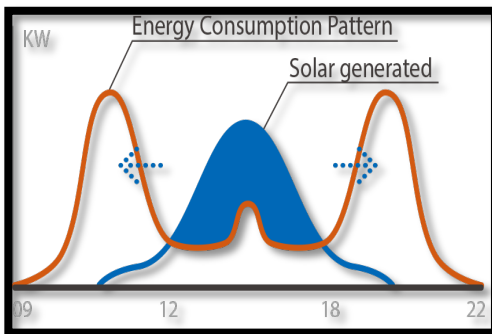


## How a battery storage unit works

At the start of each day, the **solar power system with battery storage** directs incoming solar power to your house appliances first, and then fills your battery storage unit and then any excess will be exported to the Grid, for which you get paid. This is called the (feed-in-tariff) and this power is calculated in kilowatt-hours, written thus kWh. Your battery storage will be available to power up your house-hold at night through the inverter which is part of the battery storage system, hence saving you from drawing Grid power. There are two types of battery storage units: **All-in-One**, plug and play type or **Hybrid systems**. Hybrid types of system consist of many different components, which go together to make one whole unit.



There are **four types of battery storage units**, which will suit for Grid connect homes or off Grid.

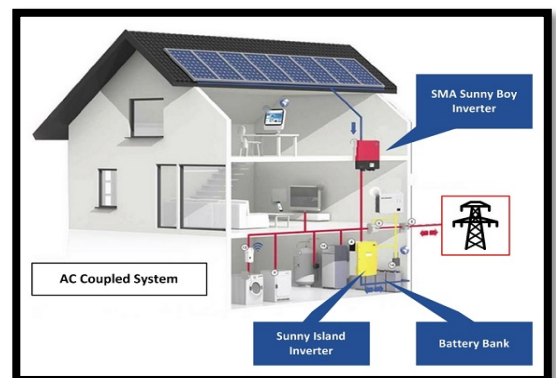
1/ If **you already** have a solar system, you can add a battery storage unit, the costs will depend on the size you require for your household needs and the size of the battery storage installed. Battery storage is available from 3 kW to 12 kW. This then forms part of the solar system.

2/. If you **do not** have a solar system already, then there are battery storage units, which come with an inbuilt inverter to run your household appliances. This system will power up your house appliances first, and then fill your battery and then any, excess will be exported to the Grid, for which you get paid (Feed-in-tariff).

3/. It is quite acceptable to add additional panels and battery storage system to operate many of your energy needs day and night, so that you do not have to pay for night time power usage, if you are on the **high Feed-in-tariff**.

### 4/. You are not connected to the Grid

If you are **not connect to the Grid**, you are in a “Stand-A-lone” situation, then you will require a DC model battery storage unit, it is recommended that you go for a larger storage unit, say around 10 kWh in this instance. This system will consist of, Solar panels, solar racking, extra electrical materials, metering & wiring material, and battery storage unit. Battery storage is also quite suitable for **off grid systems** and can be sized to suit your power requirements you would also require the addition of a generator for this type of system.



### Low Feed-in tariff

If you are on the **new lower feed-in-tariff**, battery storage is quite viable, depending on the size of your electricity bill.

### **What will suit your requirements?**

Your Energy consultant will tailor a system to suit your needs, whether on Grid or off Grid. Energy storage systems have a massive potential to revolutionize how energy is consumed in the house-hold. This new technology is set to revolutionize how we think and use the power in the home.

**Types of battery in the Battery storage - Lithium ion, there are many other types and combinations in elements of Lithium ion batteries.** Ninety nine percent of the solar storage offers around the world use Lithium Ion batteries, the very latest and greatest storage battery. Lithium ion batteries is the buzz word in the energy storage space these days as the type of battery chemistry with the most promise which is overtaking lead acid as the standard for home energy storage applications, being much smaller and more compact with longer life than the older technology of lead or gel batteries. On the whole, lithium ion batteries are more robust than lead acid, tolerating deeper repeated discharges than lead acid without incurring the same wear and tear (mainly their ability to hold a charge). Lithium ion batteries are often described as 'power batteries' because they are good for discharging a lot of electricity quickly. Battery storage is a new application for the technology, but it is well understood, having been used in mobile phones and laptops for the better part of a decade now. Electric cars and motorcycles also use Lithium Ion batteries extensively and are driving the massive surge in manufacturing capacity and research and development

### **Cycle life and warranties**

The long life battery technology is rated at variable from 48V – 52V with a variable D.O.D (depth of discharge ) of 80% - 100%, with cycle life varying from 5000 – 8000 cycles. Warranties from 5 – 10 yr.

Lithium-ion batteries belong to a large family of storage products using different chemistries. Not all Lithium-iron batteries are the same. There are slight variations in costs and technology.

#### **Legend:**

<b>LCO</b>	<b>Lithium Cobalt</b>
<b>NCA</b>	<b>Lithium Nickel Cobalt Aluminium Oxide</b>
<b>NCM</b>	<b>Lithium Nickel Manganese Cobalt</b>
<b>LMO</b>	<b>Lithium Manganese Oxide</b>
<b>LFP</b>	<b>Lithium Ion Phosphate</b>

