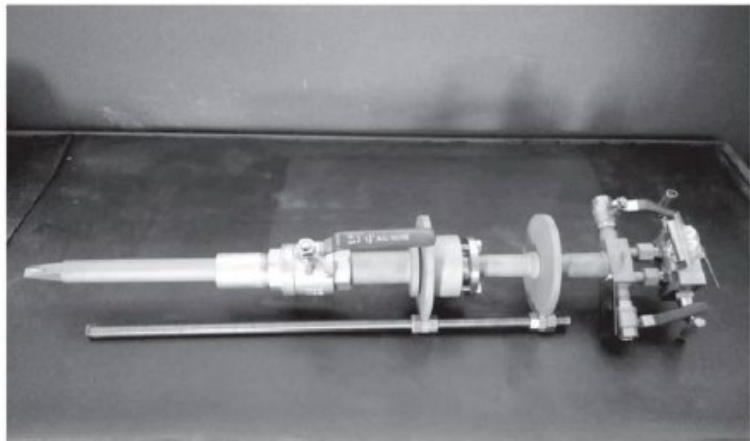
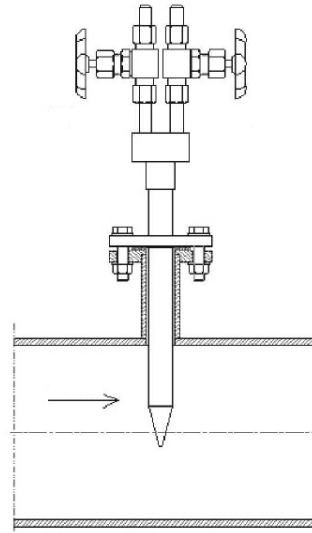


Pitoba Flowmeter



Overview

Pitoba flow meter is a kind of averaging Pitot Tube Flowmeter, is widely used in the industrial field and is a flow meter suitable for various media. It can be widely used for measuring gas, steam, and liquid flow rates. Gas: primary air volume, secondary air volume, negative pressure, air, oxygen, hydrogen, dry gas, converter gas, blast furnace gas, producer gas, coke oven gas, natural gas, liquefied gas, flue gas, chemical material gas, etc; Vapors: superheated steam, saturated steam, wet steam, dry steam, bidirectional steam, etc. Liquids: water, incomplete pipe water, wash oil, lean oil, light oil, tar, heavy oil, crude oil, corrosive liquids, various solutions, chemical material liquids, paraffin, etc. It has a simple structure and is easy to install, requiring only one opening in the pipeline ϕ Insert the Pitot Tube Flowmeter into the center of the pipeline with a hole of 25mm to 60mm, and connect it to the pipeline through welding or flange.



During the long-term operational of Pitot Tube Flowmeter:

1. Solved the problems of blockage and wear of primary wind speed and air volume sensors in the power industry.
2. Solved measurement problems such as high temperature, high pressure, and high flow rate of the main steam.
3. Solved the problem of sensor fouling when measuring various types of gas.
4. Solved the difficulties in measuring small and large pipe diameters (20mm-8000mm), low flow rates, and low flow rates.
5. Implemented pressurized opening and online installation.
6. Implemented online dredging and cleaning.
7. Various pipeline inspections (square, rectangular, diamond, trapezoidal, elliptical, triangular, etc.) have been implemented.
8. Various detection devices have been implemented to calibrate Pitot Tube Flowmeters.
9. Implemented measurement of high viscosity media (crude oil, tar, heavy oil, etc.).
10. Implemented measurement of insufficient straight pipe sections.

Working principle

Pitoba flow meter is a kind of averaging Pitot Tube Flowmeter, it is a differential pressure flowmeter designed according to the international standard ISO3966 "Measurement of fluid flow in closed pipelines - Velocity area method using pitot static pressure tubes". It is the only energy-saving flowmeter recommended by the Energy Conservation Information Center of the National Development and Reform Commission. The principle of pitot tubes has been widely applied in the aerospace industry for a long time. For example: testing and inspection of aircraft wind tunnels, aerodynamic testing of aircraft engines, speed measuring rods for aircraft flight speed, etc.

The Pitoba Flowmeter inserts the sensor into the center of the pipeline, with the total pressure hole facing the direction of fluid flow. The difference between the total pressure and static pressure is the measured differential pressure at the center of the pipeline. The standard differential pressure at that point is then fitted using the calibration curve of the Pitot Tube Flowmeter's wind device, and the fluid flow rate is calculated based on the standard differential pressure. At the same time, it is necessary to use a pressure transmitter to measure the fluid pressure, and a thermal resistance thermometer to measure the fluid temperature. The standard differential pressure signal, pressure signal, and temperature signal are simultaneously introduced into the flow integrator composed of a microcontroller or directly connected to the DCS system. On the one hand, the medium is compensated for pressure and temperature to ensure measurement accuracy, and parameters such as differential pressure, pressure, temperature, instantaneous flow rate, cumulative flow rate, heat, and speed are displayed digitally.

Pitoba Flowmeter is developed based on the principle of Pitot tube velocity measurement. It determines the flow rate by multiplying the average flow velocity of the pipeline and the effective cross-sectional area of the pipeline.

Technical Parameters of Pitoba flow meter

1. Range ratio of 10:1, up to 20:1 in special occasions
2. Universal pipe diameter: 20mm~8000mm
3. Universal media: full tube, unidirectional gas, steam, and liquid with a viscosity not exceeding 10 centipoises
4. Requirements for straight pipe sections: Generally, the measurement accuracy of 0.5% to 1.5% is guaranteed for the first 7D and the last 3D sections
5. Measurement accuracy: $\pm 0.5\%$; $\pm 1.0\%$; $\pm 1.5\%$;
6. Repetitive accuracy: $\pm 0.05\%$
7. Applicable pressure: 0-25Mpa, special applications can reach 32Mpa
8. Applicable temperature: -100 °C ~650 °C, special applications can reach up to 800 °C
9. Measurement upper limit: determined based on process requirements and probe strength
10. Measurement lower limit: depends on the minimum differential pressure measured. When it is lower than the minimum differential pressure, special designs can be used to meet the requirements.

Performance Characteristics

1. Energy saving: Due to the fact that the intelligent probe of a measuring element is usually composed of less than $\varnothing$ 30mm stainless steel, it has a small cross-sectional area and almost no pressure loss in the medium pipeline, greatly reducing operating costs. Compared with throttling devices such as orifice plates, it has a significant energy-saving effect. High temperature and high pressure resistance: The material of the primary component intelligent probe is 304 or 316 stainless steel (special steel is selected according to different media), which can withstand a maximum temperature of 650 °C and a maximum pressure of 32MPa for the medium.
2. High reliability: Due to the simple structure and reasonable design of the probe, the medium in the pressure tube does not flow, and debris is not easy to enter, so the measurement accuracy can be maintained for a long time.

3. Easy installation: Simply drill a corresponding hole in the appropriate position of the pipeline and insert the probe of the component into the center of the pipeline for easy installation.
4. No maintenance required: The primary measuring element probe itself does not require maintenance. It only needs to perform zero and full scale calibration on the differential pressure transmitter according to the requirements of regular calibration of measuring instruments, as well as verify the corresponding current input for the secondary meter.
5. Wide measurement range: Media with gas flow rates above 6m/s and liquid flow rates above 0.5m/s can be accurately measured, especially for low flow rates, small flow rates, and large pipe diameters. Widely used for gas, steam, and liquid flow measurement. Gas: primary wind speed, secondary wind speed, negative pressure air, oxygen, hydrogen, dry gas, coal gas (converter gas, blast furnace gas, coke oven gas), natural gas, liquefied gas, flue gas, chemical material gas, etc; Steam body: superheated steam, saturated steam, wet steam, bidirectional steam, etc; Liquids: water, untreated water, light oil, tar, crude oil, various solutions, chemical material liquids, etc.
6. The cross-sectional shape of the medium pipeline has a wide range of applications: this flowmeter has no requirements for the geometric shape of the medium pipeline cross-section, and is suitable for circular, elliptical, square, rectangular, prismatic, triangular, trapezoidal, etc.
7. High temperature and high pressure resistance: can withstand a maximum temperature of 650 °C in the medium, spray A1203 coating can withstand a maximum temperature of 1300 °C , and can withstand the highest pressure in the medium 32MPa.
8. Equipped with intelligent secondary instruments: it can display various parameters digitally and communicate remotely, forming a network for centralized management.
9. Online installation and maintenance: Some measuring points that cannot be stopped for installation and media with excessive impurity content can be installed and measured online without stopping production, and can be cleaned and maintained without stopping production

Model Selection

Mark	Code	Description
Type	Pitoba	Pitoba flow meter
Fluids	L	Liquid
	G	Gas
	S	Steam
Process Connection	1	Screw Connection
	2	Flange connection
	3	Union
	4	Others
Operation Pressure	1	1.6Mpa
	2	2.5Mpa
	3	4 Mpa
	4	6.3Mpa
	5	10 Mpa
	6	25Mpa

	7 8	32Mpa Others
Pipeline size	-25 -50 -80 ... -3000	DN25 DN50 DN80 DN3000

