30 Common Solar Power Terms/Jargon Explained

We know learning about solar power and how it all works can be confusing, so we've put together a breakdown of the most common solar power jargon. If you still need some help figuring out your solar power system, don't hesitate to get in touch.

Alternating Current (AC): the type of electricity used by household appliances, output from the inverter.

Ampere (Amp): Unit of measurement for an electric current. Metaphorically, it's the *volume* of water flowing through a pipe.

Amp-hour: amount of energy charge in a battery that will give you one ampere for one hour. As an example, one AA battery has a capacity of two-to-three-amp hours, and our batteries have 200-amp hours.

Backup generator: a device that can be used to provide electricity in an off-grid solar power system when the batteries are low or when there is not enough sunlight to generate sufficient electricity.

Battery Bank: a group of batteries wired together to store more power than a single battery would hold. These battery banks store electricity created by solar panels. After the battery stores the energy, it is then used at any point.

Battery capacity: the amount of energy that a battery can store, typically measured in amp-hours (Ah) or kilowatt-hours (kWh).

Battery Charger: this component works similarly to a charge controller by controlling the charge going into the batteries. This is typically used to allow a generator to charge the batteries in a solar power system.

Battery charging voltage: the voltage applied to the battery by the charging device to charge the battery. This will typically be higher than the resting voltage and is not an accurate measure of the SOC.

Battery resting voltage: the voltage of a battery when it is not being charged or discharged and has had enough time to stabilize. It is typically measured after the battery has been at rest for several hours, and is the most accurate way to read the SOC.

Battery state of charge (SOC): the amount of energy stored in a battery bank at a given point in time, expressed as a percentage of the battery's total capacity.

Charge Controller: this component monitors how much energy a system stores into a battery. It also controls how fast that energy gets stored. Monitoring these levels is important because if the energy enters the battery too quickly, it will lower the system's lifespan.

Deep Cycle Battery: the most common battery used for solar power storage. Unlike most batteries, deep cycle batteries are designed for constant heavy depletion and recharging. They can withstand thousands of these cycles without negatively affecting the battery.

Depth of Discharge (DoD): Level that a battery is run-down, which gets measured by how much energy is removed. For example, if 50 percent of the energy in a battery is used, then the depth of discharge would be 50 percent. Depth of discharge is an important statistic to monitor when using batteries, as discharging past 50% may have negative long-term effects on the battery's lifespan.

Direct Current (DC): The type of electricity produced by the solar panels and stored in the batteries.

Evacuated Tube Solar: a system of glass tubes that absorb the sun's rays as heat for water heating systems. Many spas, pools, and water heaters use this process, as it is more efficient that heating water with solar electricity.

Extra Low Voltage (ELV): refers to voltage below 120V DC and is not considered prescribed electrical work and doesn't require and electrician.

Gel Battery: a specific type of deep cycle battery in with the contents of the battery are a gel, rather than a liquid, ensuring the battery is completely sealed and maintenance free.

Grid: Distribution network consisting of towers and wires that power companies use to direct and deliver energy.

Grid-tied: A power system connected to the grid. In solar, this is a system that can feed power back into the grid or use energy from the grid as needed.

Grounding: the process of connecting the electrical system of an off-grid solar power system to a grounding electrode to protect against electrical shock and damage to electronic equipment. This should be done by an electrician.

Hybrid Inverter: combines aspects of a charge controller, inverter, and battery charger. Allows for alternate energy production, such as a generator, to easily be part of your solar system. In off-grid systems, this does not include the ability to feed back into the grid.

Inverter: equipment that converts DC power into AC power, and low voltage into high voltage. This allows you to use the power stored in the batteries (12/24/48V DC) for all your standard household appliances (240V AC).

Kilowatt (kW): measurement of power that is equal to 1000 watts of power. Sometimes used to refer to the size of solar power system in reference to the size of the solar panel array.

Kilowatt-hour (kWh): a unit of energy that is commonly used to measure the amount of electricity consumed or generated over time.

Load: an electrical device or appliance that consumes electricity, such as lights, refrigerators, and televisions. Can also refer to the cumulative power use of such items.

Lithium-ion battery: a general term encompassing all batteries using lithium-ion technology.

Lithium iron battery (LiFePO4): a type of lithium-ion battery that's optimised for lifespan, resilience, and DoD, although at a much higher price point than Gel. When GridFree says "lithium battery", this is what we are referring to.

Maximum Power Point Tracking (MPPT): technology used in modern charge controllers that optimizes the output of solar panels by finding the maximum power point where the voltage and current produce the most power.

Off-grid: A power system with no connection to the grid, such as a generator or a solar power system. Can also refer to the lack of any utilities such as power and water, or the lifestyle that accompanies living without utilities.

Off-grid solar kit: a pre-packaged system that includes all the components needed to set up an off-grid solar system. These kits are typically designed for smaller homes or cabins and are a convenient way to get started with off-grid solar power.

Peak Power Point: The point at which the voltage curve for a solar cell's current value is at its maximum capacity, used by smart charge controllers to improve charging efficiency.

Peak Sun Hours: a way of measuring the intensity of sunlight in the context of solar power, with 1000W/m2 being considered 1 peak sun hour.

Photovoltaic (PV): referring to anything that converts light into electricity, eg PV array is another name for solar panel array.

PV Solar panel: A solar panel is a device that contains photovoltaic cells that convert sunlight into electricity.

PERC Mono Solar panel: a panel combining 'passivated emitter and rear cell' and monocrystalline (single silicon crystals) technology to create a more efficient solar panel.

Solar PV array: the collection of solar panels wired together in one solar power system.

Solar Power System: the collection of components used to generate, store, and use solar power. Consists of solar panels; a hybrid inverter or charge controller and inverter; and deep cycle batteries.

Voltage: Unit of measurement for electrical potential. Metaphorically, it's the *pressure* of water in a pipe.

Watt: unit of measurement for power, equivalent to Voltage multiplied by Amperage. Often used when describing the potential power consumption of an appliance, e.g., a 100W television.

Watt-hour: This specific term relates to the measurement of energy, or watts, that is used over a given period. This is also how companies measure home electricity bills to determine the consumed energy during the billing period. For example, a 50W fan that is on for four hours is equal to 200Wh.

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To learn more about off-gridding, especially solar, make sure you check out our knowledge base at: https://gridfree.store/blogs/how-to-articles/

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