

Why a Portable Solar Generator?

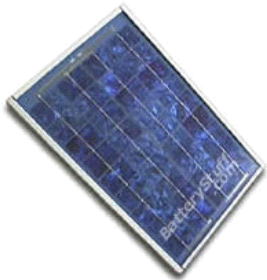
Why have a solar generator when a gasoline generator and provide power? Well, a solar generator does not do away with a gas generator at all. I have both. Each has pluses and minuses.

A gas generator is noisy, save for the new super quiet generator like the Honda i2000. A gas generator requires, well, gasoline and in some emergency situations, gasoline may be very scarce or need to be used for other purposes.

A portable solar generator can be used for normal camping as well as for emergencies. I use mine for powering my HAM radios when performing service for the community. I can use it to grind wheat in my wife's wheat grinder. (See later section in this handout).

A portable solar generator can be used in daily life as well. Some appliances within the home can be powered by the electricity provided by a portable solar generator while "waiting" for a camping trip or an emergency.

Solar power systems usually have 4 subsystems:



- 1) **Generation** (solar panels)
- 2) **Storage** (DC Batteries)
- 3) **Processing** (Charge controllers, invertors, etc)
- 4) **Loads** (lights, HAM radios, other radios, motors, etc)

1) Generation

I have purchased (2) 10 watt panels \$88 each.

Wired them up and now I have portable power for lights and the ham radio.

Same panel is now http://www.discountpv.com/solar_panels/index.htm

Other panels can be seen at http://www.ecobusinesslinks.com/solar_panels.htm

This panel is very portable for use in powering my HAM devices.

I also have a 40 watt panel and (2) 64 watt panels.

All these panels are connected to a 12v "main" power line that runs the length of my house, outside under the eaves of my house. I tap into this line to run charge controllers in my tent trailer and for my indoor HAM station, and another SunSaver-10 in my garage for the lawn mower).

The (2) 10 watt panels and the 40 watt panel can be taken down from their mounts easily and taken with the tent trailer. I have a 64 watt panel mounted to my radio mobile.

2) Storage

Small batteries

I have purchased 8 D Ni-Mh batteries (8000 ma) for them from the same link below.

I charge them on the AccuCharger (\$54), which will charge AAA, AA, C, D and 9-volt, either Ni-Cads or Ni-Mhi types

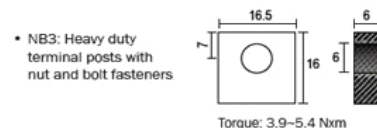
<http://store.batteryspecialists.com/ap20201.html>

3500 S Main, Salt Lake City, UTAH

It can use 110V ac, 12dc and solar panel which is 12dc, to charge.



Terminals (mm)



Larger Batters - 12v

I have (2) 5 amp/hr and (2) 35 amp/hr 12 volt batteries. The smaller ones I use to power my HAM when mobile or other small 12 volt devices (Cell phones, anything that requires 12v)

The bigger ones I use to power my lawn mower (yes, I use solar power to mow my lawn) and my base station HAM rig at home.

These are also available at batteryspecialists. \$75 for the 35 amp/hr

I visited www.Batteryspecialists.com and got some prices on their SEALED 12 volt batteries.

3) Processing equipment

Charge controllers, invertors, etc

4-amp Morningstart SunGuard,

6-amp Morningstart SunSaver-10 (\$41)

6-amp Morningstart SunSaver-10L (\$50) (LVD - low voltage disconnect)

10-amp Morningstart SunSaver-10 (\$47)

10-amp Morningstart SunSaver-10L (\$59) (LVD - low voltage disconnect)

<http://www.solarpanelstore.com/solar-power.small-charge-controllers.sunsaver.html>

The SunSaver is a good controller, since it can power both wet cell and sealed cell batteries.



Invertors

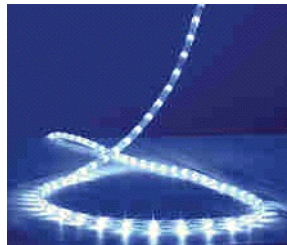
I have one 1200 watt inverter that I can connect to my tent trailer, but most of my loads are DC, so I don't use it much

Meters - "Watts UP" DC Meter

Connectors

4) Loads - Radios, Lights, Battery Chargers, etc

FOUNDATION \$185



I found a good FOUNDATION building block for portable and usable power system for use in camping or what ever.

<http://www.amazon.com/gp/product/B000E6LEIC/103-0523439-3973440>



28 amp/hr battery sockets

1 DC socket

Jumper cables

LARGER BASE \$400

600 Watt AC Inverter (internal) surge/400 Watt sustained 3 AC

Recharged by AC or DC (MAX 30 watt solar panel)

AM/FM radio alarm clock

Built-in incandescent light

<http://www.amazon.com/Xantrex-Technologies-Powerpack-500-Watt-802-1500/dp/B00005RHQQ>

Amazon.com Product Review



The XPower Powerpack 1500 is designed for ultimate portability. See the [product specifications](#). View the generator in [greater detail](#).

The XPower Powerpack 1500 is a portable power system that produces household electricity for products rated at 1500 watts or less. A clean and quiet alternative to a generator, the XPower Powerpack integrates a 60 Amp/hour AGM battery with a 1500-watt inverter and produces a 3000-watt surge. This system is built to run a range of appliances such as a standard size refrigerator and microwave oven, and office equipment such as a computer, monitor, and fax machine.

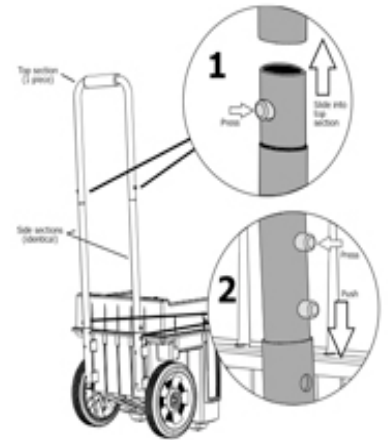
The XPower Powerpack 1500 consists of a battery pack that stores electrical energy, state-of-the-art electronics that convert 12 volts from the battery pack to household power, an AC power panel that contains two standard outlets, and a DC power panel that is used to run 12 volt products. These components are packaged into a rugged "cart" with a removable waist handle that

allows XPower Powerpack 1500 to be wheeled from room-to-room or outdoors over rough An excellent alternative to a generator, the XPower Powerpack produces no noise or fumes and has no moving parts. With the accessories provided, you can easily recharge the XPower Powerpack using standard utility power from your wall outlet, your vehicle, or from a solar panel.

The XPower Powerpack can be used to produce power for numerous applications. For power emergencies it can run essential appliances like refrigerators, cordless/mobile phones, radios, fireplace fans, table lamps, or microwaves. For work sites, you can power your drills, belt sanders, circular saws, hedge trimmers, leaf blowers, vacuums, computers, large monitors, fax machines, and inkjet printers. For plain old fun, you can use the power source to run blenders, video games, TV and VCRs, satellite equipment, coffee makers, portable coolers and more.

The XPower Powerpack features a built-in 1500 watt inverter and sealed, non-spillable 60 Amp-hour AGM battery. Dual AC outlets allow operation of multiple products, and a built-in battery level indicator confirms the charge level. A high surge protection and automatic over-temperature and overload shutdown keeps the Powerpack running safely and efficiently, while a low voltage alarm and shutdown prevents deep battery discharge. You can recharge the Powerpack from home (up to 15 hours), or your vehicle (6 to 8 hours). A padded grip towing handle removes easily for storage in tight places, and built-in handles on sides allow for easy lifting.

The XPower Powerpack measures 14.8 x 15.6 x 12.3 inches (HxWxD), weighs 60 pounds, and is backed by a 1-year limited warranty.



Wheat grinder test

Ordered list of grinders based on energy usage that uses the least amount of electricity to grind 13 cups of flour (1 #10 can) to the most energy consuming.

Golden Grain Mill

8.7 Amps / 700 watts operating consumption

1 minute 50 seconds

20 watt-hours (#1 least total watts used)

Grain Country Mill - 35 years old and going strong

8.7 Amps / 700-850 watts operating consumption

4 Minutes 11 seconds

50 watt-hours (#2)

Whisper Mill

7.0 Amps / 775-800 Watts

6 Minutes 30 seconds

65 watt-hours (#3)

Wonder Mill

11 Amps / 1180 watts operating consumption

4 minutes 17 seconds

70 watt-hours (#4)

Nutrimill

5.4 amps / 625 watts operating consumption

10 minutes 1 second

100 watt-hours (#5 - motor uses the least amps but it takes 10 minutes to grind 13 cups, if it ground faster it could be a contender)

K-Tec

5.5 Amps / 650 watts operating consumption

14 minutes 17 seconds

130 watt-hours (#6)