Basic Electric Circuit Laws

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There are several electric circuit laws, some famous laws are kirchoff's law and ohm's law.

OHM LAW

Ohm law calculation is the easiest calculation on electric circuits. Ohm law applied in hydraulic mechanism, electric circuits, etc. Ohm's law on electric circuit defines that the pressure (voltage) is the volume of electricity multiplied with the resistance :
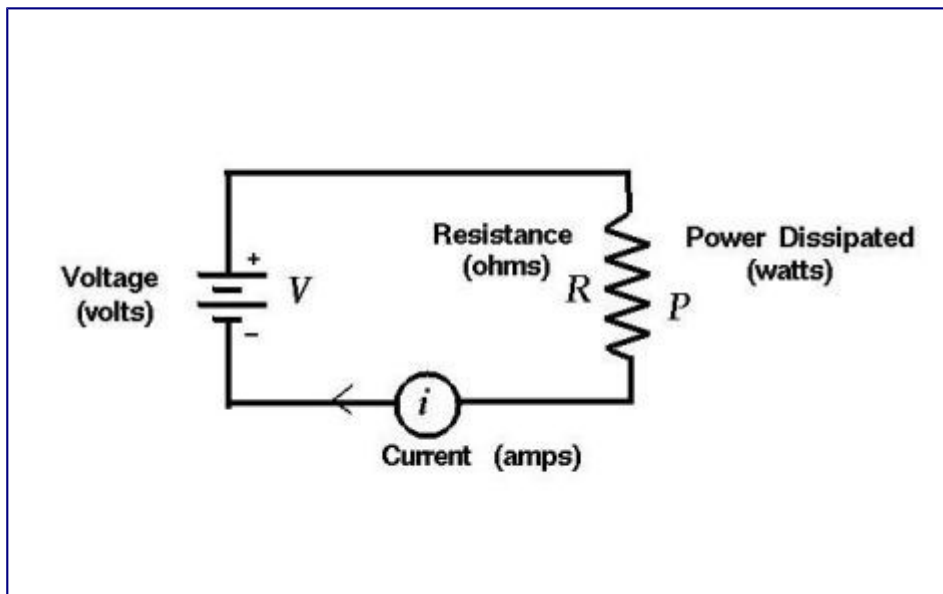
V = I.R

V = volt , volt is the pressure of electricity.

I = ampere, ampere is volume of electricity

R = resistance

I = V/R

as an example we have some little electric circuit :

As an example pressure = 9V, resistance = 220 Ω, So current can be calculated so easily :
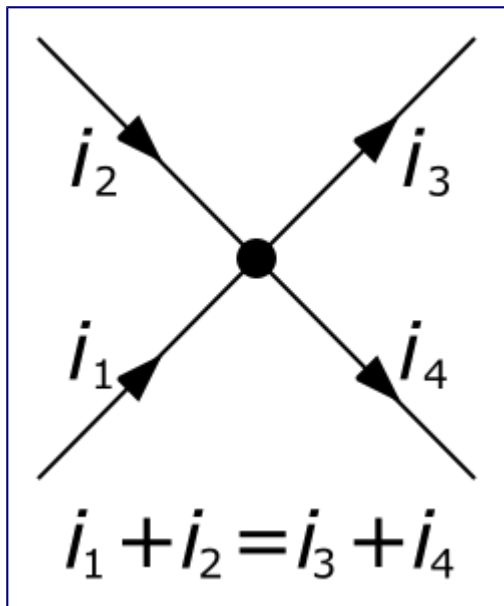
I = 9/220

So current is:

I = 0,04 ampere

KIRCHOFF LAW

Kirchoff law defines on the voltage and ampere. Kirchoff's law on current (volume of electricity):

Σi = 0

As an example here we have simple circuit:

$$i_1 + i_2 = i_3 + i_4$$

Suppose we will calculate I4 if:

I1 = 0,4 A (positive current)

I2 = 2A (positive current)

I3= 1A (negative current)

This is the simple algebra:

Σi = 0

i1 + i2 = i3 -i4

i1+i2 – i3 -i4 = 0

(0,4 + 2) – 1 – i4 = 0

i4 = 2,4 – 1 = **1,4A**

Second law is kirchoff pressure law:

Σv = 0

For an example we have a simple electric circuit:
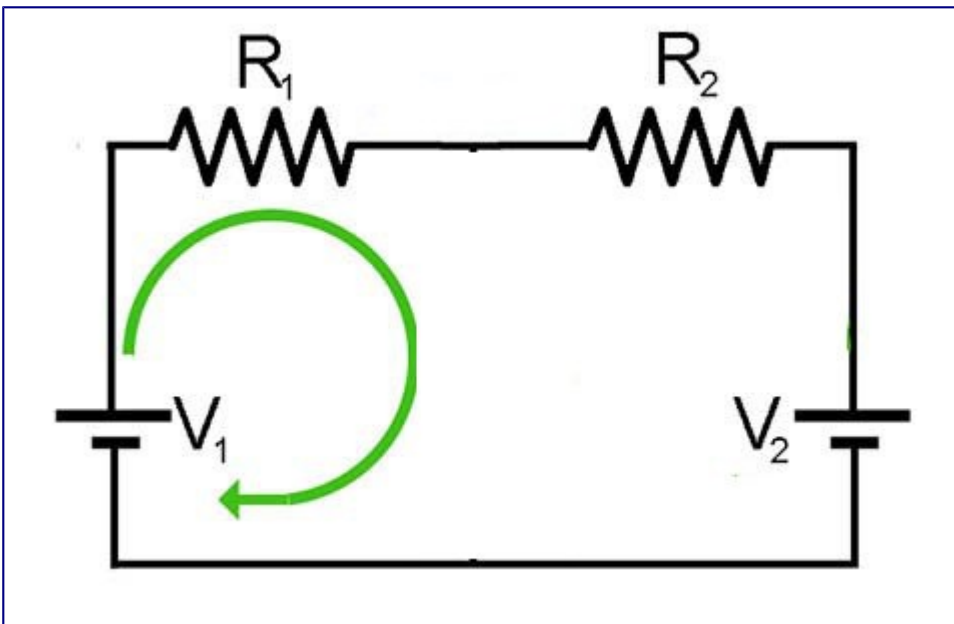
Suppose:

v1 = 20 volt

v2 = 10 volt

R1 = 110 Ω

R2 = 220 Ω

Current (I) calculation is simple :

Since Σv = 0 :

V1 – (I * R1) – V2 – (I * R2) = 0

20 – (I * 110) – 10 – (I * 220) = 0

10 – (I * 110) – (I * 220) = 0

10 = (I * 110) + (I * 220)

10 = i * 330

I = 10/330

I = 0.030

So the current is 0,030 ampere.