Solar charger

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Solar chargers can charge lead acid or Ni-Cd battery banks up to 48 V and hundreds of ampere hours (up to 4000 Ah) capacity. Such type of solar charger setups generally use an intelligent charge controller. A series of solar cells are installed in a stationary location (ie: rooftops of homes, base-station locations on the ground etc.) and can be connected to a battery bank to store energy for off-peak usage. They can also be used in addition to mains-supply chargers for energy saving during the daytime.

A solar panel can produce a range of charging voltages depending upon sunlight intensity, so a voltage regulator must be included in the charging circuit so as to not over-charge (overvoltage) a device such as a 12 volt car battery.

Portable solar chargers are used to charge cell phones and other small electronic devices on the go. Chargers on the market today use various types of solar panels, ranging from thin film panels with efficiencies from 7-15% (amorphous silicon around 7%, CIGS closer to 15%), to the slightly more efficient monocrystalline panels which offer efficiencies up to 18%.

The other type of portable solar chargers are those with wheels which enable them to be transported from one place to another and be used by a lot of people. They are semi-public, considering the fact that are used publicly but not permanently installed.[1]

Some solar chargers also have an on-board battery which is charged by the solar panel when not charging anything else. This allows the user to be able to use the solar energy stored in the battery to charge their electronic devices at night or when indoors.

Currently, foldable solar panels are coming down in price to the point that almost anyone can deploy one while at the beach, biking, hiking, or at any outdoor location and charge their cellphone, tablet, computer etc. Some companies such as GoSun have incorporated a solar charger into a table so that can have more than one function.[2]

There are also public solar chargers for mobile phones which can be installed permanently in public places such as streets, park and squares. One such is the Strawberry Tree public solar charger.[4][5][6]

One cell phone model was reported in 2010 to have a built in solar charger.[12] Solar chargers are commercially available for cellphones.

Solar cell phone chargers come in different shapes and configurations including folding (Goal Zero, Endless Sun Solar) and types that unfold like petals (Solio).[13]

They also come in the form of straps, with solar cells on the outer surface and a rechargeable battery inside. Solar cell technology limits the effectiveness and practicality of phone solar chargers for everyday use. Phone charge times vary depending on the solar panel size and efficiency, or the battery capacity of models with batteries, further extending the charge times of solar chargers. The fold-out design provides a larger solar panel, hence higher charge current, and is compact when not in use.

Solar chargers can be used to charge other rechargeable devices with requirements similar to a mobile phone, such as Bluetooth headsets and music players.[12]

Solar chargers used to charge a phone directly, rather than by using an internal battery, can damage a phone if the output is not well-controlled,[14] for example by supplying excessive voltage in bright sunlight. In less bright light, although there is electrical output it may be too low to support charging, it will not just charge slower.

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