

Eddy Current: (Foucault's Current/Surface current)

Eddy currents are loops of electrical current induced within conducting sheet or blocks by a changing magnetic field in the conductor according to Faraday's law of induction. Eddy currents flow in closed loops within conductors, in planes perpendicular to the magnetic field.

- The eddy currents are usually large even for small induced emf because of low resistance of block of metal.
- Since eddy currents heat the metal so energy is wasted in the form of heat (Joule's law of Heating).
- Eddy currents cannot be removed completely but only they can be minimized, to minimize eddy currents, the soft iron core is divided into a number of sheets and these sheets are insulated by lamination.

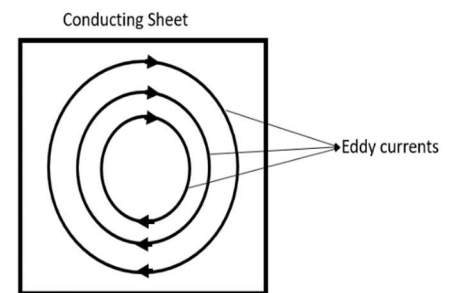


Fig: Formation of eddy currents

Applications of Eddy Currents:

1. **Electromagnetic Damping (Dead beat Galvanometer):** They are used in damping the oscillating motion of the pointer in electrical devices such as galvanometers.
2. **Electric Brakes (Electromagnetic brakes-electric trains)**
3. **Heating effect (Induction Furnace):** Used to extract metals from its ores.
4. **Metal Detector**
5. **Speedometer of Vehicles.**

✚ A piece of metal and a piece of non-conducting stone are dropped from the same height. Will they reach the earth at the same time?