



Which Flow Meter?

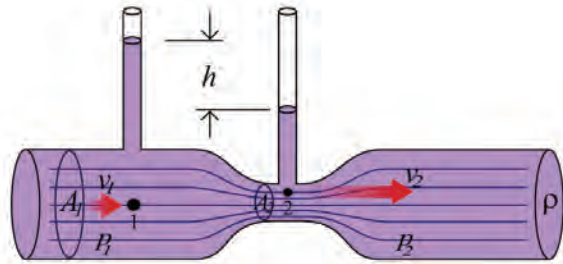
Flow meters are very much **application dependent** devices. How fast they respond, the environment in which they measure, cost and of course accuracy, are all factors. Here's a quick run down of the common types:-

Differential Pressure (DP) Flow Meters

Daniel Bernoulli realised that when a fluid increases speed, it's *static* pressure decreases. Even better than that, he was able to calculate that a pressure drop is proportional to the square of the flow rate. Introducing a constriction in a pipe will cause a pressure drop ($-\Delta P$ or DP) and the flow may be calculated. Typically, orifice plates are used for exactly this purpose. This theory was later developed by Giovanni Battista Venturi and is known today as **The Venturi Effect**.

As fluid speed increases, it's static pressure drops proportionately as it moves through a restriction.

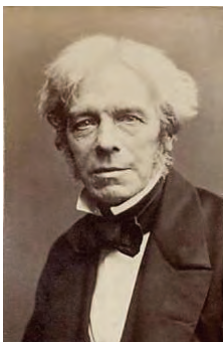
This is the principle by which DP Flow Meters operate.



Common Application:- Steam flow measurements

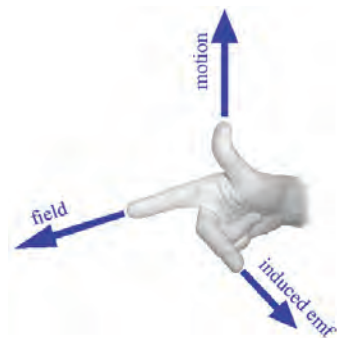
Electro-magnetic (Mag) Flow Meters

Clever people are behind many modern devices. The electromagnetic flow meter is no exception. Michael Faraday realised that a conductor moving at 90 degrees to a magnetic field would induce an EMF (voltage).



Left: Michael Faraday whose name is linked to a host of scientific.

Right: Flemings Right Hand Rule (Generators). Many a High School Student has fallen foul of confusing this with the Left Hand Rule (Motors).



Any resultant induced voltage is proportional to the velocity of the conductor moving through the magnetic field. As a conductive fluid passes through a meter, its flow rate can be measured using the voltage induced. The faster the flow, the greater the induced voltage.

Common Application:- Water, Waste water, Chemicals, Foodstuffs

Positive Displacement (PD) Flow Meters

Positive displacement flowmeters are called such as a finite volume must be occupied by fluid in order to mechanically displace components. Each 'displacement' results in a measureable output.

There are various types on the market: Turbine, Gear, Piston, Diaphragm are all examples.

The key advantage of PD meters is with batch control where specific and accurate volumes of product are required in repeated sequences—better known as 'batch control'.



Trimec MP series positive displacement meters: Highly accurate and extremely reliable

Common Application:- Batch Control, Food applications, Pharmaceuticals.

- ◆ New Zealand owned & operated
- ◆ Service & sales facilities
- ◆ 30 years in the industry
- ◆ Experience you can rely on



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