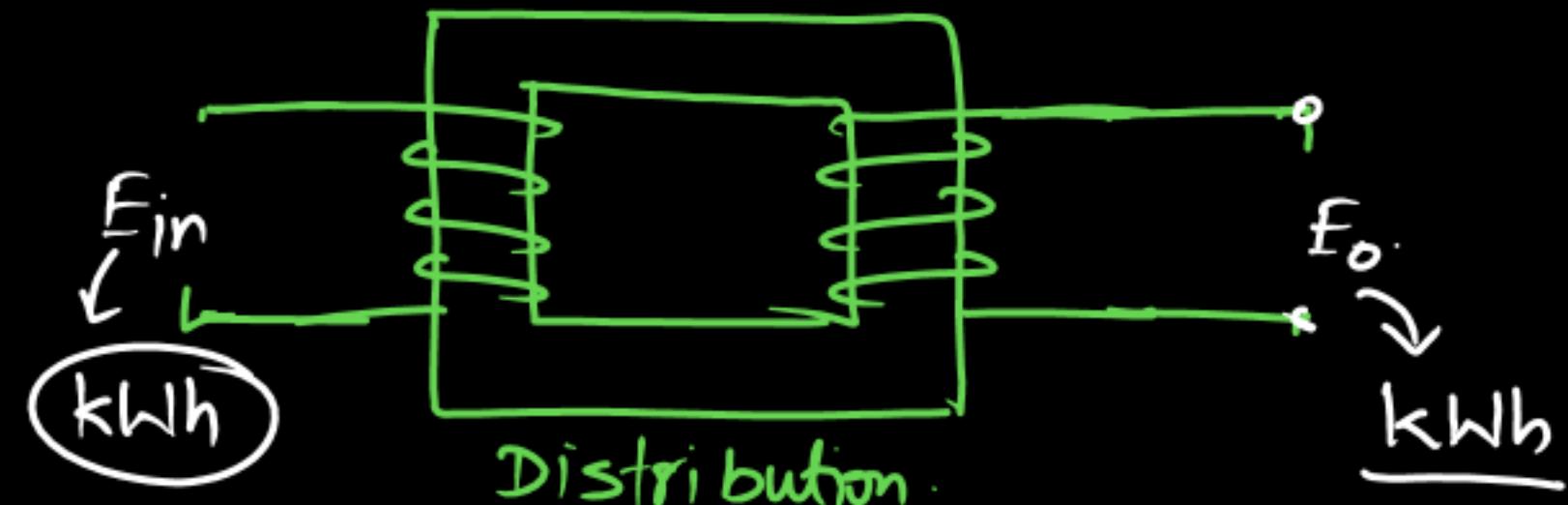


All-Day Efficiency → In terms of kWh

- It is defined as the ratio of output power to the input power in kWh or Wh of the transformer over 24 hours.
- Mathematically, it is represented as i.e, All day efficiency,

$$\eta_{\text{all day}} = \frac{\text{Output Power in kWh}}{\text{Input Power in kWh}}$$



- In other words, all day efficiency means the power consumed by the transformer throughout the day.

$$\% \text{ All day efficiency } \eta_{\text{all day}} = \frac{\text{Output Power in kWh during a day}}{\text{Input Power in kWh during a day}} \times 100$$

$$= \frac{\text{Output Power in kWh during a day}}{\text{Output energy} + \text{Energy spent for total loss}}$$

 All day efficiency of the transformer depends on their load cycle.

-  Transformer efficiency can not be judge by ordinary (or commercial efficiency) efficiency as the load on certain transformer fluctuate throughout the day.
-  In a day, most of the time the distribution transformer has 50 to 70 % load on it.
-  As the value of efficiency also depends upon the loss, hence the variation in loss than efficiency is changed.
-  The core loss of transformer is constant but copper loss depends upon load, hence the copper loss vary according to load.
-  So performance of transformer is judge by all day efficiency.
-  All day efficiency is also known as opeartional and energy efficiency.