

FLOW MEASUREMENT SELECTION & PRACTICE

Comparison of Flow metering technologies by applications

✔ Suitable      ⚙ Possible (special design) or sub-optimal      ✖ Unsuitable

Liquids	Magnetic flow	Coriolis mass flow	Vortex Flow	Ultrasonic Flow	Variable Area Flow	DP Flow Wedge	DP Flow Venturi Tube	DP Flow Orifice	DP Nozzle	DP Flow Averaging Pitot	Typical application Liquids
Clean conductive	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	Drinking Water
Dirty Conductive	✔	✔	⚙	✔	⚙	✔	✔	⚙	✔	⚙	Waste Water
Viscous Conductive	⚙	✔	✖	✔	⚙	✔	⚙	⚙	⚙	⚙	Food and Beverage product feed
Conductive Slurries	✔	✔	✖	⚙	✖	✔	⚙	✖	⚙	✖	Cement manufacture
Conductive bi-directional Flow	✔	✔	✖	✔	⚙	⚙	⚙	⚙	✖	⚙	Loading and unloading
Conductive and Corrosive	⚙	⚙	⚙	✔	⚙	✔	✔	✔	⚙	⚙	Acid Transport
Water Hammer	⚙	✖	✖	✔	✖	⚙	⚙	⚙	⚙	⚙	Steam line start up
Conductive Pulsating Flow	✔	✔	⚙	⚙	✖	⚙	⚙	⚙	⚙	⚙	Ground water recovery
Clean non-conductive	✖	✔	✔	✔	✔	✔	✔	✔	✔	✔	Gasoline products
Dirty non-conductive	✖	✔	⚙	✔	⚙	✔	✔	⚙	✔	⚙	Crude Oil production
Viscous non-conductive	✖	✔	✖	✔	⚙	✔	⚙	⚙	⚙	⚙	Bitumen
Non-conductive Slurries	✖	✔	✖	⚙	✖	✔	⚙	✖	⚙	✖	Coal to Oil
non-conductive bi-directional Flow	✖	✔	✖	✔	⚙	⚙	⚙	⚙	✖	⚙	Loading & Unloading Gasoline products
Non-conductive and Corrosive	✖	⚙	⚙	✔	⚙	✔	✔	✔	⚙	⚙	Sour feed stock
non-conductive Pulsating Flow	✖	✔	⚙	⚙	✖	⚙	⚙	⚙	⚙	⚙	Diapham pump feed
Gasses	Magnetic flow	Coriolis mass flow	Vortex Flow	Ultrasonic Flow	Variable Area Flow	DP Flow Wedge	DP Flow Venturi Tube	DP Flow Orifice	DP Nozzle	DP Flow Averaging Pitot	Typical application Gasses
Steam	✖	⚙	✔	✖	✔	✔	✔	✔	✔	✔	Power and heating
Clean	✖	✔	✔	✔	✔	✔	✔	✔	✔	✔	Hydrocarbon gas
Wet	✖	⚙	✖	⚙	⚙	✔	✔	✔	✔	✔	Gas feed stock
Particle contaminated	✖	⚙	⚙	⚙	✖	✔	✔	⚙	✔	⚙	Sand entrained in Gas
Corrosive	✖	⚙	⚙	⚙	⚙	✔	✔	✔	✔	✔	Sour Gas stock
Capital Cost	Moderate	Very High	Moderate	Very High	Low	Moderate	Moderate	Low	Moderate	Low	
Maintenance costs (Typical)	Moderate	Very High	High	Very High	Low	Low	Low	Moderate	Low	Low	
Total Cost of Ownership	Moderate	Very High	Moderate	Very High	Low	Low	Low	Low	Low	Low	



Venturi Tubes



Orifice Plates



Thermowells



Cable Sensors



Multipoint Sensors



Wedge Meters