Faraday’s in the magnetic environment of the

Environment

Faraday’s LawInduction of the voltage in a coil is caused by the changes in the magnetic environment of the coil. The voltage will be generated no matter how the changes are produced. It could be produced by the change of magnetic field strength, the position of the magnet from the coil, the movement of the coil into or out of the magnetic field and other ways possible.

For further understanding, example is shown below. (source: hyperphysics. phy-astr. gsu.

edu/hbase/electric/farlaw. html)Maxwell’s equations produces a fundamental relationship which is the Faraday’s law. The induced emf is equal to the negative rate of change in magnetic flux, multiplied with the number of turns in the coil. This involved an interaction between the charges with the magnetic field. emf= -N ??/? tWhere, N = number of turns? = BA = magnetic fluxB = external magnetic fieldA = area of coilThe minus sign (-) is from Len’z law. Emf is the termfor generated or induced voltage.

? Len’z lawAccording to Faraday’s law, when an emf is generated by the change in magnetic flux, the polarity of the induced emf; produced a current whose magnetic field opposes the change that is produced. The induced magnetic field inany loop always keep the magnetic flux constant. For further understanding, example is given below.

(source: hyperphysics. phy-astr. gsu. edu/hbase/electric/farlaw. html)Bio-Savart LawThis is an equation that can describe the magnetic field created by a current-carrying wire that allows us to calculate the strength at various points. E= (? _0 q)/? 4? r?^2 E= (? _0 I dl)/? 4? r?^2 dB= (? _0 I dl)/? 4? r?

^2 dB= (? _0 I dl sin??)/? 4? r?^2 The equation stated gave the magnitude of the magnetic field but the magnetic field is a vector. The magnetic field created by the current-carrying wire took the form of circles.

We have to figure out whether the circles point clockwise or counter-clockwise then we use the right-hand rule.