

Solar Generator

by [tk1314](#) on July 17, 2008

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Intro: Solar Generator

I made this solar generator to power lights, a radio and recharge batteries for my trip to Burning Man 2008.

Parts list:

1. Sunforce 15 watt solar charger with with 7 amp charge controller - Krage Auto - \$99.99 part #50033
2. Pro X One 800 watt power inverter - Krage Auto - \$49.97 on sale - part #64009624
3. Nautilus Gold 24 NG24 deep cycle battery - \$84.99 - Krage Auto - part #6228613
4. 12 volt outlet (cigarette lighter type) - 10.99 - Krage Auto - part #6261044
5. Digital multimeter - \$2.99 - Harbor Freight Tools - part #90899
6. Crimp style electrical connectors (butt and 3/8" ring) - \$2
7. 1/2" plywood (or whatever you have lying around) - \$10.00
8. Hinges, handles, latches and screws for the box - \$15.00
9. Eight zinc plated "L" brackets - \$5.00





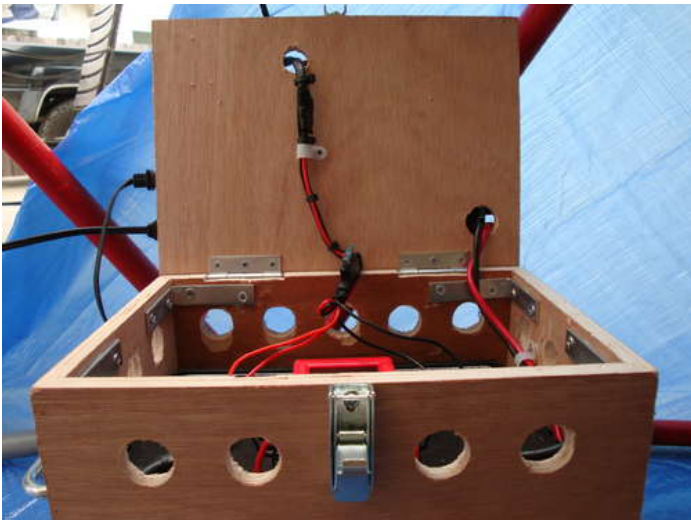
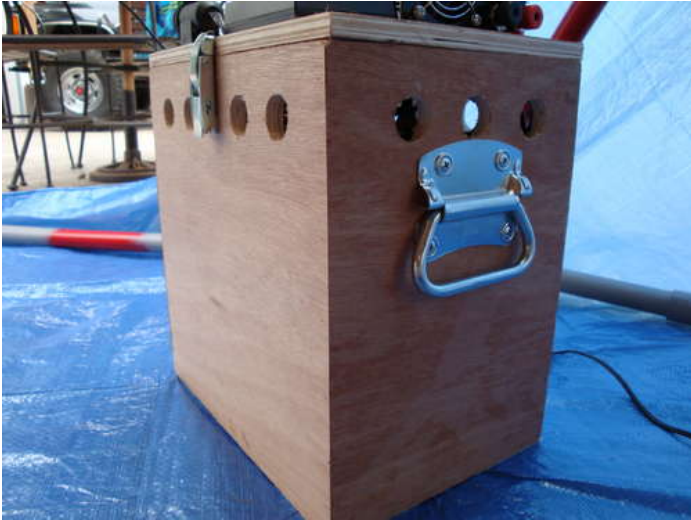
step 1: Buy the parts

I got most of my parts from Kragen Auto. They'll give you a 10% discount if you ask. I had some 1/2" plywood left over from another project to build my box but I saw that RoDuS1488 used a small cooler for his solar generator...that's a great idea, especially if you don't have wood working tools or just can't wait to get the party started. The solar panel comes with a fifteen foot cord that seems long enough to keep the panel out of the shade. Multiple panels can be wired together to get more power. One 15 watt panel barely keeps the battery charged. I think two (at thirty watts) would do a little better.



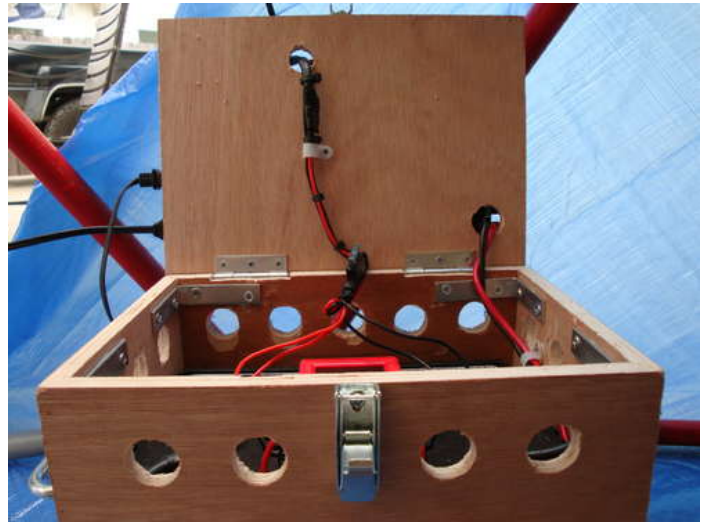
step 2: Build a box

I built my box out of 1/2" plywood and reinforced the inside corners with zinc plated "L" brackets. The sides have heavy duty chest handles to carry the generator and the bottom has four zinc plated metal corners to protect the bottom. The lid is held on with two hinges in the rear and one latch in the front. I made the box 1/2" bigger than my battery around the sides and 2" taller. I also drilled one inch holes in the sides to vent hydrogen gas and allow the battery to cool.



step 3: Connect the wires

Put the battery in the box and connect the wires. I cut the ends and used 3/8" ring crimp wire connectors to run the wires to the battery terminal posts. My deep cycle battery has four posts...two are standard car battery type posts and the other two are threaded studs. I used the threaded studs for a more secure connection. Connect the red terminal from the inverter to the positive post and the black to the negative. The solar panel connects to the battery through the charge controller. This keeps the battery from over-charging. The controller shuts off at 14.2 volts and comes on when the voltage drops below 13 volts. I also added a 12 volt outlet directly to the battery for use with cigarette lighter adapters. There's a two amp inline fuse on the positive lead. I bought a cheap digital multimeter and zip tied it to the top of the battery so I can monitor the voltage usage. I cut the leads and again used 3/8" ring crimp connectors to permanently connect them to the battery.



step 4: Plug in and enjoy clean, silent power!

I'll use the generator in my dome to run white LED Christmas lights, satellite radio and to charge batteries for my camera and ham radios.)'(

Update: The generator worked great. It never ran out of power. I use it every day at home now.





Related Instructables



Portable Solar Generator on a bike trailer for Burning Man by veggiecycle



440 Watt Regulated Pedal Power Bicycle Generator for iPod, Cell Phone, Portable TV or DVD player by bdwhaley



S.P.R.E.E. (Solar Photovoltaic Renewable Electron Encapsulator), a Compact, Durable, and Portable Solar Energy Generator by charlitron



Portable Sun Tracking Solar Panel With A Windup Clock Drive by shastalore



PORTABLE SOLAR AC POWER by jackson88



Ted Baer's Bicycle Wheel Windmill by dwarren



personal powerPlant by jabROUTIN



Building a micro solar generator by RoDuS1488

Comments

[36 comments](#) [Add Comment](#)



mark28 says:

Aug 12, 2009. 5:20 PM [REPLY](#)

hi TRK im planning to build a light emergency sistem using leds as a normal lights but i like to have at least 5 leds in differents parts of my home the question is how i can power them and last 2 or 3 days what batterie i can use ¿ can i use a batterie car? thanks



aaronanalog says:

Aug 26, 2009. 10:35 AM [REPLY](#)

The best batterie is a deep cycle one. There is an Optima yellow top deep cycle batterie (for cars & stuff) that does not vent when charged because it is sealed. So that means no harmful vapors to worry about when it is charging. It is deep cycle so it will last longer and charge better, even from a complete drain it will charge right back up.



ozetzioni says:

Oct 31, 2008. 11:36 AM [REPLY](#)

Hey, I am building a pedal generator bike with a batterie. at the end of the day i want to transfer the electricity i made of riding into a bigger batterie and then use it for lighting equipment... anyone knows of a method to transfer the electricity from one batterie to a bigger one without losing voltage or too much energy???



axmon says:

Aug 9, 2009. 2:48 PM [REPLY](#)

You could have the generator running through to a charging batterie and then use that batterie to charge the others but you would lose power that way.



mr.incredible says:

Aug 5, 2009. 1:29 PM [REPLY](#)

I saw an artical in *Popular Mechanics* (I think) The guy used a bike tire generator to run off a water wheel that he jammed into a stream bed. As the water flowed he recharged his batteries. 24 hrs a day, no need for sunshine. Of course you have to camp near a running stream.



tk1314 says:

Aug 7, 2009. 7:18 AM [REPLY](#)

That's incredible.



mr.incredible says:

Aug 7, 2009. 3:02 PM [REPLY](#)

Wicked!



junits15 says:

Nov 10, 2008. 3:16 PM [REPLY](#)

try using a small battery that u can just disconnect when u r done that eliminates alot of cost and hassel try [here](#) they have alot of interesting batteries to chose from, and u can even design your own pack!



tk1314 says:

May 14, 2009. 9:18 AM [REPLY](#)

I don't think those batteries would run the inverter.



ericdncn67 says:

Aug 8, 2009. 8:24 AM [REPLY](#)

Thanks, Man. Eric D.



mark28 says:

Aug 6, 2009. 1:55 PM [REPLY](#)

can i use a car battery with two standar posts



tk1314 says:

Aug 7, 2009. 7:17 AM [REPLY](#)

Yes, but a deep cycle battery will last longer and handle the battery drain better.



DIY Dave says:

Aug 5, 2009. 6:36 PM [REPLY](#)

How is it possable that this instuctable was posted Aug. 5, 2009 (today) and there are coments from 2008?



explosivemaker says:

Aug 6, 2009. 5:31 PM [REPLY](#)

....thats when it was last updated....

....look to the right where it says "more info"....



musicman79 says:

Jun 28, 2009. 8:13 AM [REPLY](#)

Does anybody know a site or what information I would need to gather to figure how much battery and watts I would need to run a selection of things? I am wanting to build something similar to this for my own family camping needs and would like to run a couple small tent fans, a small 12v mini fridge, and maybe a cell phone charger or two. I can get the power requirements for the items just want to know how to judge the size of my requirements.



Texas1845 says:

Jul 19, 2009. 6:40 AM [REPLY](#)

Wattage of Common Household Appliances/Tools
Appliances

Resistive Load

Reactive Load

Blender

375 watts 500 watts

Clock Radio

5 watts ---

Coffee Maker

1,700 watts ---

Computer - PC

300 watts ---

Cuisinart

450 watts 650 watts

Deep Fryer

1,800 watts ---

Electric Blanket

400 watts ---

Electric Curlers

300 watts ---
Frying Pan
1,250 watts ---
Hair Dryer
1,875 watts ---
Iron
1,200 watts ---
Light Bulbs
see marking on bulb
Microwave
1,050-2,500 watts ---
Washing Machine
1,150 watts 2,200 watts
Water Heater
4,000 watts ---
TV - Color
300 watts ---
Common Tools

Resistive Load

Reactive Load
Air Compressor (1hp)
1,500 watts 4,500 watts
Cultivator
700 watts 1,400 watts
Freezer
800 watts 2,100 watts
Furnace Fan
875-1,200 watts 2,200 watts
Garage Door Opener (1/4 hp)
550 watts 1,000 watts
Grinder, Bench
1,400 watts 2,450 watts
Heater, Kerosene (90,000 BTU)
500 watts 725 watts
Sump Pump (1/3 hp)
800 watts 1,250 watts
Well Pump (1/2 hp)
150 watts 1,950 watts
Saw, Band
1,100 watts 1,350 watts
Table Saw (10 inch)
1,750 watts 4,250 watts

the chart is on http://www.askthebuilder.com/B178_Common_Wattage_of_Household_Appliances.shtml



ElectricMan1 says:

Jun 20, 2009. 5:29 PM [REPLY](#)

How long does it take to recharge the battery, and how many amp hours does the battery hold?



tk1314 says:

Jun 20, 2009. 9:51 PM [REPLY](#)

I've never discharged it all the way. It was 13.3 volts when I bought it new and the lowest it's gone down has been 12.5 volts. It takes a whole day of sunshine to charge it back to 13.3 or above. The regulator cuts off charging at 14.2 volts but I've never seen it get that high. The battery is 80 amp hours.



abadfart says:

Jun 1, 2009. 7:14 PM [REPLY](#)

very nice you could increase the battery life by hooking up two battery's in line



iPodGuy says:

May 18, 2009. 8:39 AM [REPLY](#)

I like this. Also, big thanks for adding a parts list w/ serial numbers!



tk1314 says:

May 18, 2009. 12:39 PM [REPLY](#)

Thanks, I don't know if the Kragen part numbers are still correct since they were recently purchased by O'Reilly Auto, but they still may help.



bsouth says:

May 13, 2009. 3:53 PM [REPLY](#)

How many hours did it run the lights, radios and camera battery chargers?



tk1314 says:

It would run them all night and have plenty of power left before the sun came up to re-charge the battery. I used LED Christmas lights that only used a few watts and I don't think the battery charger used too much power.

May 14, 2009. 9:11 AM [REPLY](#)



bsouth says:

Awesome, thanks for the info. I am looking for something to power my laptop, a box fan and small refrigerator. Would I have to modify yours much in order to power all that?

May 14, 2009. 1:25 PM [REPLY](#)



tk1314 says:

I think it could handle all that. My friend has a 12 volt refrigerator/freezer in his FJ Cruiser running off a deep cycle battery. It doesn't seem to use too much power. He has a dual battery system, one deep cycle for accessories and one regular battery for starting the car. The laptop and fan shouldn't drain the battery either. If you can get them all to run off of 12 volts instead of using the inverter, you would probably use less power.

May 14, 2009. 3:12 PM [REPLY](#)



hooperstack says:

great write up, I'm planning a similar set up for this year. You mentioned that one panel barely kept the battery full; any plans to up the panel to two or more this year? http://www.costco.com/Browse/Product.aspx?Prodid=11298162&search=solar&Mo=21&cm_re=1_en-_-Top_Left_Nav-_-Top_search&lang=en-US&Nr=P_CatalogName:BC&Sp=S&N=5000043&whse=BC&Dx=mode+matchallpartial&Ntk=Text_Search&Dr=P_CatalogName:BC&Ne=4000000&D=solar&N

solarpaneltalk says:

great idea. hope you enjoyed burning man. :) your tutorial would be greatly appreciated on www.solarpaneltalk.com and lots of others would find it useful as well.

Jan 29, 2009. 7:51 PM [REPLY](#)



rocketman221 says:

those wires look way to light weight for an 800 watt inverter that thing can pull over 65 amps from the battery continuously at full power.

Oct 3, 2008. 6:20 PM [REPLY](#)



tk1314 says:

Those are the wires that came with the inverter. The two 10 gauge wires go from the battery to the inverter, the other 16 gauge wires go to the 12 volt cigarette lighter outlet, the volt meter and the solar panel (through the voltage regulator).

Oct 3, 2008. 8:30 PM [REPLY](#)



stratoHELLsing says:

oh yeah for the HHO generator. i'm working on it wight nao. so i think i should change it nao

Aug 23, 2008. 7:02 AM [REPLY](#)



pujo says:

how much does the sunforce solarcell?
Tks b4.

Aug 18, 2008. 12:13 AM [REPLY](#)



tk1314 says:

It puts out 15 watts.

Aug 19, 2008. 7:24 AM [REPLY](#)



Zlwilly says:

Nicely done! Interestingly enough, I'm halfway through a write-up (I started two days ago) of my own project that is very similar to this. Great minds think alike!

Cheers!

Jul 18, 2008. 2:32 PM [REPLY](#)



campingfreak says:

i could use this for hho generation

Jul 18, 2008. 10:21 AM [REPLY](#)



Mr. Chicken says:

This looks like a red head step child of my Instructable. <http://www.instructables.com/id/Solar-Power-System/>

But, adding the multimeter and cigarette outlet are nice features.

Jul 17, 2008. 8:34 PM [REPLY](#)



tk1314 says:

Thanks Mr. Chicken...

Jul 18, 2008. 7:20 AM [REPLY](#)