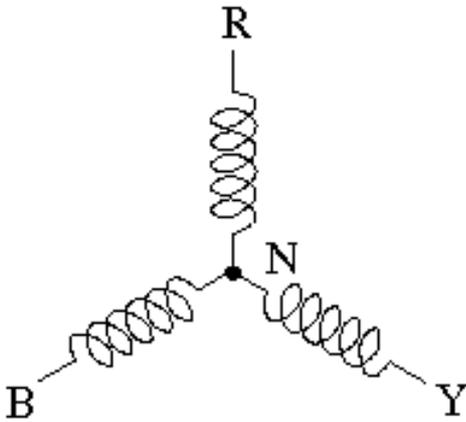


Question:

Why does an AC plug have a live and a neutral wire. We all know AC currents flow in both directions. So on one cycle current would flow from the live wire through the load and then through neutral back to the source. However on the 2nd half of the cycle current will flow from the terminating side of the source back to the originating side of the source. So theoretically the Neutral wire is suppose to be the live wire sometimes.

Answer:

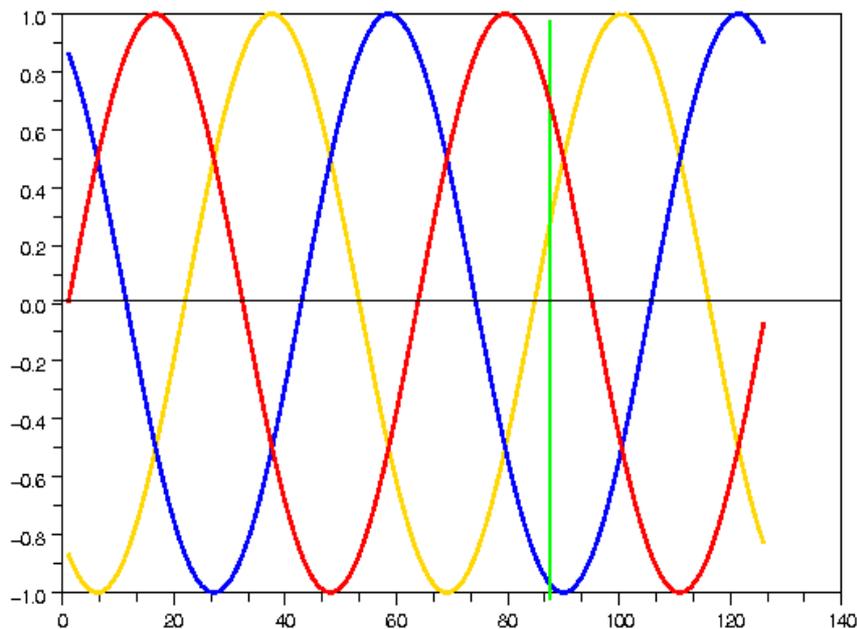
We get power from the electric company. The company generates power at the generating station. A three phase alternator produces three phase voltage, current and so three-phase power at the generating station.



Three coils separated from each other by 120 degrees electrical are rotating under the magnetic field.

E.M.F. is induced in the coils with a phase difference of 120 degrees.

Consider any instance and measure voltage induced in the individual phase coil. When we add these voltages together, we find that the algebraic addition of these voltages is ZERO. The vertical green line indicates a randomly chosen instance. We can verify here that the sum of all the three phase voltages is zero.



Electrically speaking, when we tie one end of each coil together, we are adding the instantaneous values of the three voltages. The addition as seen above, is zero. The junction of

the three ends thus becomes electrically neutral.

The electric company supplies three phase power to the industries where three-phase motors run. **To the domestic users, having two pin plugs, one of the three phases is supplied.** The connection is with a phase and a neutral. (Three pin socket at home has one hole for phase the second for the neutral and the bigger hole for the earthing.)

If the alternator is single phase generator, then there is nothing like phase and a neutral. However single-phase generators are not electrically efficient. So normally one phase out of , the more efficient 3-phase alternator, is provided for the domestic connection.

For a domestic user, the phase and neutral has no meaning as is mentioned in the question. In fact it is one part of the three phases.

--prasad mehendale