WORKING PRINCIPLE OF SOLAR FENCING SYSTEM.

The Solar module generates the DC energy and charges the Battery. The output of the battery is connected to Energizer or Controller or Charger or Fencer. The energizer will produce a short, high voltage pulse at regular rate of one pulse per second. The live wire of the energizer is connected to the fence wire and the earth terminal to the Earth system. Animal / Intruder touching the live wire creates a path for the current through its body to the ground and back to the energizer via the earth system and completes the circuit. Thus the intruder will receive a shock, the greater the shock the intruder receives the more lasting the memory will be avoided in future.

The Energizer has to be set up with its earth terminal coupled to an adequate earthing or grounding system. The live terminal is coupled to the live insulated wires of the fence. Energizer will send an electric current along an insulated steel wire. An animal or intruder touching the live wire creates a path for the electrical current through its body to the ground and back to the Energizer via the earth or ground system, thus completing the circuit. The greater the shock the animal receives the more lasting the memory will be and the more the fence will be avoided in the future. The shock felt is a combination of fence voltage and pulses time or energy. The higher the *joule rating of the energizer the greater the shock and the greater the fence performance.

*JOULE: Unit of energy. One joule is one watt for one second. It is an important measure of the power of an Energizer.

The basic building blocks of a power fence are:

1. Energizer
2. Earthing (Grounding System) and
3. Fence system

ENERGIZER:

The heart of the Power fence is the Energizer. The energizer is selected depending on the animals to be controls, length of the fence and number of strands. Main function of the energizer is to produce short and sharp pulses of about 8000 volts at regular intervals. The power input is from the DC energy from battery. The energizer should be protected from children, should be enclosed, free from mechanical damage and away from inflammable material.

EARTHING SYSTEM:

The earth or ground system of the Energizer is like the antenna or aerial of a radio. A large radio requires a large antenna to effectively collect sound waves and a high powered Energizer requires a large number of electrons from the soil.
The earth or ground system must be perfect to enable the pulse to complete its circuit and give the animal an effective shock. Soil is not a good conductor so the electrons spread out and travel over a wide area, inclining towards moist mineral soils. If possible, select an area for the energizer earth site which is damp all the year.

FENCE WIRE SYSTEMS:

They are of two types:

a. All live Wire System and
b. Earth or ground Wire Return System.

a. All Live Wire System:

The all live wire system should be used where there is relatively even rainfall and where there is some green vegetation most of the year, or in areas with highly conductive soils.

The all live wire system should be used as much as possible.

b. Earth or ground Wire Return System:

The earth or ground wires return system should be used where there is low rainfall stony and dry soil condition most of the year. The system overcomes the problem of dry, non-conductive, or frozen soils not allowing sufficient current to flow through the animal's feet back to the energizer. The fence should have both live and ground wires. By touching the live and ground wires on the fence, the animal gets the full shock.

Fence wire:

- 2.5 mm (12.5 gauge) High tensile (H.T) wire is recommended for electric fence systems because of its advantages:
  - It retains its tension far longer than soft wire.
  - It conducts sufficient current for most applications.
  - It is reasonable visible.
  - High Conductive Aluminium Coated Wire is best used for long leadouts i.e. several kilometers.
  - Double insulated Leadout Cable is used in building, under gateways and where the soil could corrode exposed galvanized wire.

Precautions:

- Never use household electrical cable.
- Never use copper wire undergate cable because electrolysis problems occur when it is joined to the galvanized fencing wire.
- Never electrify barbed wire. It is dangerous, has the potential to cause faults and is illegal in some countries.