

Chapter 05

MAGNETIC EFFECT OF ELECTRIC CURRENT

In our previous video we learnt about the heating effect of electric current.

In this video you shall learn a new property of electric current.

Children you have seen a compass haven't you? Do you know where it is used?

A compass is an instrument used for navigation on the surface of Earth by means of a magnetic pointer or needle, Hence it is called a magnetic compass. It has the directions North, South, East, and West written on it.

The needle of the magnetic compass determines the direction and aligns itself in the North–South according to Earth's magnetic field.

Now you must be wondering, why we are discussing about compass.

Well, let us perform a simple activity to find the answer. Make a simple circuit as before with a cell, switch and a bulb. Switch ON the circuit by the closing it. You will see that the bulb glows.

When the circuit is switched ON, the electric current flows through the circuit.

Now bring the magnetic compass near the wire. You can see that the needle in the compass deflects. We know that the needle shows deflection only when there is a magnetic field around.

This will not work if the current in the wire is feeble.

If we keep this compass away from any other magnetic field, it aligns itself in the Earth's magnetic field

Now again bring compass near the circuit. You can see the deflection again.

This experiment shows that when electric current flows through a circuit, it generates magnetic field.

This is known as Magnetic Effect of electric current.

This property of electric current was first experienced by a scientist called Hans Christian Oersted. He was the first one to propose that when electric current passes through a wire, the wire behaves like a magnet.

ELECTROMAGNETS

- We have just learnt this amazing property of electric current, that it produces magnetic field.
- Let us now see how and where this property is used with an activity.
- Take around 75 cm long piece of
- Insulated flexible wire and an iron nail,
- say about 6–10 cm long.
- Wind the wire tightly around the nail in the form of a coil. Connect the free ends of the wire to the terminals of a cell through a switch as shown **in the Fig.**
- Place some pins on or near the end
- **Of the nail. Now switch on the current.**
- What do you observe?
- You will see that the pins are clinging at the end of the nail.
- The coil in the above activity behaves
- like a magnet when electric current flows through it.
- Such coils are called
- Electromagnets.
- When the electric current is
- switched off, the coil generally loses its
- magnetism.
- Hence we can say that the magnetic effect of electric current is used to prepare

NOTE: In this video, we learnt about magnetic effect of electric current.