Looking for solar energy storage batteries?

GOODBYEGRID

11 questions to ask your supplier / installer and yourself

1. WHICH TECHNOLOGY DO I WANT / NEED?

- Lithium Iron Battery (LiFePo₄, LiMn₂O4 or NMC)?
- AHI (Aqueous Hydrid Ion or salt water battery)
- Zinc Bromide Flow Battery
- Lead Acid based battery (GEL incl. tubular cell, AGM, flooded deep cycle)
- NOTE: Unless you want to bridge a few years until other technologies have come down in price, we do not recommend installing lead acid batteries of any type.

2. WHAT IS MY DAILY AND WEEKLY LOAD PROFILE?

• Without understanding your load profile (How much energy is being used at different times in the day, and different days of the week), your installer won't be able to size the battery capacity properly.

3. DO I WANT GO HYBRID SOLAR OR OFF-GRID?

• With Hybrid Solar, you stay connected to the grid and use it as a backup in case you run out of battery power. Off-Grid means you are not connected at all, and may have to use a generator as a backup power source.

4. IF OFF-GRID, HOW MANY DAYS OF "AUTONOMY" SHOULD MY BATTERY ALLOW?

 Days of autonomy refers to the numbers of days the battery can provide power without any recharge from the solar power system or any other source. This is an important consideration for longer periods of rainy or cloudy weather. The number of autonomy days can be extended by avoiding power intensive activities like cooking or washing during those periods. "Oversizing" your PV Solar system is another way of reducing days of autonomy.

5. WHAT IS THE USEABLE CAPACITY OF THE BATTERY AND THE D.o.D.?

• Measured in kWh, the capacity tells you how much energy the battery can store. The Depthof-Discharge determines to what level the battery can be discharged on a regular basis without negatively affecting its life (*For example, 80% D.o.D. on a battery with a useable capacity of 10kWh means you can discharge the battery safely down to 2kWh*).

6. WHAT IS THE EXPECTED LIFE OF THE BATTERY?

- Every manufacturer provides a different set of figures to make their batteries look great!
- Ask for the expected life in number of cycles, at the specified D.o.D., until the battery capacity has reduced to 80% of the initial (new) capacity.

Example for a 10kWh (useable) battery:

Expected life of 6000 cycles with 80% D.o.D. and 60% end of life.

This means that the capacity when new (10kWh) will have reduced to 6kWh after 6000 cycles. The battery will continue to work; however, the capacity will reduce more and more. 6000 cycles are approximately 16 years when charged and discharged daily.

7. WHAT WARRANTIES APPLY FOR THE BATTERY AND ACCESSORIES?

- Product warranty on battery?
- Performance warranty on battery?



Example: TESLA or LG RESU Example: AQUION Example: REDFLOW

- Product warranty on accessories?
- Warranty on installation?
- How will my warranty claim be dealt with?
 - i. Will I have to send the battery away or will it be replaced on-site?
 - ii. Do I have an Australia based contact person and phone number?
 - iii. Are replacement parts warehoused in Australia?

8. WHAT IS THE DIFFERENCE BETWEEN DC AND AC COUPLED SYSTEMS?

Most battery systems are DC coupled:

The solar panels put out DC voltage; the batteries are charged with DC current via a battery charger; the inverter turns the DC into AC for your use in your home. These types of systems have fewer components than AC coupled systems and many, but

not all systems incorporate a UPS function (to provide power when the grid is down).

- A few systems like the ENPHASE AC battery are AC coupled:
 Every battery module puts out 240V AC directly into the house supply and is charged via the house supply from solar generated or grid energy.
 These systems are easy to scale by just adding battery modules. UPS functionality can be added by way of a critical loads panel for the most important loads (e.g. fridge, freezer, computer etc.). Enphase currently does not have a built-in UPS function.
- If you have a PV Solar system already (other than micro-inverter based systems) and want to add battery storage, a DC coupled system would be your preferred option.

9. APART FROM THE BATTERY, WHAT OTHER COMPONENTS DO I NEED?

• Some systems are All-in-One (AIO):

They include the battery, the battery charger and a battery management system. Ask your supplier whether the proposed battery can easily be connected to your inverter, or whether extra components are required.

Some battery systems are just batteries
 They usually include some control and communications gear and require additional
 components, or just work with some 'compatible' inverters (e.g. TESLA Powerwall).
 Ask your supplier whether your inverter is compatible with the proposed battery.

10. DOES THE BATTERY SYSTEM PROVIDE A UPS FUNCTION IF THE GRID GOES DOWN?

- We believe that in our region with frequent blackouts every battery should be able to supply at least one dedicated circuit of critical loads with power from the battery or the solar panels if the grid goes down.
- Larger batteries may not require a critical loads circuit if you remember to use energy wisely during a blackout situation (No use of air conditioning etc.)
- Ask your supplier whether the proposed system has UPS functionality.

11. WHAT IS THE TOTAL COST?

- The total cost would include:
 - i. The battery or batteries
 - ii. The battery charger /inverter
 - iii. The control or battery management software
 - iv. The communication software
 - v. Delivery and installation cost

Ask any installer you are considering for the total cost of the system and compare on a \$ per kWh battery capacity basis.

For example:

Installer A offers you 6.4kWh battery storage system for \$11,000 fully installed. Installer B offers you a 10kWh system for \$14,000 fully installed. If you can make good use of the bigger battery, and the systems are comparable in all other aspects (most of all the warranties!), offer B would be better value.