

Analogy between electric & magnetic circuits

Electric Circuit

Path traced by the current is known as electric circuit.

EMF is the driving force in the electric circuit. The unit is Volts.

There is a current I in the electric circuit which is measured in amperes.

The flow of electrons decides the current in conductor.

Magnetic Circuit

Path traced by the magnetic flux is called as magnetic circuit.

MMF is the driving force in the magnetic circuit. The unit is ampere turns.

There is flux ϕ in the magnetic circuit which is measured in the weber.

The number of magnetic lines of force decides the flux.

Resistance (R) oppose the flow of the current. The unit is Ohm	Reluctance (S) is opposed by magnetic path to the flux. The Unit is ampere turn/weber.
$R = \rho \cdot l/a$. Directly proportional to l. Inversely proportional to a. Depends on nature of material.	$S = l/(\mu_o\mu_r a)$. Directly proportional to l. Inversely proportional to $\mu = \mu_o\mu_r$. Inversely proportional to a
The current $I = \text{EMF} / \text{Resistance}$	The Flux = $\text{MMF} / \text{Reluctance}$
The current density	The flux density
Kirchhoff current law and voltage law is applicable to the electric circuit.	Kirchhoff mmf law and flux law is applicable to the magnetic flux.