



## Solar Powered Trike

by [dpearce1](#) on May 7, 2008

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## Intro: Solar Powered Trike

Travel for free with the power of the sun!

How to build a Solar Powered Trike

The purpose of this project is to build a vehicle that:

-Provides free, 'green' transportation for short distances (<10 miles), thus it must never plug into a wall socket, or emit any pollutants.

-Charges while at work

-Is cheap, simple, and low maintenance.

-Draws attention to the practical application of green energies, and promotes Fossil Fuel alternatives.

-Reduces excess automobile wear and pollution from cold driving / short, in town trips.

-This is a project for Dr. Reza Toosi's 'Energy and the Environment, a global perspective' class at California State University, Long Beach. We look at the sources, technologies, and impacts of energy on our environment.

Link to other class projects, some of Dr. Toosi's ENG-302i lectures, and other interesting videos.

<http://www.csulb.edu/~rtoossi/engr302i>

Short video:

<http://www.youtube.com/watch?v=sliJp4aKDHM>



## Step 1: Acquire a vehicle

Find a lightweight vehicle with low rolling resistance. A two, three or four wheeler will do, depending on how much work you want to do, but the concept is the same. Four wheeled vehicles may be regulated under different laws. Of course the best vehicle is one that you already have, if you happen to have a three or four wheeled pedal powered vehicle. In the interest of simplicity, a three wheeler was chosen for my project. This Schwinn Meridian Trike was \$250 new, readily available locally, and the basket provides a convenient location for batteries and solar panels with minimal fabrication.

The first thing to be done was completely disassemble the trike and paint it a bright 'fern' green. This step may not be necessary, but I felt that it was in my case since this is a school project that is supposed to grab your attention, and let you know that it is a true green vehicle. It is a vehicle that does not use gas, and does not plug in to a wall socket, which would defeat the purpose since electricity from the grid likely comes from a non-renewable energy source. It runs on pure solar energy.

Before painting the frame, I used this stage as an opportunity to reinforce the frame where the Batteries were going to mount. Lead acid Batteries are heavy, but they are relatively cheap.

One tube was welded in to distribute the load over 4 points on the axle carrier instead of two.

It also ties the rear sub-frame together, which makes the tube the load bearer rather than the weld beads, which may eventually fatigue and fail.

High pressure (65psi) tubes were equipped and the Trike was meticulously assembled in order to minimize rolling resistance.

While the welder was out a battery mount was fabricated, and bolts welded to the basket to be used as battery mount studs making removal easier. 12 volt LED's were put in the reflectors and wired as brake lights through the brake levers that cut the motor when you brake. They are wired through only one of the three 12 volt batteries.





## Step 2: Drivetrain / Running Gear

The drivetrain consists of your electrical system and electric motor. The Electric Hub Motor kit was purchased from ([www.Goldenmotor.com](http://www.Goldenmotor.com)), costs \$259 and consists of a front wheel with an integrated brushless 36 Volt electric motor as part of the hub, along with the necessary components such as a twist grip throttle, brake levers that are wired to cut power to the motor, battery level indicator, and the motor-speed controller, 36V battery charger and a battery pack connector. Not sure if the kit is still available but they still sell everything needed. The customer service is basically an owners forum, which did prove useful in diagnosing a bent pin in on of the electrical connections.

The motor install requires a simple front wheel change, and routing the wires back to the controller which will be mounted under the rear basket. Slack must be left in the wires around the steering tube / fork juncture so they will not be in tension even at the maximum steering angle. The grips and brake levers are replaced with the new ones, and their wires also routed back to the controller.

Choosing the right battery is a compromise between price, weight, and range vs. charge time. Lots of money can be spent on batteries, but since I was on a budget, I had to take what I could get. I took a multi-meter to a local industrial liquidation warehouse and found 3 batteries for \$20 each, and have worked good so far. (3) -12 volt, 20 Amp/hour batteries are run in series to make 36 volts. 20A/hr provides long range, with the trade-off being a longer charge time. A battery cut off switch was added so the rider does not have to unplug the battery pack to shut the electrical system off.





### Step 3: Charging System / Solar Panels

The solar panels need to be as large as possible to maximize the available wattage, but they also must provide the right voltage. Solar panels produce a range of voltages, which peak and drop, but the nominal voltage of the panel is what matters for selecting the right charge controller. I purchased 3 Q-cell brand mono-crystalline solar panels that I found on Ebay for \$110 each. They produce 21.8 Volts peak and 17 volts nominal, at about 1.2 amps nominal. With the 3 panels wired in series, this makes around 66 volts peak and 51 Volts nominal, which is plenty over the 42V needed to charge the batteries. a basket was added in the front to accommodate the third solar panel.

From Ohm's law Power (P) is equal to voltage (V) times current (I), ( $P=V*I$ ), so the panels produce  $((17\text{Volts}*3)*1.2\text{ Amps})= 61.2\text{ Watts}$  nominal, and over 80 Watts peak. A Maximum power point tracking (MPPT) charge controller tricks the panels by hiding the battery load from them and allowing them to operate at their peak power when conditions allow.

A charge controller was purchased from [www.solarsellers.com](http://www.solarsellers.com), where Mr John Drake was very helpful in assisting me and ordering a custom charge controller for my application. The controller basically takes the varying voltage / amperage input from the solar panel array and converts it into a constant voltage (42V) or current, to optimize charging the 36 volt source. Maximum input voltage to the controller is 100 Volts, so the peak of 66 Volts will not harm the controller. The controller is a Maximum power point tracking (MPPT) type, which charges faster as more sun is available, rather than at a set rate as most controllers do.

In order to charge the batteries in a practical amount of time, they need to charge about as fast or faster than the provided 110V wall socket to 36V charger/convertor, which charges at a rate of 1.5 amps. At 1.2 amps the panels do not quite achieve this, but with the MPPT Controller it takes right around the same amount of time for a charge. The bike is stored in a location that gets a few hours of sun every day (where I live the sun is pretty reliable), which keeps the batteries topped off and ready to go whenever needed.

And for those of you wondering, the electric motor draws up to 20 Amps, and the 1.2+ Amps added by the solar panels do not make it go faster, since the 1.2 amps are routed through the controller and only serve to charge the batteries. The motor speed controller does not see this extra Amperage, and outputs just the same as without panels, except the batteries will stay charged slightly longer, (extending your range) with the net drain being  $(20-1.2)A= 18.8A$  rather than 20A without the panels. The motor only pulls 20 Amps when taking off though, so the draw is much less when at cruising speed. The motor speed controller cuts the voltage off at 32V to keep the batteries from going below 10.5V, but I monitor the voltage and try not to discharge the batteries below 36V.



#### Step 4: Solar panel mounts

Now you have to figure out how you're going to mount the panels on your vehicle. Hinges were welded on the baskets to mount the panels and allow them to tilt for access to the basket, with rubber hold-downs on the other side to keep them from opening while riding.

Once your wires are all routed and zip tied, your batteries and panels held securely down, double check every thing and you are ready to go.

#### Performance:

This Solar Powered Trike does about 15-18 mph depending on the weight of the rider. The furthest I have gone is a little over 10 miles with small hills and little pedaling, and the battery meter still read full (green) at the end of the trips.

At ten miles, the voltage drops to around 36V, safely above the controller's cut-off voltage. If the batteries are kept from discharging too low the panels take about the same amount of time as the plug in charger, since both the plug in charger and the solar charge controller charge with constant wattage. With constant wattage charging, Power, (P), and Ohm's law again ( $P=V*I$ ), the charging current goes down as the voltage goes up, as the batteries near their fully charged state.

What this means is if you keep the voltage from dropping too low, the panels provide adequate current to match the charging speed of the plug-in charger, but if it drops below a certain point the panels are slower at charging. This is easily avoided since my typical trip range is around 3 miles or less, semi daily at most, so low voltage not an issue, but on longer trips I bring the multi-meter.

#### Cost Breakdown:

The Trike cost a little over \$910 to build

Schwinn Meridian Trike  
\$250.00 [www.K-Mart.com](http://www.K-Mart.com)

Q-cell Mono-crystalline Solar panels:  
\$330.00 [www.Ebay.com](http://www.Ebay.com)....

Charge Controller:  
\$ 95.00 [www.solarseller.com](http://www.solarseller.com)

Electric Hub Motor Kit  
\$260.00 [www.goldenmotor.com](http://www.goldenmotor.com)- also sells regenerative braking motor speed controllers

Batteries  
\$ 60.00 Earl's industrial liquidation, Hawthorne, CA

High pressure tubes \$ 15.00 Any bicycle store

**Total \$910.00**

Other solar trikes / information

<http://www.solartrike.com>

<http://www.instructables.com/id/Solar-Powered-Trike/>

[http://www.therapyproducts.com/products\\_sunnybike.html](http://www.therapyproducts.com/products_sunnybike.html)

<http://www.csulb.edu/~rtoossi/engr302i>

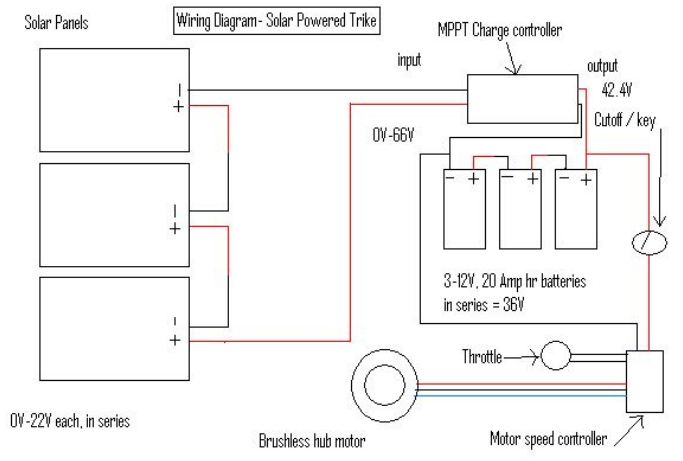
[http://www.kyosemi.co.jp/product/pro\\_ene\\_sun\\_e.html](http://www.kyosemi.co.jp/product/pro_ene_sun_e.html)

<http://www.nanosolar.com/>

The last picture is a scan of a page straight out of Dr Reza Toossi's book, Energy and the Environment, Sources, Technologies, and Impacts.

Book information / purchase

<http://www.vervepublishers.com/>



<http://www.instructables.com/id/Solar-Powered-Trike/>

## A Blueprint for a Sustainable Future

Throughout the ages civilizations have risen and crumbled, many times as a result of their own mistakes and those of their forefathers. Many of these mistakes were, of course, inevitable, because they lacked the necessary technological know-how and their immediate survival depended on the unsustainable exploitation of their natural resources. In addition, the population was relatively small and natural resources were abundant, so they moved to more fertile lands and friendlier environments and set up new centers of civilization. Because of the availability of a vast amount of resources and the relatively small population, the ecology remained to a great extent sustainable. It has only been in the last century that accelerated growth in technological innovation, along with exponential growth in population, the rapid pace of economic expansion, and a lack of respect for the environment, have brought about conditions that could put us at risk for ecological disaster.

In an excellent book called *Natural Capitalism*<sup>19</sup>, published by the Rocky Mountain Institute (a non-profit organization

### Sustainability: The Facts

#### Did You Know That...?

- To travel one kilometer by bike requires approximately 5-15 watt-hours (Wh) of energy, while the same distance requires 15-20 Wh by foot, 30-40 Wh by train, and over 400 Wh in a singly occupied car.<sup>1</sup> Air-, water-, and food-borne diseases are spreading. Almost one half of the planet's tropical forests have been destroyed or severely degraded.
- Air-, water-, and food-borne diseases are spreading. Almost one half of the planet's tropical forests have been destroyed or severely degraded.
- Most of our medicines are extracted from plants, many of which are now endangered.
- Ninety percent of all large fish have disappeared in the past half century.
- 70% of all people do not have access to fresh water and 20,000 die each day as a result of contaminated water.
- Because of the climate change, it is expected that over one million species will be lost in the coming 50 years.
- At the current rate, world population is increasing by 80 million people every year.
- Since the mid-twentieth century, the population has doubled, while at the same time grain consumption has tripled, seafood harvest has increased four times, paper use has increased six-fold, and consumption of fossil fuels has increased by a factor of four.
- 1% of the world's population is consuming some 80% of its natural resources.
- The world's 500 largest corporations control 25% of the world's economic output.

<sup>1</sup>Bouwen, M. E. An environmental assessment of the bicycle and other transport systems, University of Groningen, Netherlands, 2005. ([http://www.sabonem.nl/nl/individueel/2006/pdf/bouwen\\_m\\_e.pdf](http://www.sabonem.nl/nl/individueel/2006/pdf/bouwen_m_e.pdf))

<sup>19</sup>Hawkins, Paul, Lovins, A. and Lovins, L. H., "Natural Capitalism: Creating the Next Industrial Revolution," Rocky Mountain Institute, 1993.

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## File Downloads



Untitled Document.wps (17 KB)

[NOTE: When saving, if you see .tmp as the file ext, rename it to 'Untitled Document.wps']

## Related Instructables



**Uninterrupted Solar Power (mostly)** (video)  
by ColorBomb



**Living a Greener More Energy Efficient Life** by tashiandmo



**The Electric Sailboat** (video)  
by Disc Dog



**How to Make a Simple Cardboard Solar Oven** by solaroven



**A Home-Built Biomass Gasifier for Producing Wood Gas** by mdavis19



**Fusion Jr. Home Energy Reactor**  
by TheHomebrewGuru



## Comments

50 comments [Add Comment](#)

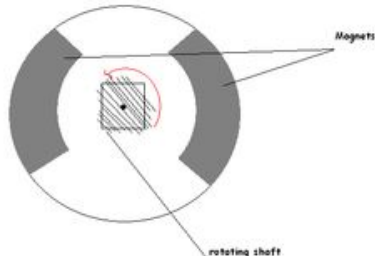
[view all 331 comments](#)



**fahadshihab** says:

Jul 1, 2012. 3:33 AM [REPLY](#)

add a generator(as in the diagram)to the wheels of the trike.let the no.of turns in the coil be >300 so it can produce enough energy while driving the bike.



**jolshefsky** says:

May 10, 2008. 11:59 AM [REPLY](#)

It's a cute concept but rather expensive for not much benefit. I figure your panels total about 30 watts of power, and you have 720 watt-hours of batteries. Assuming perfect efficiency in your charging circuit, that's 24 hours of direct sun. You can count on a sunny day providing about 5 direct-sun-hours (that is, in 8 hours of sunlight, you get only a little while at noon and a whole lot at lower and lower angles so about 5 hours.) Thus, dead batteries would take about 5 days to recharge completely. You'd be better off having about half the battery capacity and only using half of that â?? in other words, about 360 watt-hours of battery capacity and only use up to about 150 watt-hours a day (which is what your panels can charge) which keeps the batteries above 50% charge so they'll last much longer.



**lloydrc** says:

May 7, 2012. 1:00 PM [REPLY](#)

He stated that he only partly discharges the batteries.



**lloydrc** says:

May 7, 2012. 12:12 PM [REPLY](#)

I really like your project: it is well-executed and well-explained. The enhancement that I would suggest is some means to prop up the solar panels to a more efficient angle, at least when the bike is parked.

Unfortunately, the easiest thing to find in the United States is someone who says you cannot do something, and that appears to be doubly so on this web site.

People - look at the top of this page. It says "Share What You Make", not "Only Present The Completely Perfect In Every Regard" or "Criticize What Other People Made".

I am by no means a flaming greenie, and dpearce1 clearly put a lot of thought, time and effort into this project, and it was well designed and executed, IMNSHO, so it deserves kudos and not criticism.



**solarbipolar** says:

Sep 24, 2009. 1:40 AM [REPLY](#)

All you people need to realize that those solar panels could take as much as a week or longer to recharge the batteries. A good example is a cordless rechargeable lawn mower. They use an almost identical setup - 24v motor and two 12v batteries. One mower manufacturer sells a solar panel as an option and tell you up front that it will take at least 3 days if in full sun. But you can't keep the panels always pointed at the sun without a tracker. Most of the cheaper solar panels are nothing but trickle chargers that just keep batteries topped off like on RVs or other vehicles that have a lot of accessories that drain a battery even if not being used. And no, you can't ride down the road perpetually with sun power and no batteries. It's just common sense. There are experimental solar cars that have competitions, but they have huge arrays of solar cells and use flat terrain and hug the ground and are streamlined.



**lloydrc** says:

May 7, 2012. 11:48 AM [REPLY](#)

We don't need to "realize" any such thing. He presented the math and the limitations of the system, and his numbers add up. He's not deep charging the battery, but rather topping it off.



**OppositePoles** says:

Mar 7, 2012. 9:16 PM [REPLY](#)

I think your project is amazing!  
Don't pay attention to morons who only have the imagination to criticize your work instead of creating something on their own.  
Thanks for sharing your work! :D



**kentuski** says:

Feb 11, 2012. 2:04 AM [REPLY](#)

why you put your solar cell in front of the bike, its hard to drive it, instead build a roof and put all your cell on the top of it , and it is also safe while driving the bike,by the way its a good project,



**adsandy** says:

Aug 11, 2010. 7:35 AM [REPLY](#)

Wouldn't it be easier to just pedal?



**Climber333** says:

Unless you're disabled, which adds a whole new dimension, doesn't it? Thanks again people for thinking outside your own tiny box.

Aug 10, 2011. 9:51 PM [REPLY](#)



**adsandy** says:

Well then, how does the disabled person get on and off? What if it malfunctions during the ride? How is a disabled person to construct one?

Aug 11, 2011. 6:54 AM [REPLY](#)



**Climber333** says:

Would you like to know the range of disabilities a person can have or are you asking me personally...perhaps you're offering to help. A one-handed person could do all those things...one-legged...an auto-immune disease...Chronic Fatigue Syndrome...Fibromyalgia....Lyme disease. Perhaps a 20 second period of thinking before you ask.

Aug 11, 2011. 1:12 PM [REPLY](#)



**adsandy** says:

Most of the people with those diseases could peddle. Those with severe pain are most likely already medicated. Someone with that severe of pain would be smart to choose something professionally made rather than this homemade thing. They would need something reliable. I honestly believe that this is an impractical vehicle for disabled people. I'd appreciate it if you could offer criticism without insulting me.

Aug 11, 2011. 3:50 PM [REPLY](#)



**drbill** says:

Hey this would be good for me as I have arthritis ! I am not "Medicated" as I do not like the side effects. I can peddle for some distance and would not mind having something like this. A Motorized Chair to me just makes me more sedentary and prone to worse diseases, like diabetes. Being a couch potato is not my idea of having a life and this trike would make my life worth living. Thank You dpearce1 for posting this l'ble.

Jan 12, 2012. 4:34 PM [REPLY](#)



**Climber333** says:

And I'd appreciate it if you'd try to give disabled people the credibility they deserve. Sarcasm toward your questions was well deserved, given the lack of critical thinking necessary to make them possible. Where are you getting your information about what people with the diseases I mentioned are capable of? Are you inventing it? I am on Trazadone and Morphine and it doesn't manage my pain....if I push too hard, I end up setting myself back weeks or months or going into a full relapse, so pedaling is not always possible . My history is one of being an Olympic caliber athlete with a range of skills from building computers to being a certified arborist. There's little I cannot do, given the tools and time and I can assure you, I make things better than you can buy (if you have the money to buy off the shelf). You can't fit all disabled people into the same box, so just decide if it's practical for yourself and let others decide for themselves.

Aug 14, 2011. 2:45 PM [REPLY](#)



**sgomes3** says:

Excellent instructables. Thank you for sharing.

Sep 10, 2011. 11:14 PM [REPLY](#)



**jimbo13** says:

my calculator says it costs \$ 1,010

Sep 3, 2011. 9:50 AM [REPLY](#)



**knexfan100** says:

one of my old bikes had a battery motor but, to save money I replaced the battery with a rechargeable one. the way it was powered: I will only say I turned the back tire into a generator and waterproofed the whole thing and had those parts protected in case of a crash.

May 16, 2010. 2:01 PM [REPLY](#)



**Climber333** says:

Excellent...That's what I was thinking too.

Aug 10, 2011. 9:52 PM [REPLY](#)



**solarbipolar** says:

(removed by author or community request)

Sep 23, 2010. 1:31 AM



**Climber333** says:

You could add a simple electro-magnetic charging system to pedal power the batteries if the sun is not sufficient. I wonder why people think so narrowly on any given subject....if you built it as a recumbent, you could even have a arm pedal option for those who are disabled and not able to use their legs. In Colorado, all things are "optimally pointed" at the sun nearly year round !anyway, why not make the most of it?!?

Aug 10, 2011. 9:50 PM [REPLY](#)



**jjroper** says:

In the light of all these comments, it looks to me that getting rid of the weight of the motor and the panels would make it much easier to just pedal this thing!

Sep 28, 2009. 6:36 AM [REPLY](#)



**Climber333** says:

Unless you're disabled, which adds a whole new dimension, doesn't it? Thanks for thinking outside your box.

Aug 10, 2011. 9:41 PM [REPLY](#)



**mtdna** says:

But that's not much fun, is it?

Dec 13, 2009. 12:00 PM [REPLY](#)

But seriously, I think it is worth doing this kind of thing as a kind of proof of principle. No, it's not ideal, but it's a step forward.

My response based on my own experience is this: I had no idea roads are so tilted!! I found myself pretty uncomfortable riding this on roads because I always felt like I was tipping over. My engineer friend told me there is a reason for this - virtually all roads are high in the middle to make sure rain runs off.

I really didn't like the tilt of the trike on roads, so I've rebuilt as a bicycle. Also, I found the solar panels cumbersome to ride with, so I built a little station with the panels at home. But, in the end, the principle is the same.



**lame\_penguin** says:

Put the solar cells in the wheels, then you can just lay it in the sun to charge. Probably wouldn't want the front tire a solid sheet of cells, maybe only the center, but the back wheel can be all cells, like the solid back wheel on those I've seen in the Olympic games. Plus you can get the added benefit of a more aerodynamic wheel, as the racing bicycle does.

Jan 30, 2011. 4:16 PM [REPLY](#)

lp



**rusheggie** says:

sorry if something like this has already been said - but i am surprised that a solar bike isn't on here with the panel(s) above the rider's head on an awning. like on some quadricycles ("surrey bikes"). it would provide shade and more solar energy... maybe more drag though...

May 22, 2011. 11:27 PM [REPLY](#)



**mblackwood** says:

I like the idea.

Jul 2, 2011. 10:47 AM [REPLY](#)

In santa cruz, there's a guy riding around on a scooter, with a similar set-up- but mostly for holding surfboards, and nothing related to solar. I think that it could easily be adapted to do just exactly what you are describing.



**praveenjun07** says:

hi this is r.praveen i need some materials for this Fabrication of solar operated tricycle.

Jan 26, 2011. 6:47 AM [REPLY](#)



**wilmadan** says:

the idea here is to use the power of the sun to power the bike,if we could make a much better design ,well we will all benefited....thanks for the idea mr. dpearce 1...

Dec 6, 2010. 5:39 AM [REPLY](#)



**Johenix** says:

Thanks for alerting me to the Schwinn Meridian. Cool even without solar power. As an alternative I might look at the old 80cc 0.01Hp "Chicken Power" two cycle motor from the 1970-80's. What really bugs me is the power wheel uses 36V (rather than 12V) and you must use multiple 12V panels and batteries (adding excessive weight). Does anyone make lower voltage wheel motors or higher voltage solar panels?

Feb 28, 2010. 1:42 PM [REPLY](#)



**lukeyj15** says:

the only problem is that to get the same amount of watts (energy) at a lower voltage, current (amps) increases, so you need 3 12v batteries in parallel instead of series. You also need wire that is 3 times thicker.

Sep 19, 2010. 5:27 AM [REPLY](#)



**tauruslatino** says:

just a question...how long it will take to recharge the bateries?

Aug 1, 2010. 10:06 AM [REPLY](#)



**Smithhound** says:

Solar and Wind are still evolving. If owning and operating a car are getting too much or you simply cannot afford it, I recommend finding a decent bike and putting an electric motor on it. In November it'll be 2 years no car for me. In San Diego. 9 mi commute each way. 48v and 58 tooth front 11 rear and I'm pedaling @ 35mph. It's not a motorcycle. It's an assist that makes this alternative to owning a car more viable. I've traveled 35 miles on a 20 amp hour battery. If your ready to try this I can help you. 20 is plenty.

Jun 21, 2010. 11:03 AM [REPLY](#)



**cricket3\_2000** says:

I thought the spokes and wheel of the bikes were made out of sturdy aluminum. Are they?

Apr 25, 2010. 8:27 AM [REPLY](#)



**static** says:

Good instructable. Too bad so many of the comments got strange though.

Mar 1, 2010. 1:25 AM [REPLY](#)



**l8nite** says:

LOL some of the comments here remind me of my brother, after draining his truck battery on a camping trip by running his small refrigerator and radio off an inverter, on his next trip he plugged a battery charger into the inverter and hooked it up to the battery.... It would have been brilliant IF it had worked....

Dec 13, 2009. 10:02 PM [REPLY](#)

I picked up a pretty cool trike Ive been contemplating powering (everyone says it needs a motor!) This may be the ticket but Id like a little more speed. Here's a pic of my grocery getter



**Timothy Wooi** says:

This trike is great. Reminds me of my 1st unit built in 2001 and was destroyed in 2005 during a flood that hit my place. I use 2 units of 400 watts hub motors with flexibility of turning any on at a time. Cheers, timothywooi@gmail.com

Feb 28, 2010. 11:21 PM [REPLY](#)



**txkidd76567** says:

what kinda trike is this

Jan 1, 2010. 11:04 PM [REPLY](#)



**l8nite** says:

Its a personal activity vehicle built by Worksmancycles [http://worksmancycles.com/shopsite\\_sc/store/html/pav3.html](http://worksmancycles.com/shopsite_sc/store/html/pav3.html)

Jan 1, 2010. 11:19 PM [REPLY](#)

The one I have is the stretched version, it's a great ride if you have back problems. My only complaint is that with the 3spd version the gearing is either to low or to high



**txkidd76567** says:

thats kool thank u for theinfo i do have back problems an hip so im unable to ride a bike like most people

Jan 2, 2010. 8:46 AM [REPLY](#)



**cantthinkof bettername** says:

This is my tricycle. So far the most I have ridden it in one trip is 36.6 miles, and I averaged 16 mph (without a ferring). Could solar panels be mounted on a tadpole trike like the Whizwheelz Terratrike?

Aug 4, 2008. 7:31 PM [REPLY](#)



**Johenix** says:

On spelling the word is 'FAIRING' but you probably never read it, just heard it in conversation. (My late aunt called her shoes 'Gun Boats' (a miss speaking of 'Gun Boots' (hunting boots) or 'Gum Boots' (rubber boots) and the plant 'Burr Dock' became 'Bird Ock'.)

Feb 28, 2010. 2:03 PM [REPLY](#)

If I wanted to add solar panels to your trike I would attach the upper end of the panel to the top of your seat and slanting back over the rear wheel, with supports attached to the rear axel.

One problem with your trike: NO CARGO CAPACITY!



**dpearce1** says:

Theres nothing different except the way you will mount your batteries and panels, also it will run a hub motor on the rear wheel. You will have to make mounts for these things, they will need to be lightweight and strong. This type of trike has the advantages of being more stable, and it has more area available for solar panels if they are mounted overhead. The frame may need reinforcement.

Aug 5, 2008. 8:23 AM [REPLY](#)



**ronaldino** says:

I'm having trouble with a couple things. 1) Finding Panels like the ones in the demo and 2) Understanding the correlation between Panel Charge output and Battery Voltage/Amp What should I look for when it comes to batteries and Solar Panels. Is it necessary to have 12V batteries with 20A/hour outputs?

Jul 21, 2008. 12:03 AM [REPLY](#)



**dpearce1** says:

Jul 21, 2008. 8:18 AM **REPLY**

Do a search on the goldenmotor.com forum, you can find out anything you need from people who are using this hub motor setup. The 12 volt batteries are necessary to achieve the 36v needed to power the motor, but the capacity rating will determine your range. Some people on the forum use 10 or 12 A/hr batteries, they are lighter and cheaper but will not have as long a range as 20A/hr.

The Panels are made by a brand called Q-cell, I got them off Ebay, but in general, you should not have to pay more than 3 or 4 dollars per watt.

As for panel / battery voltage / amperage, the requirement of your panels is determined by your battery voltage. If you have a 36v battery, (or 3 - 12v batteries in series), you need a solar panel (or panels) that will be able to charge these batteries using the nominal voltage rating of the panels. For example:

A 12 volt battery charges at around 13.8V, with 12v being the nominal voltage. Now with 3 of these in series, gives you 36 volts nominal and around 42.4 volts needed to charge the battery/batteries. This means you need a solar panel or solar panels that will give you **at least** 42.4v nominal. A little higher voltage output from the panels is desired since the nominal rating is given for high noon on a sunny day, and you don't want your batteries charging from only 12:00pm to 12:01pm. So a panel with a little higher voltage will be fine, since it will give the needed output voltage to charge the batteries throughout the day rather than only during a short time when the solar output is greatest. It is the solar charge converters job to regulate this varying voltage coming from the panels, so even if your panels are making up to 100v it will still charge your batteries at the proper charging voltage.

Check out the forum, if you search around on there you can find answers to any questions you might have regarding the electric motor kit / battery setups.

Thanks- David

golden motor forum



**Timothy Wooi** says:

Feb 28, 2010. 12:05 PM **REPLY**

Check out facebook [timothywooi@gmail.com](http://timothywooi@gmail.com) or go to m hub pages on Homebuilt electric assisted tricycle for my dual power electric assisted tricycle & a homebuilt Timmy Green Delta Recumbent with 0 footprints to address issues of Global Warming.

### **My dual power assisted Electric tricycle from upgrown bicycle and household parts**

This is my lean dual powered tricycle, made of parts available at home right from used computer chair to a salvaged kid's outgrown bicycle.

It is designed with a choice of 3 power modes, human, combination of human & Electric power and full Electrical, all can be individually selected to suit personal preference. 1. Manual mode: Pedal cycling for muscles toning up & burning of waste colestrol! (2 motors switched off). 2. Electric assisted mode: For light exer-cycling & climbing hills or low speed cruising (1 motor switch on ). 3. Full Electric power for high speed riding at 24 km/hr! (both motors switched on). This Tricycle is equipped with Amp meter, Volt meter and protected by a resettable 15Amp NFB(no fuse breaker that also acts as a switch). The Amp & Volt meter shows current battery condition and available power.

A solar panel can be built into the fairing to charge the 3 units 12 volts,7AH Computer UPS gel battery! while parked in the daylight as an upgrade modification. Sorry Im unable to attached the free plans & detail progress photos as it was all destroyed through a flood that hit my place in 2006!

Cheers,.

[timothywooi@gmail.com](mailto:timothywooi@gmail.com)



**ronaldino** says:

Jul 21, 2008. 1:08 PM **REPLY**

I really want to solarize my trike for Burningman this year. Last year I modified the trike to fit two people by building a wooden box with a padded top and mounted it to the back. I also added a shadey rooftop with pvc & canvas but they didn't hold up to the wind at all. My thought for this year is to modify it with solar panels as the rooftop with a frame built out of angle iron from old bedframes that attaches to the frame of the bike. The frame will be tall enough that two people can comfortably sit on the trike with a solar roof that acts as shade while charging up the battery pack that will most likely be positioned inside the Box/passenger seat. Is this a crazy idea? The winds out there are intense so I think I'd have to be able to take the panels off the top to prevent the whole thing from tipping over and remove them at night too since they won't be charging the batteries. I really want to make this idea come to life and I could use a good deal of advice from the forum. I've included pictures of the two of us on the trike and a picture of the trike with it's canvas shade "roof top" Any opinions rear vs. front? What are your thoughts on the added weight load of an extra person? Anyone's input on this idea would be very much appreciated... Thanks





**bstevens** says:

Feb 28, 2010. 10:09 AM [REPLY](#)

Having been to BRC seven times I think relying on something over your head is kinda scary...

Ideally you could setup a solar charging station at camp, and have two sets of batteries. Make them easily come out and connect to the bike and the charging station. Then you'd have more range at night :) Don't forget to include enough power to light it up!

Now I want one.

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**awang8** says:

Jan 20, 2009. 10:56 PM [REPLY](#)

you don't need to take the panels off at night. All you need id a prodection diode to stopthe batteries returning the power.

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**drbill** says:

Jan 12, 2012. 4:44 PM [REPLY](#)

Or a cut off switch~

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[view all 331 comments](#)