FACULTY OF ENGINEERING & TECHNOLOGY

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Manometer

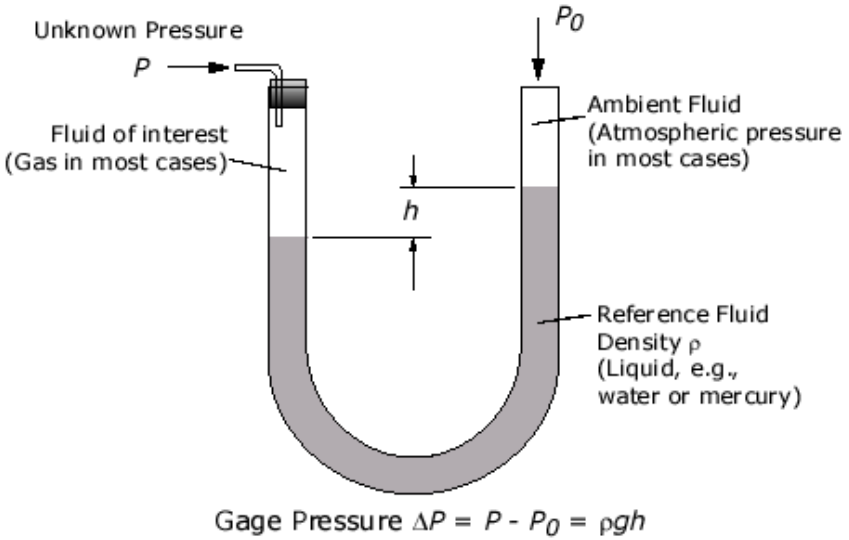
Manometer is a device used for measuring the pressure at a point in a fluid by balancing the column of fluid with the same column or another of the fluid.

Classification of Manometers
1. Simple manometer
2. Differential manometer

Differential manometer

A differential manometer is a simple instrument for comparing pressures, usually by the difference in height of two liquid columns.

- The simplest of such instrument is a U-tube containing some liquid, usually mercury, water or oil.
- The pressure exerted by a confined gas changes the levels of the mercury in the manometer. The total pressure of a gas or liquid is the total pressure it exerts, including the effect of atmospheric pressure(P_{atm}).



Changes To Liquid Levels In Manometer

When the manometer is not connected to any gas supply, the liquid levels in the left and right side of the are equal since atmospheric pressure acts on both surfaces of the liquid.
When one end of the tube is connected to a gas supply, the pressure exerted by the gas changes the levels of the mercury column.

Introduction

Why we need to measure vibrations:

- To measure natural frequencies for selecting operational speed to avoid resonance.
- To verify theoretical values it may be different from measured values.
- To design active vibration isolation systems.
- To identify mass, stiffness and damping of a system.
- To detect shifts in natural frequency which indicates possible failure.
- To verify the approximated model.