

ABSTRACT

An improved and reduced-size low-cost gas supply system equipped with a pressure-type flow rate control unit, to be used, for instance, in semiconductor manufacturing facilities. Transient flow rate characteristics are improved to prevent the gas from overshooting when the gas supply is started, raising the flow rate control accuracy and reliability of facilities. That eliminates the quality non-uniformity of products or semiconductors and raises the production efficiency.

To illustrate, the gas supply system equipped with a pressure-type flow rate control unit is so configured that with the pressure on the upstream side of the orifice held about twice or more higher than the downstream side pressure, the gas flow rate is controlled to supply the gas to a gas-using process through an orifice-accompanying valve, the gas supply system comprising a control valve to receive gas from the gas supply source, an orifice-accompanying valve provided on the downstream side of the control valve, a pressure detector provided between the control valve and the orifice-accompanying valve, an orifice provided on the downstream side of the valve mechanism of the orifice-accompanying valve and a calculation control unit where on the basis of the pressure $P1$ detected by the pressure detector, the flow rate Qc is calculated with an equation $Qc = KP1$ (K : constant) and the difference between the flow-rate specifying signal Qs and the calculated flow rate Qc is then input as control signal Qy in the drive for the control valve, thereby regulating the opening of the control valve for adjusting the pressure $P1$ so that the flow rate of the gas to supply can be controlled.