

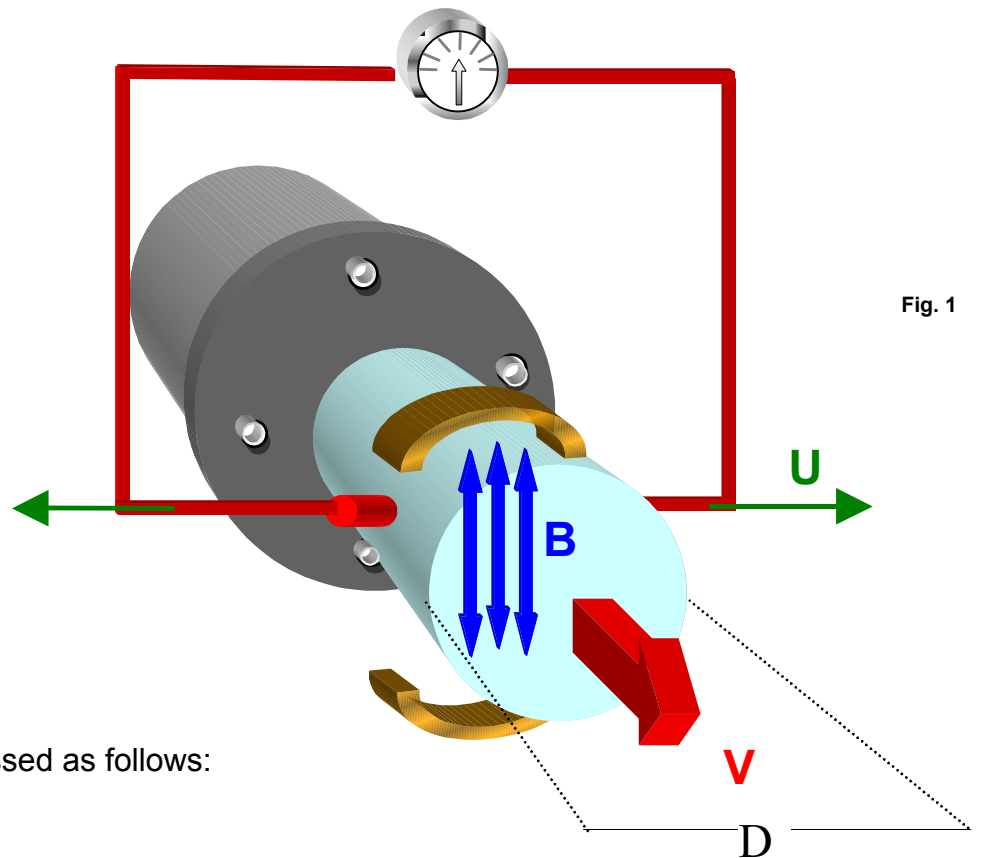


Working Principle

Electromagnetic Asameters (EM-meter) working principle is based on the Faraday law about electromagnetic induction; it asserts that a conductive body, moving inside a magnetic field, produces an electromagnetic induced power U .

The liquid, that flows inside the EM-meter, is the moving conductive body and the induced voltage U results to be proportional to the fluid speed V and can be detected by two electrodes positioned at distance equal to the pipe diameter D .

The EM field is constant and is generated by two coils fed with continuous current, but with alternate polarity.



U = EM induced power

B = EM induction

V = Speed

D = Nominal Diameter

Q = Flowrate

Faraday law can be expressed as follows:

$$U = V * D * B$$

Volumic flow rate can be calculated as:

$$Q = V * D^2 * \frac{\pi}{4}$$

If $V = \frac{U}{B * D}$ than from the previous formula you get:

$$= \frac{U}{B} * D * \frac{\pi}{4}$$

In order to avoid short circuit with pipe, not-conductive inner lining coating materials are used for the measuring tube: PTFE, Hard Rubber, Ceramic, Pvc ecc.

Flow rate measuring is independent from fluid properties (viscosity or density) and conditions (pressure and temperature). The only thing to be taken into consideration is the conductivity.