SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35

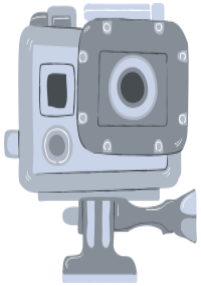
Accredited by NBA-AICTE and Accredited by NAAC – UGC with A+ Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE NAME: 19EET205/ MEASUREMENTS AND INSTRUMENTATION

II YEAR / IV SEMESTER

Unit 1 –**MEASUREMENT OF POWER, ENERGY AND MAGNETIC MEASUREMENTS**



Topic : ENERGY METER

Energy Meter

- Fig.(1) shows the construction of energy meter.
- The two exciting coils act as current coil and voltage coil and the disc acts as a time counting device.
- The disc is kept free to rotate continuously. Speed of the disc depends on the power supplied to the load. More the load, higher is the disc speed.
- In this instrument a gear train is provided to count the revolution of the disc. Number of revolution of the disc are directly recorded in terms of the energy consumed.

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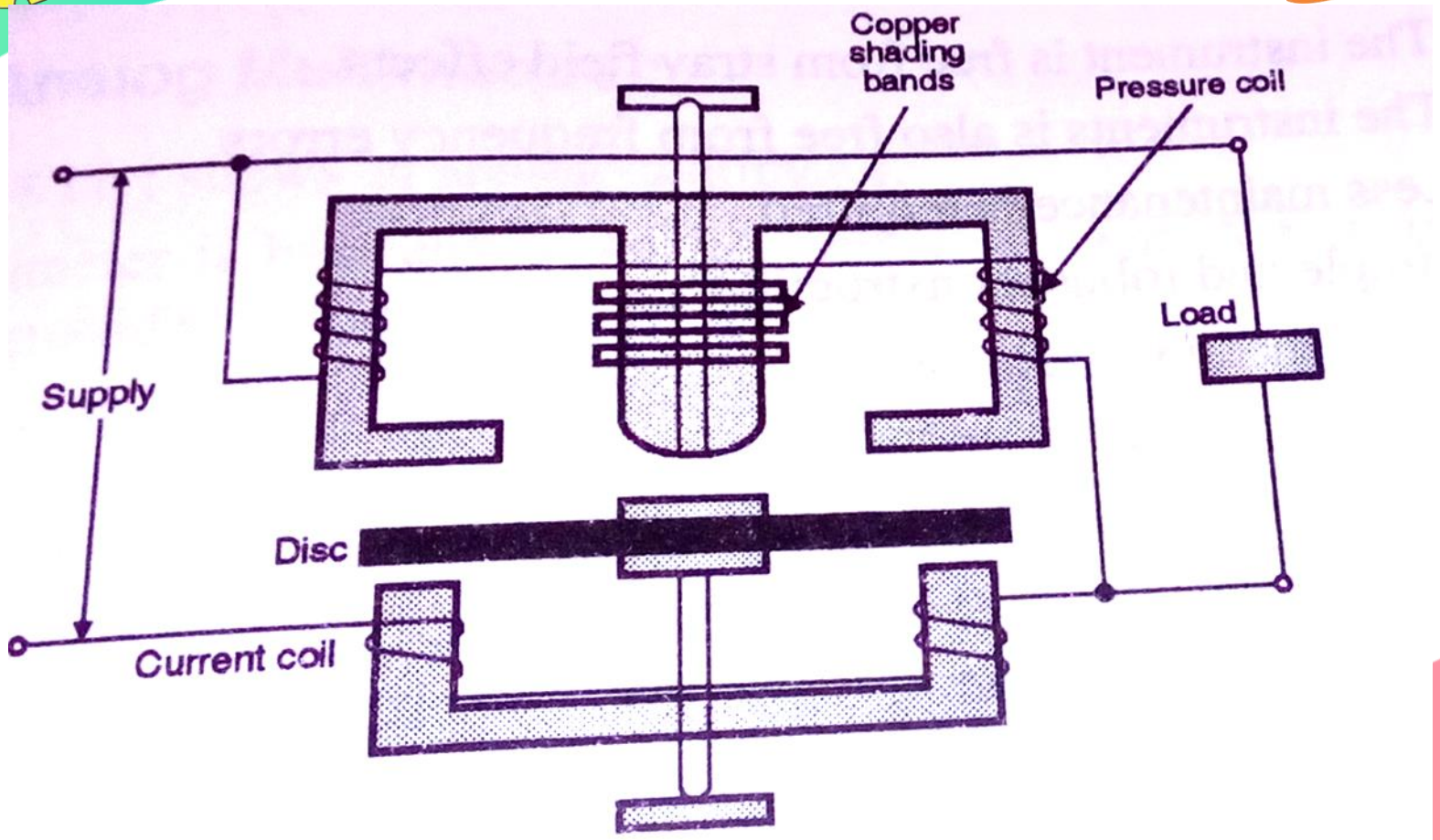

Fig.(1): construction of energy meter

Digital Multimeter

- **Advantages:**

1. They are having high input impedance. So there is no loading effect.
2. They are having higher accuracy.
3. They are available in smaller size.
4. Digital display so easy and accurate reading.
5. Automatic range adjustment.
6. Easy to carry.

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- **Disadvantages:**

1. Needs battery for its operation.
2. Internal circuit is complex.
3. It is costlier than the analog multimeter.

- **Applications:**

1. To measure DC voltage
2. To measure the resistance

Clip On Meter

- **Working principle:**

➢ The principle of operation is shown in above figure, where it can be seen that the clamp on jaws of the instrument act as a transformer core and the current carrying conductor acts as a primary winding.

➢ The resulting secondary current is then measured by the instrument (taking the turns ratio of the current transformer into account).

➢ Current induced in the secondary winding is rectified and applied to a moving coil meter.

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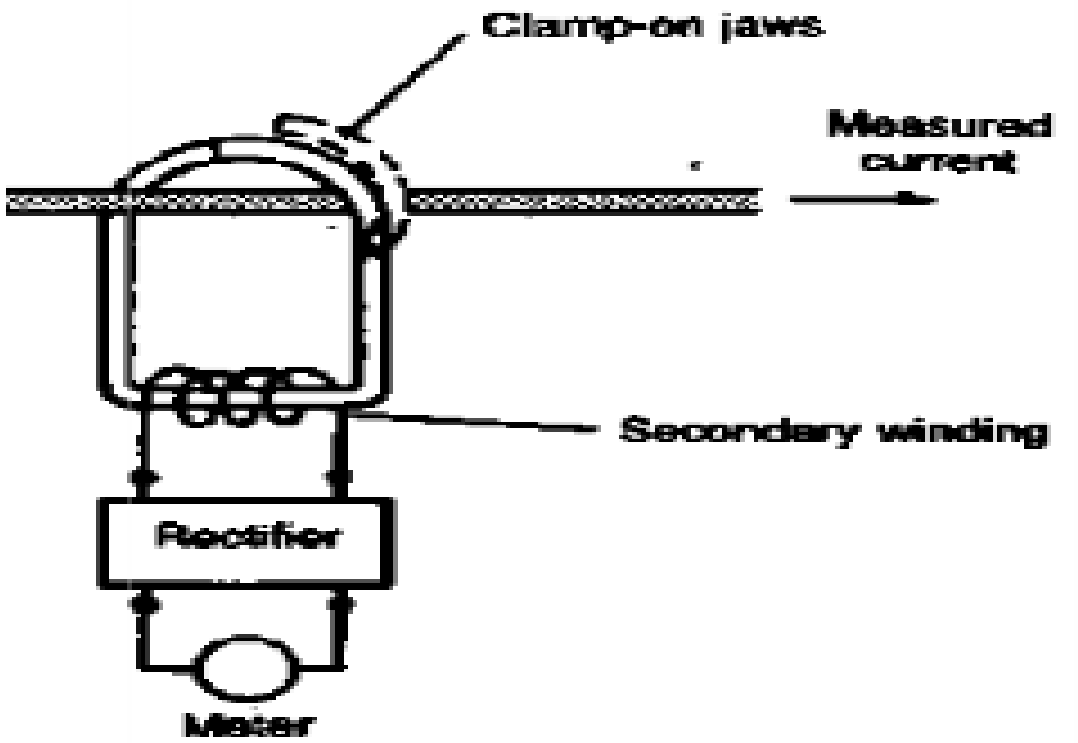

Fig.(1): Clip-on meter

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- **Applications:**

  the clip on ammeter is used for high ac current measurement without breaking the circuit.