

## Solar PV Powered Refrigerator (Double to delete)



### Why to choose this solution?

The solar refrigerator is a cooling unit that uses electricity produced by photovoltaic solar panel, and stored in a battery. The fridge typically have low voltage (12V or 24 V) input. They can be used hospitals, homes and for commercial purposes like shops, milk products. They are used mostly in off-grid areas. The size typically varies from 10 to 85 litres.

### Savings per day or production:

The solar fridge helps to reduce financial bills since it is installed once and there are no monthly bills. This also helps save money because the expenditures of buying ice block and diesel of petrol for generator to keep drugs and foods fresh daily in off-grid / on-grid areas are reduced. It is environment friendly as there is no release of CO<sub>2</sub>/kWh emission in case of solar based refrigeration system. Hence making the system to be technically proven, environment friendly and economically better.

### Cost in money and in own time to construct:

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### Lifetime:

It is durable. The refrigerator has a life span of over 10 years the solar panel 15 years, and the batteries last 5 years.

### Maintenance needed:

Unlike traditional refrigerators, there is no need for any fuel or gas. The panel must be cleaned regularly to avoid dirt that can prevent sunrays from reaching the panel. The refrigerator does not need regular checking.

### Resources needed in use:

Sun Light, panel and batteries, refrigerator, wires, regulator.

### Problems and limits:

Requires a relatively big investments; the initial cost involved is high which makes it limited to people with low income. Lack of good quality materials or equipment in the markets. Improper connections of wire to the

refrigerator can cause short circuit

**Where and how can you get it or make it?**

JEEP is promoting it. It has been installed in health centres and green power units on Ssesse islands for business purposes. The solar powered refrigerator can be purchased from shops in Uganda that sell solar equipment in Uganda or shipped from China, England, Germany, etc. This is then required to be installed with solar panel, batteries and other accessories.

**Skills needed to produce, install, maintenance, use:**

Needs a trained electrical engineer to install the system and orient the end user to start using the solar refrigerator.

**How to use it:**

Not necessary

**How to maintain it:**

Not necessary

**Climate effect (if any):**

Environmentally friendly since there is no emission of carbon. Solar powered refrigerators are environmentally friendly since it involves use of 100% natural radiation from the sun. The system reduces carbon emissions to the atmosphere in cases where generators are used hence conserving the environment. It is simple, reliable and safe to the person operating it. It is also energy efficient.

**Where it is used and how many users are there?**

It is effectively used in off-grid, rural, and peri-urban areas and used by around 1,000,000 people for domestic, hospital and commercial purpose.

**Why is it successful?**

It is efficient and can be operated easily. It is well known and can be used in several places i.e. hospitals, green enterprises. It has greatly contributed to improved services at health facilities, keeping medicines, vaccines cool. Hence, it contributed to reduce the infant mortality rate in many off-grid areas. After the equipment is purchased, maintenance can be done after 3 -5 years.

**If you can make it, a short description, typical problems, materials needed:**

Needs a skilled personnel to make

**How to make it (if possible):**

Not relevant

**How is it delivered and by whom?**

**Successful financial model**

Support from government and other development partners by providing these refrigerators mainly in hospitals, small-scale enterprises in rural, peri-urban and off grid areas. Establishment of solar associations. Training local electricians and start your own business incentives.

**What policies and strategies helped the success?**

Government programs implemented by different ministries, for example the Ministry of Energy, are

conducting training of communities on use of solar energy and use of equipment that can be installed. To encourage people to get equipment on hire purchase The Uganda Ministry of Energy has brought together organisations that can procure equipment for a group and they remit funds to the organisation while it is also cheaper for the group. Training and advocacy in communities on positive attitude toward environmental conservation. The government, through the Ministry of Health, is encouraging promotion of solar refrigerators in off grid, peri-urban and rural hospitals to facilitate drug and vaccine storage. There are many solar subsidies and tax waives, which have been put in place through the Uganda revenue authority.

**More info:**

<https://apps.who.int/iris/bitstream/handle/10665/254715/WHO-IVB-17.01-eng.pdf?sequence=1>

**Sources:**

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**When was the case uploaded?**

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