Solar energy storage options

Solar energy storage options

What are the main types of solar energy storage?

In our previous article, we looked at how many benefits turning to solar energy can give to businesses. The power generated from the sun is cheaper, cleaner, and fully renewable, and as the installations are getting more efficient every year, they can now generate far more energy than in past years. That way, solar energy is becoming one of the most effective ways to reduce our dependence on fossil fuels, carbon emissions, and also our energy bills.

But even the biggest fans of using solar energy have to admit that solar panels have two significant weaknesses: they only produce electricity when the sun is shining, and the solar panels themselves can"t store the energy for later use. So does it mean solar panels will hardly be useful for cloudy or winter days when their efficiency visibly drops?

No – you can keep using solar energy in the evenings or during dark winter times, as long as you use a solar energy storage system.

Solar energy storage is devices that can gather the electricity generated by the solar panels, store it inside the device and then release it when the energy is needed – for example, after sundown or during power outages.

Thermal or hydro storage systems can store far more energy inside themselves (Pumped Hydro Storage capacity is, on average, 100 times higher than any available battery solution), but they are also far more complicated and costly to build.

The interest in solar panel systems is booming as homeowners and businesses are looking for ways to lower their energy costs and become more environmentally friendly. For example, the number of solar panels installed by Americans in 2022 would be enough to power 22 million homes – and that"s when we capture and turn to electricity only a fraction of the sunlight power.

As they are, solar panels also have some limitations though.

The main disadvantage is that the panels can only generate energy when the sun shines on them. So during cloudy weather or winter when it"s getting dark quickly, the solar panels’ efficiency naturally drops. On the other hand, during sunny days the solar panels often generate far more energy than needed – but the power might be wasted since panels can"t store it themselves.

Solar energy storage systems can solve both of those problems though, as they can gather the excess

electricity, store it and then let companies use it whenever they need it. With the capacity of some of the storage systems, businesses can even gather energy in summer (when renewable energy sources are producing more electricity than needed) and then use it to power their company in winter, when there is a high demand for electricity but a low supply of solar energy.

Solar panels with storage devices are becoming increasingly popular as a backup energy source in case of power outages (for example, during severe weather) when the panels cannot produce energy. Why is that?

Unless solar panel owners decide to go entirely off-grid, the panels are usually still connected to the grid. That way, you can draw electrical power from your utility provider when your system isn"t generating enough energy, and you can also send excess energy to the grid for credit in many states (this is called net metering). For safety reasons though, all grid-tied solar energy inverters are required to automatically shut down when the electric grid goes down and the power goes off. That means when the power grid is down, the solar panels are not working either.