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How To Pick Out The Best Battery For a Solar Panel System, Battery Bank, or Off-Grid System

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Have you ever wondered how to pick out the best battery(s) for your solar panel system (or off-grid energy system)? Or have you wondered what makes one deep cycle battery better than another? If so, this article will answer these questions and give you specific things to check on before buying your new battery (to ensure you get the most bang for your buck)!

When choosing a battery (or batteries) for your solar panel system, there are three categories of batteries that work best. So in this article we will:

Part 1) Quickly compare the three main types of solar batteries (**lead acid, saltwater, and lithium**).

Part 2) Compare the components of batteries, such as: **depth of discharge, capacity and power, efficiency, battery life, and manufacturer.**

By the end of this article you will know exactly how to pick out the best battery for your solar system! So let's get started...

Part 1) The Three Best Types Of Batteries For Solar Systems:

The best type of battery for your solar panel system will depend on what you're looking for. There are three battery types that work exceptionally well; however, each battery type has pros and cons. So the first decision to make is the type of battery that will fit your system.

Lead Acid Batteries

Lead acid batteries are among the longest-used and most reliable batteries in existence. They are the cheapest option but you trade cost for battery life and depth of discharge. But for homeowners needing lots of storage for a lower cost, or if you are just making the move to a solar system, lead acid may be a very good option.

Saltwater Batteries

Saltwater batteries are more expensive than lead acid batteries, but also have a greater lifespan. Unlike lead acid batteries, saltwater batteries are essentially brand new to the market and remain both somewhat untested and harder to come across. Of the three types of batteries, saltwater has the greatest depth of discharge, so you'll get the most output per charge before needing to recharge.

Lithium Batteries

Lithium batteries are the most expensive and the longest lasting of the three types of solar batteries. Their depth of discharge is less than that of a saltwater battery, but more than that of a lead acid battery. Comparing all three options, the lithium battery is probably the highest rated, but also the least accessible cost-wise.

Part 2) Compare the components of batteries

Once you've picked the [best battery type for your solar panel or off-grid system](#) (that meets your system's needs), there are components to explore to find the ideal battery for your system.

Cost

Cost is probably one of the more obvious components. But the old saying, "you get what you pay for" holds true when buying batteries as well. In some instances though, certain batteries may be overkill for your system so the most expensive battery may not be the best choice always.

Battery Life and Warranty

For most systems, a battery will cycle daily, meaning it will charge and drain regularly. With each cycle, the battery's ability to hold the same charge lessens slightly. So, one component to consider is the warranty on the battery that guarantees a certain number of cycles of useful life.

Depth of Discharge

Depth of discharge is how much you can drain the battery down before needing to recharge the battery without harming its life. Certain solar batteries can be depleted further than others, allowing for more use between charging. Essentially, a battery with a 90% depth of discharge per cycle will provide more battery power per charge than a battery with less.

Capacity and Power

Measured in kilowatt hours (kWh), capacity is the amount of energy a battery can store over time. More literally, capacity is how much energy (measured in kW) a battery can store over time. The more capacity a battery has, the more power it can store.

Power is how much energy a battery can provide at a given moment. A battery with both a high capacity and high power can run a large system for several hours; a battery with low capacity and high power can run a large system but only for a short time.

Efficiency

Efficiency is the amount of energy used compared to the amount of energy it took to store said energy. Batteries require power to charge and efficiency compares the energy taken to charge a battery with the amount of energy that the charged battery produces. The higher the efficiency, the more cost-effective the battery.

Manufacturer

This may not be a component most would consider, but it is something to pay attention to. As with other technology, there are both trusted brands and start-up brands. A trusted brand comes with known flaws and benefits; a start-up brand can perhaps have better technology, but can also have yet unknown technological issues. Depending on your system needs, you may decide to go with a well-reviewed company or one that is brand new to the market.

Part 3) What happens when your solar batteries start to die?

If you follow this article you should be able to compare batteries and pick out the best battery for your solar system's needs.

But your new solar batteries won't last forever. So what can you do? ...and what can you do when your batteries actually die? Well, that's where [our battery reconditioning course](#) comes in! You can use it to bring nearly any type of dead battery back to life again – including solar batteries, marine batteries, car batteries, forklift batteries, plus many other types. If you'd like to watch a new presentation about our course, you can [see it here for a limited time](#).