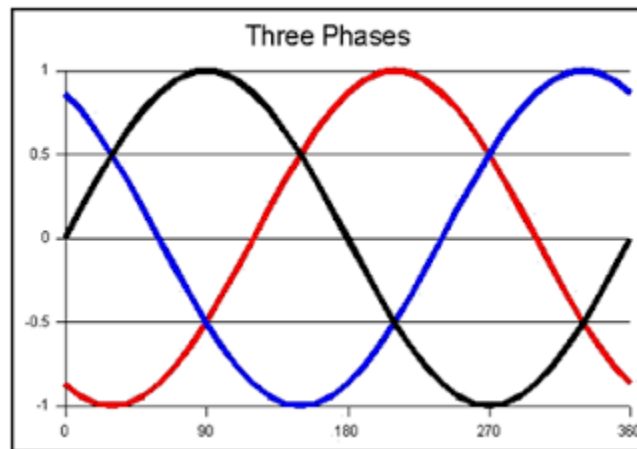


PHASE OF ELECTRICITY

Single phase AC circuit:

Two wires connected to electricity source

Direction of current changes many times per second



3-phases of an electric system

Three phase systems:

3 lines with electricity from 3 circuits

One neutral line

3 waveforms offset in time: 50-60 cycles/second

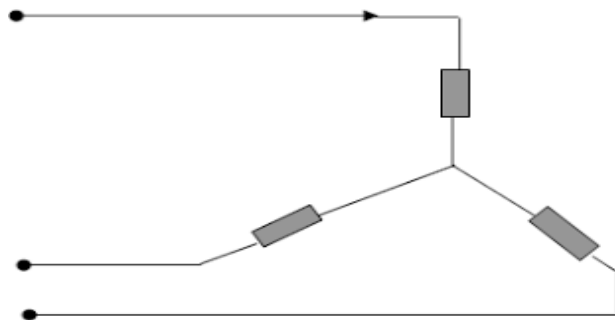
A single-phase AC circuit has two wires connected to the source of electricity. However, unlike the DC circuit in which the direction of the electric current does not change, the direction of the current changes many times per second in the AC circuit depending upon the frequency of the supply. The 240 volt (V) electricity supplied to our homes is single-phase AC electricity and has two wires: 'active' and 'neutral'.

Three lines carry electricity from three electrical circuits, and they share a common neutral line (i.e. three active lines and one common neutral line). Three-phase systems have 3 waveforms (usually carrying power) that are $2/3 \pi$ radians (120 degrees, $1/3$ of a cycle) offset in time.

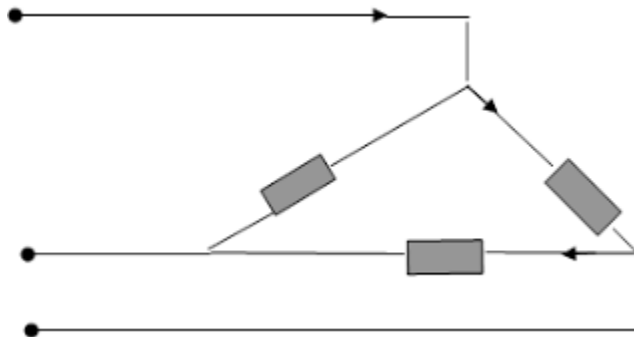
The figure shows one cycle of a three-phase system, from 0 to 360 degrees (2π radians), along the time axis.

The plotted line represents the variation of instantaneous voltage (or current) in time. This cycle will repeat 50 or 60 times per second depending on the power system frequency. The colors of the lines represent the American color code for three-phase systems: black=VL1 red=VL2 blue=VL3.

Star connection



Delta connection



The three-phase supply system is further represented by star and delta connection as shown in the figure. But as part of this training we will not explain these in detail.

Source: <http://mediatoget.blogspot.in/2012/02/phase-of-electricity.html>