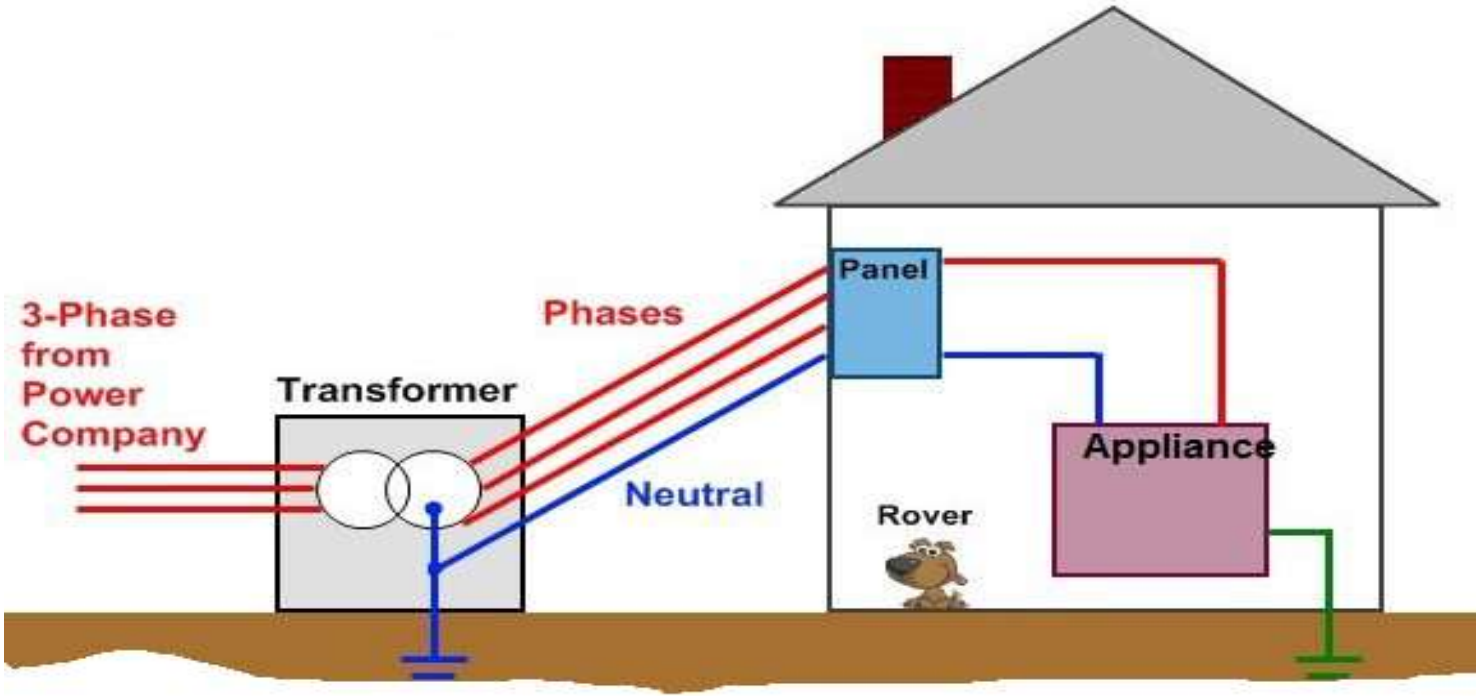
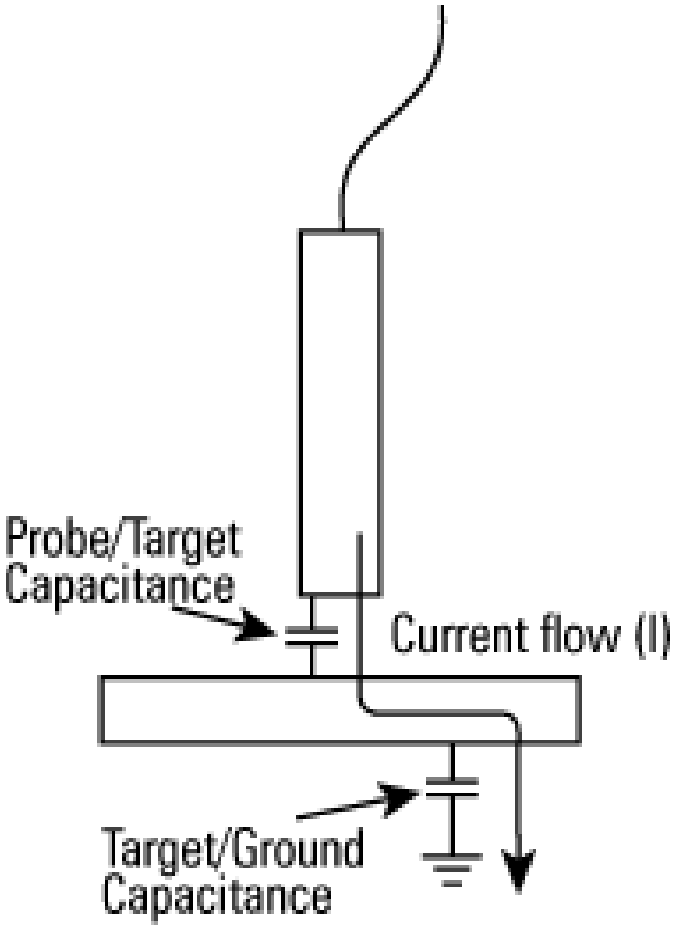
TYPES OF GROUNDING

- These three systems are:
  - Ungrounded Systems
  - Resistance Grounded Systems
  - Solidly Grounded Systems



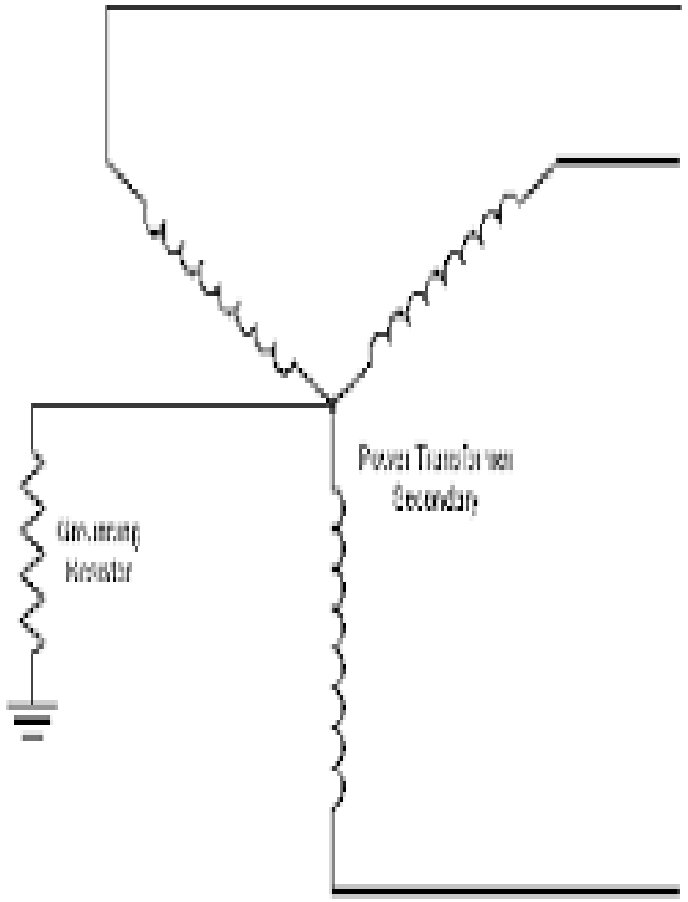
UNGROUNDED SYSTEM

- An ungrounded system isn't really ungrounded. Electrically, system is connected to ground through the capacitance between the lines and the earth, that it's a capacitance grounded system.
- It ungrounded because of convention, and because there isn't a direct physical connection between any of the power lines and the ground.



RESISTANCE GROUNDING SYSTEM

- Resistance grounding is when a connection between neutral line and the ground through a resistor. This resistor is used to limit the fault current through your neutral line:
- if voltage doesn't change, then current is dependent on the size of the resistor according to Ohm's law (V=IR).



ADVANTAGES OF RESISTANCE GROUNDING

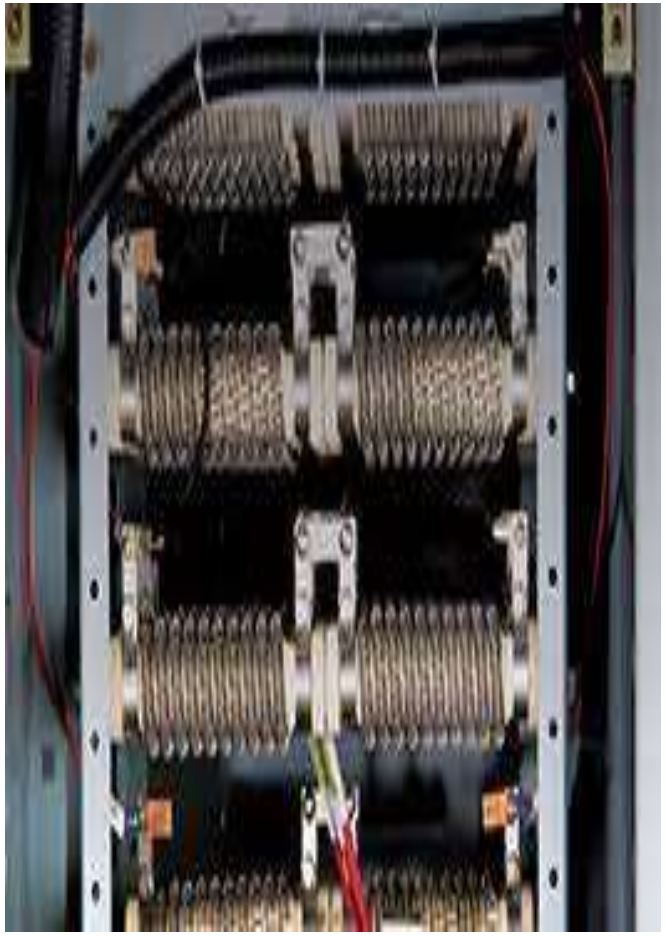
- Because the current in the neutral is controlled instead of negligible, system over voltages are also controlled.
- This reduced current and reduced overvoltage means reduced heat, which keeps the wear and tear of electrical system to a minimum.
- This is especially important for keeping motors safe, since the reduced current will not damage the magnetic iron of the motor (which is costly to repair). The reduced currents also reduce the risk of shock and arc flash/blast hazards.

TYPES OF RESISTIVE GROUNDING

- There are two types of Resistive Grounding
  - High Resistance Grounding
  - Low Resistive Grounding

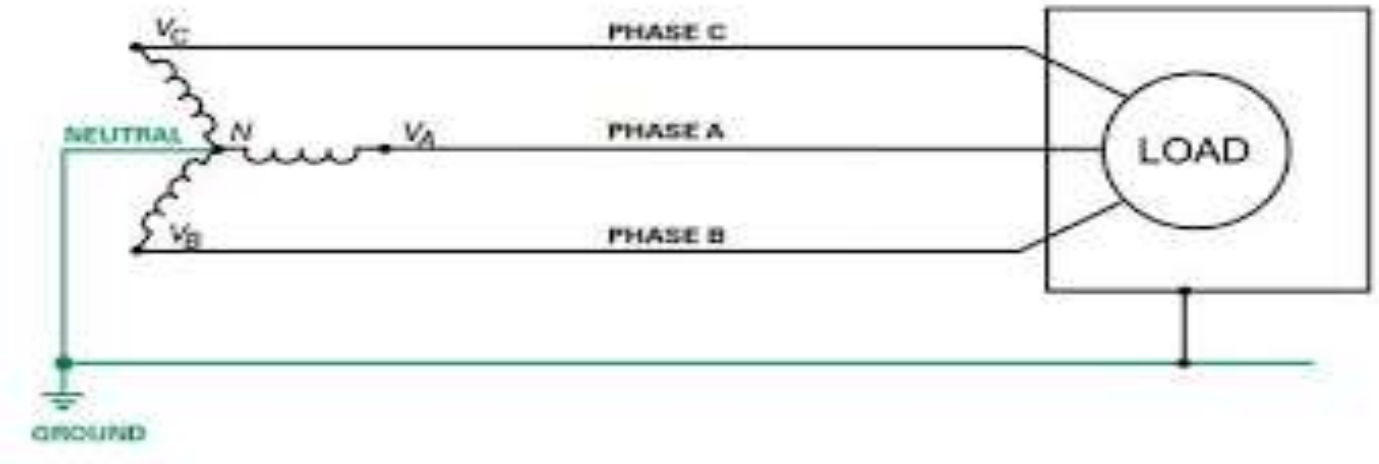
HIGH RESISTIVE GROUNDING

- High resistance grounding is typically used to limit ground fault current to < 10 amps.
- The low ground-fault current also means that, just like an ungrounded system, It can continue to operate the system on a single line-to-ground fault. The low current will typically not trip your protective devices during a single line-to-ground fault.



LOW RESISTIVE GROUNDING

- Low resistance grounding typically limits ground fault current to between 100 and 1000 amps.
- Low resistance grounding also reduces overvoltage, and is used in medium voltage systems of 15kV or less, typically where big generators/motors are used.



SOLID GROUNDING

- Solid grounding is connect, without any sort of resistance in the way. The ground is typically connected to the system at a neutral point, like the neutral terminal of a generator or transformer.
- Solid grounding has two main uses:

➢ In systems with voltages of 600V or less, solid grounding can be used if it is not necessary to maintain operation of a faulted circuit.

➢ In systems with voltages of 15kV or greater, solid grounding can be used if high ground fault currents are desirable of any reason, such as quick ground fault detection