SOLAR LIFE - COLLECT STORE AND USE

COLLECT

It feels a little surreal the first time you plug your phone into a solar panel and see the charge icon appear and know that your phone is being kick-started using power from the sun. So how do the panels actually work?

It all starts with the Sun. Nuclear fusion at the Suns core creates energy released in the form of light. The Suns' light takes a 8.5 minute, 93 million mile trip to Earth. Solar panels contain two layers of carefully grown silicon slices with a uniformed pathway in between. Energetic electrons in the negatively charged top layer are itching to jump to the positively charged bottom. All they need is a little push in the right direction.

Think of the next step like solar billiards. The visible and invisible light from the Sun hits the top layer electrons like cue ball and gives them the push they need to break loose and race towards the bottom. This creates a current as they move.

Pathways created in the solar panel capture the moving electrons, acting like a waterslide and forcing the energy to where we want it. An open solar panel generates quite a bit of energy. The key is to harness the power and put it to good use. Placing a device in the middle of the electron waterslide allows you to collect and store energy. Then all you have to do is plug your device in, and bam… you're charging from harnessed Sun power.

STORE

The use of personal electronic devices in the outdoor adventure industry is growing at a strong and steady rate, creating a demand for portable power solutions to recharge these devices off grid. Here are a few starting points to consider when deciding on the perfect power pack for your needs.

First thing to consider is **storage capacity.** This will tell you how much charge the battery pack can store for use later to recharge your devices, before it in turn needs recharging.

By comparing the storage capacity of a portable battery to that of the battery in your device, you can get an idea of how many recharges you have available. This is usually stated in milliAmp hours (mAh) or Amp hours (Ah). For example, 2200 mAh = 2.2 Ah. Watt hours (wh) is another measure of capacity. To convert watt hours to mAh: (Wh /Volts) x 1000 = mAh – simples!

To recharge or top off your electronic device, you need a battery pack with enough storage capacity and enough output voltage to move energy into your device.

How much is enough? Find out the storage capacity of the battery in your device. For electronics with built-in batteries, check the technical specs to find the battery capacity. If your device uses only replaceable AA batteries, this is not an issue. Choose a battery pack that features these.

Power output: The output of the charger (measured in volts) must be equal to the input battery voltage requirement of your electronic device. If it's lower, you may drain your device's battery instead of charging it up. Oops!

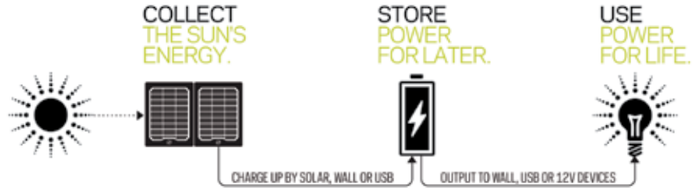
Battery technology: Portable battery packs vary in not only capacity and output, but also in technology, size and weight.

NiMH (Nickel Metal Hydride) batteries are likely to be rechargeable AA or AAA batteries. A battery pack that uses these is a convenient option for devices that use replaceable batteries like a GPS, camera or headlamp. Instead of recharging your device, you simply swap out the batteries.

Lithium-ion and lithium polymers are the most common type of portable battery packs, being the same technology as the built-in batteries in personal electronics.

Lead acid batteries are large and heavy but provide the greatest power capacity and output.

Deep cycle AGM (Absorbent Glass Mat) batteries are the key component in various types of renewable energy systems that require the storage of electricity.



Output connectors and adapter tips: If you buy a solar panel with an included battery—either integrated or independent—any necessary connectors between panel and battery will be included.

If you buy a solar panel and battery individually, note what output connector it has and its suitability for charging your device directly (if recommended) or connecting to a separate battery pack. Your options may include a USB (standard, mini, micro), a connector (with a selection of adapter tips) or DC output with voltage control.

With all of this knowledge under your belt you should be confident in selecting the right charger for your needs…..

USE

How to choose the right solar recharger for your adventure?

Most USB rechargeable devices can be charged with a compact recharger such as the Goal Zero Flip range. One Flip 20 recharger will charge your phone up to two times and offers the added bonus of pass through charging, so you can charge the Flip and your phone all at once.

For a mid-size device, requiring low or medium power, such as tablets, Go Pros and USB charged DLSR cameras a higher wattage battery will be more reliable. Check out Goal Zero's Venture 30 recharger, weatherproof, rugged and will charge 2 devices at once!!

For an ultra-portable solar solution, charging anything from smart phones to laptops, the Sherpa 50 and Sherpa 100 chargers are an adventure travellers dream come true. The lithium battery ensures the unit is ultra-light weight as well as having a longer battery lifespan. All of this is reflected in a higher cost per unit, however, they are made to withstand harsh climates and are the smarter choice when weight is an issue.

If you have heavy draw products to charge from your base camp such as small refrigerators, laptops, CPAP machines and more, then the Yeti range of rechargers will leave you the envy of all. From a Yeti 150 – light and portable, to the epitome of unlimited, portable power – the Yeti 1250.

Solar Life is about the feeling you get waking up to a frost-encrusted tent before dawn. It's hiking a high mountain ridge to watch the sun rise. It's bringing light into the lives of those in need, but most of all it's having the freedom to get out and stay out doing the things that you love without compromising. Solar powered chargers and generators exist to capture and share the stories of those seeking adventure. Get out, and stay out!

Most USB and 12V devices can charge directly from solar panels, if the weather conditions are good enough

Small USB devices like cameras of MP3 players require 1-2.5W of constant power to charge. Solar panels can easily provide this amount of power even in sub-ideal conditions. Smartphones and tablets have a higher power requirement, usually around 5W of constant power. A 7W rated solar panel will only produce 5W in perfect sun conditions, and because smartphones are quite picky about their power requirements, they can "give up" charging if there is ever an interruption in constant power - like when a cloud passes by overhead.

For the best experience, it is recommended you use a battery pack as a buffer, instead of charging DIRECTLY from the sun, for the following reasons:

Heat and batteries are enemies. Precision electronics don't like heat either. When charging directly from solar, care should be taken to keep the device with the battery in the shade. The shade of the angled panel is a good option. Do not store devices next to the panels when charging. The heat will lower the life of the battery.

Weather uncertainty. Your phone may not be weather durable. Keep it protected.

If clouds pass by or weather changes, the charging can become interrupted. Phones will often reject the charge in cases like these. This means your phone could be sitting out there and not charging. Batteries give you a constant charge no matter the weather conditions. Rechargers and personal power packs charge well with solar regardless of the conditions – they never reject a charge opportunity.

You might not want to sit out in the heat of the sun, if you need to use your phone while it charges. Battery lets you move anywhere.

You use your phone during the day and charge at night. Solar doesn't work at night, but batteries work anytime.