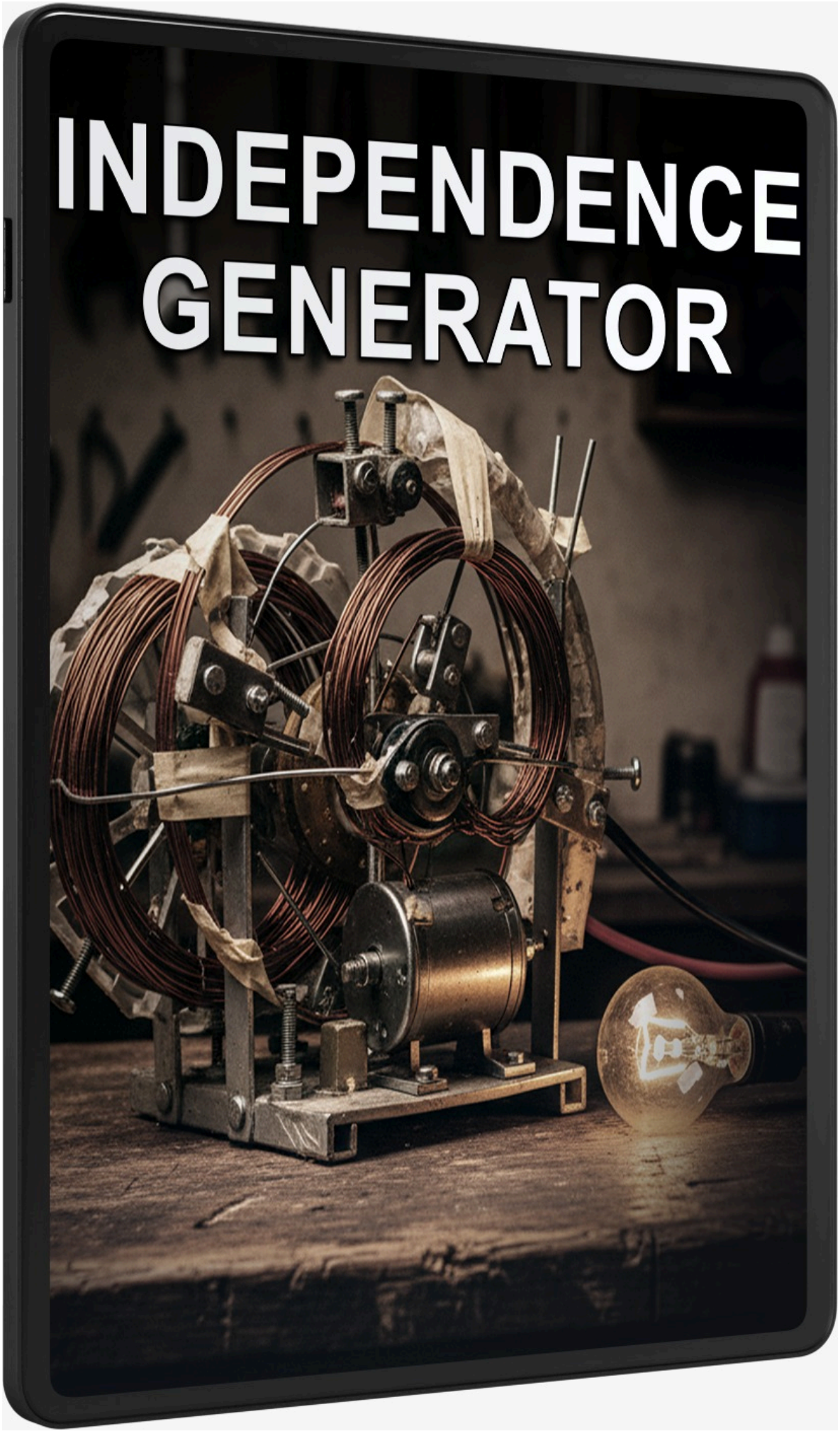

INDEPENDENCE
GENERATOR

Contents

FOREWORD:

John Bedini has a prototype free energy motor.

Imagine having a small D.C. electrical motor sitting on your laboratory bench powered by a common 12-volt battery. Imagine starting with a fully charged battery and connecting it to the motor with no other power input. Obviously, the motor is going to run off the battery, but by conventional thinking it will stop when the battery runs down.

Impossible, you say. Not at all. That's precisely what John Bedini has done and the motor is running now in his workshop.

It isn't running by the conventional wisdom of electrical physics. It isn't running by the conventional rules of electric motors and generators, but it is running.

And it isn't something complex. It's pretty simple, once one gets the hang of the basic idea.

It's running off the principles of electromagnetics that Nikola Tesla discovered shortly before 1900 in his Colorado Springs experiments. It's running off the fact that empty vacuum – pure "emptiness," so to speak is filled with rivers and oceans of seething energy, just as Nikola Tesla pointed out.

It's running off the fact that vacuum space-time it-self is nothing but pure massless charge. That is, vacuum has a very high electrostatic scalar potential it is greatly stressed. To usefully tap the enormous locked-in energy of that stress, all one has to do is crack it sharply and tap the vacuum oscillations that result. The best way to do that is to hit something resonant that is imbedded in the vacuum, then tap the resonant stress of the ringing of the vacuum itself.

In other words, we can ring something at its resonant frequency and, if that something is imbedded in the vacuum, we can tap off the resonance in vacuum stress, without tapping energy directly from the embedded system we rang into oscillation. So what we really need is something that is deeply imbedded in the vacuum, that is, something that can translate "vacuum" movement to "mass" movement.

Well, all charged particles and ions are already imbedded in the vacuum by their charged fluxes, so stressed oscillations – that is, vacuum oscillations – can be converted into normal energy of mass movement by charged particles or ions, if the system of charged particles or ions is made to resonate in phase with our tapping "potential." For our purpose, let's use a system of ions.

First we will need a big accumulator to hold a lot of the charged ions in the system that we wish to shock into oscillation. We need something that has a big capacitance and also contains a lot of ions.

An ordinary battery filled with electrolyte fits the bill nicely. While it's not commonly known, ordinary lead-acid storage batteries have a resonant ionic frequency, usually in the range of from 1–6 MHz. All we have to do is shock oscillate the ions in the electrolyte at their resonant frequency and time our "trigger" potential and "siphon" current correctly. Then if we keep adding potential to trigger the system, we can get all that "potential" to translate into "free electrical energy."

Look at it this way. Conventionally "electrostatic scalar potential" is composed of work or energy per coulomb of charged particle mass. So if we add potential alone, without the mass flow, to a system of oscillating charged particles, we add "physical energy" in the entire charged particle system. In other words, the "potential" we add is converted directly into "ordinary energy" by the imbedded ions in the system. And if we are clever we don't have to furnish any pushing energy to move pure potential around.

(For proof that this is possible, see Bearden's *Toward a New Electromagnetics; Part IV; Vectors and Mechanisms Clarified;* Tesla Book Co., 1983[1], slide 19, page 43, and the accompanying write-up, pages 10–11. Also see Y. Aharonov and V. Bohm, "Significance of Electromagnetic Potentials in the Quantum Theory", *Physical Review,* Second Series, Vol. 115, No. 3, Aug. 1, 1959, pp. 485– 491. On page 490 you will find that it's possible to have a field-free region of space, and still have the potential determine the physical properties of the system.)

Now this "free energy resonant coupling" can be done in a simple, cheap system. You don't need big cyclotrons and huge laboratories to do it; you can do it with ordinary D.C. motors, batteries, controllers and trigger circuits.

And that's exactly what John Bedini has done. It's real. It works. It's running now on John's laboratory bench in prototype form.

But that's not all. John also is a humanitarian. He's as concerned as I am for that little old widow lady at the end of the lane, stretching her meager Social Security check as far as she can, shivering in the cold winter and not daring to turn up her furnace because she can't afford the frightful utility bills.

That's simply got to change and John Bedini may well be the fellow who changes it. By openly releasing his work in this paper, he is providing enough information for all the tinkerers and independent inventors around the world to have at it. If he can get a thousand of them to duplicate his device, it simply can't be sup-pressed as so many others have been.

So here it is. John has deliberately written his pa-per for the tinkerer and experimenter, not for the scientist. You must be careful, for the device is a little tricky to adjust in and synchronize all the reso-nances. You'll have to fiddle with it, but it will work. Keep at it.

Also, we warn you not to play with this unless you know what you are doing. The resonating battery electrolyte produces hydrogen, and if you hit it too hard with a voltage spike you can get an electrical spark inside the battery. If that happens, the battery will explode, so don't mess with it unless you are qualified and use the utmost caution.

But it does work. So all you experimenters and pio-neers, now's your chance. Have at it. Build it. Tinker with it. Fiddle it into resonant operation. Then let's build this thing in quantity, sell it widely, and get those home utilities down to where we can all afford them – including the shivering little old lady at the end of the lane.

And when we do, let's give John Bedini, and inventors like him, the credit and appreciation they so richly deserve.

INTRODUCTION:

One day a boy who plays with motors and generators gets a brilliant idea. He reasons with himself: "If I hook the motor to the generator via the same shaft, the generator should run the motor and vice versa." He soon discovers that many things are against him, so he de-vises better schemes and finds the same things again. (Summary of a *Time-Life* article on energy.)

However you may view this article, it does not count, because the principles on which our machine works are completely different. At this point, I will make ref-erence to Tom Bearden's *Toward a New Electromagnetics; Part 4: Vectors and Mechanisms Clarified,* Tesla Book Co., 1983[2]. If you plan to build this machine, it is a must that you get Tom Bearden's paper. You will find on pages 20, 21 and 22 the description of a simple free energy motor. Also, you will find a block diagram on page 53, slide 40.

Understanding the material in this paper is a must, or you may not succeed in building this simple free energy generator.

Special thanks are given to Tom Bearden for discussing a multitude of questions. Without him, this would not have been possible. Any errors made in this paper are my own and not the fault of others.

I must also state that neither John Bedini nor the publisher takes any responsibility for misuse of the information in the present paper due to bad hookups, misuse of the battery or faulty mechanical workmanship.

BASIC CONCEPTS:

For some time man has been looking for different ways to generate electricity. He has used water power, steam power, nuclear power and solar power. Recent papers written by Tom Bearden make a free energy generator possible. Tom Bearden, rather than patent his devices, chose to share them with people who had open ears. I myself have had numerous conversations with Tom Bearden. I found Tom to be one of the most reasonable men I have ever dealt with in this energy field. Most others would tell you stories of great machines they had, but would never present the truth with circuit diagrams or a look at the machine in question. Tom, on the other hand, clearly presents his ideas and discloses the concepts by means of which they work.

The facts I am about to present to you about free en-ergy were never put into textbooks, only portions were. The textbooks have grounded people in conventional theory and made things very complicated. What I am about to explain is very simple; anyone can understand this theory and anyone who understands what he is doing can build this device.

I have been grounded in conventional theory for some eleven years. I have always tried to study the simplicity of electrical circuits, but my mind wouldn't allow this because of my orthodox training. In any event, I had to change the way I was looking at things. I started to wonder, why do we need to have things

so complicated? The truth of the matter is, we have been taught to consume or waste energy at every turn in our lives, so we jump into our cars, turn on lights, etc. In other words, we have been conditioned to waste energy and fuels lavishly, not realizing that someday someone will sky-rocket our energy bills to a point where we will not be able to pay for these fuels. Everything will come to a stand-still.

But laugh as you will, at that time Rube Goldberg machines will power your future. It probably will not be uncommon to see machines from the size of garbage cans to the size of two story apartment houses powering everything in sight. These machines will be using a force in nature never conceived by the conventionally trained mind of today.

The theory I am about to explain to you will bring you one step closer to gaining free energy.

To begin my story, I must state that I had a vision: looking for this energy. Many times I hammered my head into the ground, but I refused to give up in my search. Any person with a dream should never let it be wasted by fools, who will always say "you can't do that". All that statement really means is that they do not know how to do it.

There are many different ways to explain this theory. I will discuss the first one now.

The device is very simple and uses electronic circuits. Basically we drive a direct current motor with pulsed current from a battery, then utilize a special means to cause the battery to recharge itself.

First, the battery is connected to a simple flip-flop circuit which in turn drives a simple amplifier circuit. The load (motor) is connected to Q4 (2N5885, Figure 3), or between the positive pole of the battery and the collector of the output power transistor. As the motor starts moving forward, the load condition is decreased and the motor draws very little electrical energy. As the energy drawn from the battery is decreased, the flip-flop circuit goes faster and faster to a certain point, which determines the speed of the circuit; how-ever, we can vary the speed by adding certain things that are also simple. The idea is to pulse the motor in a certain time frame, drive a flywheel of some mass, and convert the mass's angular momentum to energy for our use, giving back to the battery all we have robbed from it during one power pulse plus adding a little bit more.

An easy way to look at this is to say the battery is 12 volts. To charge this battery we need at least 2 volts over the battery voltage, so we need 14 volts ap-lied in the correct direction. (See Figure 1.)

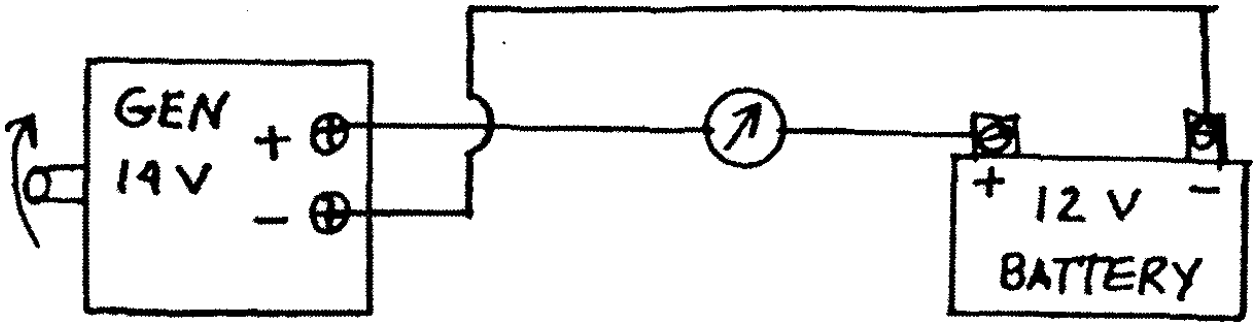


Figure 1. Recharging a Battery from a Generator

Looking at Figure 1 we can see that the generator is at 14 volts and the battery is at 12 volts so we have a reverse flow condition in the battery, which means the battery is in a charging condition. If, however, the generator did not make 14 volts but say only made 10.5 volts, the generator would act like a motor and just drain the battery away and the current meter would show discharge.

So far, this is all just conventional theory on how batteries are charged, and this is all you will find in textbooks, except for some books that tell you how to make special power supplies to charge batteries faster. With the machine I am going to describe to you, we will do better than that; we can actually boil the battery away if the device is not properly constructed.

Let's begin by stating certain facts. The ions move backwards under charging conditions and in reverse under discharging conditions. So here we start our new concept. Suppose we have constructed a machine that has tricked this battery into a different space and time relationship. Simply put, suppose the battery never did any work and it should have its full charge left in it. Suppose this becomes possible because we have stressed the terminals in such a way that the ions in the battery electrolyte actually move themselves backwards. The machine, or unit, that makes this possible has many different names. Some people call these units generators, energizers, alternators, etc. Conventionally such devices have one thing in common; they stress the battery backwards by pushing electricity to the battery and forcibly pushing the ions in the electrolyte back-wards. In our theory we are not going to push anything – the ions are going to move themselves, recharging the battery.

If we go a little deeper into this theory, you are probably asking yourself "What is this madman talking about?" Simply put, we are going to put a stress on the battery terminals for a moment in time and the battery will do the rest.

Now comes the heavy part of this theory. What they didn't teach you in textbooks is that, in order for the battery to charge, two oscillatory actions must occur, one at the positive terminal and one at the negative terminal. Under different stress levels this then forces the ions backwards. The same would occur for an electron. Our machine will slingshot ions in the battery electrolyte backwards beyond the normal recoil action. (See Figure 2.)

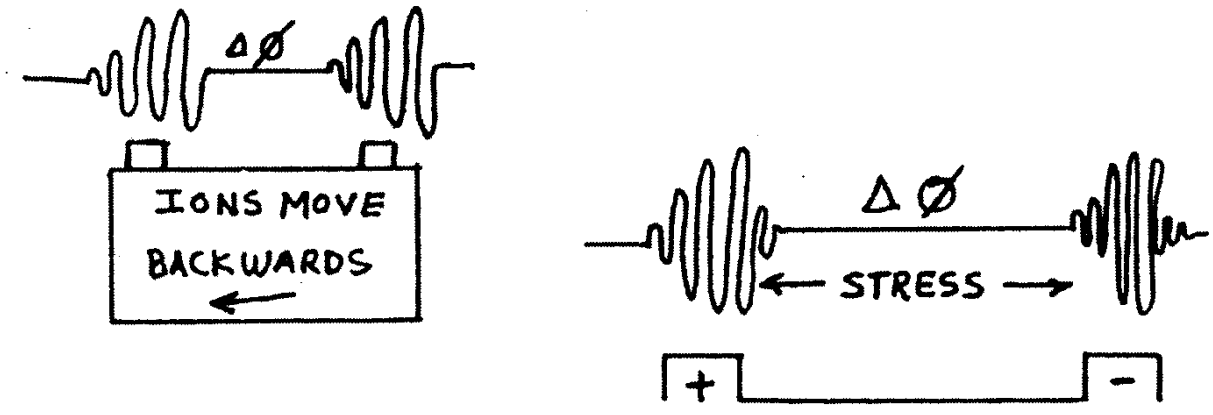


Figure 2. Ringing of Ions in the Battery from a Hammer Effect

I must give a very stern warning at this time that if the voltage developed is too high the battery will explode. Use the utmost care. Test setups in my lab have proven that this can be dangerous. Do not build the device and experiment with it unless you know what you are doing, and use the utmost caution.

When struck by a sharp voltage spike, the electrolyte in the battery will resonate at a certain frequency and this can also force the ions backwards. Simply put, the battery, the motor and the energizer will become resonant at some point, "ring" like a bell when we "strike" it, and in its ringing the most energy will be developed.

THE CONTROL CIRCUIT:

For people who like to tinker and like electronics, these are the circuits I have used in my lab to examine this new concept.

The circuit contains a very simple, free-running multivibrator circuit which is used to gate the operation of a two stage amplifier.

A motor or other load is connected in series with the collector of the output transistor, and each time the transistor conducts voltage, it will be applied across the load.

The input power may be any D.C. voltage from 6 to 24 volts.

The rectangular wave developed at the collector of the second transistor is resistively coupled to the base of the 2N5875, gating it on and off. This stage in turn gates the operation of the 2N5885 used in the output stage.

A motor is connected from the positive side of the battery to the collector of the output transistor. The motor pulses at the frequency of the multivibrator. (See Figure 3)

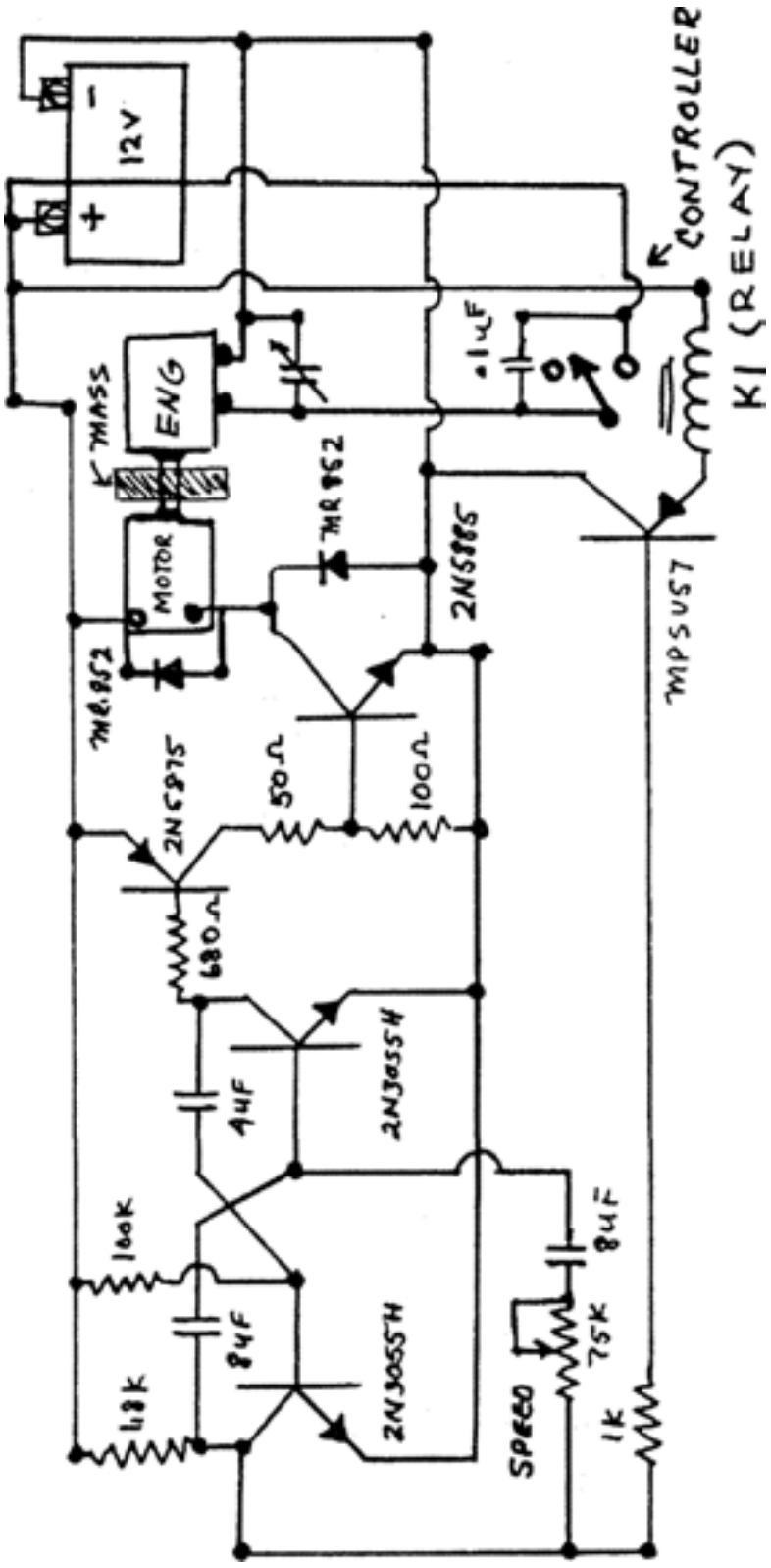


Figure 3. Circuit for the Bedini Free Energy Device

In Figure 3 it must be remembered that the tuning of the circuit is very important in that the pulser circuit must be out of phase with the controller circuit. Those persons who have instruments to check this must connect the probes of an oscilloscope on channel A to the col-lector of the 2N5885 and ground the scope to channel B which must be across the battery. The wave forms should look like those shown in Figure 4.

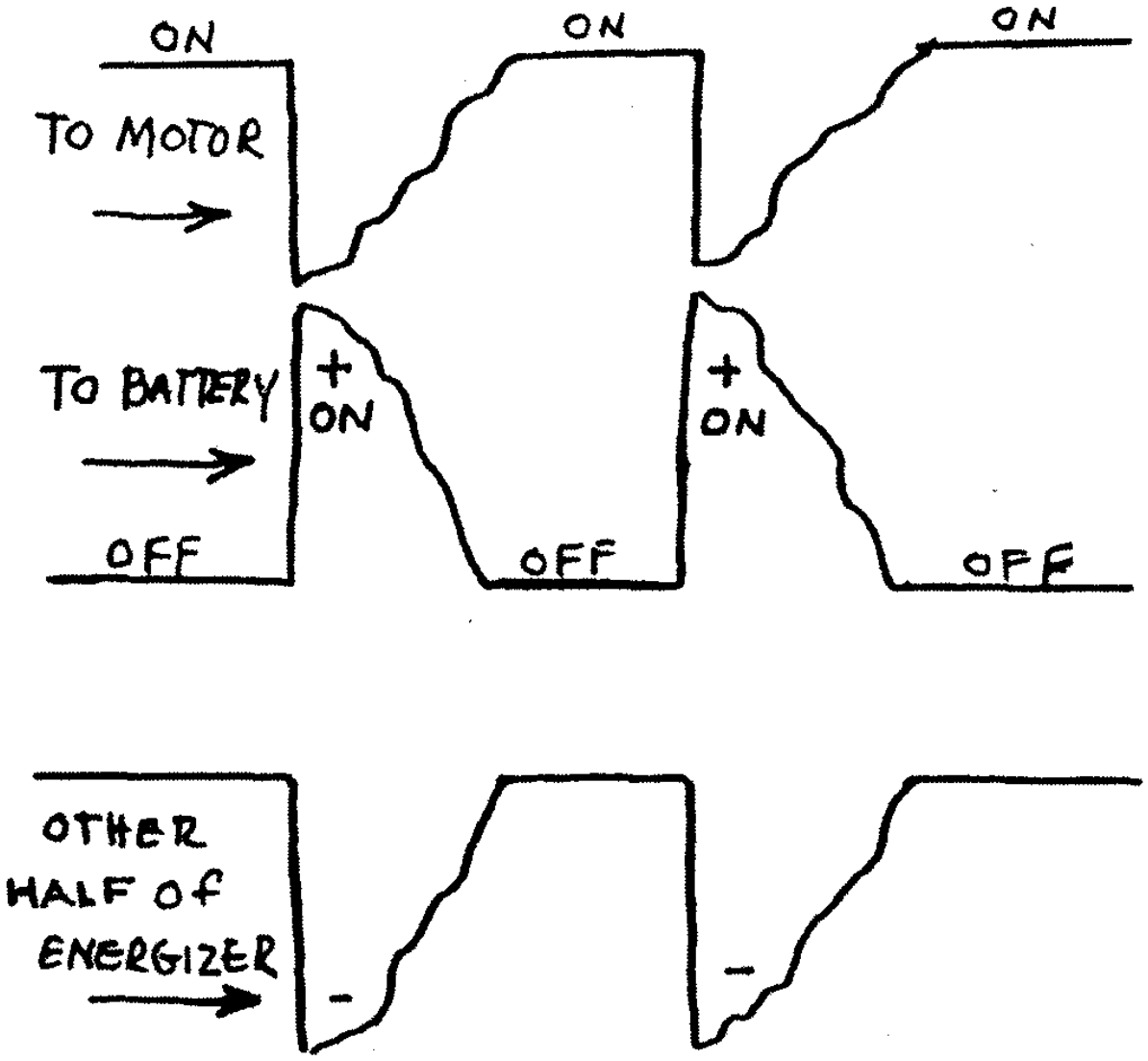


Figure 4. Oscilloscope Wave Form

In studying this new concept a little further, we see that something very unconventional is taking place here. The motor is very conventional as far as pulsed wave-forms go, but the energizer is doing something very unusual. The waveforms from the energizer are telling us a new story. If we take the scope and expand these waveforms out even further, around 50 MHz, the waveforms look completely different. (See Figure 5.)

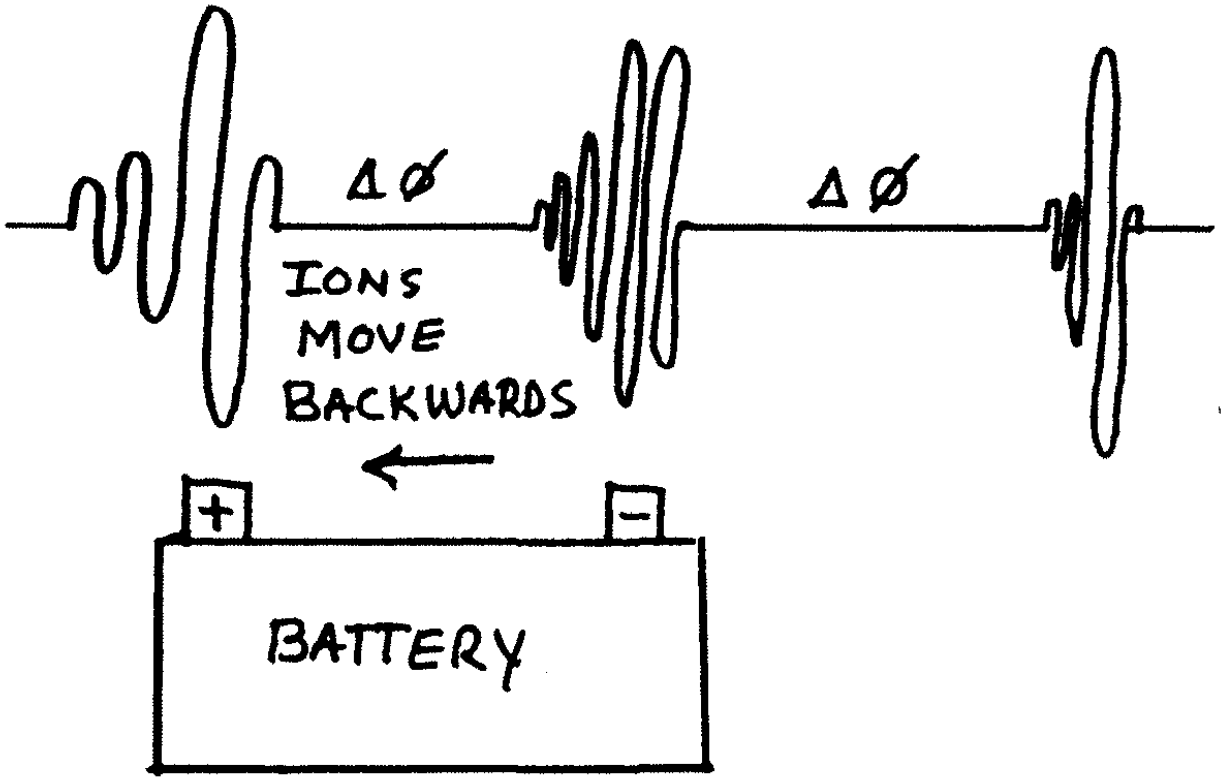


Figure 5. Stimulated Resonance Provides Self-Charging

As we look at Figure 5 the story becomes clear. The battery is really charging itself. The ions in the electrolyte are being stressed in a curved space and time relationship; the battery is actually forced into believing that no work ever occurred. The oscillatory action that has taken place by the energizer has just pulsed our "slingshot" back and immediately let go. Once this has happened, the electrolyte in the battery goes wild and the ions race backwards, giving off hydro-gen and oxygen gas.

I must make a stern warning here! The time of the stimulating pulse is very important. If the time is too long, the battery will burn itself out. If the pulse time is too short or if the circuit fails to operate correctly, the battery will never recover its charge.

Taking this into consideration, the only failures that could occur would be the controller failing to operate due to a points failure, or the multivibrator latched in the "on" position. Anyone studying this can see that we have used very little energy to get to this point, and gained a lot of resonant energy in return.

We must remember that, if the battery is applied to the energizer longer than normal, we must burn up the excess energy to keep the battery cool. The problem becomes one of embarrassing excess of energy, not a shortage.

Now I have one question for you, what will you do with the excess energy and where did you get it?

THE ENERGIZER:

The energizer is also a simple machine, but if you want to, you can make it very complex. The simple way is to study the alternator principles. The waves we want to generate are like those that come from old D.C. generators with the exception of armature drag, bearing drag and no excited fields. Also, we would want to cut the magnetic fields at 90 degrees to the armature. The simpler the better.

I am going to throw a few ideas your way. I have run some tests in my lab and discovered that certain types of energizers, generators and alternators do what we need. Also, we want to be able to tune the output of our energizer. The old D.C. generator puts out some-thing very close to what we need, except for the drag. (See Figure 6.)

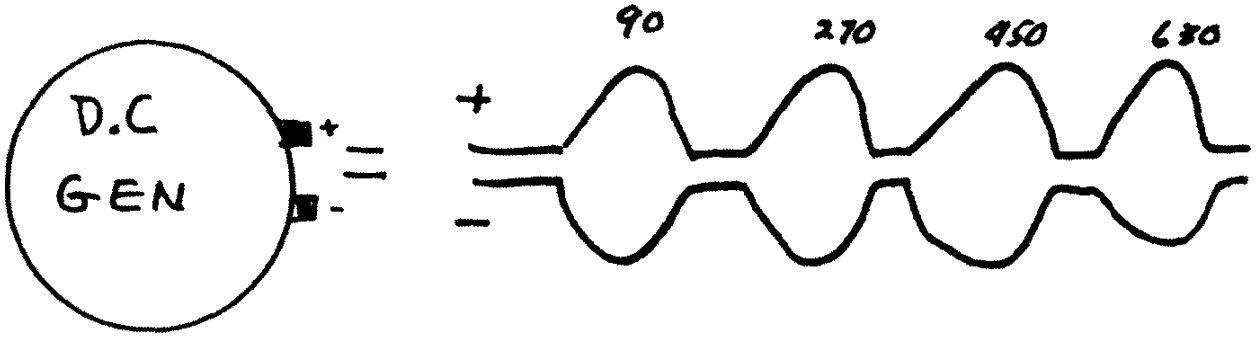


Figure 6. Output Pulses from a D.C. Generator

Looking at Figure 6, this is pulsed D.C. and everybody will accept this, except me, because the other half has been left out *once* again. It is the same old story, wasting energy. Conventionally it is not important to know about the other half. Well, it is very important to me, because I need it to build my energizer.

The D.C. generator output actually looks like this when expanded. (See Figure 7.)

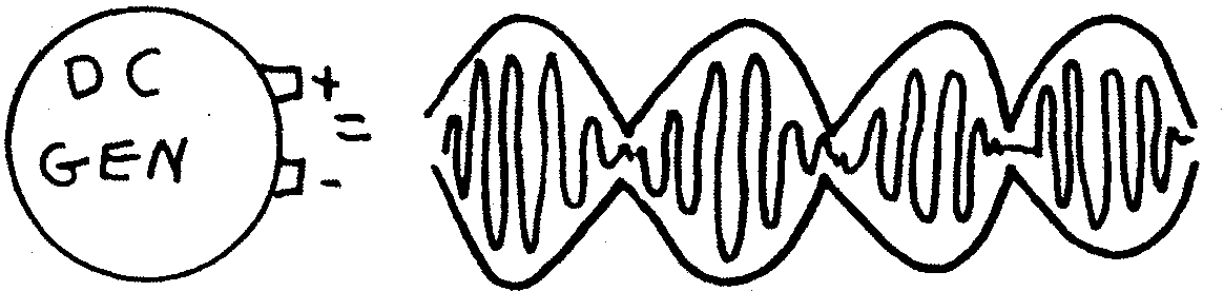


Figure 7. Expanded Output from a D.C. Generator

In an A.C. generator output we are going to see just what we manufactured. (See Figure 8.)

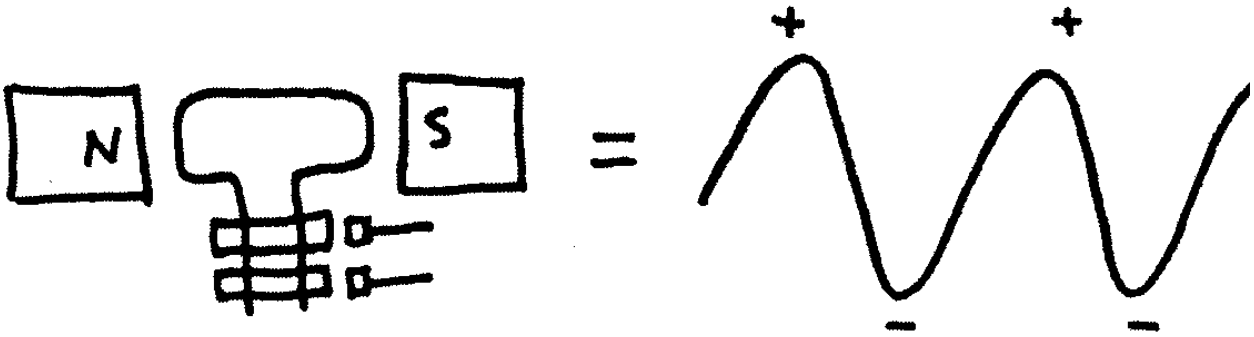


Figure 8. A.C. Generator Output

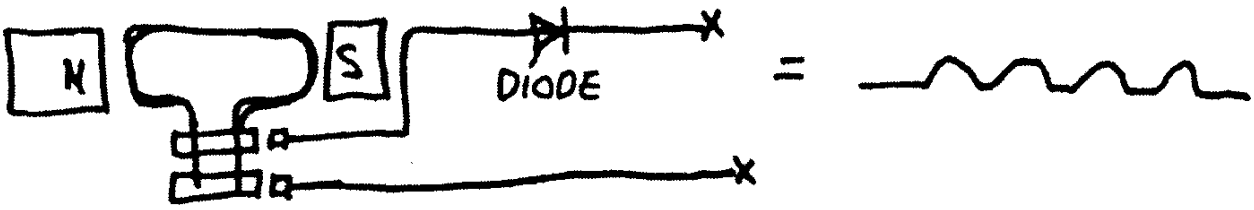


Figure 9. Rectified Output from an A.C. Generator

In looking at the A.C. generator with rectified out-put, we see that it could become very useful to us as an energizer, simply because it is the easiest to construct and its principles are simple. I have done experiments with a little different variation of this machine, as shown in Figure 10.

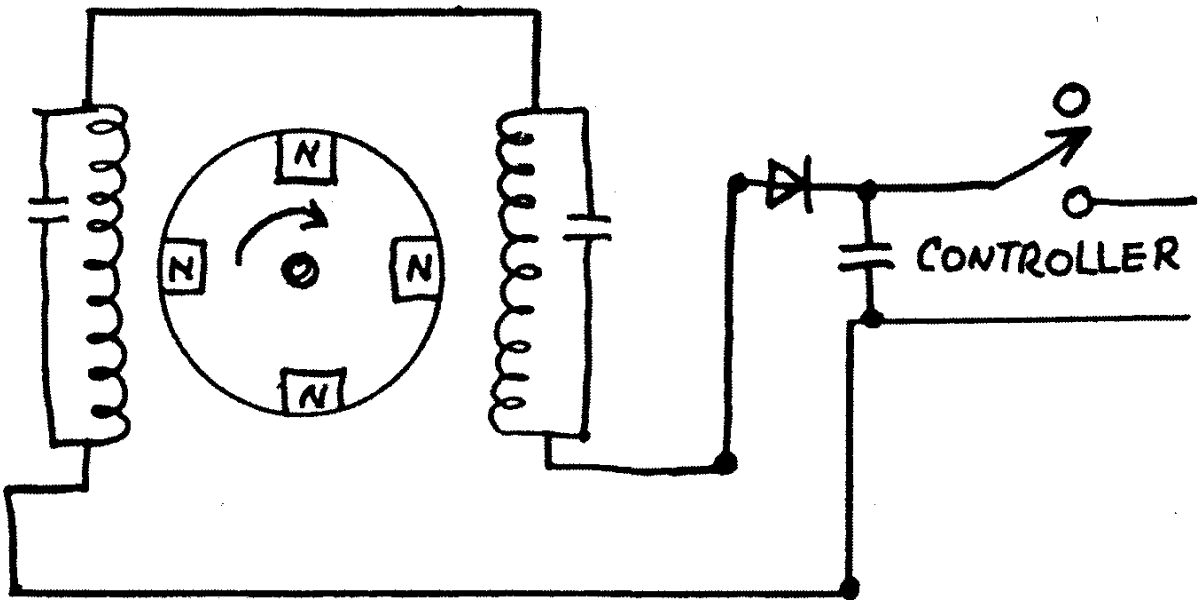


Figure 10. Variation of a Rectified A.C. Generator

According to the conventional books, this alternator principle applies this way, as shown in Figure 11.

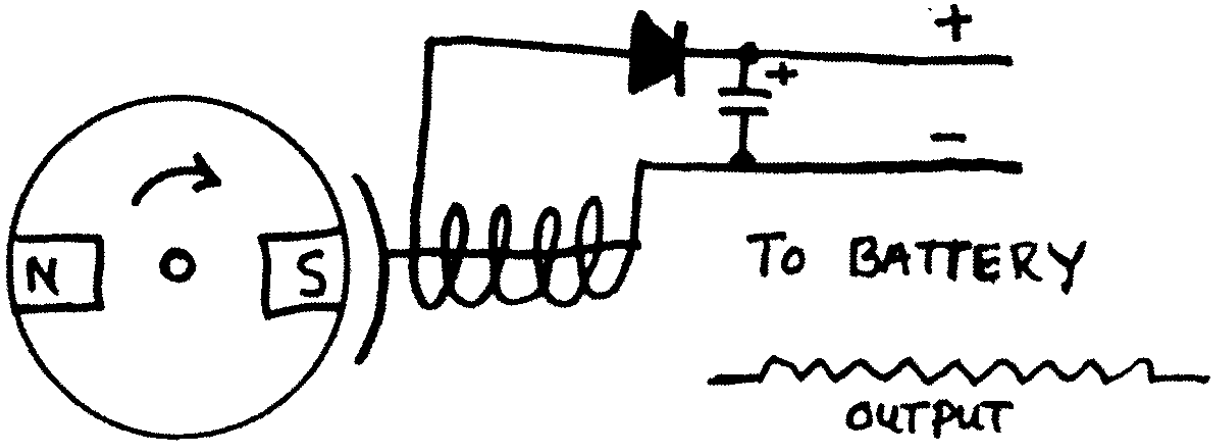


Figure 11. Conventional Explana

In Figure 10 most people can see that the alternator drawn here might have some problems. However, remember that I am looking for a certain type of wave form that I want to tune to a certain frequency at a certain speed. The winding of this alternator is a problem and it is tricky, but I chose to stay with this unit. You may choose a different method if you retain the principle.

THE CONTROLLER:

The controller is a simple piece of equipment to build; however the controller in Figure 3 could present certain problems if the contacts or points were to arc closed. If this were to happen, the motor soon would drain the energy from the battery and things would die.

There is another type of controller I must make known, and it is the simplest of all. With three brushes and a commutator, you can do away with all the electronics and handle 100 times the power back to the battery. The simplest method would be a split commutator, of which a little less than 180 degrees would be copper. (See Figure 12.)

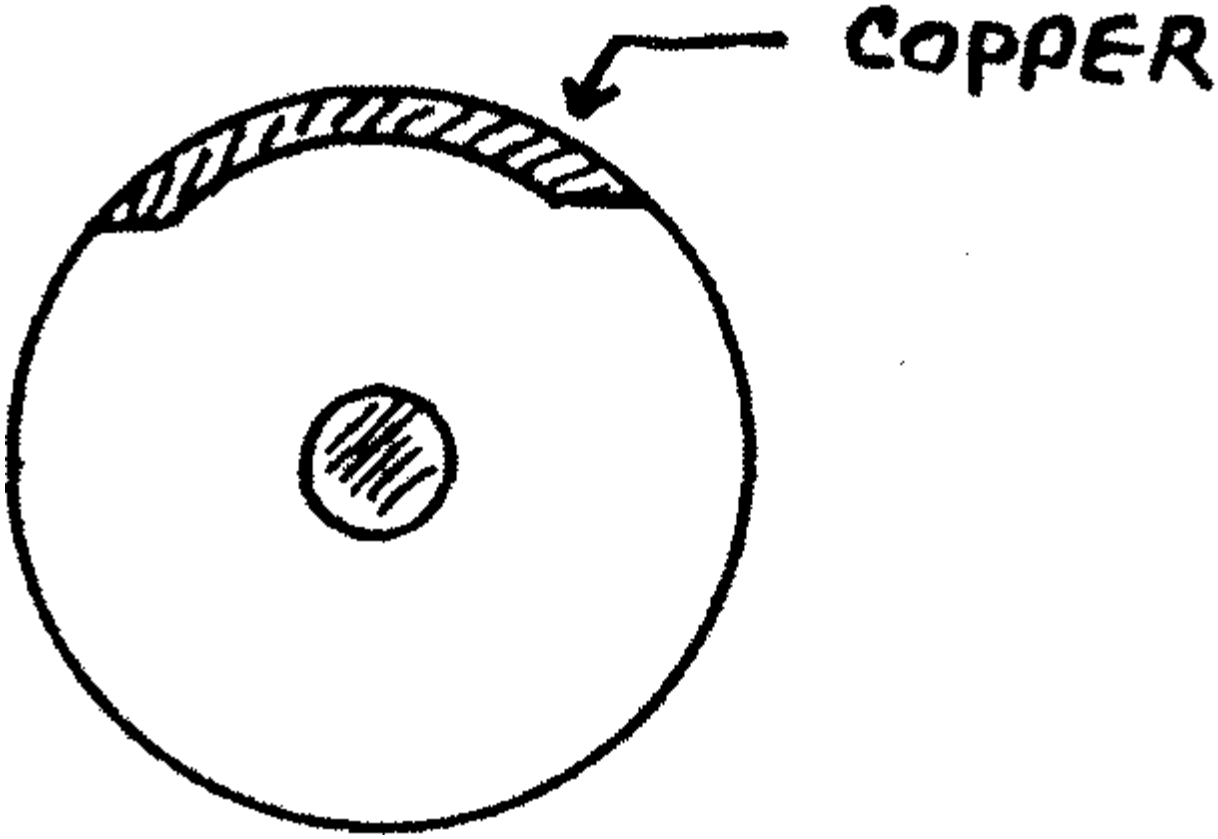


Figure 12. Split Commutator

This split commutator is going to become our pulser and our controller, doing away with all the electronics. Just think – no transistors to fail, no relays to stick, no resistors to burn up and the best of all – no cost!

The only thing this unit requires is a little tinkering and later on you can add the vacuum advance.

But enough joking around! The next step is to build a good unit that will last a long time. You may choose to build any other version you wish. Now, we need three 12 brushes and you can begin to see how this is going to work for us. (See Figure 13.)

Figure 13. Split Commutator with 3 Brushes

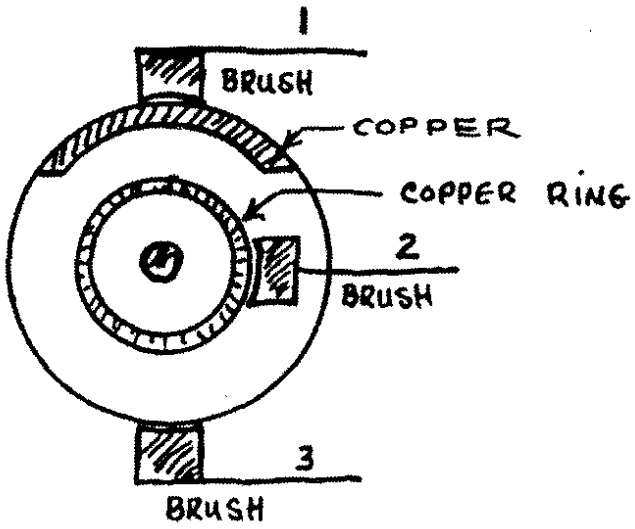


Figure 13a.

Physical Construction

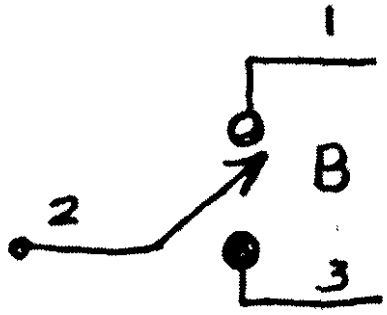


Figure 13b.

Equivalent Circuit

As we can see, the physical construction (Figure 13A) is is nothing more than a simple switch (illustrated in Figure 13B). The thing to remember is that this commutator is completely insulated from the shaft; otherwise the bearings will arc in the motor and the heavy mass, or flywheel, will chew the bearings up. This controller only has one function – to gate the energy from the battery and to return it in the opposite direction. You have already seen the wave forms earlier in this paper.

There may be some tinkering around to be done with brush 1 or brush 3, depending on which way you want to hook it up. Also, once again, the timing between brush 1 and brush 3 is very important.

Let's look at the way this would be hooked up. (See Figure 14 on page 28).

If you hook up the components as shown and tinker with it until you get a stimulated resonance-coupled system, you will have a free running motor that powers itself and performs useful external work as well.

I think I have presented the facts as they really are. The machine is simple and not complicated. If built and adjusted correctly, this unit should supply energy for whatever you need.

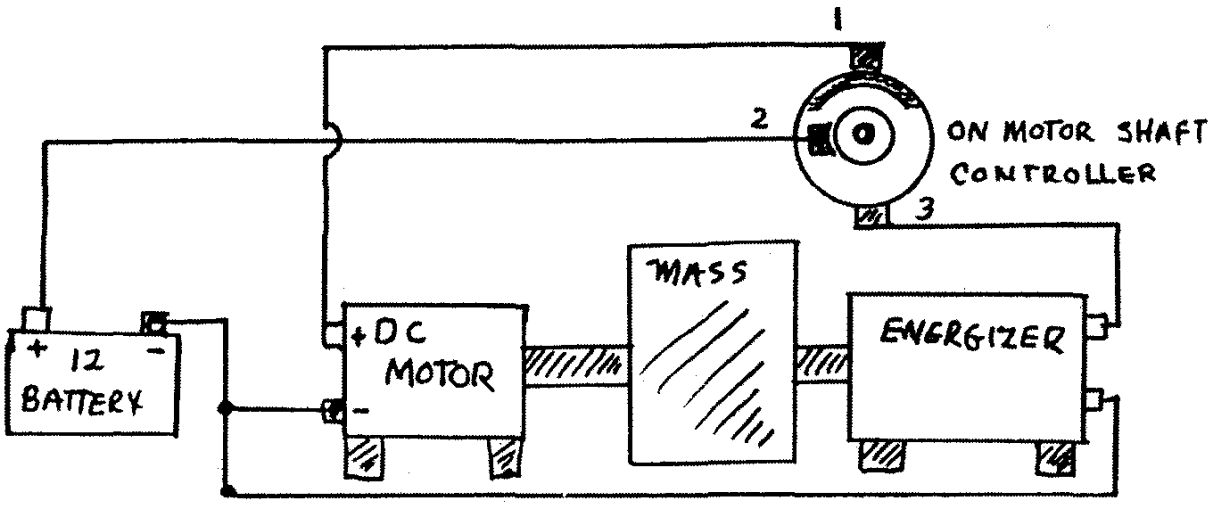


Figure 14. Prototype Hookup

A photo of a prototype is shown in Figure 15 on 31 and on page 32 is a diagram of the device I am now building as the second phase of this development.

The devices shown are my original concepts, of which I have actually built several working models. These have been witnessed by reliable observers. Several of these units are being constructed by friends and acquaintan-ces, based on my instructions.

For those who wish to build and make improvements in the units described, the very best of luck to you. I am willing to offer suggestions to those who are truly involved and need some assistance.

John C. Bedini April 9, 1984

CONSTRUCTION NOTES:

For those interested in building and experimenting with a free energy unit, a brief description of the basic components used in the original prototype is as follows:

MOTOR – G.E. permanent magnet, 1100 RPM, 1/12 h.p. This motor draws approx. 10 amps on pulses on start-up. As the speed of the motor increases, the amperage will decrease to about 1 amp on pulses. Permanent magnet motors are suggested based on good efficiency. BATTERY – 12 volt, 12 amp-hour motorcycle battery. ENERGIZER – A standard office type 2-speed A.C. fan was used for the housing. The coils were replaced with 6 coils of approx. 200 turns of #20 wire – all in phase. Six permanent magnets are bonded to an aluminum disc. The arrangement should be similar to that shown in Figure 16a/16b. This arrangement is basically a magneto, but will produce more amperage than ordinarily expected of a magneto.

CONTROLLER – If the controller as shown in Figure 13 is used, it is important that provision be made to rotate the brushes in relationship to each other in order to secure the required timing.

The author again wishes to stress the fact that while the circuit and apparatus is not complicated, a great deal of "tinkering" may be required to obtain efficient operation. Much is yet to be discovered in the construction and operation of such a unit, but the first major step has been made.

Figure 15. Prototype of Free Energy Unit

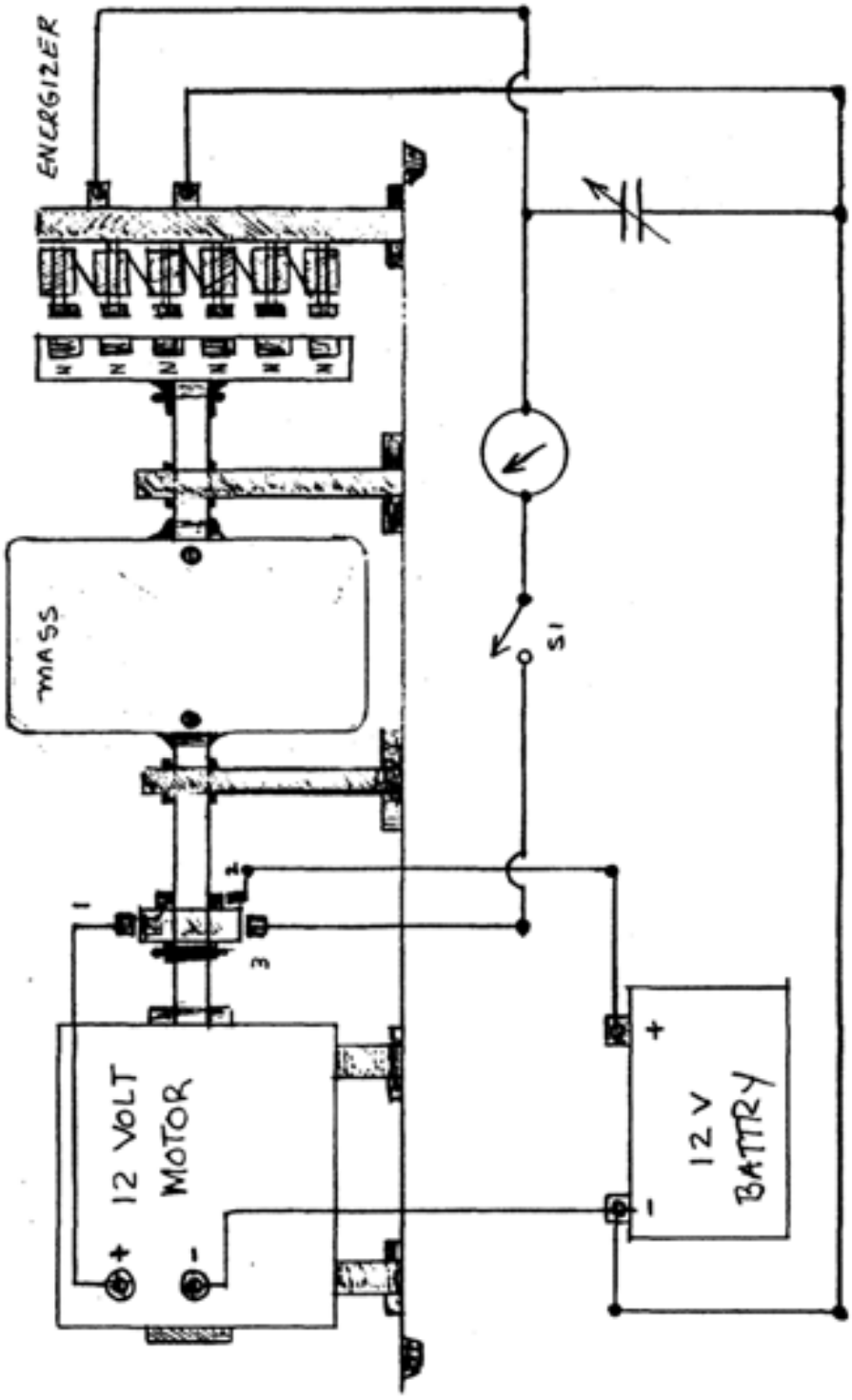
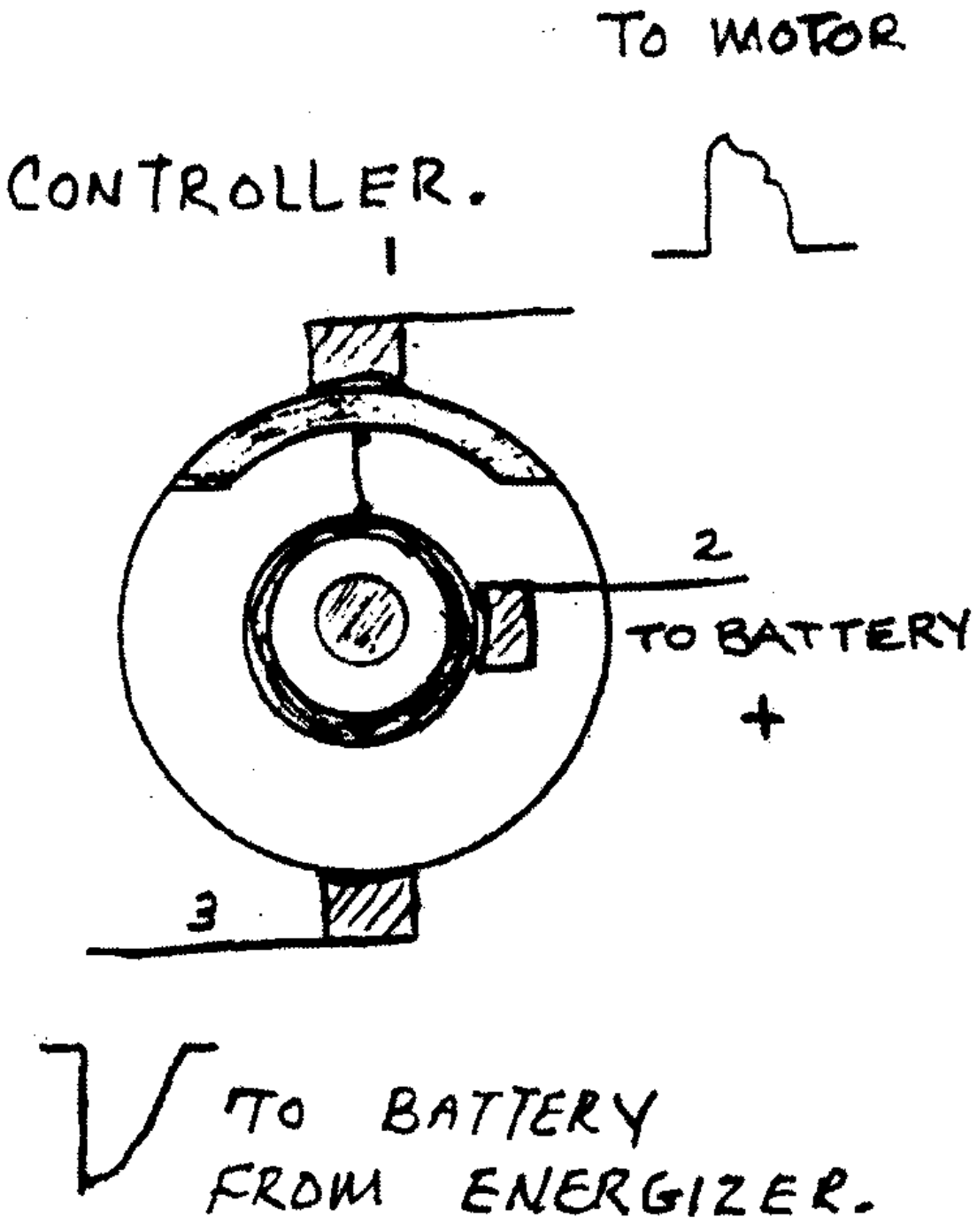


Figure 16a. Bedini's Test Model No. 2



Patent Pending

Figure 16b. Bedini's Test Model No. 2 (Controller)

STEP BY STEP GUIDE:

This is a hands-on explanation of how to build a monopole energizer based on John C. Bedini's patent No. 6,545,444. This system charges lead acid or gel cell batteries in a unique manner. There is very little current and no heating involved. Contrary to the effects of conventional charging batteries charged with a Bedini energizer show an increased capacity after repeated charging and they recharge more rapidly.

Mr. Bedini has made this patent information freely available and given permission for anyone to build one of these systems for their own use. John Bedini knows from experience that the only way to understand this technology is to build a system and see it in action. That is why we know they work, we have built them. And we have found ways to construct them using off the shelf supplies. This guide is to help those who have average skills with average tools to build this extraordinary device for themselves.

There have been comments about my efforts from those who now control the patent named above. They said I was not authorized to sell Bedini products. Well I am not selling now. I explained to them that I would give away all the information I could. If they had a problem with that let me know. They have said nothing since.

There have been thousands of hours spent in developing this system so others can construct them for their own experimentation and use. We strongly encourage you to copy this information and freely distribute it. Those who wish to monopolize nature's gift of energy can only be defeated if we who are willing to share, will share it.

We have developed ways to construct them using off the shelf supplies. This guide is to help those who have average skills with average tools to build this extraordinary device for themselves.

We have tried to include all the information needed in this document to tell you where to buy the parts, how to put them together and start gaining firsthand experience with radiant technology.

Any building or replication of these systems you do is entirely at your own risk.

No guarantees are made or implied.

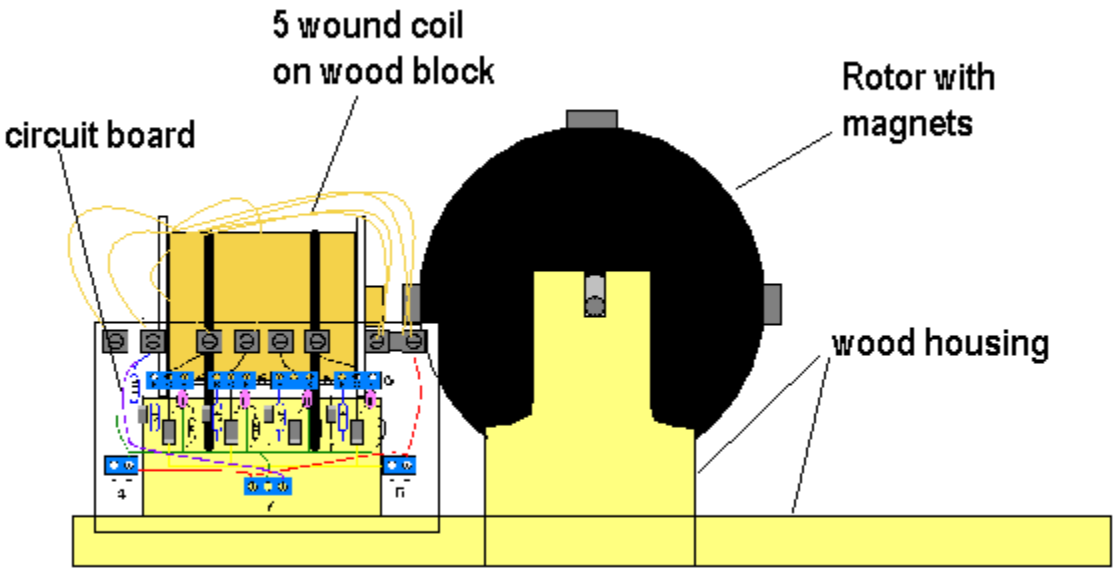
Let's Get Started!

You will need to have access to, and be able to use, the following tools:

- Electric drill for making holes and driving screws
- Measuring tape
- Soldering iron
- ½ in open end wrench or medium to small crescent wrench
- Hack saw
- Radial or skilsaw
- Hot melt glue gun
- A pair of heavy duty wire cutters or tin snips
- Needle nose pliers (if you have a strong grip this can also be the wire cutters)
- A volt/ohm meter
- Masking tape and electrical tape

Here is a diagram of what you will be building. We call it a Kitty Hawk version because it is just the beginning of your adventure into radiant energy use.

There are 5 main parts to this device. They are the coil, the rotor, the circuit, the connecting wires and the base to hold them all together.



This is a picture of an expanded version we call the Cactus Express.
This model has an amp meter attached which is not part of the kit.

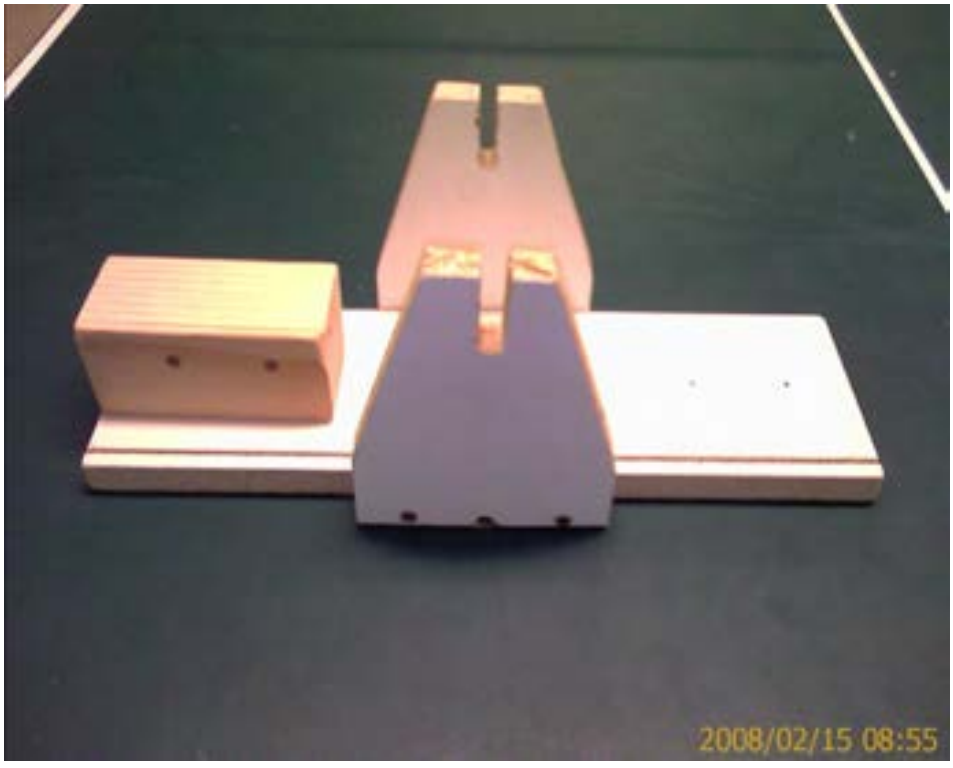
Here is an overview of the 5 parts.

The coil is wound with multiple wires all the same length so it is not a conventional transformer. The first coil on the system has 5 wires all about 100 feet long. Any additional coils would have only 4 wires also 100 feet in length. They are wrapped on a plastic spool and the core is filled with cut welding rods. In the picture you see two coils on either side of the rotor.

The rotor is about 5 inches in diameter by 3 ¾ inches long, made of black ABS plastic. It has a place for a bearing in the center. On the outside circumference are placed 4 to 6 ceramic magnets which are taped in place. The rotor pictured above has 6 magnets, double stacked.

The circuit is the more technical part. But if you have done any circuit soldering it is a simple circuit. If you have never soldered but would like to try, this is a great place to start. The components are fairly easy to handle and the circuit is not complex. There are two circuits shown in the above picture. The circuit has been designed to be expandable so whether the system has one coil or 12 the same circuit works for all.

The base is made of a non magnetic material. It needs to be strong enough to hold the coil and the rotor rigidly in place during the operation. The base of our Kitty Hawk kit is designed for one coil which easily expands to a two coil system. We make the base of melamine.



The connecting wires are just wires that go from the battery that powers the system and the wires that go to the battery (or batteries) being charged. We put battery clamps on the end of the wire and it is stripped bare on the other end to fit into the circuit

terminal blocks like this. 

Let's talk a little about the operation so the connections will be clear. The system is fed by conventional electricity from a battery or a power supply plugged into the wall. What you are going to build is a specially designed electric motor. The rotor will spin very fast. But instead of using the mechanical output, we are concerned with tapping radiant energy that is a result of the rapid switching rates of the circuit. As the rotor is given a good strong spin the magnets create a voltage in the coil. One of the 5 winds of wire is used as a trigger sending this voltage to the base leg of the 4 transistors. They all switch on and the coil becomes an electromagnet. One end of the coil will be north and the other south. The magnets on the rotor all have the north poles facing out. The coil is connected so when it is energized the north pole is facing the magnets and it will then repel them and the rotor will continue to spin.

When the coil repels the magnet it moves away and the voltage in the trigger winding goes to zero. So the transistor turns off. The current stops and a radiant energy spike occurs. This is seen as a voltage spike as we measure it with our instruments. But there is more there than can be measured with a volt meter. The energy then leaves the circuit through a large diode and makes the charging battery start charging up without any current. Each magnet that comes by repeats the process.

So again a magnet comes by inducing a voltage in the trigger winding. That turns on the transistor and the coil is energized. The electromagnet coil now repels the magnet and as the magnet leaves the transistor turns off. The space between each magnet should 44 be about 3 but no more than 5 magnets widths apart. This space gives time for the radiant energy to be captured and determines the percentage "on time" of the transistors.

As the rotor gets up to speed the action actually changes so that when the coil energizes the magnet has past it already. So the coil is now pulling the south pole of the next magnet towards it. So the spacing is important not to be too small between each magnet or else the coil will start repelling the next magnet and slow everything down.

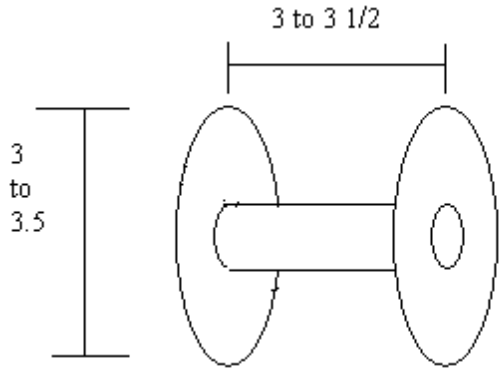
So the faster the magnets go past the coil the more pulses of radiant energy hit the battery and the faster the charge rate. Also each winding on the coil taps a portion of energy. So the more windings the greater the flow of energy. If a second, third or 12th coil were added to pulse the rotor they would all receive their switching voltage from the same trigger coil. The speed of the rotor increases substantially with each coil. The greater the speed the greater the trigger current to the transistors. If you have 4 coils or more the circuit needs an increase in the resistance to decrease the trigger voltage and current so the energizer doesn't draw more current than needed for the charging action to take place. But increasing the resistance which is now fixed at 147 ohms doesn't just slow down the rotor it also makes the whole system consume less input power. If we decrease it from its present value of 147 ohms on the Kitty Hawk

we can decrease the current draw and it will use less power, but we also decrease the charging rate. So for a one or two coil system the 147 ohms is the best balance between current draw and charging output. I have found that a 6 coil system with an increase of just 22 ohms in the trigger resistor changes the current draw from 6 amps to 2.5 amps. A one coil Kitty Hawk uses about 1.2 amps current at 12 volts input power. So a little less than 15 watts of power.

Now we will show you how you can build each part of your system.

- # The Coil

Three items are needed for the coil. They are a plastic spool, the magnet wire and the ferrite core.



Plastic spool:

The plastic spool needs to be 3 to 31/2 inches long and 3 to 3 1/2 inches diameter with a ¾ inch hole in the middle. Pittsfield Plastic Engineering sells a 5 pound solder spool that is perfect.

Here is a photo of a Pittsfield Plastic Engineering 5 pound solder spool (the spool is very light the solder would weigh 5 pounds):

Magnet wire: 500 to 550 feet of 18 AWG (gauge) magnet wire for the 5 winding coil.

There are a few online sources for this. Here are some:

- Paramount wire at www.parawire.com
- McMaster-Carr at www.mcmaster.com
- CMS Magnetics at www.magnet4sale.com

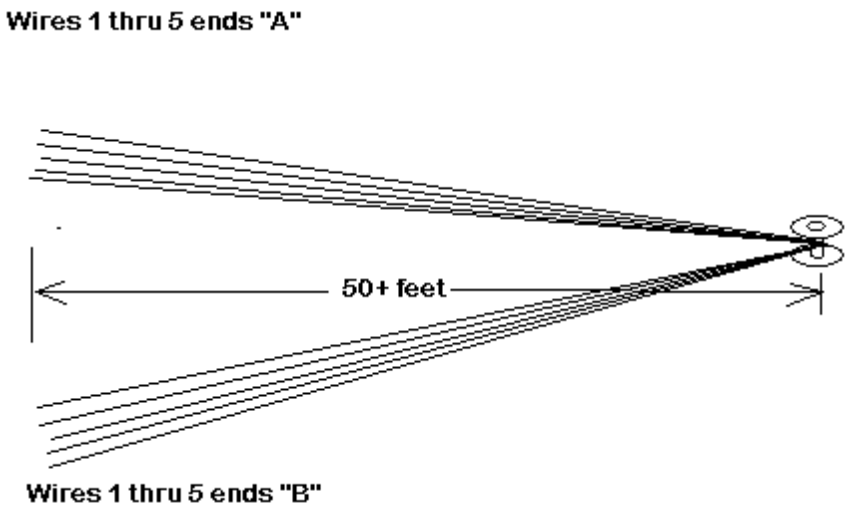
Essex is a big magnet wire manufacturer. Their Denver number is (800) 774-4643. They can direct you to a warehouse nearest you. They sell it in about 10 pound spools.

For your planning purposes in this size of magnet wire one pound equals about 200 feet. You can also check if you have a local electronics supply store (the kind for professionals) they may carry spools of at least 100 feet. A radio shack store doesn't carry this in the length you'll need.

The center of the spool will be stuffed with cut welding rods to provide for the ferrite or iron based core. The welding rods are copper coated mild steel 1/16th inch diameter. Welding supply stores have them in 1 pound tubes and they come in 36 inch lengths. Lincoln R60 welding rods work well. R-45 rods from other companies also work. You will cut them 3 ½ inches long. Do your best to keep them the same length since it is best to have a flat surface facing the magnets and you be using a file to make them all flat on one side. To fill the spool center it will take about ½ pounds of cut rods.

Coil building:

The Kitty Hawk system uses 18 AWG magnet wire. We recommend 100 to 106 feet for each winding. The wire comes in large spools and you'll need to measure out the five lengths. So you will need at least 530 feet to have enough for all 5 windings. You can take it outside and stretch out five 106 foot lengths. You can have a hook or a spool 53 feet from the spool and then stretch each length back to the spool to get the 106 total. Keep the ends separated from each other so you can have the opposite ends of each wire in two separate bundles. Like so:



To keep the wire off the ground so the insulation is not damaged you might drape it through the back of a chair. Once all five strands are stretched out you need to twist them together. The twisting provides for better mutual inductance and handling. One turn per inch is sufficient. Once the wires are stretched out this twisting is easily done by taping the ends together on a wooden dowel. Then place the dowel an electric drill chuck and give it a spin for a while. Then do the same to the other end. No need to reverse the drill direction. Some people like a lot of twist in the wires. It is not real critical how much twist there is, but it most likely improves performance. It does make handling during the winding process easier.

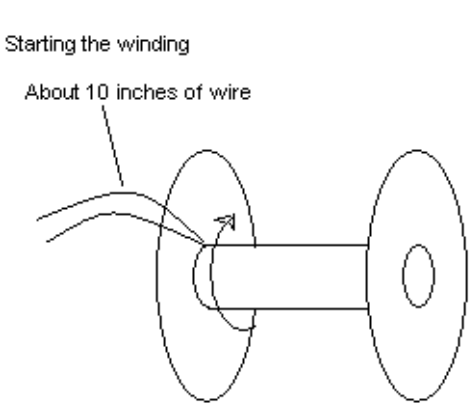
You will need some strong electrical tape for the winding process. As the wire is wound on the spool it will require constant pressure to keep it even and tight. This will tire your hands. But the instant you let the pressure off, the wire will go very loose and you'll lose a lot of work. So to prevent this before you let off the pressure wrap the last 77 few turns with about 3 or 4 wraps of electrical tape. You will have to do this at the very end of the winding for sure.

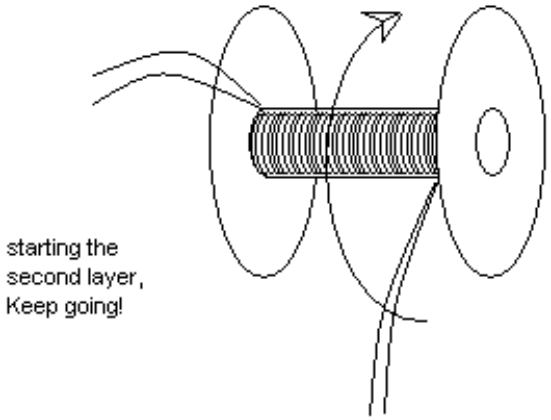
You could mark the ends of each wire length with tape so you'll know which ends match up after all the twisting and coiling. But it is just as easy to use a volt/ohm meter to test them afterward. And yes you need to have a Volt/Ohm meter because you'll want to see your batteries charging up. They don't have to be real fancy. A little digital one only costs about $10.

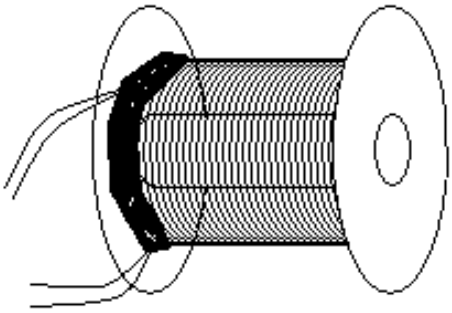
Now that the wires are twisted start winding it on the spool clockwise from one end, but leave about 10 inches of wire not wound on the spool so you can connect it to the switching circuit. Once the coil is wound you will never be able to pull on those inner wires. So start with 10 inches of wire out of the coil and you can cut the end if it is too long after the coil is installed.

Wind around the spool core from one end to the other and then back again. Ideally nice smooth layers of evenly spaced wire. But most likely you will find yourself with some gaps and bumps part way through. Don't worry it will still work. Just fill in the gaps as you go and try to keep it so the wire is evenly distributed along the spool length when you are done. At the end leave about 10 inches of wire to connect to the switching circuit. Try to have the winding end at the same end the other wires are sticking out. That way both ends will be in the same end of the coil and away from the rotor.

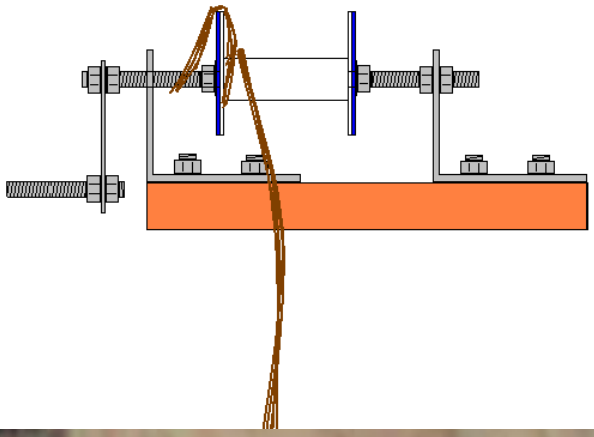
Here are some pictures:







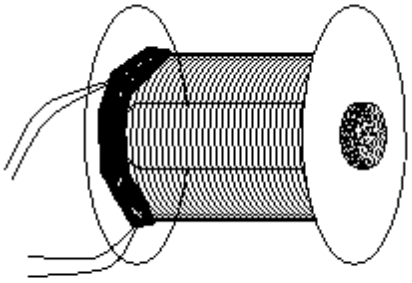
To make the process easier you can build a winding jig. A 10 or 12 inch length of 5/16 threaded rod with bolts and washers and 3 ½ end caps that will hold the spool and turn it. Here is an example:



After the coil is wound and taped so it won't unwind, you will need to insert the cut welding rods. Lincoln R-60 1/16th is the recommended rods. Cut them 3 1/5 inches long. I suggest using some way to measure the rods as you cut them so each will be as close to the same as feasible. You could tape a small block of wood 3 ½ in from the edge of a table and place the rod end against it and then cut it at the edge of the table. It takes about ½ pound of rods to fill a coil core.

After you cut the rods place the coil on a flat surface with the wire ends on the bottom. Fill the center with the cut rods. One end of the rods will protrude out from the coil. That will be the end facing the rotor and the opposite end from where the wire ends are. Put in as many rods as you can and then keep inserting more by tapping them with a 99 hammer or other metal tool. You can use an ice pick or small Phillips head screwdriver to make a hole to insert new rods. Or you can use a file and sharpen one of the rods to help it force its way into the now full core. Tap the rods gently or they will bend and then they won't go in. When you have put enough of the rods in, they will all be tight and will not fall out.

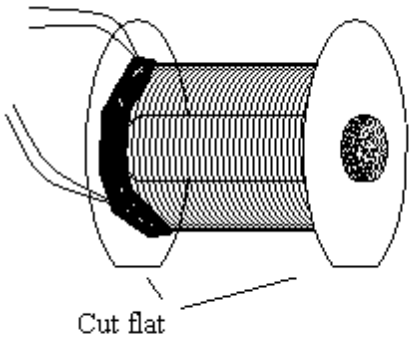
You will want to file all the ends that protrude out so it is flat on the side facing the rotor magnets. This takes time but it will provide a better push for the magnets.



1/16" welding rods stuffed in the center.

Now remove the enamel insulation from the last ¾ inch of each wire end. This can be done with sand paper or a file or a sharp blade like an exacto knife. Scrape all the way around.

Lastly cut about 1/8th inch off the edge of the spool to make a flat side for the coil to be held in place firmly. See the picture below.



Use the voltmeter on the lowest resistance setting to find the two ends of one wire. The wires will be in two groups. Take one wire end from one group and attach it to one probe of the voltmeter. You can't be touching the ends of both meter probes or it will tell you the resistance through your skin. You will notice that the voltmeter reads nothing or "OL" or "L" meaning it is an open line. If the probes are not touching the ends of one wire then no electricity can flow between the probes because there is no conductor between them. This is what you will see until you find the two ends of the same wire. So start trying each

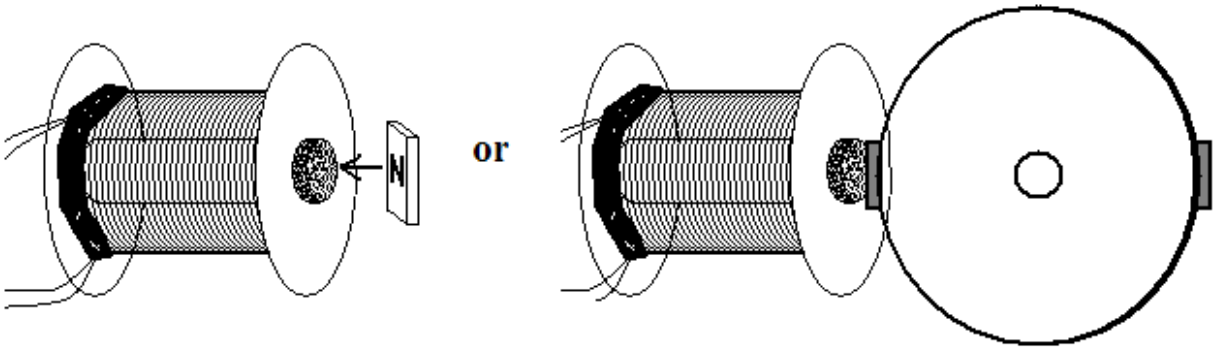
wire. It takes a second or two for the meter to register. Hold one probe to one end and the other to the other end until you see the meter read a number below 10. As soon as it starts changing it will be the right wire. When you see that, the probes are in contact with the ends of the same wire.

Mark those two ends with tape.

Coil polarity:

Now let's determine the polarity. You need to find out which end of the wires needs to be fed with the battery positive to make the protruding ends of the core be the north pole of the coil. Then you need to mark that end with a plus sign. This group of wire ends will then all be connected to the positive portions of the circuit. This will be critical to wiring the coil to the circuit correctly.

Place a magnet with the north pole side facing the core on the part of the core that protrudes out. The magnet will of course hold firmly against the core. If the only magnets you have are on the rotor then set the coil down and place the magnet on the rotor against the protruding core. Like this:



Now use either a 12 Volt battery or power supply and attach one wire end to the negative. Now carefully and very briefly touch the other wire end to the positive post. If the magnet instantly jumps away from the coil you have the right polarity. If so mark the wire you just touched to the positive with a plus sign on it. And all the wires in that group will be the positive ends. If the magnet does not push away switch the wires and do it again.

It takes time but if you build a coil you have made a component that will last a lifetime. It never wears out. And what's more you will have created a powerful device for harvesting radiant energy.

- # The Rotor:

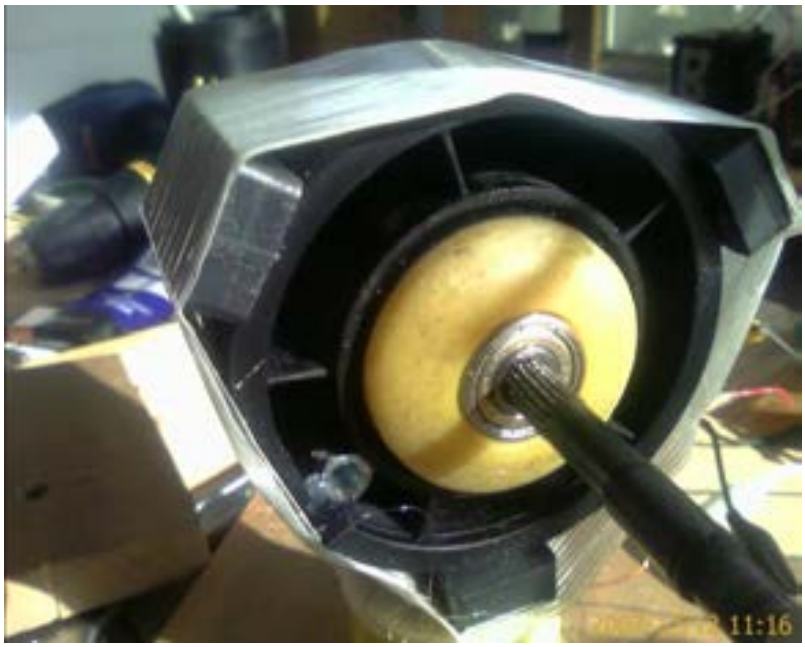
The rotor we show how to construct requires no machine tool work. However we also construct rotors for our systems with a hole for the bearing which has been machined and then pressed into place. We have this work done by a machine shop. The result is better than the use of a skateboard wheel. But the skate board wheel also works fine; it is just a little bulkier.

The rotor we use can hold 4 to 6 magnets and has a ball bearing that fits on a shaft. We have found some off the shelf items that can make a nice rotor. At a hardware store, Home depot, Lowe's etc. go to the plumbing isle look for the ABS sewer pipe items. Get a 4 inch ABS coupling and then two 4 X 2 inch

ABS reducers. The reducers fit in either end of the coupling and will form the outside of your rotor. They fit in tight enough that there is no need to glue them. In the middle we will put a bearing.

We have found that skateboard bearings are so plentiful that the price is very reasonable. If you have experience with bearings you may be tempted to substitute a bigger industrial type bearing. That may be a mistake. Industrial bearings are made to take heavy loads and stay well lubricated for a long time. They may even have grease ports for periodic greasing. They also anticipate that you will have a 1 or more horse power turning the shaft. But your energizer needs all the speed it can get to harvest radiant energy not to heat grease in bearings. Skateboard bearings are intended to be as free-wheeling as possible for more speed. I spent some money on nice ½ inch ID bearings. But no matter what I have done, even soaking in gasoline for two weeks, those bearings are useless for my rotors. If you use greased bearings you will need to take them apart and remove all the grease. So I suggest you save yourself some time and money and get a pair of skateboard bearings or at least buy a free-wheeling Teflon coated or ceramic bearings if you must have larger. As an example I have seen that a ½ inch bearing of the exact same composition cost 7 times as much as a comparable skateboard bearing.

Now you need to have something to marry the bearing and the ABS reducer. Well all skateboard wheels are perfect for holding skateboard bearings. They can just press in or pop out. But to fit in your 4 X 2 ABS reducer you need a wheel that is 60 to 61 mm. That is a slightly large size but most places that sell a selection of wheels will have some that size. If it is a little smaller wrap some winds of electrical tape around the wheel and then press it in the reducer. Just make sure it is flat against the inside edge so it will be perpendicular to the shaft. You will only need one bearing on the outside of each wheel. If you want to take the time you can saw the wheel in half and use each half on one side. That way with two wheels you can make two rotors. If you buy the wheels they will come in a four pack and you can make more rotors for other systems.

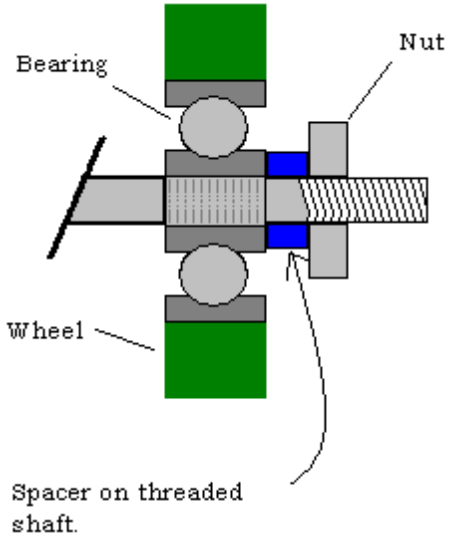
Here is a picture: 

This is actually a smaller rotor with a 3 X 1 ½ reducer for a small demonstrator system I made, but the concept is the same.

Skateboard bearings are 7mm inner diameter. That is just a little larger than 5/16th inch. So again at a hardware store get a piece of 5/16th threaded rod 12 inches long. Also buy four 5/16 nuts and at least two washers. Also get a packet of two 27/64 or .328 plastic spacers. They fit over the 5/16th in rod and press against the inner races of the bearings held by a nut with very little pressure or it will slow the rotor

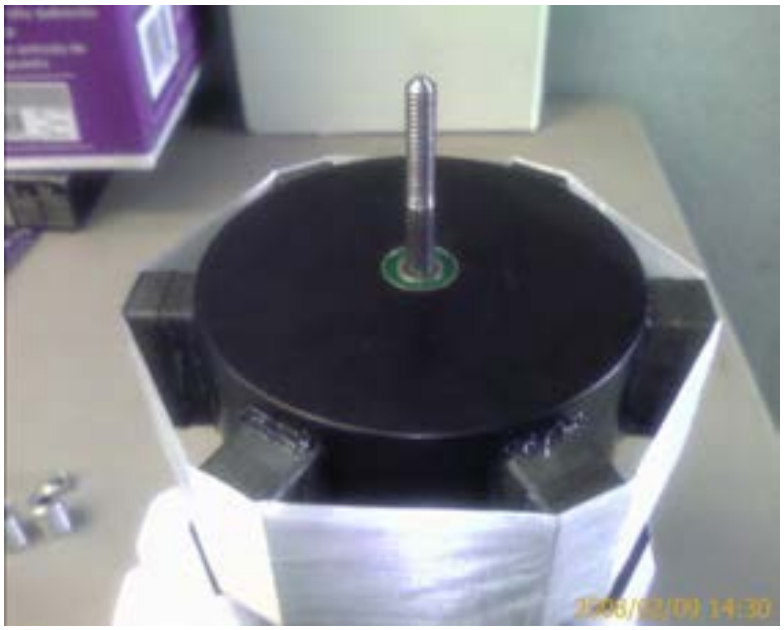
.

Here is a picture:



We have the rotor kit for sale which has the bearings pressed into the plastic parts without using a skateboard wheel. This makes for a smoother operation and it fits the base dimensions given here. This is an example of one portion of the system that a machined part is easier to work with than off the shelf pieces. So we are making these available at a reasonable cost. If you can machine it yourself or have access to someone who can do the machine work great.

We use a machine shop to place a hole in the ABS plastic and then press fit the bearings in it. Here is a picture. This rotor had 6 magnets double stacked. I am not sure you need that. 4 magnets single high seems to work fine. But you can experiment of course. We can get you a rotor with a press fit bearing in it.



- **Magnets:**

The magnets you will use are 1 7/8 X 7/8 X 3/8 inch ceramic magnets either grade 5 or grade 8. They are quite strong so use caution not to pinch your fingers as they close together. Also they are brittle and allowing them to just snap together will often chip or break them.

Sources for these are local craft stores, some hardware stores and online. Just type in "ceramic magnets" in an internet search and you'll find some sources. But here is one that has a good price, www.magnet4sale.com . The rotor described here can take 4, 5 or 6 magnets. You can improve the performance if you double stack the magnets as in the picture above. Double stacking improves system performance by creating more repulsion/attraction and the increased weight provides a flywheel momentum. Both are a real plus for the system.

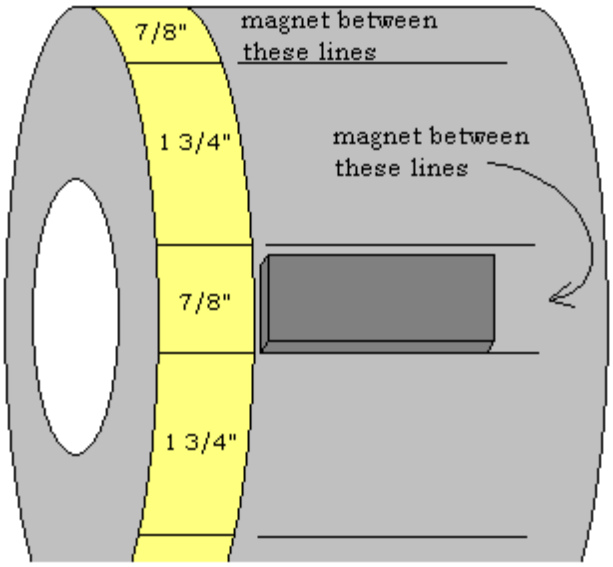
The magnets used are polarized through the thickness. The magnets go around the rotor evenly spaced with the north pole facing out. To determine which side is the north pole place take one magnet and tape a piece of thread to the large side and then suspend the magnet by the thread with one large side facing north. If when you let the magnet go and that side continues facing north then that is the north side. Mark an N on that side with a permanent marker. Then for the rest of the magnets just find the side that repels the side marked N and mark an N on each of them also. Yes that's right what we call the north pole of a magnet is attracted by the earth's magnetic north pole. So either that is really the south pole or…, well whatever, but that is the convention. The north pole on a magnet is attracted by the earth's magnetic north pole. Caution you may see a "free energy" effect of the magnet spinning counterclockwise if it starts rotating that direction. To determine which is north just place one flat side towards north and if it turns then stop it and face the other side towards north and it should stay with that side facing north. (The spinning counterclockwise if it starts will gain speed and only stop when the thread is wound tight. And they said there is no such thing as "free energy"!)

Now let's place the magnets on the rotor. If you have only one coil then perfect spacing is not crucial other than for balance. But if you plan to add more coils then you will want it to be symmetrical so each

coil will be lined up with a magnet at the same time. The rotor is 5 inches in diameter and for proper magnet spacing it can have 4, 5 or 6 magnets on it. 4 or 6 magnets makes it easy to have 2 coil on opposite sides of the coil or 180 degrees apart and still be lined up to the magnets. With 4 magnets they will each be 90 degrees apart and 5 magnets 72 degrees and 6 magnets is 60 degrees apart. But I just eye ball it for four magnets and just use distance around the rotor to determine where to place 6 magnets.

For 4 magnets you can place the 4 inch ABS coupling on a sheet of paper and, trace the circle from its circumference. Fold the circle in half across the center of this circle and then in fourth, again across the center. Unfold the paper and the creases will correspond to where to place the four magnets. Transfer these as marks on the coupling edge. Place each magnet edge on the same side of the marks in the centered in the middle of the rotor face.

If you use the ABS coupling as described then the distance between each of the 6 magnets is just a hair under 1 3/4ths inches. To find out where the magnets should go I put one layer of masking tape around the rotor along the edge and laying a measuring tape around the rotor marked a line then 1 3/4th inch then another line and then 7/8 and a line. A magnet will go between the two lines 7/8 apart and then a space of 1 3/4ths then another 7/8 inch etc. Like so:

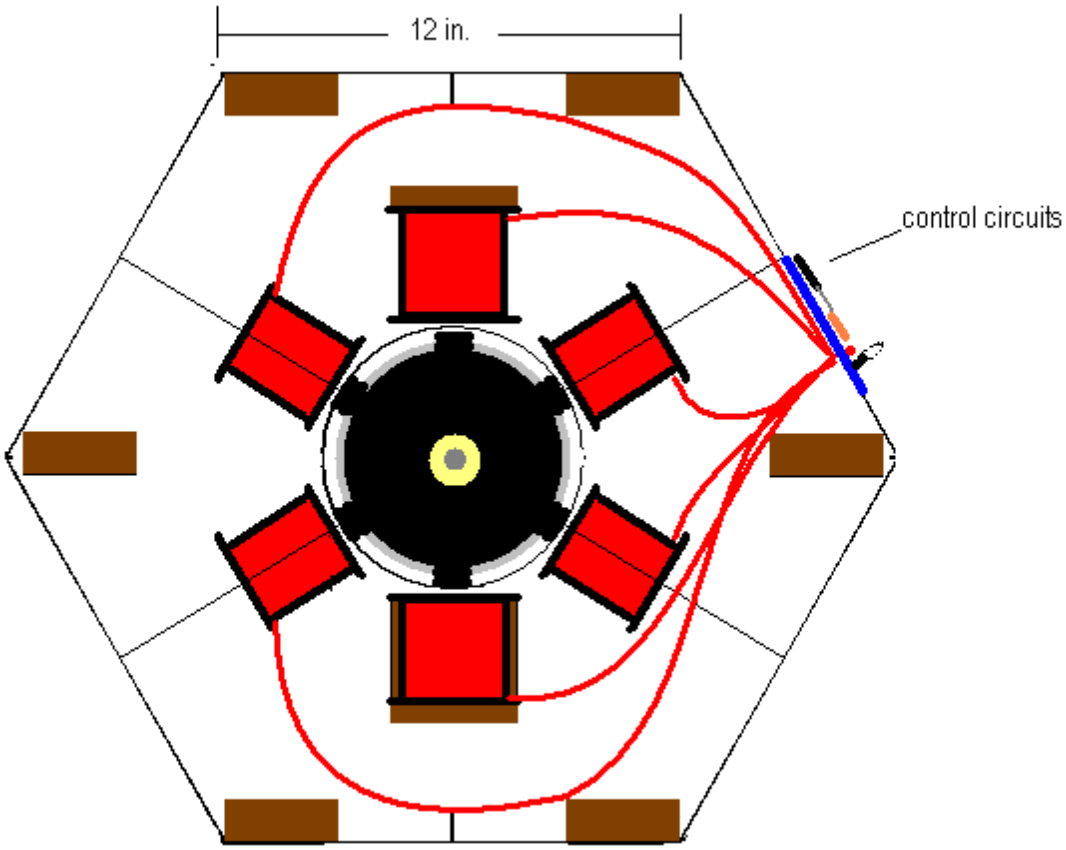


If the masking tape is 1 inch wide then the inner edge (the right edge in the diagram) is a perfect place to line up the left edge of the magnets to make them centered. I take a sharp knife like an exacto knife and cut lines where the magnets will fit. Then after making sure I know which is the north face of the magnet and with my hot melt glue gun already heated I place glue on the magnet, quickly apply it to the rotor and hold it down for 10 seconds trying to get it as flat as possible. Make sure the magnet is centered and perpendicular to the rotation or straight across the rotor. If it is crooked take off the magnet and scrape off the glue and do it again. Once attached place glue along the edges to keep it firmly in place. If you want to double stack the magnets then place a magnet on top the only way it will stay in place is again with the top magnet north pole facing out. Now glue the edges of the top magnet to the bottom one securely.

And then after all the magnets are glued in position wrap them with 3 layers of 2 inch nylon filament reinforced strapping tape. Pull the tape very tight especially the last two layers. This will hold them in place as the RPMs start getting higher.

Once all the magnets are in place and wrapped with tape you will want to balance the rotor. We will do that when we place the rotor and shaft in the base.

If you plan to have more than 4 coils the speed will be very great. This means you will need to put a variable resistor on the trigger coil output to reduce the current. Here is a sample of a 6 coil layout:



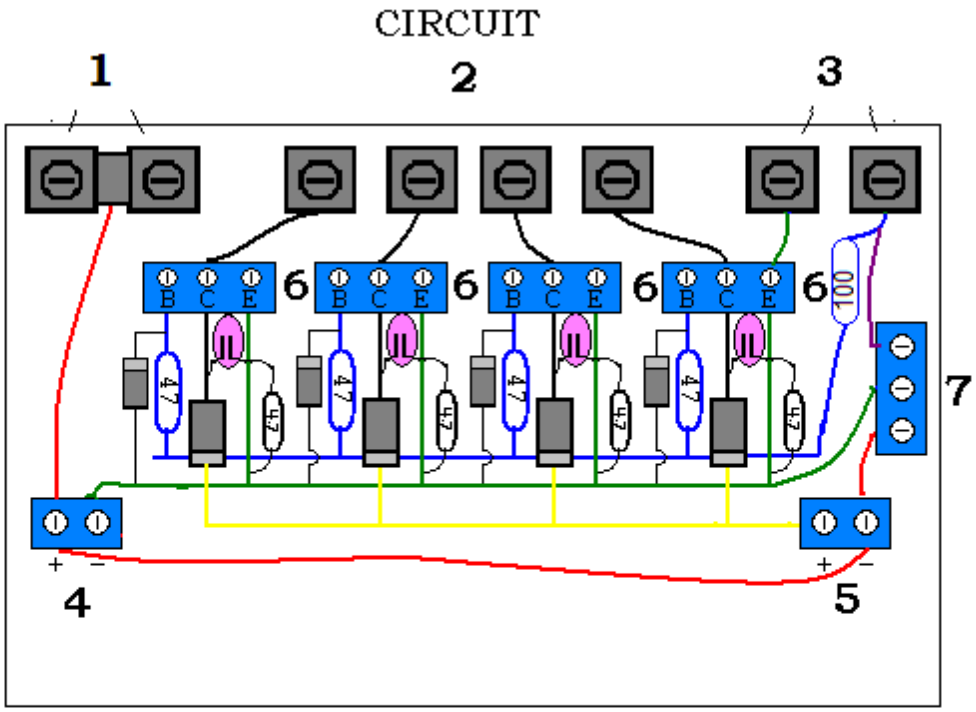
Example of a six coil sustem layout

Here is a picture of a 6 coil system in progress. Note the close up for details of the rotor set up and finished coils. The magnets here have a strap of aluminum instead of strapping tape. But strapping tape is easier. The coils have been attached with plastic plumber's tape and grommets on ¼ in brass threaded rods made from bolts with the heads cut off inserted through the plywood. This is actually a 12 coil in

progress since I placed 2 sets of double stacked magnets and will put another 6 coils on the back. If you look closely you can see the second set of magnets.

- **The Circuit:**

The circuit has a place for input power and output power to the charging batteries. It also has expansion ports for additional coils. This circuit is our adaptation. You can read the schematic and the layout is up to you or you can follow our layout. Here is a diagram.



1. The 4 positive side of the windings attach to these two connectors.
2. The negative legs of the remaing 4 windings go here.
3. Trigger winding input left is neg, right is positive.
4. The input power goes here, positive left and negative right.
5. The output to the charging battery here positive left and negative right.
6. 4 transistor holder, black facing the bottom of this diagram.
7. Expansion outputs, input + and - and the trigger positive leg

We build our kit circuits on 3.5" by 5.5" by .09" thick acrylic plastic available at hardware stores. It is easy to see all the connections and it is not expensive. It does melt easily so the soldering iron must be handled with care around it. You can use printed circuit perf board or any rigid, non-conductive material. We drill holes in the board so some components are underneath and some on top.

The diagram of the circuit is color coded to distinguish the various portions. On the left is the power input, positive and negative or ground. The wires carrying positive conventional electrical voltage are in red. This power is hooked up to the circuit through the blue terminal block on the far left. You can see the input positive is also carried to one leg of the four coil windings via the two wire connectors at the top

left. It also feeds the negative output on the far right. So be careful not to connect the negative output to the negative input or your input battery will melt your wires and waste a lot of power.

The input negative is the circuit ground, second from the left. It connects directly to the black bus rod. From there it feeds the emitter leg of the transistor so that when the transistors switch on current flows from the input positive to the input negative through the coil. It also connects to one leg of the trigger winding giving the electricity generated by that winding a voltage basis. And at the right side it goes to the expansion port.

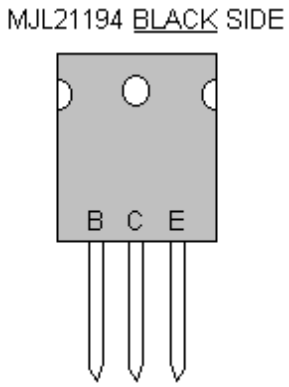
The blue lines represent the trigger voltage bus rod. It goes through two resistors totaling 147 ohms for each transistor. The faster the rotor spins the greater the current generated in this bus. If not for the resistors the transistors would be burned out.

The wires or bus rods in yellow show the radiant energy flow. The yellow wires connect the coil to the transistor “C” leg, the collector.

The blue bus rod that the large 47 ohm resistors are attached to is on the bottom of the board to insulate it from the ground bus and the radiant output bus. On the top of the board the fat housing of the 1N5408 diodes insulates their leads from the ground bus. The smaller 1N4001 diodes are on the top of the board so holes are drilled for the diodes to pass through the board. This small diode connects to the base leg of the transistor through the end of the resistor wire. Again the circuit is available as a kit with holes predrilled.

The 8 metal wire terminals at the very top will connect the coil windings to the circuit. They are arranged in three groups. The two screws on the far left are connected to the four winding legs to be fed with positive voltage from the power source or primary battery. The next four screws are for the four negative legs of the coil windings. They each go to one of the transistor’s “C” leg. It makes no difference which one is where. The two connectors on the right are for the trigger winding. The second from the left is the negative leg of the trigger. It is connected to ground through the “E” leg of the transistor closest to it. The last connector on the right is the positive leg of the trigger winding. From this wire there is a 100 ohm 3 watt resistor for each of the four branches of the circuit. Only on the 5 winding coil will these last two be connected to the coil. The trigger pulse for the other circuits will come from the expansion ports. But the 100 ohm resistor is needed for each coil. I tried bypassing it and it didn’t work as well.

The four blue terminal blocks about 3/4ths the way up hold the 4 transistors. The transistor legs will be bent and installed in these with the black side facing down on this diagram. This will line up the transistor’s three legs. Look closely at the picture of the six coil system on page 17. The view is looking down from the top of the circuit board so the transistors have the metal side facing up. The MJL21194 looks like this:



I put the pin labels on the diagram but they are not on the transistor itself. One side is black and the other is metal and is electrically connected to the collector. From left to right the connections are (B)ase, (C)ollector and (E)mitter. The base is the switch which connects the collect to the emitter and allows the current to flow. The base is fed from the voltage of the trigger coil through the 100 ohm and 47 ohm resistors. The 100 ohm and 47 ohm resistors should be 3 watts or more capacity. That is pretty hefty for a 12 volt circuit and they are a bit large.

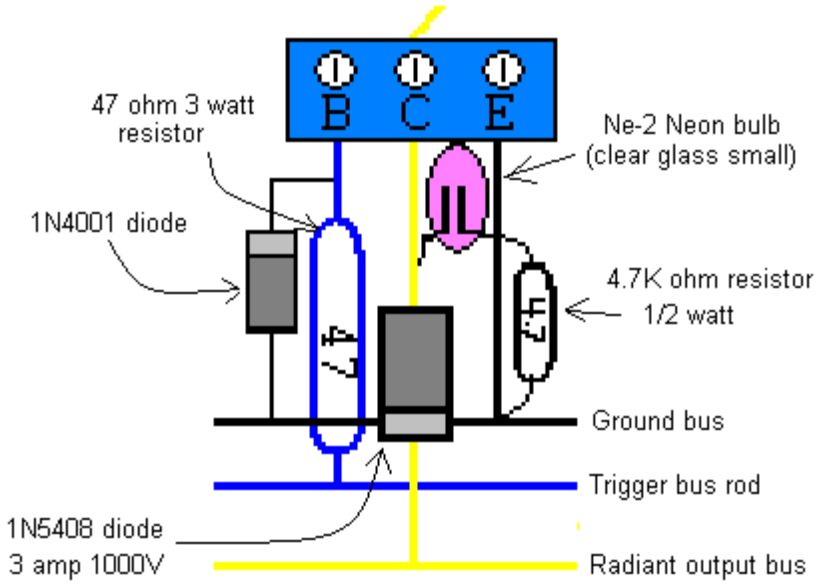
Between the 47 ohm resistor and the transistor base leg is a small protection diode. When the coil gives that high voltage spike (300 to 400 volts) it also goes down to a very low negative voltage. This little diode prevents the base from going below .07 volts. Otherwise it would ruin the transistor.

On the collector or C leg the transistor is connected to the coil, the large output diode and a small neon bulb. The current flows through the coil and then rapidly gets cutoff. The radiant energy then leaves the circuit through the large diode to charge up the batteries. If no battery is connected the radiant will destroy the transistor. So a safety valve is created through the neon bulb. That neon will only turn on with 70 volts or more. The 4.7 K ohm smaller resistor is between the neon and ground. This insures that there will be as little leakage of radiant to ground as possible. It probably also makes the circuit very touchy if you pulse the coils with no battery hooked to the output. So be very
cautious not to rely on the neon to save the transistors under high rpm for any length of time.

The “E” leg is the emitter. It is connected to the ground bus rod through holes from the bottom side at the same place the 4.7K ohm resistor is connected.

Here is a close up of the components for each of the four branch circuits from an above view. The 1N4001 and the 4.7k ohm resistor are actually inline with the “B” and “E” connections but are depicted to the side for clarity.

A branch circuit showing components



The circuit has an expansion ports with four connectors. This way any number of coils can be added in daisy chain fashion with expansion port going to the next board. The connections from top to bottom are trigger positive, input negative or ground, input positive and the radiant output or positive output. Any additional coils will be 4 wire coils.

To connect an additional circuit the top connector of expansion port will be connected to the wire connector on the top right of the next board since all secondary boards have that position open. The second connection down on the expansion port goes to the next board's input negative on the left of the board. The third one down goes to the other board's input positive. The last connection is the radiant output. It should go to the other board's radiant output on the lower right. On the very last board of your system this connection would go to the charging battery's positive post and the negative output to the charging battery's negative post.

This circuit board layout is just one way of putting the circuit together. We have designed it for ease of assembly and show all the details here so you can replicate it if you desire.

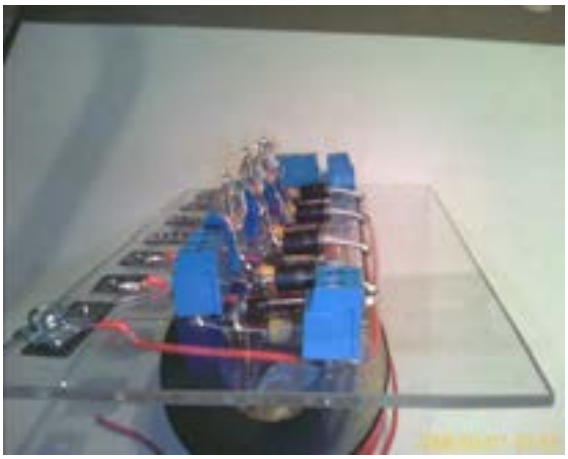
Now a word about substitutions. As with any circuit the component usage and the connections can not be changed and still get the expected results. But even beyond that with radiant technology you will not get good results if your transistors are not suited for radiant energy production. The resistors just need to be the same values. You could even go to 2 watts rather than 3 and it will still work. The diodes should have at least the same rating. If you substituted a 1N4007 for the 1N4001 it would still work.

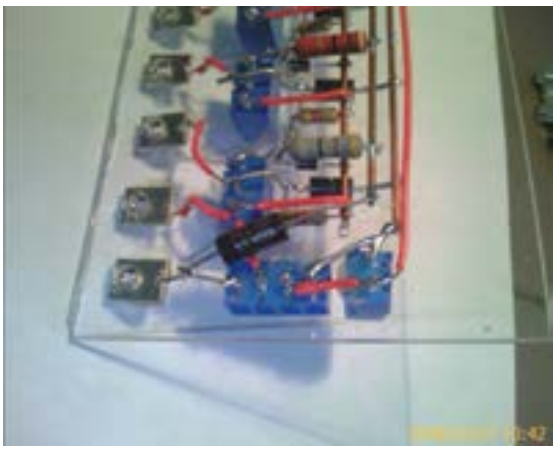
But you can't use just any substitute transistor because what the electrical literature will recommend will be based on conventional electrical values of voltage, current, gain etc. But these measurements do not consider the characteristics of the transistors that actually tap the radiant energy. Some transistors have the same conventional parameters but do not produce the radiant energy output we are looking for. Now certain transistors do retain the radiant tapping quality but are less powerful. You can use 2N3055 or

BD234C. But they have lower power output and hence although they tap the radiant your results will be less for this circuit. The Kitty Hawk uses a large wire coil. Whereas most other coils use 21 or 23 AWG we are using 18 AWG wire. I have tried using transistors even with the same power ratings as the MJL211194 and the results were very disappointing.

Here are some pictures of a completed circuit board. The color coding is only on the diagram. In the pictured circuit board I used all red wire just to confuse you and it was all I had at the time. Perhaps someday our kits will be on printed circuit boards but for now this is what we have. Also in the future we may modify the layout as we seek ways to lower costs and increase function. But this layout works well.

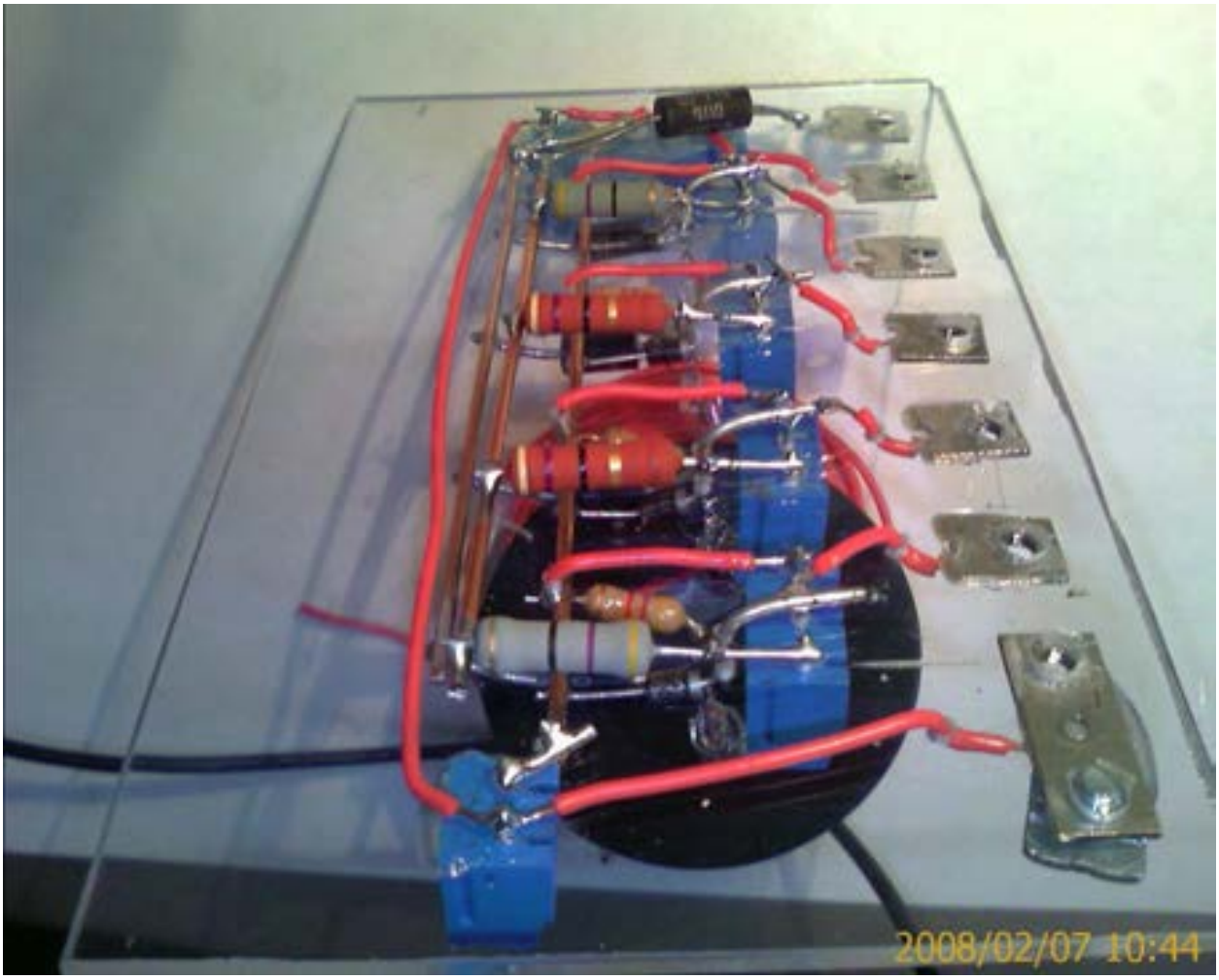
This is a top view.



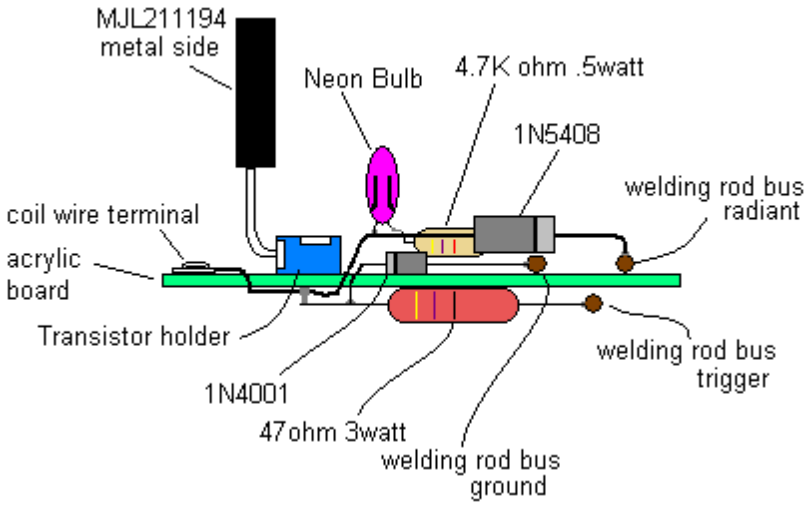


On the left is a side view of the top. On the right is a close up, from the bottom of the board, of the expansion port.

Another side view: Remember our goal is to spread this technology. If you can build it yourself with a different layout great!



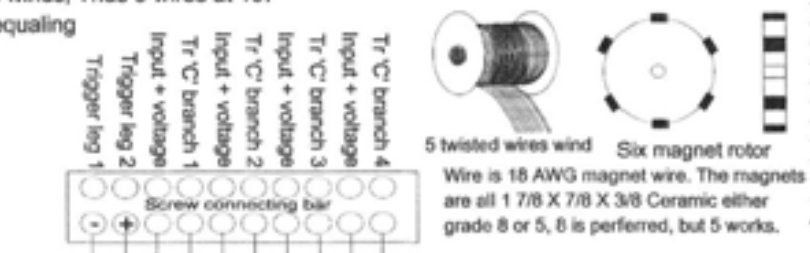
Below is a color coded side view of one of the 4 branch circuits.



For those who can read schematics the next page has the circuit. For those who are not familiar with schematics the next page has the parts list of the components and other valuable information.

A Bedini school girl (SG) circuit

This circuit is for a one trigger (tr) wind, and 4 Transistor (tr) 'c' leg branch circuits winds, Thus 5 wires at 107' of AGW #18, equaling 10 wire ends.

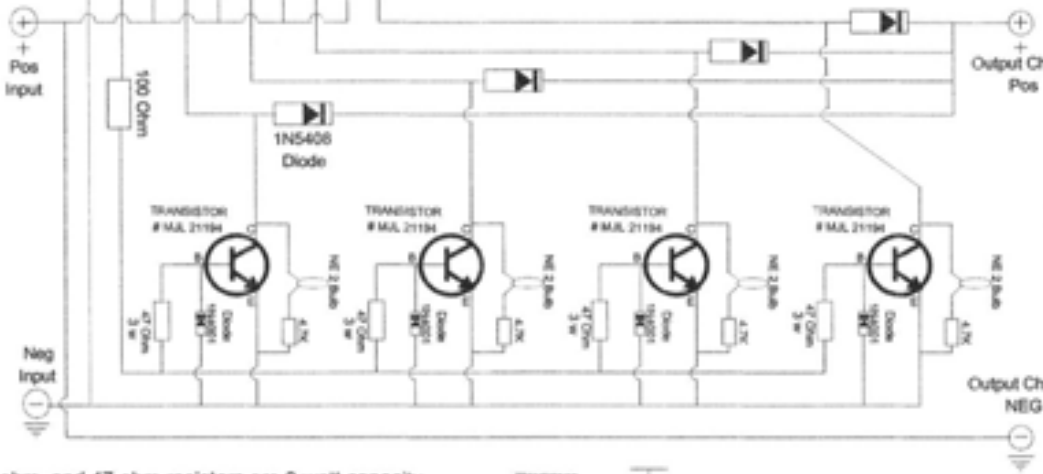


5 twisted wires wind

Six magnet rotor

Wire is 18 AWG magnet wire. The magnets are all 1 7/8 X 7/8 X 3/8 Ceramic either grade 8 or 5, 8 is perferred, but 5 works.

Quanity	Material List
1 Per wind	/ Transisters #MJL21194. NO SUBSTITUTIONS, Source 'Digikey.com'
1 Per wind	/ Diodes #1N5408 3 amp 1000 V, Source 'Digikey.com'
1 Per wind	/ Diodes #1N4001 B leg 50V fast type, Source 'Digikey.com'
1 Per cir board	/ Resistors 100 ohm, 3 watt. Source NTE warehouse 'on line'
1 Per wind	/ Resistors 47 ohm, 3 watt. Source NTE warehouse
1 Per wind	/ Neon Bulbes clear, ck local electronics store
1 Per wind	/ Wire 18G coil coated 100 ' per circ twisted togeather then wound.
1 up to 5 winds	/ Spool 3 1/4" long X 3 1/2" dia. with 3/4" center hole
1 Pound	/ Welding rods 1/16dia cut to 3 1/2" to fit tightly in spool hole.
1 Per 1Tr. 4tr.	/ Circuit board 4"X6" or 4"X9" pre drilled holes.
1 Per wind	/ Screw connecting bar 10 ports.
4 Per board	/ Foot spacers for holding circ board up.



Trouble shooting / This is not a Motor

First make sure North is facing out on rotor magentas!
Make sure the Tr 'C' and + voltage kick away
all the magnets on the rotor not attract!
To get started use no lubricant on the bearings
you need very easy rolling bearings.
You will need a well charged battery to get started.
We suggest a good strapping tape over the magnets.
If it does not run reverse trigger lead wires from Coil.
The rotor usually needs a good spin.
Spacing of center coil rods and the magents
is approx. 3/16" to 5/16", experiment.

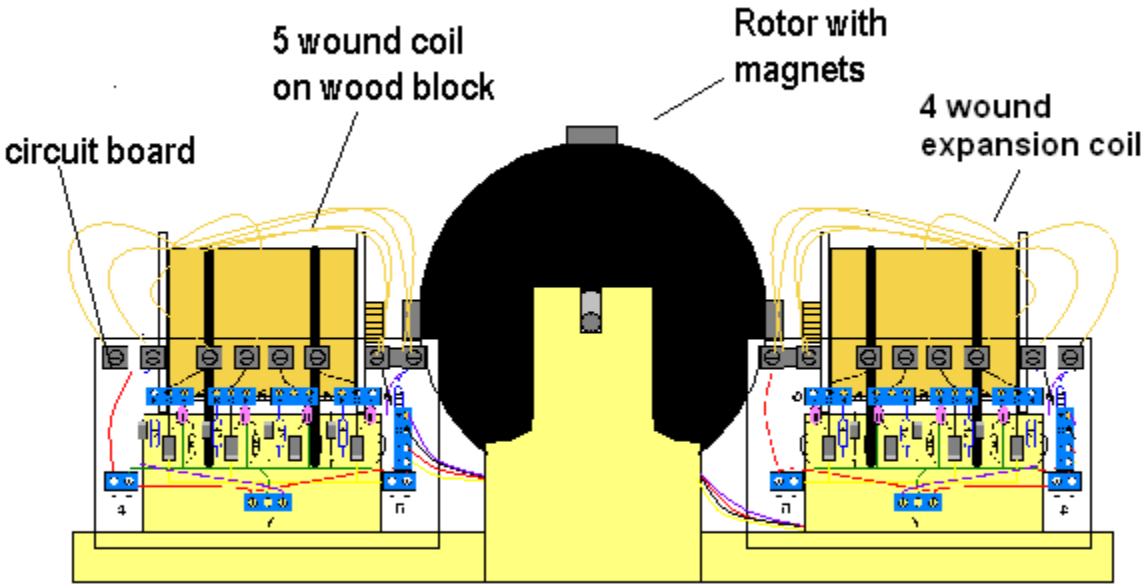
Notes :

The 100 ohm and 47 ohm resistors are 3 watt capacity.
The 4.7k ohm resistor is 1/2 watt.
Transistors MJL21194, no substitutions!
Neon bulbs are a small neon clear bulb.
Diodes for the B leg of transistors are 50V (V= Volts) fast type.
Diodes for the output are 3amp 1000V.
Only 1 trigger wind needed, if adding more coils to the same rotor system each transistor requires one wire wind, but not another tr circuit wind.

Sugested color conventions

White = triger wire leg off board.
Red = + input Voltage (Hot) & output to charge
Black = - Neg input & output to charge
Yellow = Radiant plus + to Screw connecting bar

Here is an example a two coil system we call the Cactus Express.

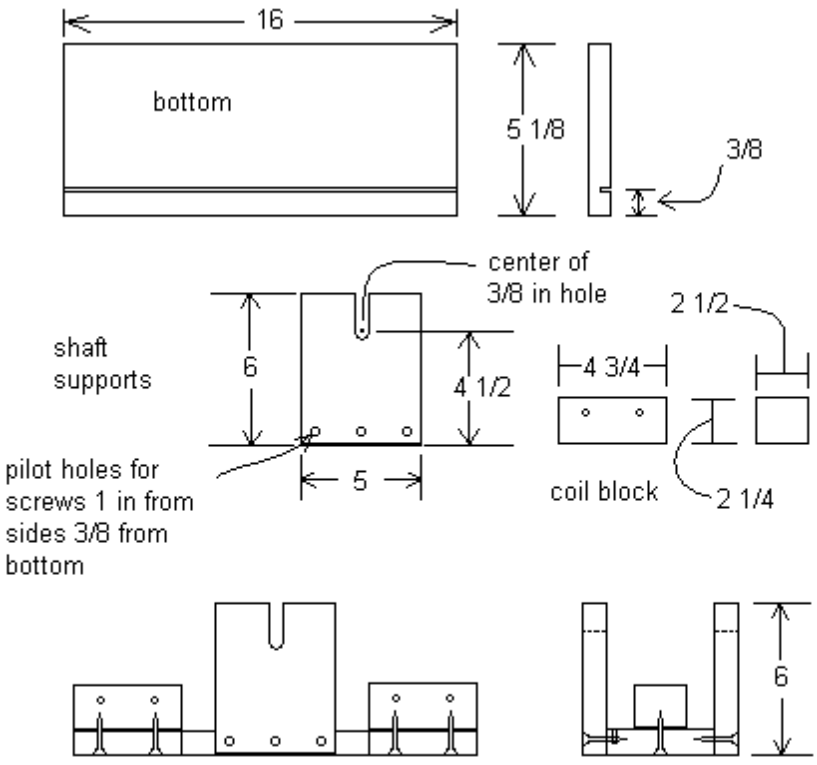


The "Cactus Express" 2 coil system

Any number of batteries can be charged simultaneously. They won't charge as fast with two or more as with just one. It is a matter of the output being spread over a larger area. But all the batteries will start charging. The electronic parts can be purchased from www.digikey.com online. You might look around for an electronic store near you also. But the transistors used are only available on line and www.digikey.com seems to be the best for the transistors. There are other online sources for the rest of the electronics also.

- ## The Base:

The base for the one coil system is made to easily expand for a 2 coil system. Some things about the system cannot be altered without causing functional problems. For example the electronic components and the type of magnets and the winding should be constructed as explained because they are all interrelated and are based upon radiant energy principles. But the base is flexible so long as it holds the components in proper relationship to each other.



Kitty Hawk base unit.
All measurements are in inches. Use 11/2 or 2 inch screws.

The material used needs to be non-magnetic or no iron based. It can be plastic, particle board, plywood or regular nominal 1 inch dimension lumber. The picture I have included was made of red oak for beauty and durability since it is a demonstrator unit. But you don't have to go to that expense. The material needs to be strong enough to support the rotor and coil rigidly. You will also need to have it be stable.

The base is made from 5 pieces of wood. The bottom plate, 2 shaft supports, and 2 coil blocks. The material you use for the bottom plate and shaft supports should be ¾ inch thick for proper alignment with these measurements. Lumber at hardware stores that
is stated as 1 X 4 or 1 X 6 etc. has been planned down to 3/4 inch thick. So it will work fine.

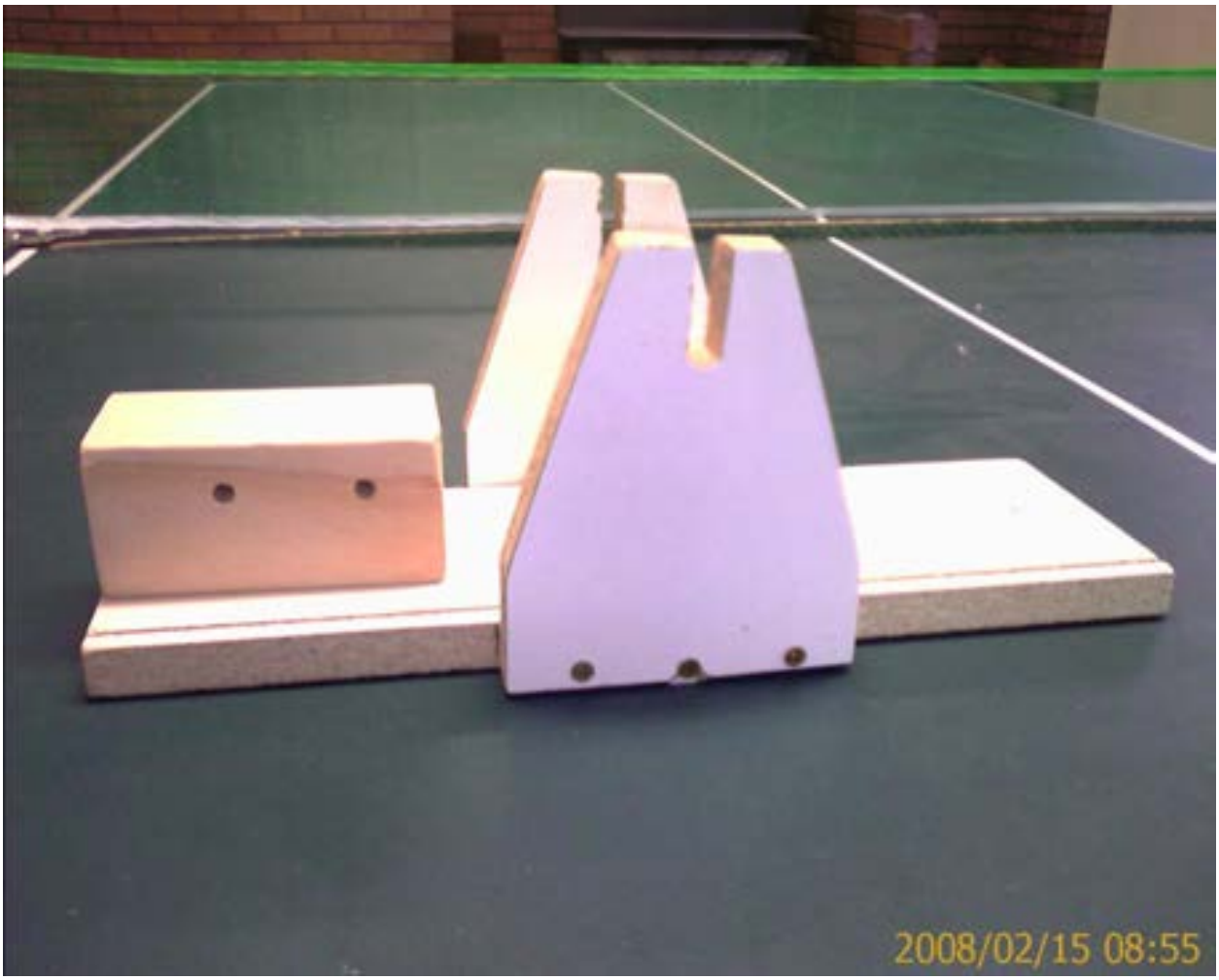
First cut out the bottom piece. The bottom piece is 16" long by 5 1/8" wide. On the top side you will cut a 3/8" deep slot with a radial saw the full length and 3/8" from the front edge. The width of your blade is fine for the width of the slot. Set your blade depth at 3/8".

The shaft supports are 5" wide and 6" high. The center notch is made by drilling a 3/8" hole with its center 4 ½" up from the bottom. It should be centered in the 5" width. The placement of this hold is real crucial. Then cut the sides of the notch down from the top to the middle of the hole. This makes removing the rotor very easy for any changes. You can make the upper corners rounded or curved for esthetics if you have the ability and are so inclined.

The shaft supports will be installed centered left to right on the bottom piece. Drill pilot holes on the lower part of the shaft support one inch in from both edges and 3/8" up from the bottom. The center pilot hole will of course be centered on the 5"width. Attach the supports with drywall or deck type screws 1 ½ or 2" long.

The coil blocks will hold the coil in place. They measure 4 ¾" long by 2 ¼" high by 2 ½" high. Drill two ¼" diameter holes through the block parallel to the top and ¾" down from the top. Place the first hole 1" in from one end and the other 2 inches from the first hole. The holes will be for a zip tie to secure the coil tightly to the block. The hole closest to the end will be on the side facing the rotor.

Install the block flush with the outer edge of the bottom piece and centered across the width using two screws from the bottom of the base. Your finished product might look something like this.



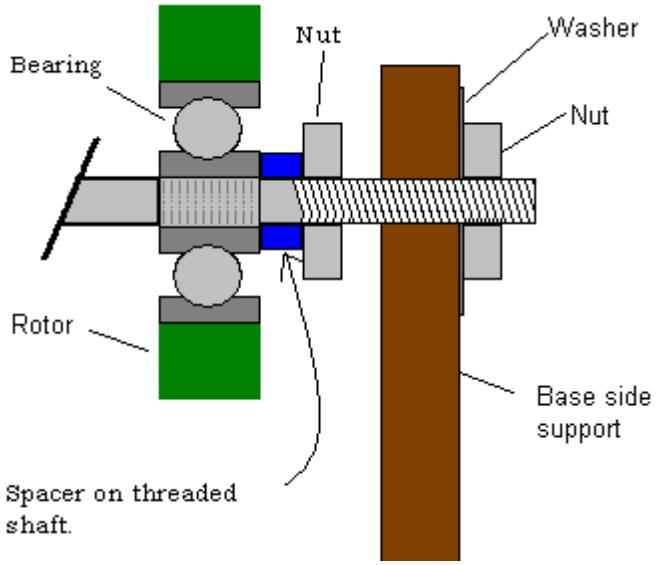
One last thing, you will need two 14 inch plastic zip ties to attach the coil to the block.

- # Putting all together:

Attaching the rotor to the base:

Now that all the parts are built let's connect it up and start charging batteries. First place the rotor shaft in the bearings and then put the two spacers against the bearing with a nut. Remember just very light pressure to hold it just touching the bearing. It should be centered on the shaft. Now place the rotor and shaft in the base. Secure it against the shaft supports with a washer and then another nut. The outer nut should be tight against the wood to reduce movement.

See the diagram below.



The rotor should spin freely. If it does not, check that there is not too much pressure from the nut against the spacer. There can even be daylight between the nut and the spacer. It just keeps the rotor centered on the shaft. Make sure your inside nut does not tighten itself during operation. You can put another nut tightened against the one so they won't move. Or dab some lock tight or fingernail polish on the inner nut and shaft once you are sure it is properly placed, to keep it from wandering.

Attaching the coil to the base:

For the next step it helps to have a small piece of wood or other non-magnetic object about ¼ inch thick. A wood shim works well. Take the coil and place this spacer on the protruding part of the ferrite core. Then place it on the wood block and against the magnet on the rotor. The magnet will hold it there. If you don't have this small shim piece then carefully place the coil on the block and have someone hold it firmly about ¼ inch away from the rotor magnet. Thread the zip tie through the hole in the wood block and around the coil and then back through the zip tie hole. Make sure the coil is about ¼ inch from the magnet and then cinch it down tight. Do this with both holes. Refer to the picture on page 22 and look at the white zip ties around the coils.

Connecting the coil to the circuit:

The slot in the bottom piece is to hold the circuit board. So you can place the circuit board in the slot with the metal wire connectors on top.

Before we start wiring the coil to the circuit if you have not already done so, verify which end of the coil wires need to be connected to battery positive to cause the rotor to spin. See coil polarity on page 31.

I will refer to the circuit diagram on page 30 so look at the numbers there and the description to make the wiring clear. Select one wire to be the trigger and attach the positive leg of that wire to the far right wire connector or the one on your circuit that is connected to the 100 ohm resistor. In the Kitty Hawk Circuit diagram it is the right most of those labeled #3. Attach the other end of this wire to the trigger negative post which is second from the right.

Attach each of the remaining four positive ends to the two positive wire connectors on the far left, labeled #1. There will be two wires per post on this connector. Attach the last four wire ends to the connectors labeled #2 which are connected to the transistor's "C" leg. Screw them down firmly but be careful the hot melt glue can break loose. If this happens the circuit will still function since the wires are soldered to the connectors. They will just be loose on the Plexiglas.

Battery connections:

With the rotor and the coil on the base and the coil connected to the circuit now we connect the system to the input power and the output charging batteries. Remember it is critical that the system not be turning without having place for the radiant to go! If the rotor is spinning and the neon bulbs are flashing disconnect the power immediately or you transistors will be gone.

For the input power insert a 18 AWG or smaller (still big enough to handle the 2 to 3 amps current you may need) wire into the wire connectors shown as #4 on the diagram. The positive is on the left and the negative on the right. The other end of each wire should have a battery clamp on it if you are running from a battery.

Be very careful the current from a lead acid battery can be very great. Under normal conditions it will not shock you because it is only 12 volts and your skin resistance is high enough it normally won't penetrate. But if you accidentally connect the positive directly to the negative the current will get any wire dangerously hot immediately.

You may have a tendency to want to use big fat wires to handle large power loads and minimize losses. This really isn't meaningful in radiant energy. Large wires carry large current in conventional systems and you pay for all that power draining into ground. There is no significant current going to the batteries in this system. The power to charge the batteries does not come from high current. It comes from radiant energy that is not directly measured with an amp or volt meter.

The input power source needs to be DC or direct current of at least 1.5 amps per coil. A larger system with 4 or more coils would have increased trigger resistance so for example a 12 coil system would still need only 3.5 to 6 amps.

The input voltage should be at least 10.5 volts. Lower voltages might turn the rotor but the charging will be poor. It is proof that something very unconventional is occurring when 9 volts input can charge a 12 volt battery. I would make the upper limit be less than 48 volts for safety sake. The transistors can take 250 volts. But I cannot say how the other components would react beyond 48 volts. I have run mine many times on 24 to 26 volts. The power consumption is higher and the charging rates are higher also.

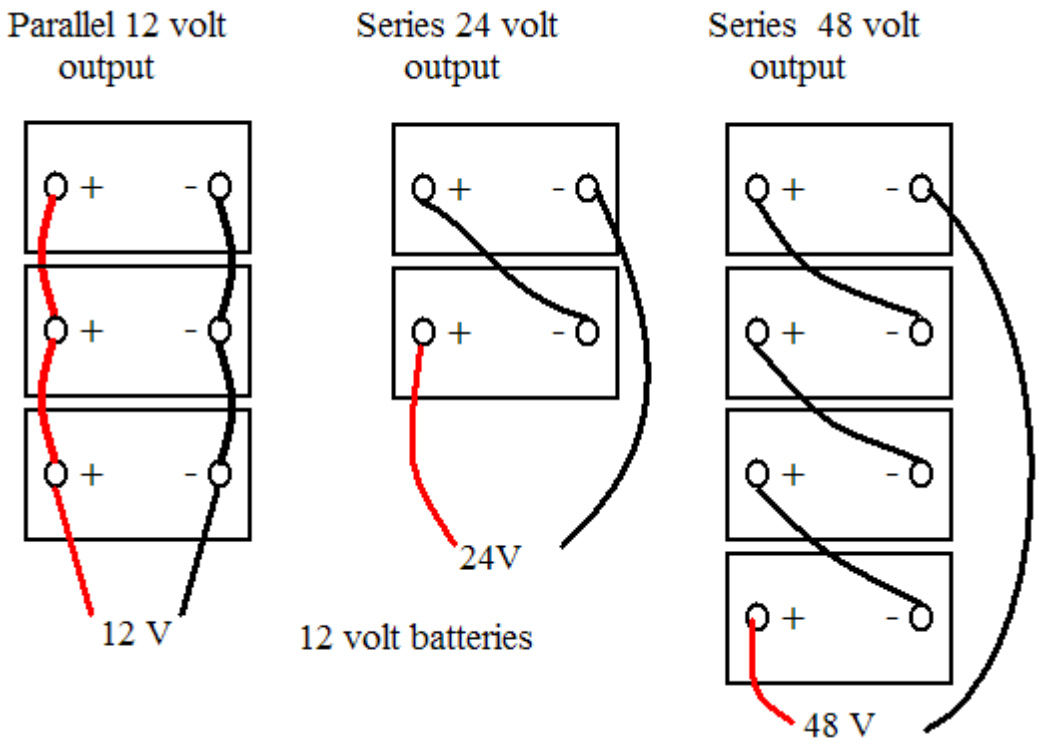
This system can use 11 to 24 volts reliably. It can also charge batteries in series so it can charge 12, 24 or 48 volt battery banks.

Attach two wires to the output labeled #5. Again be careful. The output negative is the same as the input positive so don't let it contact the input negative or any ground on the circuit. Since you'll be charging batteries the other ends of the wire should have battery clamps on them. We like to color code the input and outputs. The positive input we always have be red wire and a red clamp. The input negative we have in black. The output positive we have be yellow wire and a red clamp with yellow electrical tape on the handle. The output negative we use black wire and clamps with yellow tape on them.

Make sure you connect to the correct battery posts, positive and negative.

The output batteries can be anything that holds a charge. I know it puts some charge even in a AAA 1.5 volt. But I have not experimented enough to know how effective it is in that range. Just be sure you have a place for the radiant energy to go. 12 volt lead acid (regular automobile batteries) or gel cell (more expensive AGM sealed batteries) are perfect for this charger. If you plan to power an appliance or lights then a deep cycle battery is better. Of course you need an inverter to change the 12 volts DC to 120 volts AC, the same that comes from your wall socket in the U. S.

Again batteries can be charged in parallel or series. Like this:



Charging in parallel works best if the batteries have all been discharged at the same rate. If they all started at the same rest voltage and were used in parallel then they will all be at the same start voltage. But if the batteries have different voltages to start then the battery with the lower voltage will charge up and then when the lower and higher are the same they will finish charging together. But if they are in series then they both charge independent of each other.

Refer to the picture on page 22 to see a system hooked up to the batteries. Now with everything connected. Give it a strong spin! You may even have to slap it a couple times to get it going fast enough at first. You should hear the characteristic humming as the rotor begins spinning. It will pickup speed and the batteries will start charging.

I say slap it hard to get it up to speed at first because it seems that for whatever reason once it starts running fast and has ran for a few minutes then it starts easier from then on. This is probably the bearings getting loosened up. But it seems to be something more.

What to do if it doesn't work Trouble shooting:

If it doesn't start going at first check all your input wiring connections. Then try again.

Circuit check 1. With all the input power off and the rotor stopped, disconnect the output clamps. Turn the rotor a few spins. Stop the rotor. Now connect the input negative. Now with the input positive in hand look at the neon bulbs and have everyone be quiet so you can listen carefully. Now touch the positive to the power source. You should see the neon bulbs flash and hear a click from the circuit. If you don't see the flash try this check again. Remember have the output not connected to anything. The wires can be attached to the circuit but leave the clamps disconnected. If there is still no click and the neon bulbs don't flash then there is most likely a bad connection or something is not wired correctly. Check your circuit wiring carefully. Also check your input and output connections. Check that the coil wires are all securely connected.

Bearings check. If you get the flash but it still won't run then check if you are hearing the humming sound. This will show the transistors are switching on and it is trying to run. If the hum is present then most likely the bearings are the problem and they are too tight. If this is the case is will hum and the charge battery will show an increase in voltage but the motor will slow to a stop. The bearings need to be free-wheeling to sustain the rotor spin. Loosen the nut holding the spacer and try it again. If the bearings themselves are not free-wheeling you may have to remove the grease from them by taking them apart and cleaning the races and balls with soap and hot water. Short of this you can try spraying the bearings with a solvent like WD-40 and see if they improve.

Polarity check. If there is no humming after a strong spin then your transistors are not firing. Recheck your coil wire polarity. The polarity check is more reliable with a loose magnet. Since the rotor and coil are already installed, just place a magnet with the south pole attached to the other end of the coil. Follow the procedure on page 30 and with the south pole on the part of the coil away from the rotor the correct polarity will make that magnet jump off the coil.

Trigger check. Reverse the wires from your trigger winding. Even though you may be sure the wires are connected properly sometimes it works the other way around. It is worth a try.