

Answer on Question #48343, Engineering, Other

Question:

State Bernoulli's equation and identify the parameters and the energy types involved.

Answer:

In fluid dynamics, Bernoulli's principle states that for an inviscid flow, an increase in the speed of the fluid occurs simultaneously with a decrease in pressure or a decrease in the fluid's potential energy.

Bernoulli's principle can be applied to various types of fluid flow, resulting in what is loosely denoted as Bernoulli's equation. In fact, there are different forms of the Bernoulli equation for different types of flow. The simple form of Bernoulli's principle is valid for incompressible flows:

$$\frac{v^2}{2} + gz + \frac{p}{\rho} = \text{const}$$

v is the fluid flow speed at a point on a streamline, g is the acceleration due to gravity, z is the elevation of the point above a reference plane, p is the pressure at the chosen point and ρ is the density of the fluid at all points in the fluid.

$\frac{v^2}{2}$ is kinetic energy, gz potential energy,