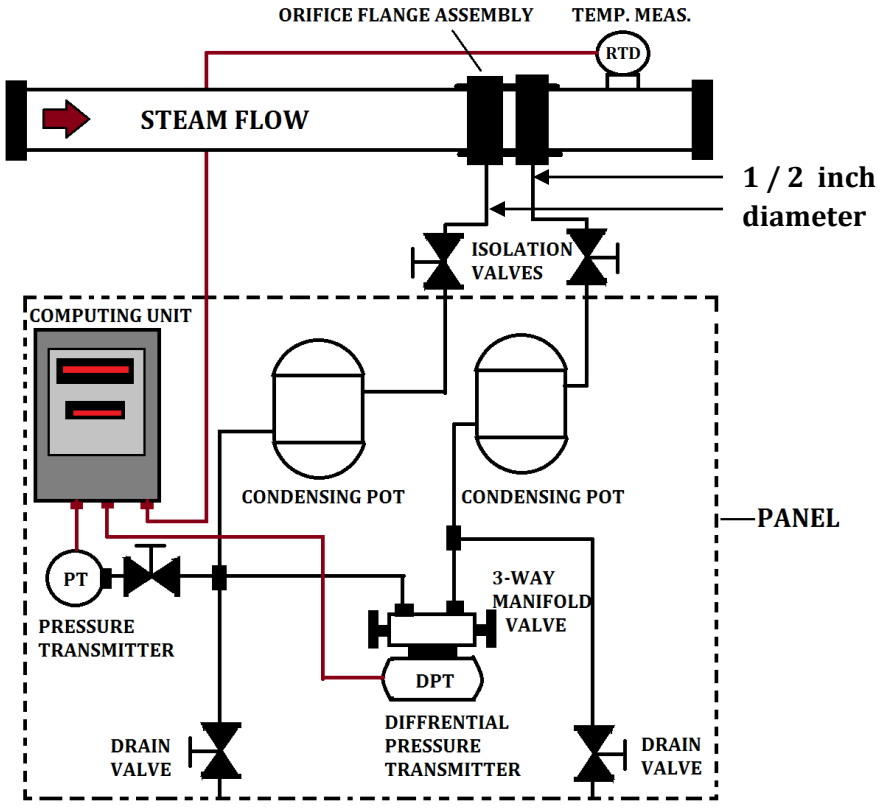
Thus by measuring the line pressure and temperature and using relevant algorithms instantaneous density can be found.

By knowing the correct density one can compute the accurate flow rate. The further operation of integration, square rooting is similar to ordinary totaliser.

PRINCIPAL ADVANTAGES:

1. Online density compensation possible because of the online pressure and temperature measurement.
2. Various sizes of orifice assemblies available with accurate design calculations, with or without IBR approval as per application.
3. Sturdy, rugged field mounting type pressure transmitter is supplied with standard end connection.
4. Online display of compensated mass flow rate, density, temperature & output of DP transmitter is offered.LED indication for status of steam (saturated or superheated) is provided.
5. User friendly. No need to feed all the complicated orifice constants since the system is intelligent enough to calculate.
6. Isolated 4-20mA dc output proportional to compensated flow rate.
7. Disconnection of DPT, PT and Temperature sensor is indicated by error message.
8. Complete system engineered to suit your requirement.
9. Standard System and highly reliable.
10. Calibration of RTD, DP transmitter, pressure transmitter is easy and inexpensive.
11. No moving Parts.
12. No wiring connections are required during installation.
13. Installation is easy and suitable.

SCHEMATIC ARRANGEMENT FOR COMPACT STEAM FLOW METER



Compact Steam Flow meter.

FEATURES OF STEAM FLOW METER:

- Easy user friendly programming
- Password protected for all modes except display mode.
- Computer/Printer Interfacing with RS 232/RS 485 port with MODBUS RTU
- Fault indication indicated by different error codes
- Overflow indicated by blinking display up to 3000 readings (for more readings consult factory)
- Data logging facility with 3445/ 6890 number of reading is available
- Linear or square root operation
- Universal power supply
- Suitable for Saturated &/or Superheated Steam
- Two alarm setting configured on pressure input
- Steam status indication (Saturated/ Superheated)
- Pressure and temperature offsets generated by site condition can be compensated
- Mass flow calculation as per ASME algorithm

SECTORS:

- Chemical / Pharmaceutical
- Petrochemicals
- Fertilizers

SPECIFICATIONS:

1. Service : Saturated and superheated steam in closed Pipes.
2. Size : 1" to 14"
3. Type of flow element : Differential flow element.
4. MOC of flow element : SS 316
5. End Connection : SORF flange
6. MOC of flanges : M.S/C.S/S.S
7. Flange Rating : Class 150 (OTHER ON REQUEST)
8. Orifice Flange assembly : WNRF Class 300
9. DPT : With Display
10. Data logging : 4900 readings or 9800 readings (optional).
11. Comm. Port : RS485, RS232 (optional).
12. Comm. Protocol : MODBUS , RTU
13. Design Standard : BS: 1042/ ISO : 5167
14. Accuracy : ±2.5% to 3% of actual reading
15. Typical turndown : 10:3
16. Density compensation : Online monitoring and compensation of density
17. Gas Temperature : Up to 70°C
18. Power Supply : 85 to 265 VAC @ 50Hz

* Specifications are subjected to change without prior notice

COMPARISON WITH VORTEX FLOW METER:

Sr. No.	Parameter	Orifice	Vortex
1.	Well established standards	Available	Not Available
2.	Suitability for high pressure & temperature application	Most suitable	Seal fails in majority of cases after Certain duration.
3.	Installation	Easy to install	Critical & expensive because of Requirement of special machined pipe lengths.
4.	Existing pipe line modifications for installation	No modifications required.	Design is based on velocity & not on line size. As a result customer line size &selected flow meter size may differ.
5.	Recalibration of transmitter	Easy & can be done in house	Has to be done on a flow-rig and hence is expensive
6.	Changes in Pressure, Temperature	Taken care during density compensation	Not be taken care of.
7.	Effects on resolution due to increase in line size	No effect.	Resolution decreases with increase in line size.
8.	Suitability for low velocity measurement	Suitable	Stops the measurement.
9.	Durability	No moving parts and hence no wear and tear and virtually maintenance free.	Diaphragm based sensor and hence is prone to wear and tear.

Ordering Information:

CODE	LINE SIZE
25 NB	DN 25 : 1''
40 NB	DN 40 : 1½"
50 NB	DN 50 : 2"
80 NB	DN 80 : 3"
100 NB	DN 100 : 4"
150 NB	DN 150 : 6"
200 NB	DN 200 : 8"
AO	ANY OTHER PL.
CODE	**END CONNECTION**
ANSI 150	SORF ANSI 150
ANY OTHER	ANY OTHER
CODE	**ORIFICE FLANGES**
ASA 300	WNRF ASA 300
ANY OTHER	ANY OTHER
CODE	**MOC OF METER**
SS 304	STAINLESS STEEL 304
SS 316	STAINLESS STEEL 316
MS/CS	MILD/ CARBON STEEL
CODE	**COMMUNICATION**
RS4	RS 485
RS2	RS232
CODE	**LOGGING FACILITY**
1L	LOGGING
2L	EXTENDED LOGGING
CODE	**POWER SUPPLY**
U	UNIVERSAL
Z	ANY OTHER

SFMc-150	50NB	ANSI 150	ASA 300	SS 304	RS4	1L	U	SAMPLE ORDERING INFORMATION

Catalog no:

manas microsystems Pvt. Ltd.

EL-54,Block-J,MIDC Bhosari, Pune-411026.(India)
Phone No.:- +91 20 2712 7044 / 7858
Fax No.:- +91 20 2712 7045
Email: mktg@manasmicro.com
Website: www.manasmicro.com/
www.flowmeterindia.in

BSCIC NABCB QM 030 ISO 9001 REGISTERED