

# Three phase battery inverter

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What does a battery inverter do? A battery inverter DC to AC convert the direct current (DC) intermediately stored in a battery into alternating current (AC) which is commonly used in households, businesses and industry. A battery for inverters is therefore necessary to be able to use intermediately stored solar power. Learn more about the SMA battery inverter and its application.

It is important to configure the electricity storage system in such a way that all operating modes that make sense for the household or business are possible. A PV system and a battery inverter can satisfy the following applications with proper planning:

A Hybrid inverter can perform the tasks of a traditional PV inverter as well as those of the battery inverter. It combines both functions in just one device. It can convert the direct current (DC) from the PV modules and the battery storage system into usable alternating current (AC) and in addition intermediately store the surplus solar power in the battery storage system.

A battery inverter is vital so that the energy stored intermediately can be used for consumption or to be fed into the utility grid. This is because the energy stored in the battery is in the form of direct current (DC). In contrast, the utility grid and the usual loads (electronic devices, electric machines) operate with alternating current (AC).

SMA battery inverters with secure power supply or backup function supply a household, a business or certain loads with the stored energy even if the utility grid fails. More information is available in the planning guidelines SMA Home Energy Solution with Battery-Backup Function.

In the early days of photovoltaics there were no suitable storage systems for the self-produced electricity. The first battery storage systems were of no interest for most homeowners due to their high original costs and large size. This has changed thanks to modern lithium-ion technology, offering a more favorable battery inverter price. Today, storage solutions for PV systems with a lithium-ion battery inverter (also called "lithium battery inverter") or with a grid tie battery inverter are comparatively compact and economical to purchase and use.

A single-phase battery inverter is only suitable for small PV systems in a single-family home. This variant is only permitted for PV systems with up to 4.6 kilovolt-ampere (kVA). 3-phase battery inverters are mandatory for larger systems over 4.6 kVA. If you'd like to use an inverter with battery for grid feed-in or with a battery-backup function, a three-phase battery inverter from SMA is the ideal choice. This ensures that the energy is fed evenly into the grid and all loads can be reliably supplied with electricity when providing backup power to your own household or company.

There is no general answer to this question; the basic rule is: the larger the PV system is, the more powerful



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the inverters and the associated storage systems should be. For example, for a high-capacity setup a battery inverter 3000W is needed. The SMA Home Storage can be configured for capacities of 3.2 kWh to 16.4 kWh and offers the right solution for all three variants.

Overall, PV inverters and battery inverters work in combination in a PV system. This ensures that solar energy is used efficiently, the batteries are charged and the building's and utility grid's energy needs are met.

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