

Free Power Blueprint



Your Energy Freedom Starts Today

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DISCLAIMER

Please take care when working on any of the projects outlined within this manual. By reading this manual you agree to that you are responsible for your own actions. Free Power Blueprint will not be held accountable for any loss or injuries.

Introduction

Since the world is gradually slipping into a energy crisis, it is of utmost importance for us to reduce our dependency on the sources of energy which are non-renewable. Clean Renewable sources of energy are those sources which are recurring meaning when you produce energy you don't exhaust any resources. Several examples of renewable energy are solar energy, hydro or water energy, and wind energy.

These sources of energy are freely available in our environment, and are often overlooked and unused. We need to take advantage of these sources of energy, thus we will make a step towards energy independence.

Solar energy i.e the Energy from the sun is the most abundant energy available on our planet. We should take advantage of this energy. By implementing a system which uses the solar energy to power our homes, we will reduce our power bills significantly and also contribute to a greener planet.

Water or Hydro Energy is an fairly effective source of clean renewable energy, and it is mostly produced on a large scale, meaning a lot of investment and time is put into building systems which will produce energy from

water. The downside of hydro energy sources is that it is implausible for an average person to implement it in his home.

Wind Energy Sources have existed for more than 2000 years, they have been used for tasks such as pumping water in the past, as the world has been industrialized, wind has become a common source for generating energy. Wind Turbines can be easily made and implemented even in individual residences, and can help relieve the power bill, by powering the more conventional power sources.

In this book you will learn how to construct another alternative source of energy, which has not reached the mainstream media yet. But with time this energy will be widely accepted and used.

1. How to Reduce Energy Consumption

Even right now without a generator, solar panel, or wind turbine you can conserve energy. Before you start using renewable energy here we present some tips that will help you conserve energy now, and produce more in the future.

- Change your regular light bulb with LED light bulbs (Light-emitting diode bulb - *figure 1*). LED light bulb is 12 times as energy efficient as a tungsten bulb, and lasts for 100,000 hours. Also if you cannot find in your area LED light bulbs, you can use fluorescent light bulbs which are also more efficient compared to the regular light bulbs. Also don't forget to turn of the light when it's not needed.



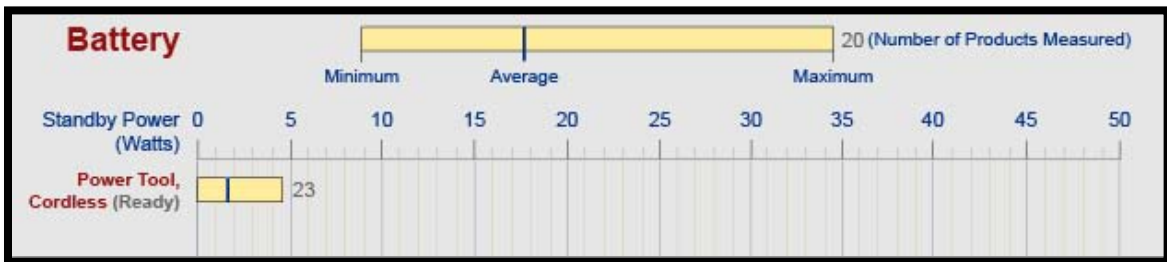
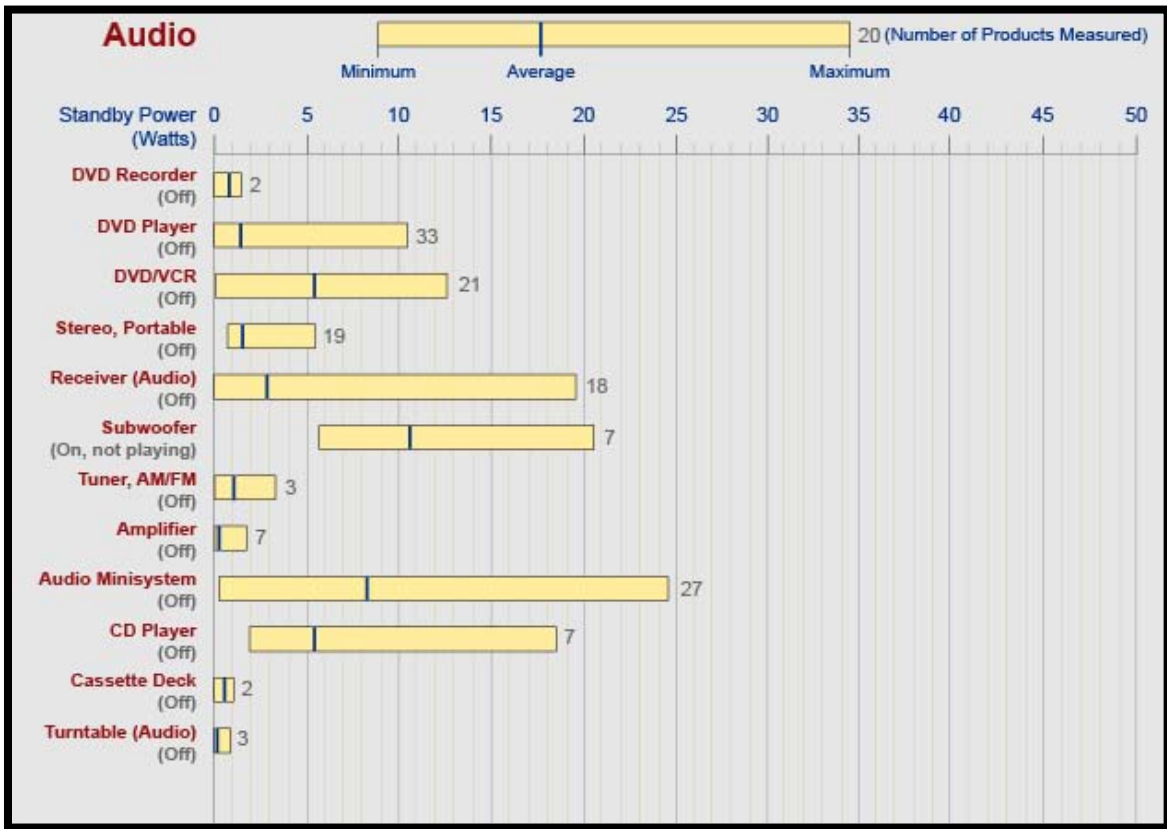
Figure 1

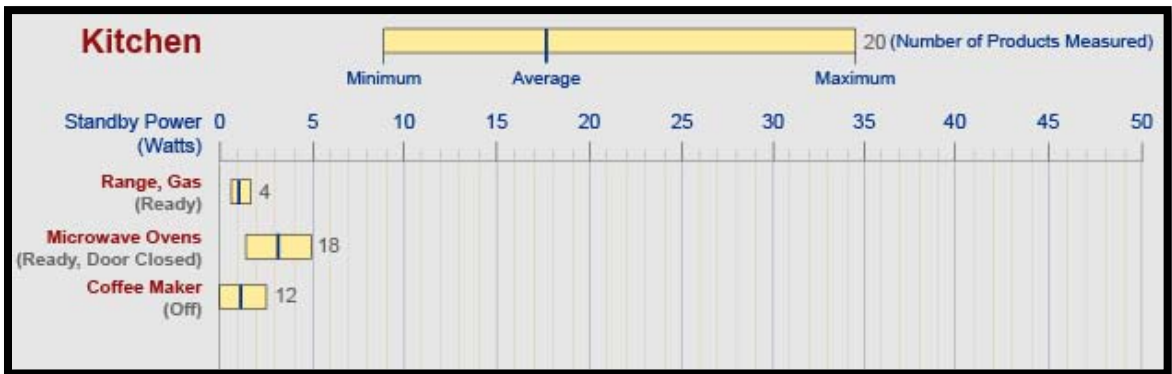
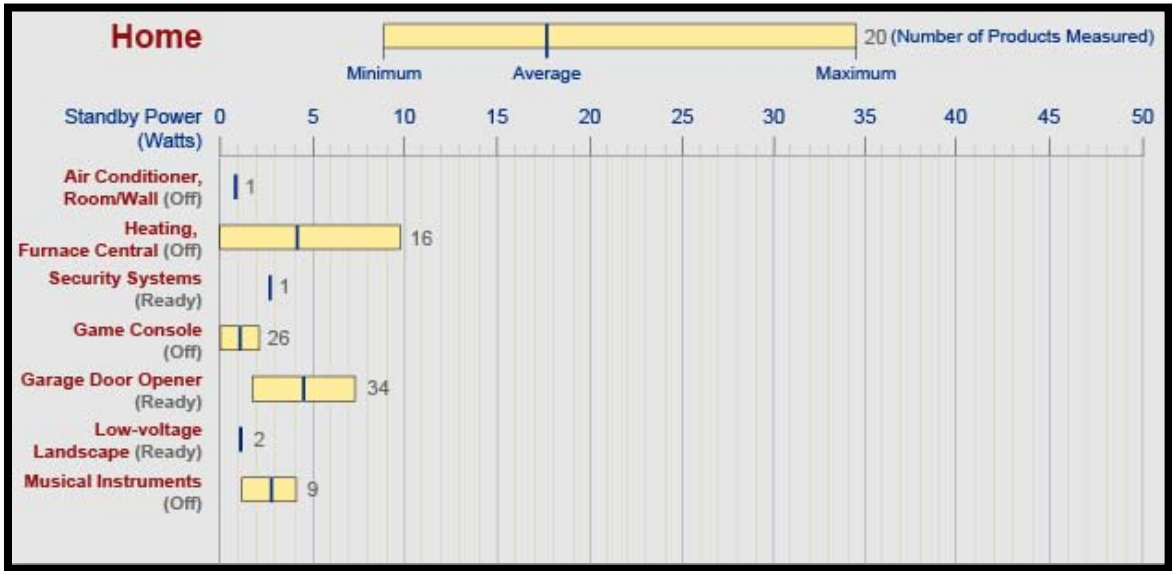
- When you turn off your TV, PC, or DVD, it still consumes energy. The standby mode does not

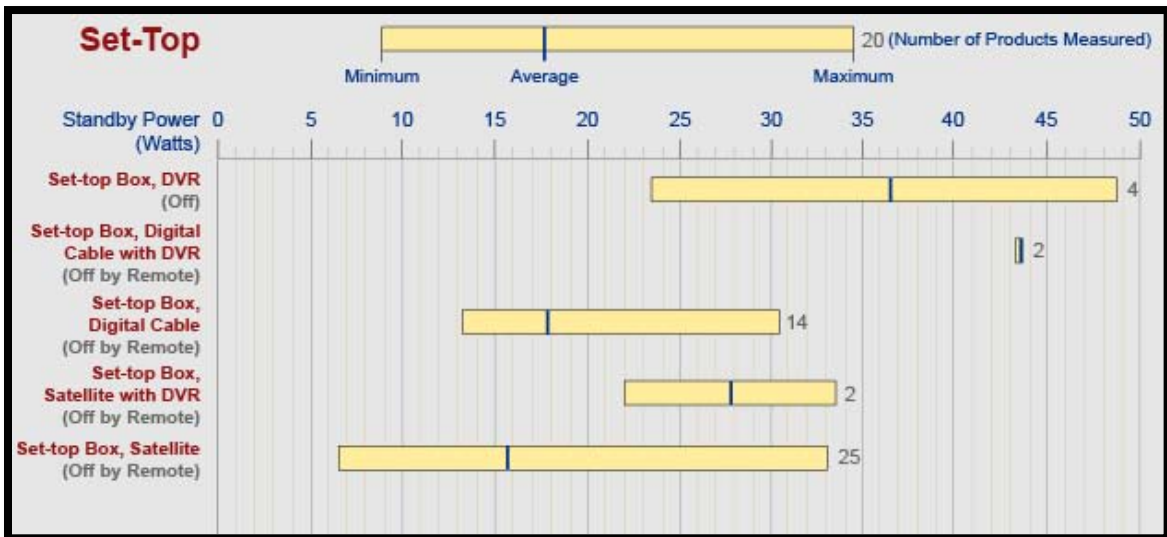
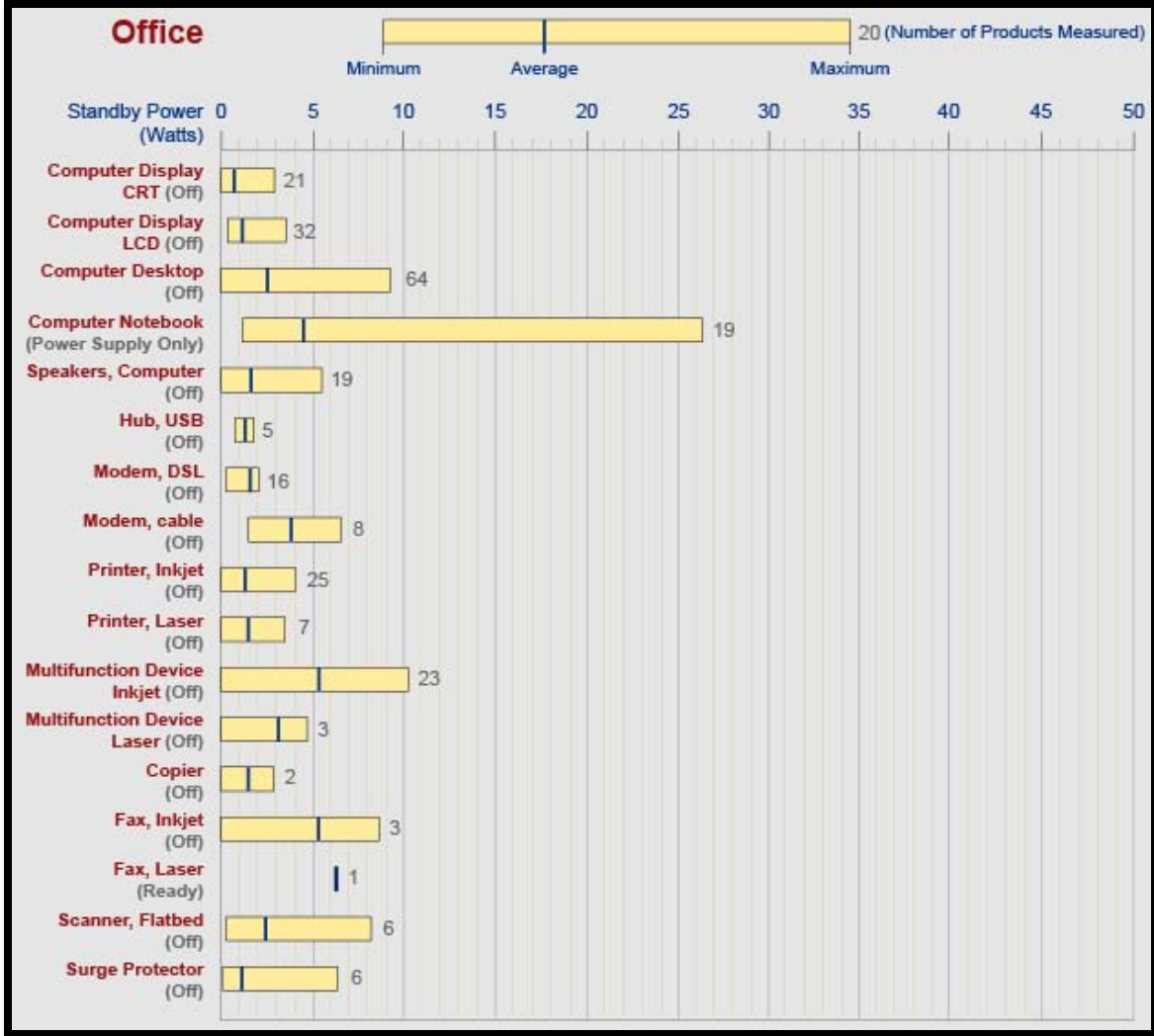
mean it doesn't consume energy, as how much energy each appliance uses during standby mode, take look at the chart below. In order to eliminate the energy consumption you could either unplug the appliance or use a switchable power strip for clusters of computer or video products. That way you can switch everything to zero with one action. The magnitude of the standby power consumption should be taken very seriously, since it comprises from 10% to 15% of your power bill. Altogether, standby power use is roughly responsible for 1% of global CO2 emissions.

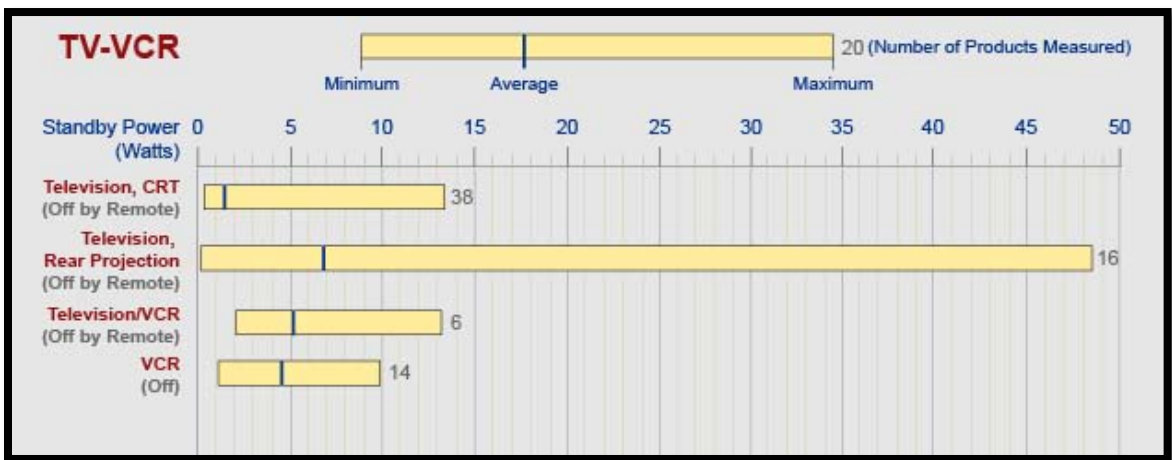
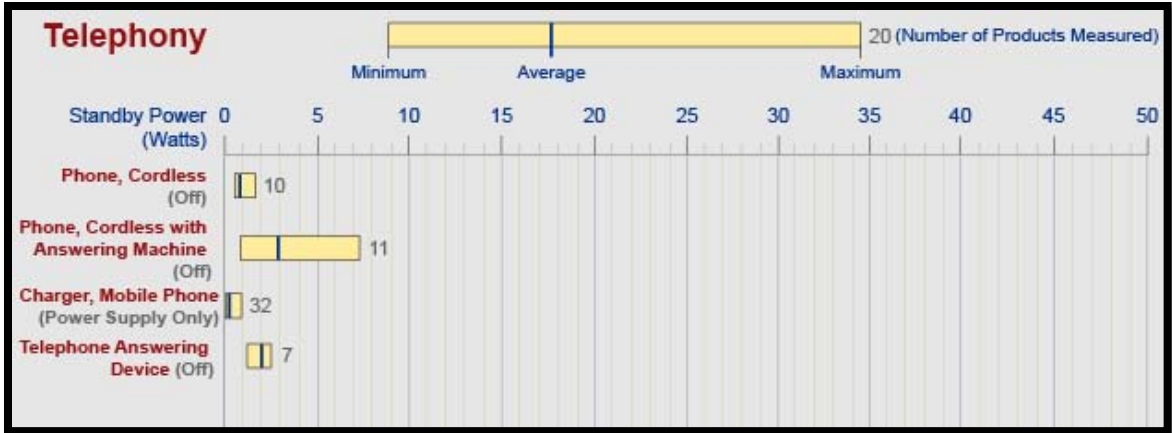
- Use your AC responsibly, the colder you want the inside to be the more energy you use, it's same when you want to use it for heating. Keep it at a comfortable level and don't overuse it. This way you will save at least 1,5Kw per hour if you have 3Kw AC. If the AC is used regularly in your home, it most likely comprises big chunk of your energy bill. Also make sure the windows and doors in your home are well sealed so no cold or warm air escapes or enters.
- Our last advice is that you air dry cloths as much as you can, since the dryer is "energy vampire", also use the dish and cloth washer once is fully loaded, this way you save energy and water.

Stand By Energy Consumption Charts:









You should start implementing the advices we presented concerning the reduction of the consumption of energy, since there is no point of using renewable energy when your consumption is the same. This way if you produce 50% of the energy you use, you can eliminate the other 50% with the advices above and you can even start thinking about producing energy and get the power company to pay you instead of the other way around. Besides the economical benefits of the said advice, don't forget that you are saving the environment also. The steps

are easy to follow. Change the regular light bulbs with LED or Fluorescent light bulbs will lower the energy consumed for light as much as 12 times. Using the heating thermostat responsibly will save you as much as 50% of the energy spent on heating, and the same goes for the AC. Using the dish/cloth washer and dryer as advice will drastically lower you energy consumption. Finally eliminating the stand by energy consumption will reduce your power bill by at least 10%. Start saving now, even before you implement independent energy source.

2. How Does They System Work

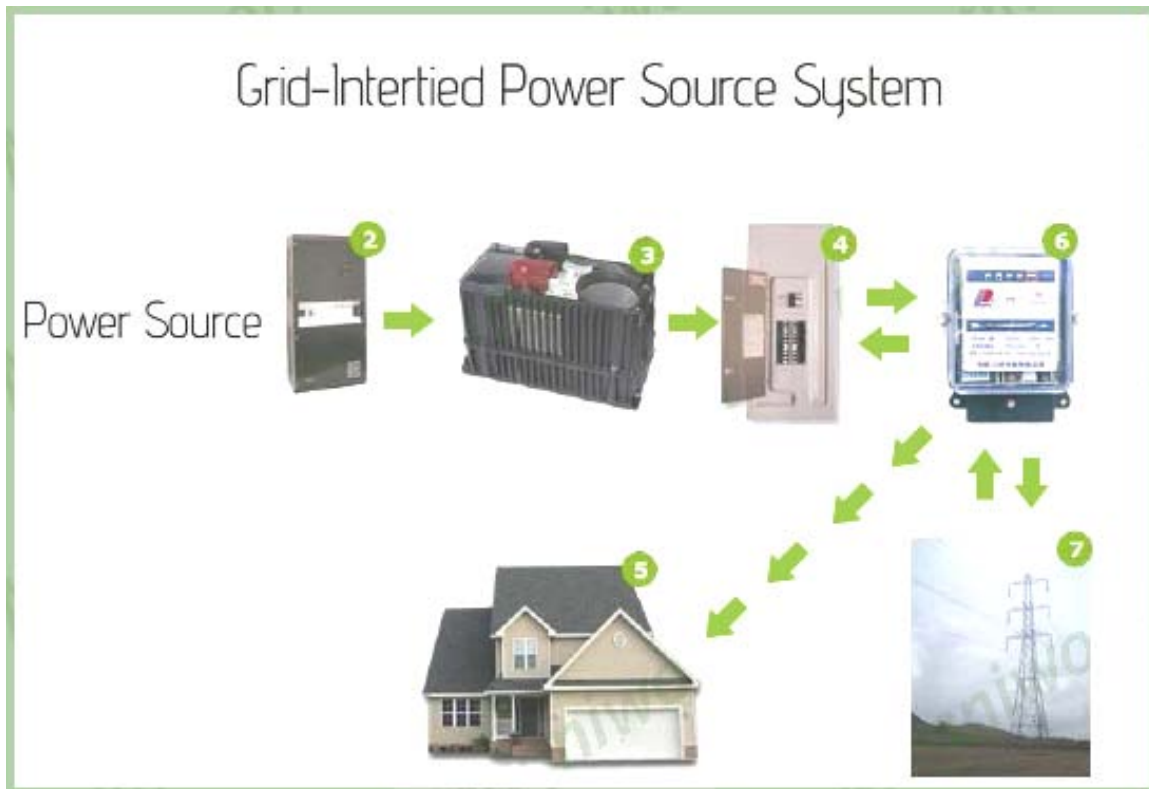
The following systems represent how you connect the external power supply to your house or grid. In the diagrams we are refereeing to the energy source a bit vaguely because the same system that is presented could be used for variety of power sources. By power sources we mean Solar Panels, Wind Turbines, and Energy Generators.

Portable Power Source System



1. Power Source
2. Charge Controller
3. Battery
4. Inverter
5. Household

Grid-Intertied Power Source System



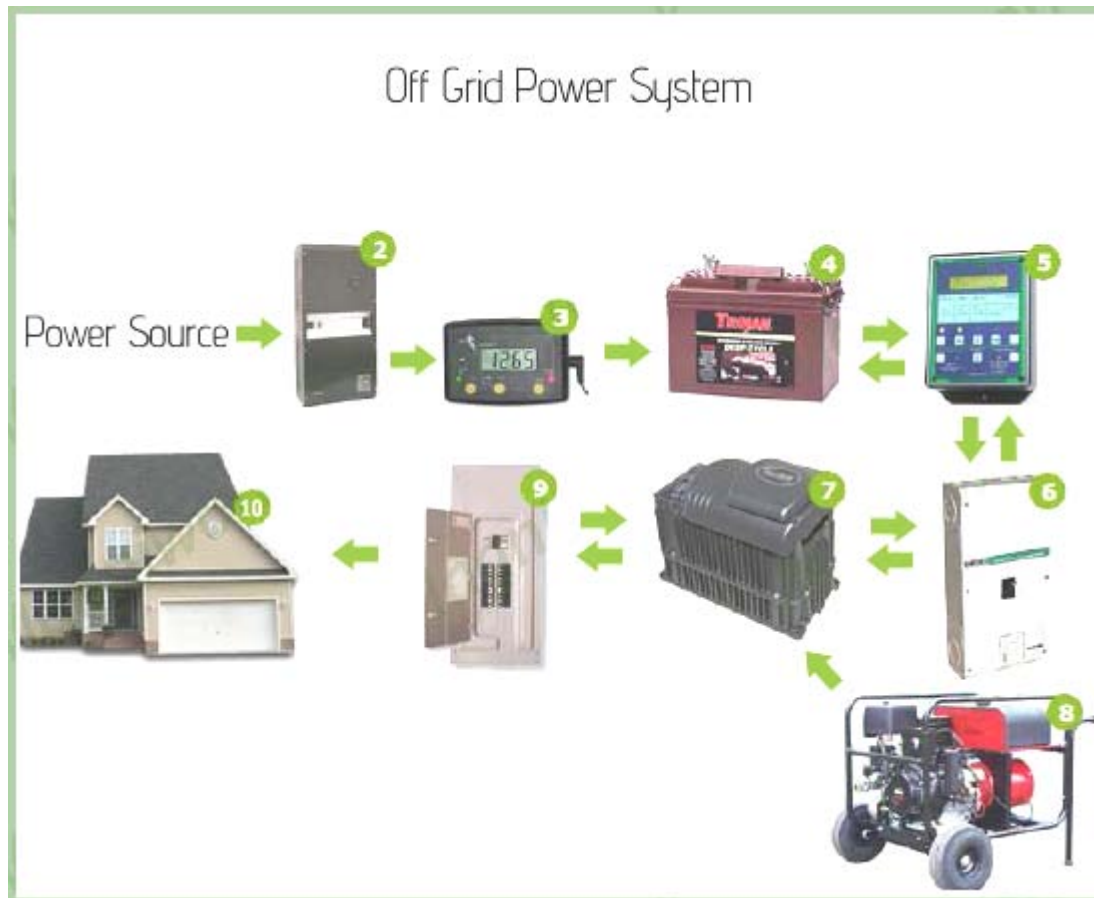
1. Power Source
2. Array DC disconnect
3. Inverter
4. AC Breaker panel
5. Household
6. Kilowatt per hour meter
7. Grid

Grid-intertied solar power system with battery backup



1. Power Source
2. Array DC disconnect
3. Charge Controller
4. Deep cycle battery
5. System meter
6. Main DC disconnect
7. Inverter
8. AC Breaker panel
9. Kilowatt per hour meter
10. Grid
11. Household

Off Grid Power System



1. Power Source
2. Array DC disconnect
3. Charge Controller
4. Deep cycle battery
5. System meter
6. Main DC disconnect
7. Inverter
8. Generator
9. AC Breaker panel
10. Household

The Units of the System

Array DC Disconnect:



DC Disconnect is used in the system, so you can shut off the system much safer and easier. The reason for shutting off the system would be mainly maintenance.

Deep Cycle Battery:



This is the battery you will use in your system once you build the full scale generator. If you cannot

afford a brand new battery, you can get on the cheap from old golf cart or forklift.

Main DC Disconnect:



The main DC disconnect is used for disconnecting the Inverter for maintenance or emergency situations.

Inverter:



The Inverter is used to invert the direct current or DC into alternating current or AC. This conversion is need since most appliances in the house use AC.

Gas Powered Generator:



If you are implementing complete off grid system, you should have Gas Powered Generator. There might be situation when you want to shut down your system for maintenance, during those situations you will use this generator.

AC Breaker Panel:

The AC Breaker panel is where all the electrical wiring is connected with your power provider. This panel is usually found in a utility room, garage, or outside the building.

Be aware each state and country has different standards for connecting alternative energy source to the AC panel. Also in most countries it is illegal to open this box by yourself, unless you are qualified electrician.

We recommend that you contact your power supply company concerning this issue and do not

take matters in to your own hands before you do that.

If you do not want to connect your system to the breaker panel, you can run appliances just from the inverter which is much easier and cheaper option.

Grid:

The main power line that comes to your house that comes from the power company is called Grid. The term Off Grid refers that you are energy independent from the power supply company.

Household:

When we referred in the previous diagrams to the household, we meant the household loads. This consists of everything that is connected to the breaker panel.

3. Construction

Needed Materials

This is a list of materials you will need:

-
- Alligator Clips
 - Quantity: Min x 4
 - More Info: Wires number 20 and above, rating 5 amp, at least 12" is recommended.
 - Cost: \$10.00
-

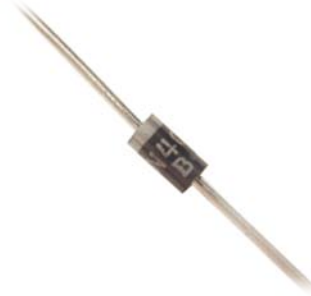
-
- 2N3055 Transistor
 - Quantity: x 1
 - More Info: An NPN type transistor
 - Cost: \$3.00
-



-
- 1N4001 Diode
 - Quantity: x 1
 - More Info: Silicone Fast Switching Diode transistor
 - Cost: \$0.40
-



- **1N4007 Diode**
- **Quantity: x 1**
- **More Info: Silicone Fast Switching Diode transistor**
- **Cost: \$0.40**



- **100 ohm resistor**
- **Quantity: x 1**
- **More Info: At least 1/4 watt but we recommend 1 /2 watt.**
- **Cost: \$0.40**



- **1 kilo ohm linear Potentiometer**
- **Quantity: x 1**
- **More Info: The higher the wattage the better. Carbon track should be fine.**
- **Cost: /**



- **Neon Bulb potentiometer**
- **Quantity: x 1**
- **More Info: NE2 type - wire ended.**
- **Cost: /**



-
- **250g (0.551 lbs)**
Enamel Coated
22 SWG (AWG - 21)
Copper Wire
 - **Quantity: x 1**
 - **More Info: Magnet Wire**
 - **Cost: \$12.90**
-



-
- **250g (0.551 lbs)**
Enamel Coated
26 SWG (AWG 25)
Copper Wire
 - **Quantity: x 1**
 - **More Info: Magnet Wire**
 - **Cost: \$12.90**
-



-
- **2 meters of High Current Wire**
 - **Quantity: x 1**
 - **More Info: It will be used to hook up the batteries**
 - **Cost: \$12.90**
-

From Where to Get This Materials

If you are based in **UK** or **Europe** we the following web sites:

Lead Acid Batteries:

<http://shop.eurobatteries.com>

Components:

<http://www.maplin.co.uk/>

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

Magnets:

<http://e-magnetsuk.com/>

If you are based in **USA** or **Canada** we recommend the following web sites:

Components:

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

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

Magnets:

<http://www.magnets4less.com/>

The Core

The curtail part for this project is the core. You can use iron filings mixed with glue, which is one option for satisfactory results. When you are scaling up this project we also recommend using welding rods for better results, but just to get used to what you are building for the first time feel free to use iron filings mixed with glue.

Each of the rods must be electrically insulated from each other, don't forget to do that since it is very important. You can either let the rods rust for a while, or you can coat them with thick layer of nail varnish.

On the other hand you should not use for the core, solid iron or steel. That is because the key mechanism for the operation of the SSG is the fast switching of the magnetic field, and if you use a solid mass for your core it is more than likely to create eddy currents that disrupt and prolong the degradation of the magnetic field. Steel bolts are very bad idea since they retain their magnetism from

the get go, it's the same principle as paper clip on a magnet, you have most likely noticed that after a while the paper clip can attract other paper clips.

The Magnets

First thing you should know concerning the magnets is what not to use, which is Neodymium or Rare Earth Magnets. The problem with such strong magnets is, after a while no matter the material used for the core, the core itself will be magnetic because of the prolonged exposure to those magnets.

Because of the issues stated above, you should use Ceramic magnets. Since for your first project you will build a small replica, you should use small magnets or more specifically: 20mm x 10mm x 5mm ceramic magnets. For your second project which will be the real size replica you will use larger magnets with dimensions approximately 50mm x 25mm x 10mm. There might be situation that the magnet might be too weak even if it is as described above, if that's the case you can always double stack them.

The Rotor

For the final model you will use an aluminum bike wheel, but as with the core you should not use steel, you should be able to fit about 24 magnets to a standard bike wheel and at the same time achieve speeds of about 200-300rpm.

But for you first project, the scaled down replica, you should do just fine with discarded hard drives. With a discarded hard drive you should fit about 6 magnets and achieve speed of around 1500 - 2000rpm.

No doubt some of you will have hard time finding hard disk drives, another option is a tape head salvaged from an old VCR. It will work just fine, since the bearing is very smooth and it's easily mountable on another surface. With it you will be able to achieve speed of around 2500rpm and higher. As with the Hard Disk Drive, here also you will use about 6 magnets.

If you want, or can't find the previous parts, you can go down even smaller, you can use roller-skate or roller-blade wheel. You should be able to attach about 4 magnets on it, since the bearing here is very good you should be able to reach from 3000 to 4000 rpm.

All the speeds previously stated are approximations and may differ, don't force your motor to get to those speeds.

Tolerance (For 24" Bicycle Rim)

Doesn't have to be bicycle wheel, any non-magnetic rotating wheel of similar size and weight should work. These plans are for a 24-inch rim. If you go smaller or large than this, you will need to adjust the number of magnets accordingly so that the spacing is approximately the same distance as on the 24-inch specified plans. You might want to source your wheel before purchasing magnets so you know how many magnets to get. Also, if you want to have your shaft coming from the wheel to convey the torque of

the wheel, you will need to configure an alternative bearing system.

The Battery

The batteries are the most expensive part of this project. For the small motor you can use 1.3ah (amp hour) 12volt Lead Acid Batteries, though we recommend you should get at least 7ah batteries.

The main trick with the batteries is for them to be big enough so that the motor will run at the C20 Rate. The Ah of the battery is the amount of amps the battery can supply for one hour. This is very high current for the batteries to supply and will damage them more quickly. This is the main reason why we use the C20 Rate, which is the Amp Hour rating of the battery divided by 20.

In other words if you motor is running on a 300ma you will need to use a battery that is at least 6amp hours ($0.3 \times 20 = 6$). In a different situation if your battery is rated at 7Amp Hours, you shouldn't discharge the battery with more than 350ma ($7/20=350$).

- 1.3ah 12v Lead Acid Battery can cost around £12 / €18 / \$24
- 7ah 12v Lead Acid Battery can cost around £15 / €22 / \$30
- 24ah 12v Lead Acid Battery can cost around £40 / €60 / \$80

Quantity:

At the beginning you will need at least two batteries: one for input, and one for receiving charge. It is recommended that an identical battery to the input battery is used, the reason for this is to test the discharge parameters of a battery independent of the circuit under the same discharge parameters being put to the input battery for characterization. Additional batteries of the same voltage and impedance can be added to the output in parallel latter. This is the widest and most crucial variable in the system.

Tolerance:

You might understand already that the voltage of the batteries is not crucial, and can be somewhere in the range of 6 to 24 volts for this particular motor. However, the input and output batteries need to be matched in their voltage and impedance. There can be more than one battery on the receiving end, connected in parallel, of a matched voltage and impedance of the input battery. For your first replication of this, you will want to use new batteries so that bad batteries will not be possible reasons for malfunction of the circuit. Not all rechargeable batteries are suitable for receiving charge from this set-up. Lead acid recommended. For more information concerning what type of batteries you need follow the formula presented in this section earlier.

Battery Care:

It will be important for you to know your batteries' optimal operating parameters from their manufacturer or other competent rating service so that you do not damage them by charging or discharging too fast or too high/low. As long as you are using this circuit to charge your batteries, you will not need to worry about speed or level of charging. But if you use another apparatus to charge your battery, you will need to know your batteries' charging parameters. If your input and output batteries are matched in voltage rating and impedance the circuit inherently balances the charging rate to a level that is not only safe but even beneficial to the receiving battery. Overcharge is not nearly the concern with this circuit as it is with other chargers. Batteries actually perform better under frequent use with this circuit, than if you let a few days pass between uses.

4. Equipment

Multimeter:



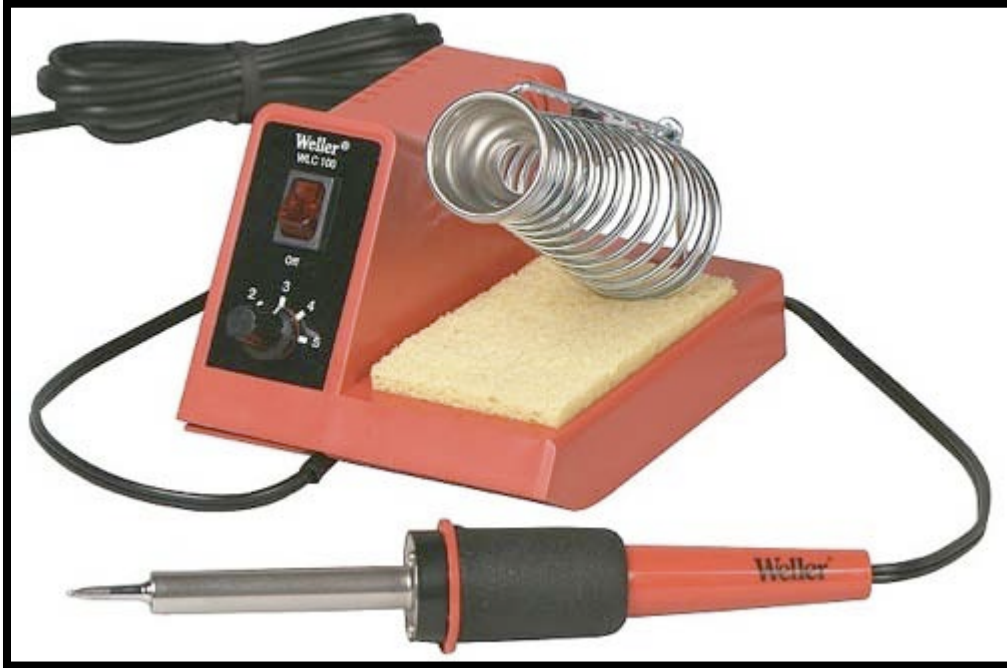
Digital multimeter is ok but we should note that we are using pulse DC in the SSG so when you are measuring the amps, it is highly recommended to use an Analogue Amp Meter, which goes up to 1amp or more. You will also need the meter to measure your input amps as well your battery voltages.

Laser Tachometer:



A laser tachometer measures the rpm of your motor. This is not a necessary tool from the beginning, but you will be glad you have one when you are fine tuning the motor since you will need it to make an accurate record of your motors performance.

Soldering Iron:



Soldering iron will be used to solder the circuit. The circuit will still operate if the connections aren't soldered, though once you are sure it is wired correctly, you should solder all the connections.

5. Assembly

Frame

Since the 24" wheel will spin, the stand needs to have stability front-back, left-right. On the other hand the rotor shouldn't have much resistance in its turning, also this need to be made of non-magnetic material.

You should plan beforehand for a 1/8 inch gap or less between the coil spool and the wheel magnets glued and taped. We cannot stress this enough but it is curtail for this project to work. The frame materials should be non-magnetic.

Another important design specification you should have in mind while construction the stand is, you may want to be able to increase or decrease the distance between the wheel and the spool, for fine tuning. The direction of the rotation does not need to be perpendicular to the coil, but it can be 90 degrees as well.

Attaching Magnets to Wheel

First you need to use a compass to determine "N" the north end of your magnets. The Earth's North Pole is magnetically south, so the "north" end of your compass will be attracted to the "south" end of your magnet. North faces out - toward the coil.

Label your magnets, with marker or sticky tape so you know which side is which.

All magnets should face the same direction (north out). Magnet spacing does not need to be uniform unless you are going to attempt more than one coil.

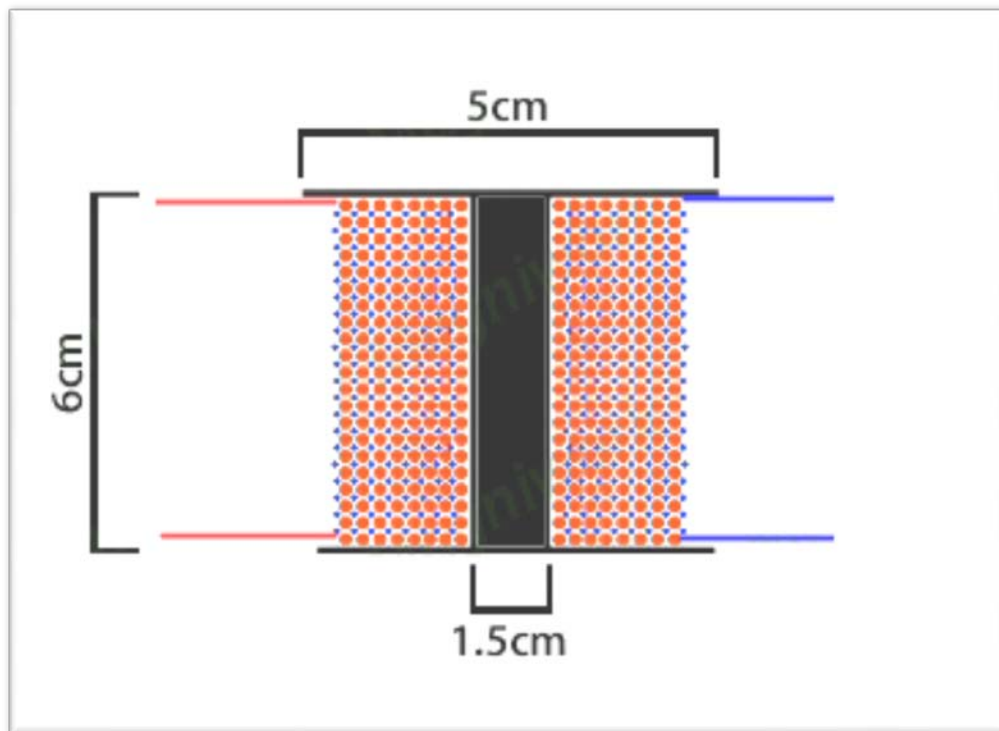
Determine an equal spacing for the magnets about the perimeter of the wheel and mark where they should go. This is not crucial to proper operation with one coil, but if you want to later add more coils (each with a separate circuit), symmetrical spacing will be important for symmetrical firing. If your wheel diameter is more or less than the 24 inches called in these plans, adjust the number of magnets accordingly to be within the same range of spacing between magnets. You don't want to get your magnets much closer than 1.5 - 2 widths apart.

If you wish to use in the future more than one coil, bear in mind that each coil will need its own complete

circuit. All coils will need to fire in unison, so the magnet spacing will need to be uniform. Spacing between magnets should not be less than 1.5 - 2 magnet widths. Use super glue and/or tape to affix the magnets.

The Coil

For the coil you should use completely the two 250g spools of wire. You should wind the two wires on the coil together, it's very important that the two wires are next to each other throughout entire distance of the winding. Arrangement of the winding is not very important, also there is no pattern or symmetry required. Think fishing spool or kite spool, and you'll be fine. The margin of tolerance is very wide here.



(6cm = 2.36 inch) (5cm = 1.96 inch) (1.5cm = 0.59 inch)

You might use a drill to spin the spool. A cordless drill generally can turn slower, making it easier to count turns and to make sure the two wires are wound parallel the

whole distance. The exact number of turns on the coil is not crucial, being close is adequate but keep track of input output pairs.

Counting visually is a method prone to error. Use an audible trigger in winding (e.g. a clacker on the spool). Alternatively, you might affix tape to both ends of spool, protruding outward around 1/2 inch. This will hit your hand as the spool turns, helping you to count turns. You should be done in approximately 900 turns.

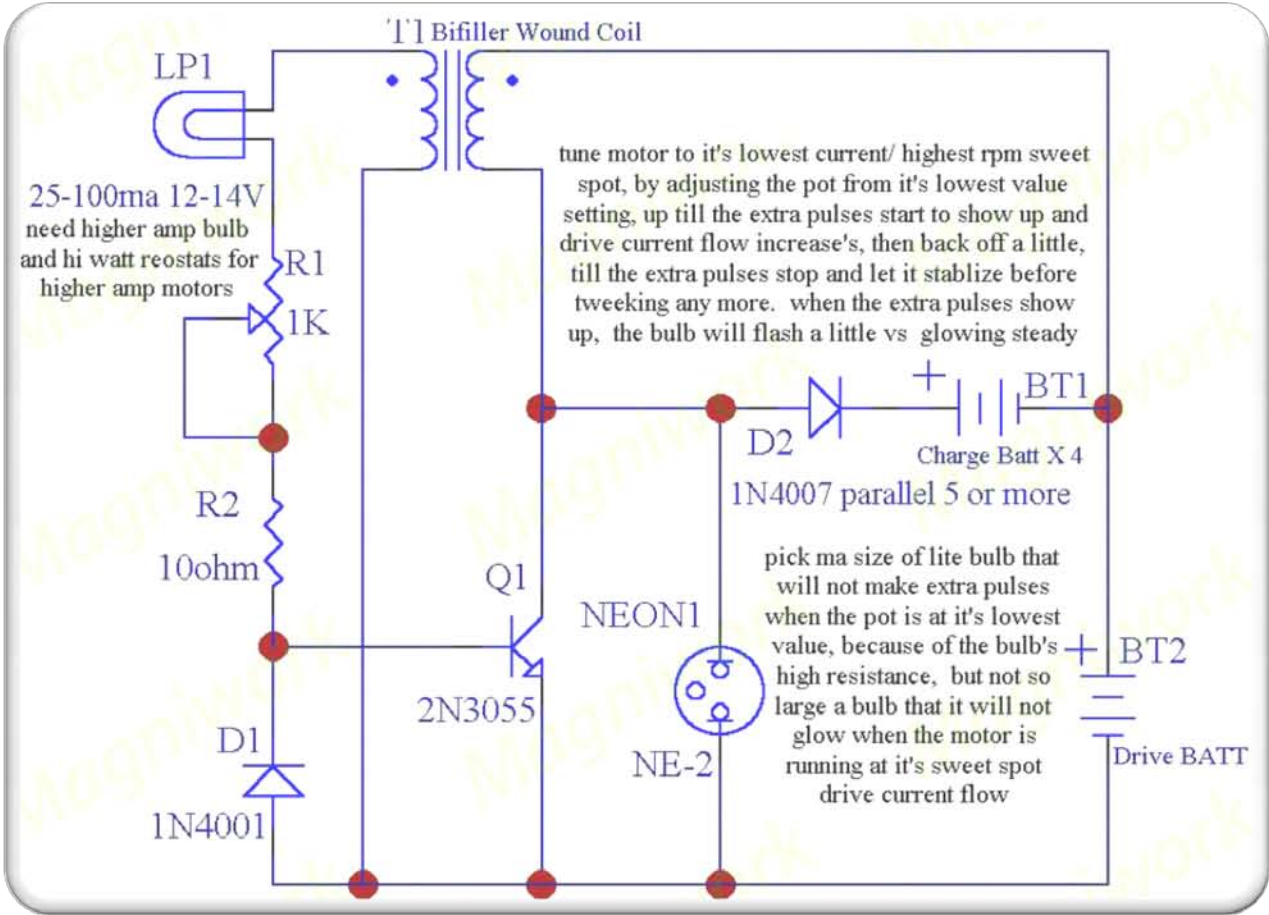
Filling the Core

Be sure to have the side that will be facing the magnets flush with the top of the spool so you can spin your magnets close to the spool without hitting a rod in the core. You might drill a 1" inch hole in your base around 1/2 inches deep for the other side of the core to protrude into, so you don't have to cut your rods short. Use glue on each rod to keep it from moving. Tap the last few rods in with some light object until you can't fit any more.

Soldering the Circuit

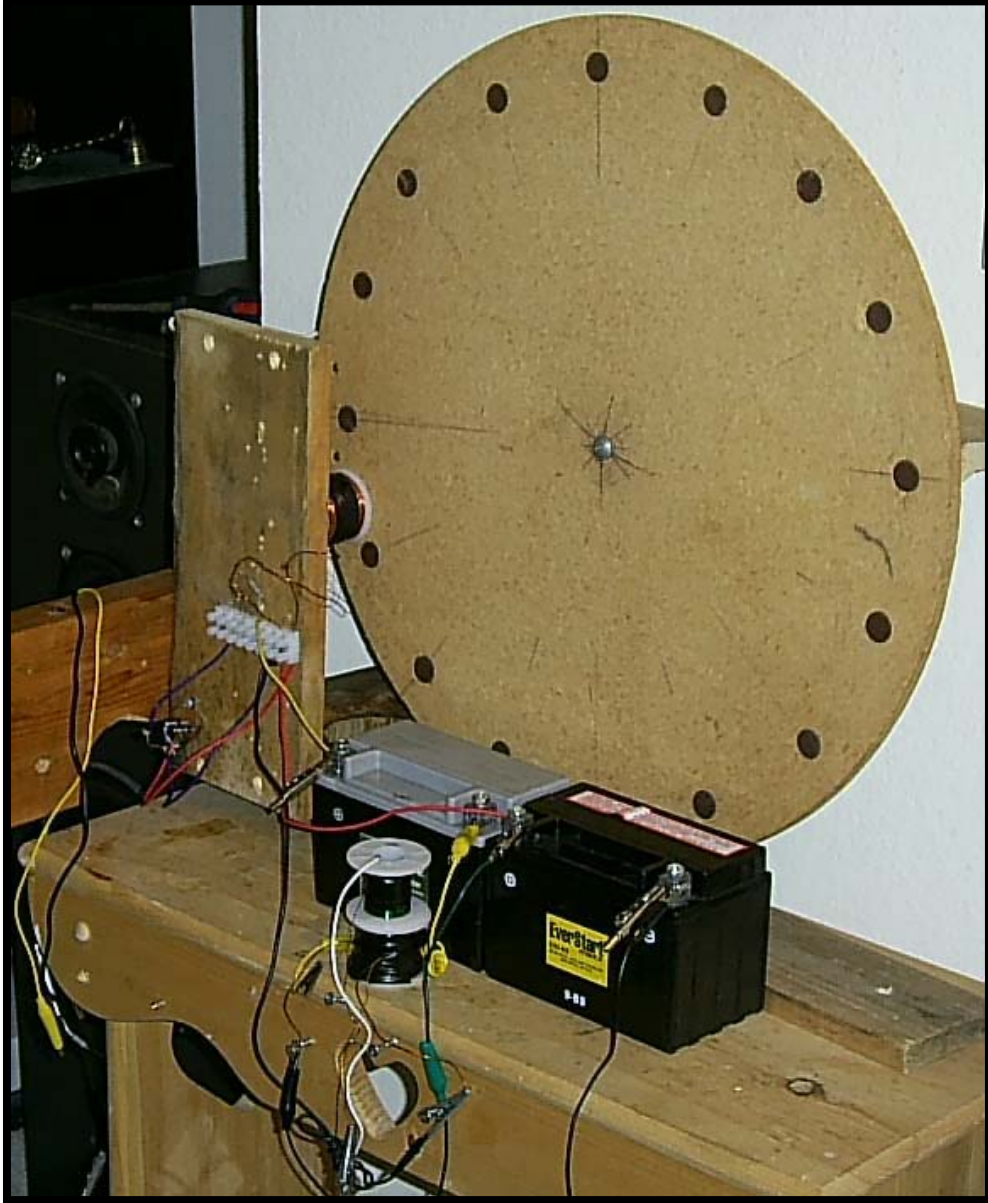
Try to keep all wires as short as possible. Furthermore don't overheat your diodes, resistor, or transistor when soldering. If you don't know how to solder, you could use wire nuts or even nuts/bolts to secure your connections. Make sure the circuit works before soldering the connections. Also alligator clips can be used to hold things in place until you solidify them. A little 9-V battery can be used to test the circuit.

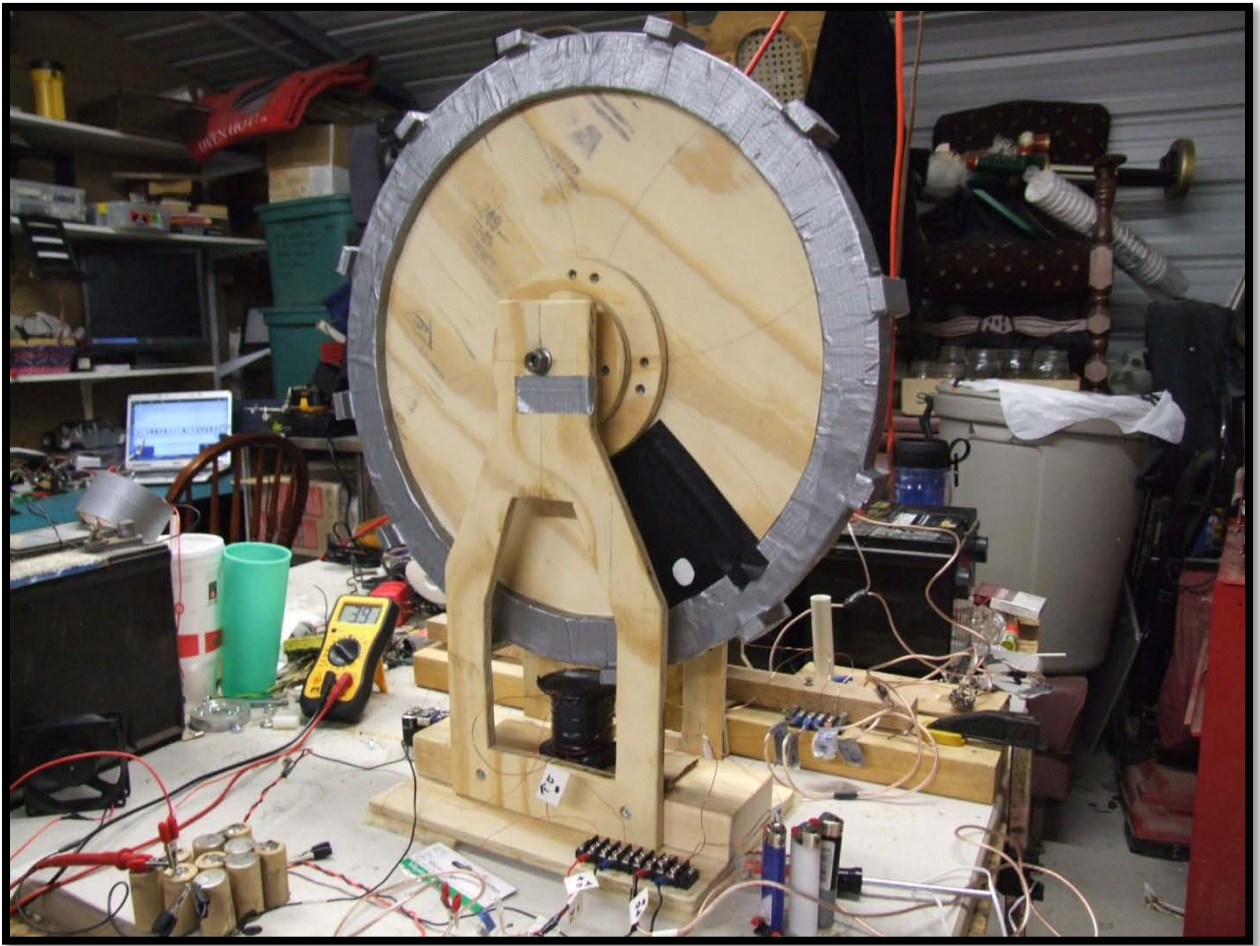
Note: Also, be sure to use a heavy gauge wire when connecting your batteries in parallel or series.



6. Gallery:









7. Operation Instructions

Turning the Motor On

To run the motor, connect circuit and give the rotor a spin (by hand). It will then accelerate or decelerate to a point of equilibrium. At some resistances in the circuit, there is more than one stable rate of rotation.

Characterizing the Window of Operation

You will want to modify the resistor of the circuit from low to high to find various ideal windows of operation.

Generally, low resistance produces high rotation speed, while high resistance results in lower rotation speed. Also in the higher resistances you will find solid state resonance either with or without rotation. In some cases they co-exist. In some cases only one or the other will exist. Higher than a certain resistance you will find that only solid state exists.

One Input, Four Output, Rotate One

Once the batteries are supercharged, place four batteries on the back end (charging), with one on the front end running the circuit. Once that battery has gone down

to its 20% from full level, rotate one of the four batteries on the back end into the front. The sequence of rotation should be one of taking turns so that the one on the back side that has been there the longest goes to the front side. You can repeat this procedure for six months without ever having to externally charge the system. Bear in mind that your success in achieving this may be determined first by finding the optimal window of performance for your particular set-up.

8. Minimizing Our Oil Dependency

Some of the bigger issues we encounter when we try to reduce the consumption of energy is to reduce and minimize the use of gas we use for our vehicles.

Oil is widely used for transportation, home heating, and energy generation.

There are several ways to tackle this problem. The automotive industry has already taken action, and is great cars with a very reasonable gas mileage. The Industry now must meet certain regulations, and the production of typical gas guzzling vehicles is reduced.

Most diesel power cars, with only a minimal conversion, are capable on running with leftover fryer fat. Meaning, you can simply go to McDonalds, and ask for the leftover oil of the fryer.

Although it sounds incredible, the vehicle will run without a problem this way, and it won't damage the engine or the fuel lines of the vehicle.

The downside of this is that the car will have a bad odor, and smell like fried potatoes. This is what can be called a 'rough biodiesel'.

In order to create a better fuel, the waste frying oil/fat can be processed so that it gets refined. The refined product knows as biodiesel, and it shares almost the

identical properties of the Diesel. The car will have the same performance as will regular diesel and behave the same.

In most conventional diesel vehicles, you can use a refined bio-diesel without applying any kind of conversion kit. Besides refining waste fat, Biodiesel can be produced from fat from pork, poultry, beef or oil from vegetables.

Another way to reduce oil dependency is with the use of electricity to power a car. Hybrid Electric Vehicles are getting more and more popular, and starting to take a significant share on the road. These vehicles combine a common car engine with a battery. They capture kinetic energy when breaking, this kinetic energy is used to recharge the battery.

The Hybrid Electric Vehicles can be considered eco-friendly, due to their low emission, and a good gas mileage. Common Examples of these vehicles are the Toyota Prius and Honda Insight

A Step forward from the HEVs, are the fully electrical cars. It relies on the sole use of electric motors to propel the vehicle. These vehicles don't use an Internal Combustion Engine. The fully electric cars might be considered the vehicles of the future, but today, they're still in development, and have limited practicality.

Although they are able to run solely on electricity, they have a limited range. Recharging the vehicle is much cheaper than gas, but the main problem is that the batteries cannot store enough energy to propel the vehicle for longer ranges. This technology is very promising, and there have been several vehicles that are fully electrical that have went into production.

9. Free Energy Generators on a Larger Scale

Significant changes in energy generation aren't going to occur until the governments and large corporations start becoming involved and look into alternative sources of energy.

A Free Energy generator could well be the solution to these problems. It can be implemented in the following way:

- Each household has its own free energy device, they generate electricity independently from the power company.

OR

- The Energy Companies replace the current sources of generating energy like non-renewable sources of energy, and implement large-scale free energy generators, which would supply the grids with power. Since the energy will only require minimal resources for it to be produced, this would result in a significantly lower price of energy.

However, the government and the big corporations aren't showing interest in such devices, they are the once that have the real funds necessary to really make this

happen. Perhaps, the outcome of a world where electric energy is free isn't something the big corporations would like to see. This would mean they would lose trillions of dollars. It would mean the collapse of two of the biggest corporative industries. The Oil and the Energy Industry.

If the US Government spent only a small fraction of what they spend on the military to the development of free energy, it could totally revolutionize the world. We have already given you a small-scale free energy device THAT WORKS. That proves that this technology really works. All it needs to be done is for this technology to be used on a larger scale, and to become wide-spread. This will reduce the energy crisis.