

ABSTRACT

A cost reduction can be achieved by making a differential pressure type flowmeter simple in structure, and highly accurate flow rate measurements can be attained over the wide flow rate range of 100%-1% with errors E of less than 1 (%SP) both in real time and in a state of inline.

To achieve the ends, a differential pressure type flowmeter comprises an orifice, a detector to detect a fluid pressure P_1 on the upstream side of an orifice, a detector to detect a fluid pressure P_2 on the downstream side of an orifice, a detector to detect a fluid temperature T on the upstream side of an orifice, and a control computation circuit to compute a fluid's flow rate Q passing through an orifice by using the pressure P_1 , pressure P_2 and temperature T detected with the aforementioned detectors, and the aforementioned fluid's flow rate Q is computed with the equation $Q=C_1 \cdot P_1/\sqrt{T} \cdot ((P_2/P_1)^m - (P_2/P_1)^n)^{1/2}$ (where C_1 is a proportional constant, and m and n are constants).