Figure 9 – Principle of Vortex Shedding

When a fluid or gas flows past an obstruction, boundary layers of slow moving fluids or gases are formed along the outer surfaces. If the obstacle is streamlined, the flow cannot follow the obstacle contours on the downstream side. The separated layers become detached and roll themselves into vortices in the low pressure area behind the body. Vortices are shed from alternate sides. The frequency at which they are shed is directly proportional to velocity. The signal output from the flowmeter is generated from the action of the fluid itself, so it belongs in the "fluidic" class of flowmeters.

Advantages of vortex shedding meters are:

- high accuracy
- long term repeatability
- good rangeability
- measure liquid, gas, and two-phase flow
- calibration is independent of viscosity, density, pressure and
  temperature and can be maintained for long periods of time

Limitations of vortex shedding meters are:

- not suitable for dirty or abrasive fluids
- not suitable for viscous liquids
- limited choice of materials of construction
- limited size range
- limited maximum pressure and temperature capability
- no measured flow below the low flow cut-off velocity

**A.** Fluidic Flowmeter (Coanda Effect)

Another type of fluidic flowmeter utilizes the Coanda effect. The Coanda effect is basically a hydraulic feed back circuit. A chamber is designed with two feedback channels on opposite sides that produce a continuous, self induced oscillation. The frequency of the oscillation relates to the fluid velocity.