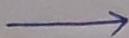


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* Graded Activity 02 *

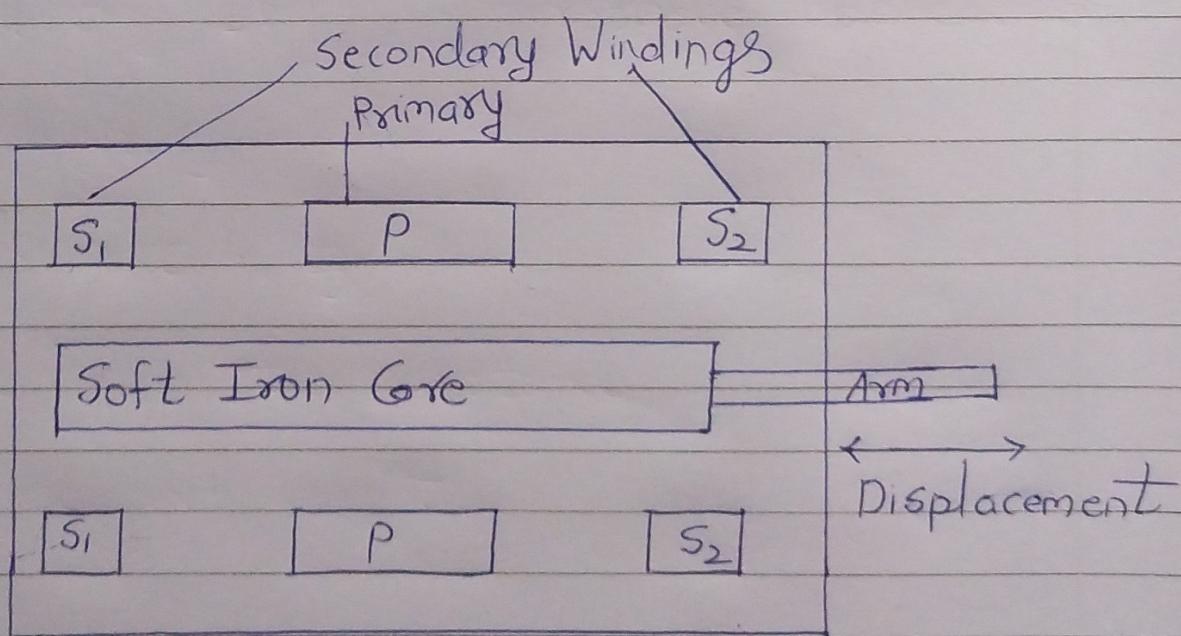
Q.1 Explain Construction, working principle with waveform and applications of LVDT



LVDT construction :-

LVDT consist of one primary winding P and 2 secondary windings S_1 & S_2 mounted on cylindrical former.

Both secondary windings (S_1 & S_2) has an equal number of turns and is placed identically on either side of primary winding in such way that net output will be difference of voltage of both secondary windings



LVDT Working Principle :-

The working principle of LVDT is based on mutual induction principle.

When AC excitation of 5-15 volts at a frequency of 50-400 Hz is applied to primary winding, then magnetic field is produced. The magnetic field is used to induce a mutual current in secondary windings.

Applications of LVDT :-

- 1] LVDT is used to measure the physical quantities such as Force, Tension, Pressure, Weight, etc. These quantities are first converted into displacement by use of primary transducers
- 2] It is mostly used in industries as well as servomechanism
- 3] It is also used in Industrial Automation, Aircraft, Turbine, Satellite, hydraulics, etc

Q.2 How LVDT is used in Aerospace? Explain in detail with selection criteria of LVDT



LVDTs are used in wide variety of applications in aerospace industry

- 1) Flight control :- LVDT are used to measure position of flight control surfaces, such as ailerons, elevators.
- 2) Landing gear :- LVDT are used to measure the position of landing gear
- 3) Hydraulics :- LVDT are used to measure position of hydraulic actuators
- 4) Engine Control :- LVDT are used to measure position of various components in aircraft's engine.

Selecting LVDT in aerospace application

- 1) Accuracy
- 2) Repeatability
- 3) Environmental resistance
- 4) Size and weight

Q.3 Design LVDT as secondary transducer with any suitable application.

The LVDT consists of a primary winding, two secondary windings and a movable core. The primary winding is connected to an AC source, and the secondary windings are connected to an output circuit. The movable core is placed in the air gap between primary & secondary windings. When the core is moved, it changes magnetic field in air gap.

Application :-

LVDT can be used to measure variety of physical quantities, such as force, pressure and displacement. In the example, LVDT will be used to measure the force applied to piston in an engine.