

Power requirement for farmland : A Case study.

A power supply is a system that supplies power to at least one electric load. Typically, it converts one type of electrical power to another, but it may also convert a different form of energy such as solar, mechanical, or chemical - into electrical energy.

Source: <https://www.techopedia.com/definition/1756/power-supply>

Deepak and Michelle are studying in 9th standard in a government school at Panaji, Goa. They like to explore various physics experiments and they are interested in electronics also.

Deepak was one day attending a party in his uncle Jagan's house. The party was in a farmland, owned by Jagan. In this land his uncle is producing cashew. The water supply to the cashew nut plants are generally provided through the regular pump which is driven by an ac motor. Since the farm land is in a remote area the power distributions lines are not available to directly source the motor. Hence as per instructions and help from the local authorities, Jagan installed a solar powered motor and pump system. During the party Jagan uncle discussed a serious problem he is facing regarding the less yield of cashew nuts. The issue is the shortage of power due to intermittent sunlight throughout the day. The motor pump is not able to supply the water as and when required (once in a week) for the cashew tree.

The young mind Deepak immediately recollected his physics class about the concept of storing electricity in a battery from a solar cell and using it later. He on the way back from party met Michelle and discussed the problem which is faced by his uncle. He also informed Michelle about physics class topics of various power supplies. They both found out a solution to resolve the power shortage issue faced by Jagan uncle. They immediately called him and said they will design a system which will solve the issues of power problems.

They made a basic design of the proposed system and prepared the bill of materials and approximate cost and send it to Jagan. He was ready to pay the cost of the design and materials.

The basic design of the system proposed by Deepak and Michelle is shown below.



The solution proposed by Deepak and Michelle was developed and tested in the farmland successfully.