Easy-build Free-energy Devices

These days, more and more people are becoming interested in “free-energy”. By ‘free-energy’ I mean energy sources which are free to use and for which you do not have to pay. Obvious sources of free-energy are sunlight, rainfall, wind energy, wave power and tidal power. There are other sources of power such as gravity, electrical charge in the atmosphere and ionosphere, and a massive, almost unknown energy field sometimes called the “zero-point energy field”.

Just to make things quite clear, just because the energy arrives free of charge, does not mean that it costs nothing to collect. For example, a solar cell can convert light to electricity and because of that is incredibly useful. But for that to happen for you, means that you have to buy a solar panel and many of those are not cheap. However, once you have bought a solar panel, it will produce electricity for many years – electricity for which you do not have to pay, so pardon me if I call that electricity “free”.

Gravity is a source of great energy although that is a new idea for many people. Think about it. Hydro-electric power generation schemes have been in use now for many years. Those generators are driven by water flowing through them and that flow is caused by gravity. Without gravity, water would not flow downhill whether through a generator or not.

For hundreds of years, water wheels have done useful work, pumping, grinding, hammering, operating bellows, etc. and it is gravity acting on the water which powers a water wheel.

Everybody understands that energy can be extracted from windflow as windmills and wind-powered generators are very well-known and are widespread. In each of these cases, considerable expenditure is needed to create the generator in the first place, but after that, the energy produced is very low-cost.

But, each of these systems can have problems. Hydro-electric schemes and water wheels will not work if there is never any rain. Windmills and wind-powered generators will not work if there is no wind. Most solar panels will not work if it is dark and in parts of the world, the dark can last continuously for three months. So what we want is a generator which works day and night no matter what the weather is. Let's start with a gravity-powered device which does not use water:

William Skinner's Gravity-powered Device

In 1939, William Skinner of Miami in Florida, demonstrated his fifth generation generator powered by spinning weights. His demonstration may still be seen at http://www.britishpathe.com/video/gravity-power where he shows his design powering a twelve-foot lathe, a drill press and a power hacksaw, all simultaneously. Skinner's impressive equipment could be driven by a single cotton thread drive band while powering his whole workshop. It looked like this:

This design has four nearly vertical shafts, each braced to give additional rigidity. These rotating shafts pass their rotating power to the mechanical output drive belt seen on the left. Each of these rotating shafts has a heavy

weight in the form of a thick, short cylinder mounted high up near the top of the shaft and what is probably an even heavier weight in the form of a long narrower cylinder attached near the bottom of the shaft as seen just to the right of the output drive belt. These four identical sets of shafts with their pairs of weights spin two or three times per second and produce the whole of the output power.

As far as I am aware, Skinner never patented his design or disclosed how it worked and the Second World War (1939 to 1945) will certainly not have helped. However, the operating principle is very simple indeed although it may take you a while to grasp how it works. You can check this out quite easily for yourself if you have access to an old-fashioned chair with four rigid legs like this:

Tilt the chair over so that it is balanced on one leg. You will notice that almost no effort is involved in keeping it in that position as all of the weight is supported by the floor through just one of the legs. Now, move the top of the chair by a very small amount and keep the top of the chair in that position. You will notice two things: first, very little effort was needed to move the top of the chair and second, the chair now swings around and becomes stationary on the same side that the top of the chair was moved.

Notice two other things: the chair swung around because of your moving the top slightly and **you** did not swing it around, and if the chair is heavy, the amount of energy in the swinging chair is very much greater that the amount of energy which you applied to the top of the chair.

If you were to keep moving the top of the chair in a tiny circle, then the chair will spin around continuously for however long that you choose to wobble the top of the chair. The amount of energy in the spinning chair is very much greater than the energy which you are expending to make the chair spin. So from where is that extra energy coming?

What is happening is that the chair swings round under gravity to reach the lowest possible point for it with the new position of the top of the chair. But, before it can get there, you move the top of the chair further around and so the chair has to swing further in order the reach the lowest point. But before it can get there, you move the top again ….. The chair keeps swinging round and round, pulled by gravity, for as long as you choose to keep moving the top. But, no matter how heavy the chair, very little effort is needed from you to cause the spinning.

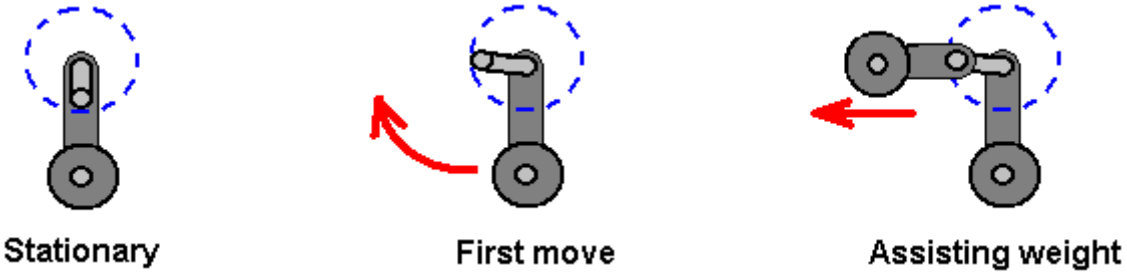
Skinner had a mechanism at the top of each vertical drive shaft, and that mechanism kept moving the top of the shaft in a small circle while allowing the shaft to rotate freely at all times. That caused the very heavy weights attached to the shaft to keep spinning around, and he used that power of the heavy spinning weights to power his whole workshop. Moving the top of the shafts required so little power that he used a 93-watt electric motor and to show that he was not even using all the power of that small motor, he used a single cotton thread as a drive band to move the tops of the four power output shafts.

His mechanism looks complicated. This is partly due to the fact that there are four identical power shafts with their weights, mounted in the one compact frame and that makes the device look more complicated than it really is. It is also due to the fact that the system shown in the newsreel is William's fifth version of the device. It is likely that his earlier, much more simple versions worked well and encouraged him to build even fancier versions. It needs to be remembered however, that it is not actually necessary to replicate William's fifth version, but instead it would be quite enough to use the principle of the spinning chair to produce a simple mechanism where the input power is far less than the output power.

If we consider what is happening, then perhaps we can understand Skinner's complicated-looking arrangement. We can consider just one of the four axle shafts The large weight is spinning around in a circle and that motion is then used to power the output shaft. In order to reduce the effort needed to spin the weight, the axle shaft has been made thinner and four bracing rods have been used to brace the shaft in exactly the same way that sailing

yacht masts are usually braced with “spreaders” to hold the bracing out from the mast and so give greater overall stiffness. So we can ignore those bracing bars as they have nothing to do with the actual operation of his design, but are merely his choice out of many different construction options.

Remember the spinning chair and consider what has to be done to spin Skinner’s heavy weight. The top of the shaft has to be moved in a small circle. Looking down from the top the situation is like this:



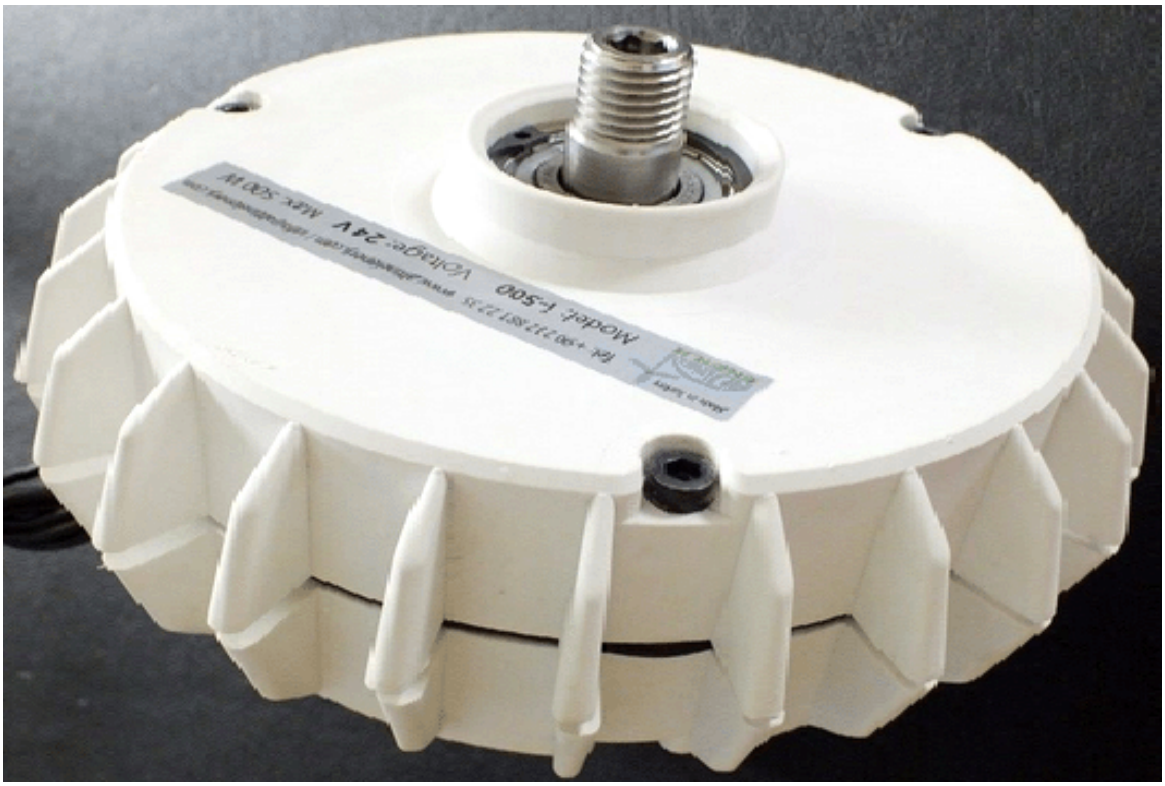
When the system is switched off, the weight attached to the bottom of the shaft comes to rest directly underneath the top of the shaft. When the system is started again, the first move is to shift the top of the axle shaft ninety degrees around. This is the start of the rotary movement and initially, the movement is slow as it takes the heavy weight some time to get moving. To reduce the effort of moving the top of the shaft ninety degrees ahead of the big lower weight, Skinner has added a weight at the top to assist the movement in that direction.

Skinner also took advantage of his very large workshop to use a belt-driven mechanism above the top of the shaft, in order to reduce the effort of moving the top of the axle shaft even further (to the level where it could be driven by a cotton thread). He used four separate identical shafts in his construction for two reasons: first, the overall output power is increased and second, any sideways forces stressing the mounting frame are matched on every side, which is helpful when you have heavy weights on a rotating arm as Skinner did.

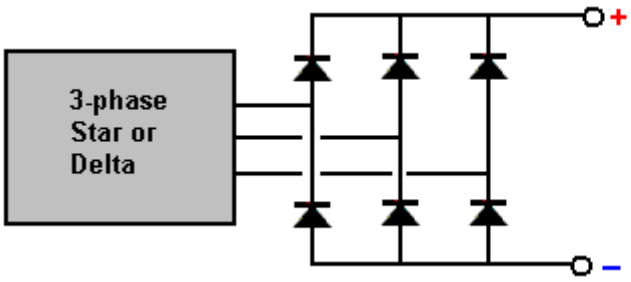
As the output shafts appear to be rotating at about 150 rpm, Skinner opted to use a straight mechanical drive. Back in 1939, electrically-driven equipment was not as widespread as it is today, but nowadays we would probably prefer to have an electrical output rather than a mechanical drive although that mechanical drive could

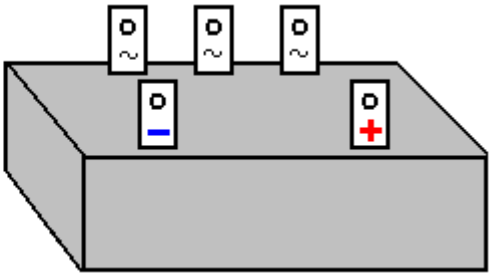
be used for driving pumps and other low-speed devices. So, we are faced with introducing some form of gearing which can raise that 150 rpm to the much higher level preferred by most alternators.

While it would be possible to use an ordinary 12-volt motor as a generator and produce a 12-volt electrical output, it is likely to be more convenient to use an off-the-shelf electrical generator, perhaps a very low-friction one like this which has been designed for wind-power operation and which has a 12V or 24V 3-phase output:



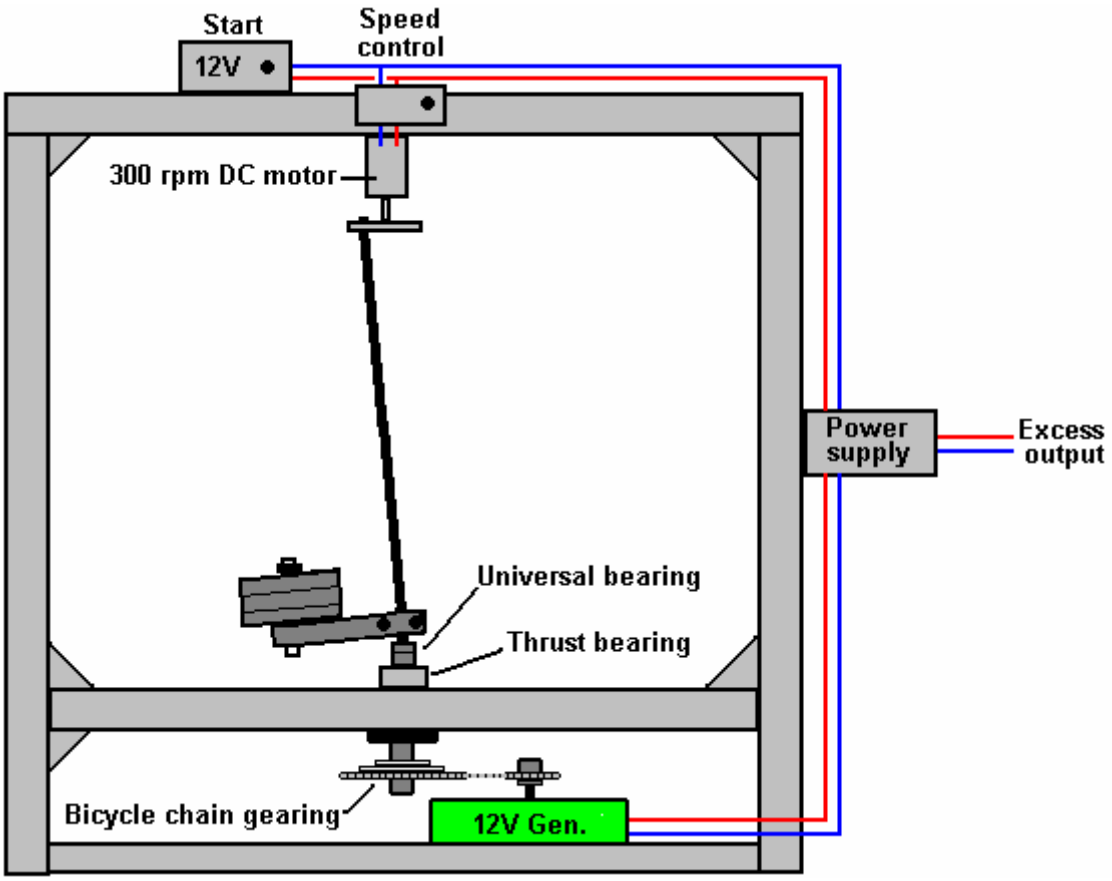
The fact that the output is 3-phase can sound a little daunting, but the conversion to DC is quite straightforward:



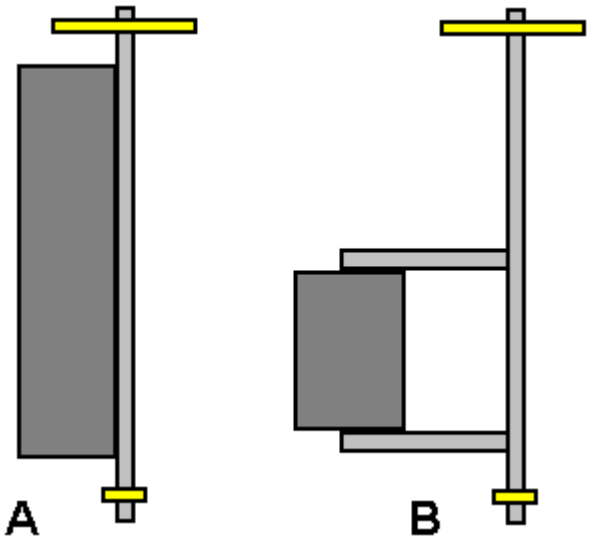


The output can be converted to DC with six ordinary diodes or a integrated diode arrangement can be used where there is a connecting tag for each of the three outputs and a separate tag for the DC Plus and for the DC Minus. The currents involved are quite high as 400 watts at 12-volts represents more than 33 amps and the peak output of 500 watts is a current of about 42 amps. For that reason, the 3-phase rectifier blocks are rated at 50 amps which sounds very high until you do the calculations and discover what the current is likely to be. It should also be borne in mind that the DC output wire has to carry that level of current on a continuous basis and so fairly robust wire is needed. If the voltage were 220V then the wire would be carrying more than 9 kilowatts at that current flow, and so the normal 13-amp mains wire is just not sufficient and instead, we need to use thick wire or more than one strand of wire for both the Plus and the Minus connections.

This particular generator is not expensive and can output 400 watts of electricity (33 amps) continuously. As the Skinner type appears to be spinning at 150 Hz, a gearing up of the output speed would allow greater output, so perhaps for a home-builder, the physical arrangement might be like this:



There are, of course, many different forms of construction which might be used, but with each of them, the question is, “how do you make the angled shaft rotate powerfully?”. If you can work out the complexities of Skinner’s fifth version shown in the newsreel, then that would certainly do the job. However, we would prefer a much more simple design and so we do not necessarily have to copy what Skinner did but instead we can just apply the principle which he demonstrated. One possible arrangement might be to imitate the chair experiment using a strong shaft with a weight attached to one side of it, perhaps like this:

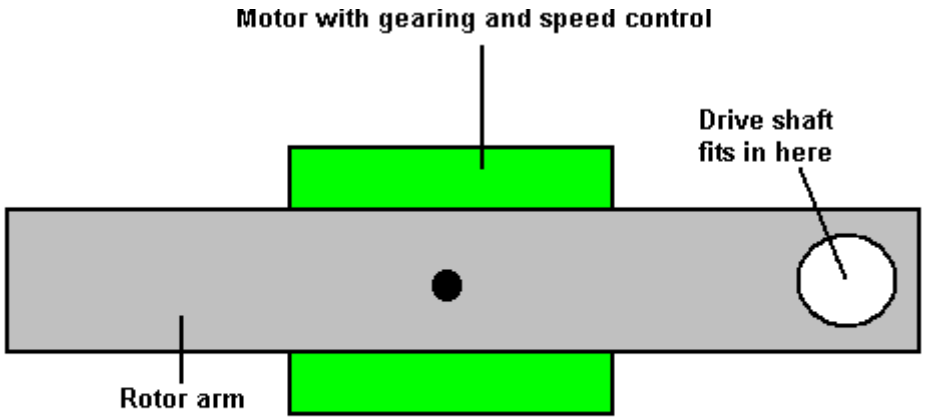


Version “A” uses the weight to stiffen the shaft but doing that raises the centre of gravity of the combined shaft and weight which may not be convenient. Version “B” increases the torque for any given weight by moving the

centre of gravity of the weight away from the centreline of the shaft by means of extension arms. As the shaft rotates at a constant rate, the load on the shaft will be essentially constant and there should not be any significant flexing of the shaft although it might bend and remain with that same bend during all of the time when it is spinning if the weight is very high relative to the stiffness of the shaft.

We do have to input some power to rotate the top of the drive shaft, but if we arrange things in any one of the hundreds of viable configurations, then the output power will be massively greater than our input power. An alternative arrangement which allows speed control (and so, output power control) is to take some of the generated output of electricity and use that to power an electrical drive which positions the top of the drive shaft.

There will be many different ways of achieving that movement. One method for doing this might be:



SEEN FROM UNDERNEATH

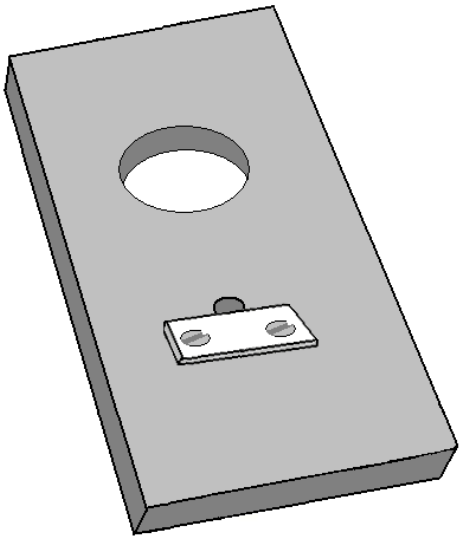
Here, the small electric motor shown in green is geared down and used to move the top of the drive shaft at whatever rate of revolution that we consider to be satisfactory, using a standard DC motor speed controller.

It should be noted that no matter what angle is chosen for the axle shaft, that is always a constant relative to the motor arm moving it round in the circle at the top of the shaft. This means that no roller bearing is needed as there is no relative movement and the shaft will automatically take up that fixed angle. The drive motor arm moving the top of the shaft will probably not be long, as Skinner appeared to be moving the top of his shafts by about 40 mm away from the centreline of the bottom pivot, making only one degree or so for the angle of the shaft on every side of the vertical.

It is, of course, not essential to convert the output power to electricity and instead it could be used in the same way that Skinner did, driving mechanical equipment such as water pumps for irrigation or extracting water from wells, milling operations for processing grain or for operating any form of workshop equipment. It is also not necessary to build the device anywhere near as large as Skinner did, and small versions could be used to power lighting systems, operate fans or cooling systems or for any other minor household requirements.

The power output from the machine can be increased by increasing the weight attached to the output shaft, or by increasing the length of the arm holding the weight, or by tilting the output shaft through a greater angle (which increases the input power needed, but probably not by much), or perhaps by scaling the whole thing up so that it is physically bigger. Skinner's design uses stiffening bracing on the output shaft, which suggests that the lighter the shaft is, the better the performance. Because of this, a prototype build might use a timber shaft of perhaps, 33 mm square as that is both light and very strong and rigid and it is a good shape for ensuring that there is no slipping of the arm which supports the weights. The top of the shaft is reduced slightly so that it has a circular cross-section. A 300 rpm motor rotates at a maximum of 5 turns per second and so is suitable for rotating the axle shaft. A suitable, low-cost motor of that type, looks like this:

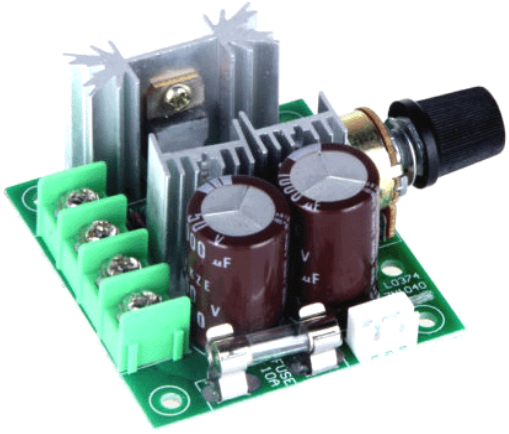
The motor needs to be linked to the shaft in a simple way which ensures that there will be no shaft slippage:



Perhaps cutting a suitable sized hole through a strip of material and using a strip of metal pressed into the flat face of the motor drive shaft (in addition to the hole being a tight push fit) would be adequate for this. A screwed collar or layer of epoxy resin holds the plate firmly to the motor as the plate is positioned below the motor and so gravity tends to pull the plate off the motor shaft at all times.

It would initially be assumed that a ball bearing or roller bearing would be needed in this motor arm, but that is not the case as the axle shaft does not rotate relative to the motor arm and while the axle shaft can be a loose fit in the hole, there is certainly no need for a bearing.

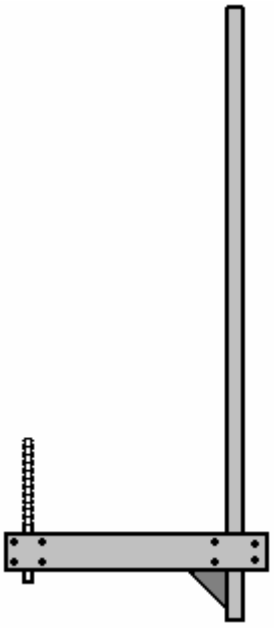
A commercial DC Motor Speed Controller can be used to bring the shaft rotation speed gradually up from a stationary start to the chosen rate of revolution:



Using a commercial module like this means that no electronics knowledge is needed to build a working generator of this type.

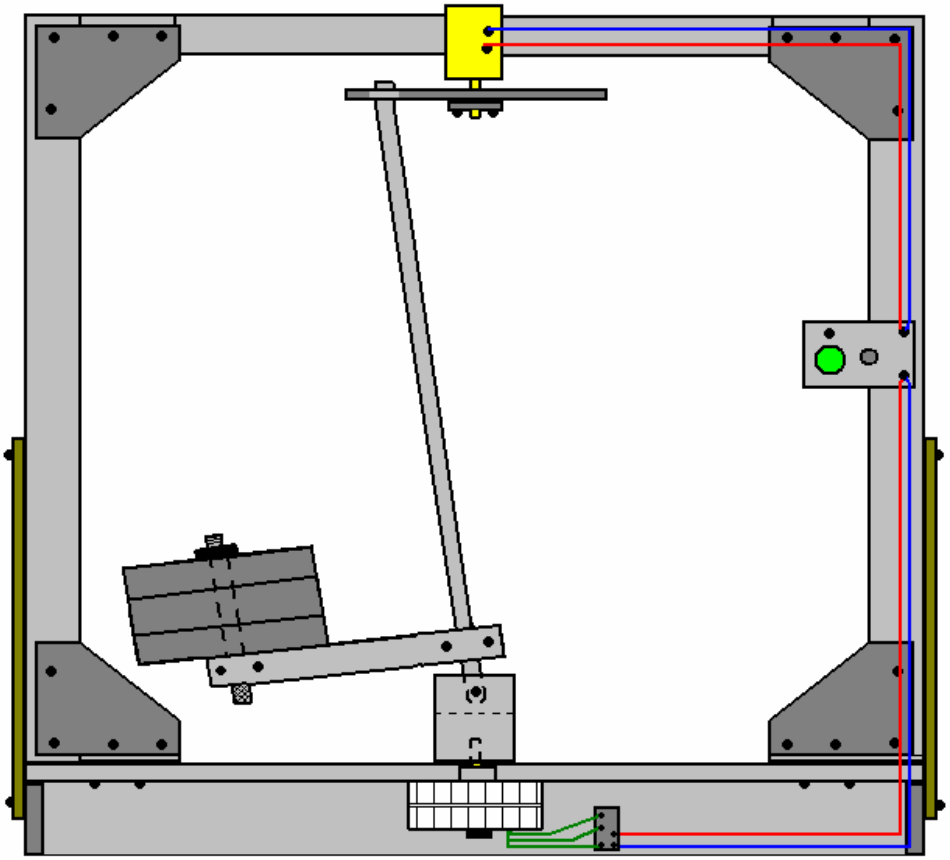
There are many options for providing the necessary weight which drives the generator. One possibility is to use a barbell shaft with as many weights as are required, that being a very simple alteration:

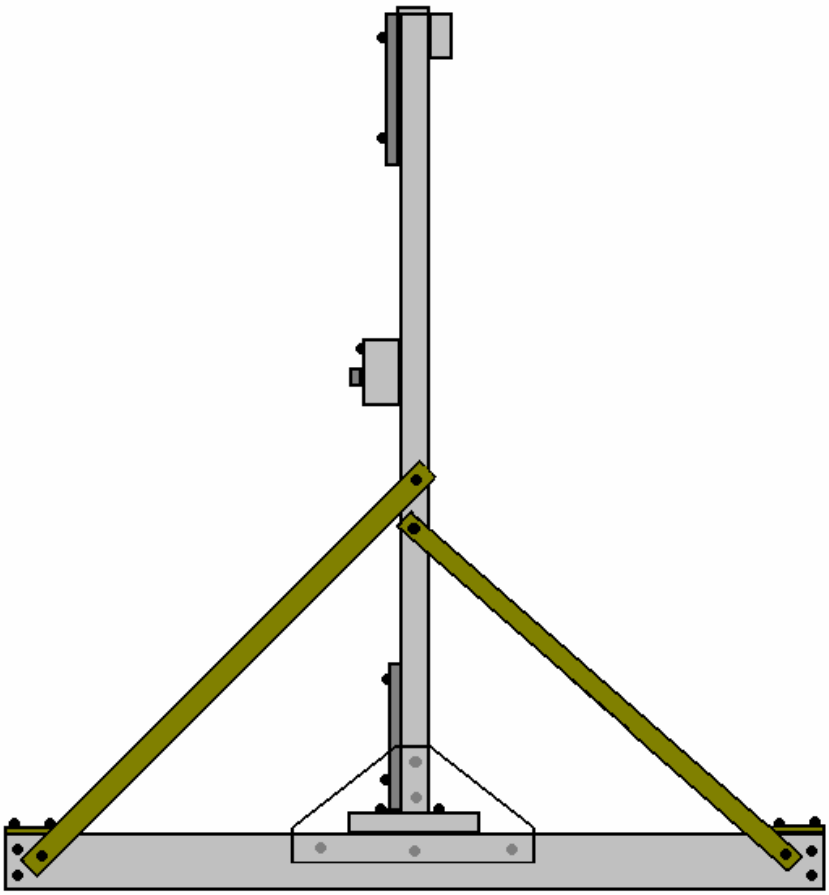
One of the hand grips can be cut and used directly as part of the mounting, perhaps like this:



This simple arrangement allows the weight discs to be added and secured in any combination desired. As dumbbells are supplied in pairs, there are four discs of each side which allows a wide range of weight options going up in jumps of just 1 Kg which is very convenient. If the axle shaft has a square cross section, there is no tendency for the lever arm to slide around the shaft

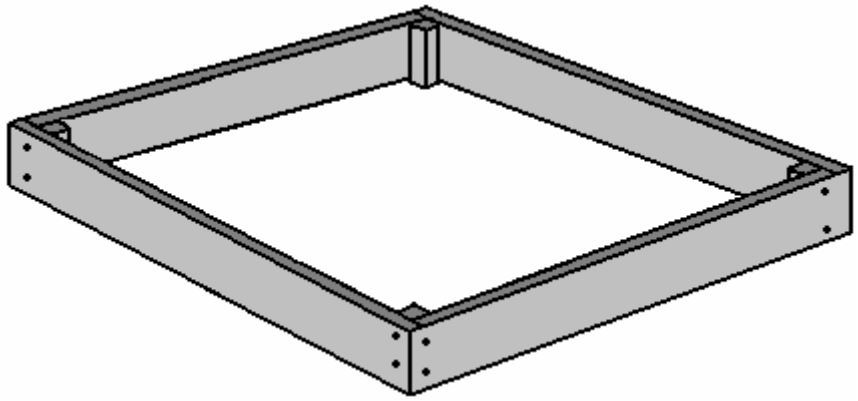
The following sketches are not to scale, but one form of construction might be like this:



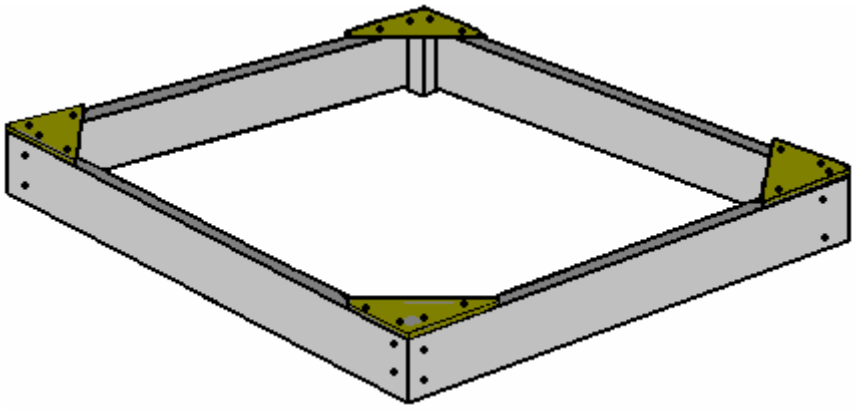


For this style of construction, four pieces of, perhaps, 70 x 18 mm Planed Square Edge timber are cut to perhaps 1050 mm and two 33 x 33 x 65 mm pieces epoxied and screwed to two of the pieces, 18 mm in from the ends:

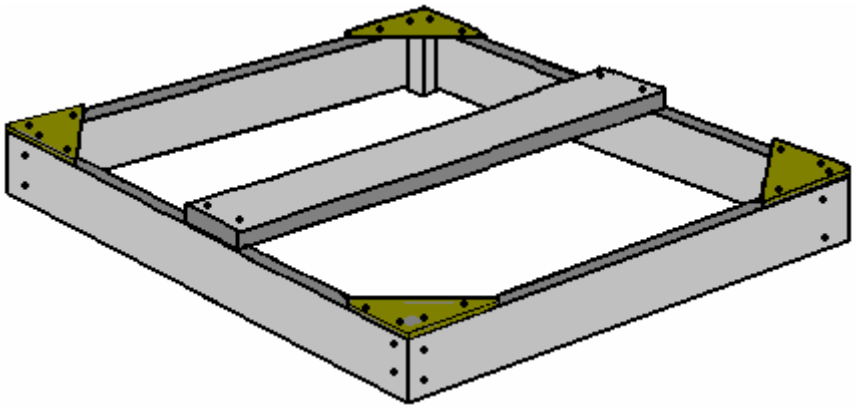
Then the four pieces are screwed together while resting on a flat surface:



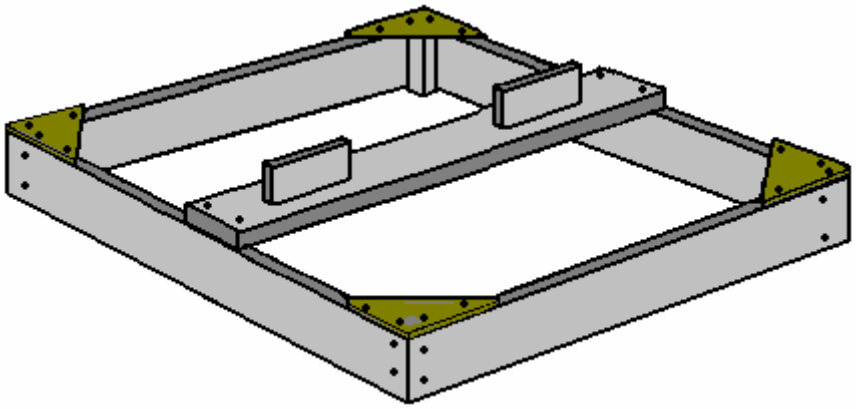
Then corner bracing triangles of MDF are screwed in place:



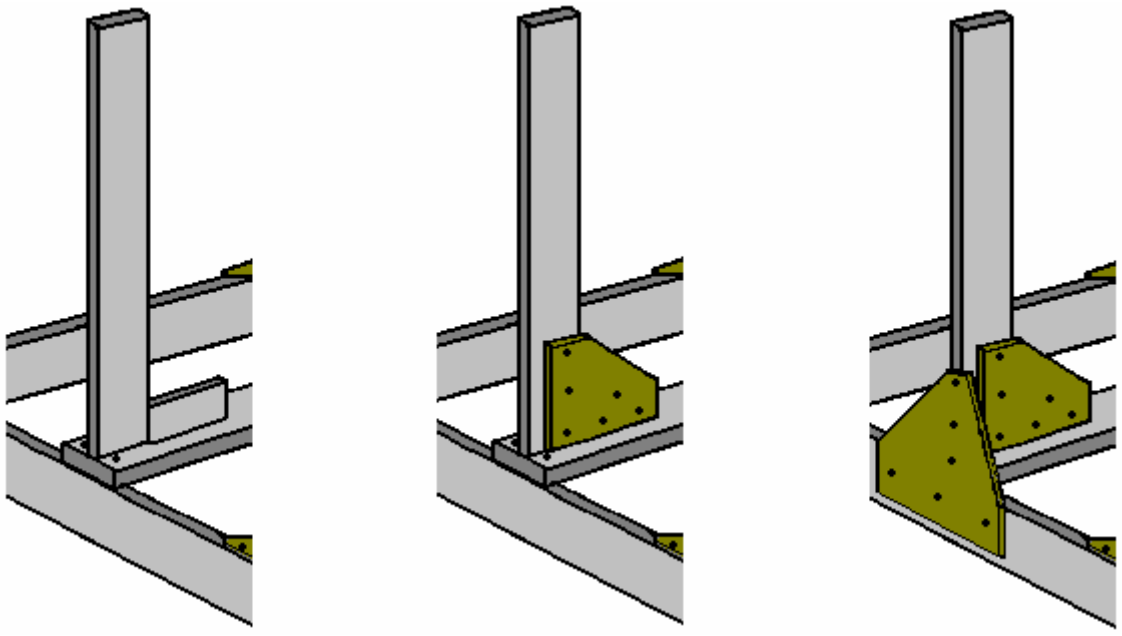
Then a 130 x 25 mm thick plank is attached across the width at the centre point and screwed in place:



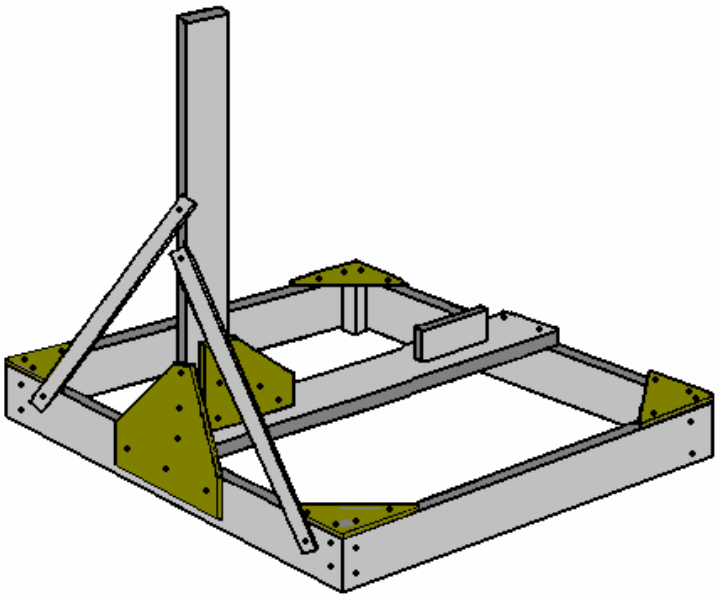
Next, two lengths of the 18 mm thick timbers about 180 mm long are epoxied and screwed to the centre of the 25 mm thick plank, leaving 70 mm clearance to the end of the plank:



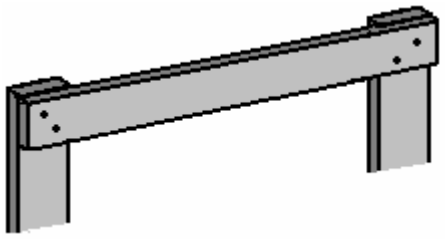
Two timber strips 1350 mm long, are cut and erected vertically, being attached by screws coming upwards through the 25 mm thick plank, and by MDF bracing triangles on one side and across the lower end of the verticals. If a spirit level is used to ensure that the vertical timber is actually vertical, then first, the four corners of the floor frame need to be weighted down to overcome any twisting and the floor frame confirmed to be actually horizontal before attaching the vertical timbers:



Each vertical needs to be braced on both sides with diagonal strip, either metal or timber:

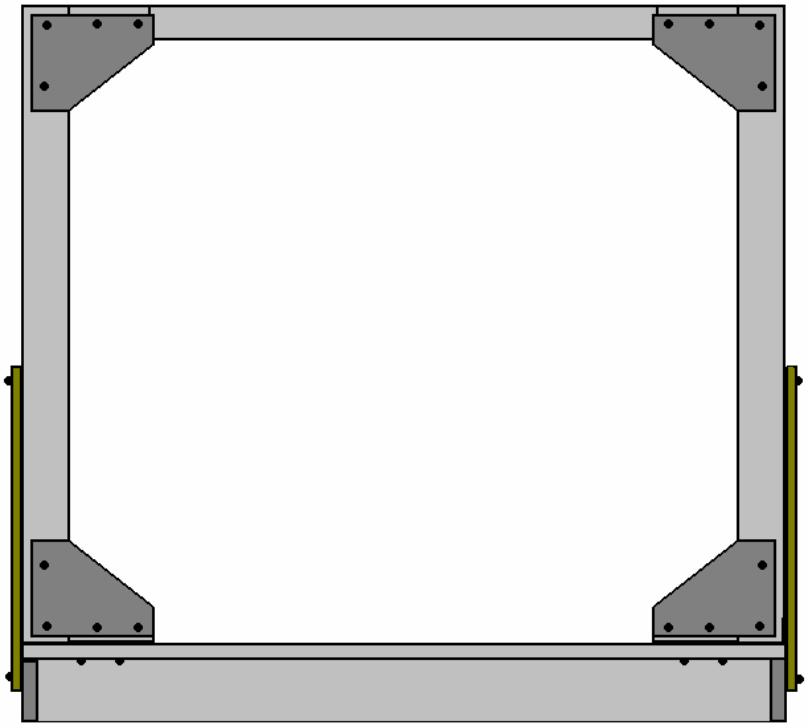


An 18 mm thick timber strip is screwed to the tops of the verticals. This deliberately positions the timber 18 mm off centre as the motor which rotates the top of the axle shaft has to be attached to the middle of this newest timber and that places the motor shaft very close to the central point of the base:

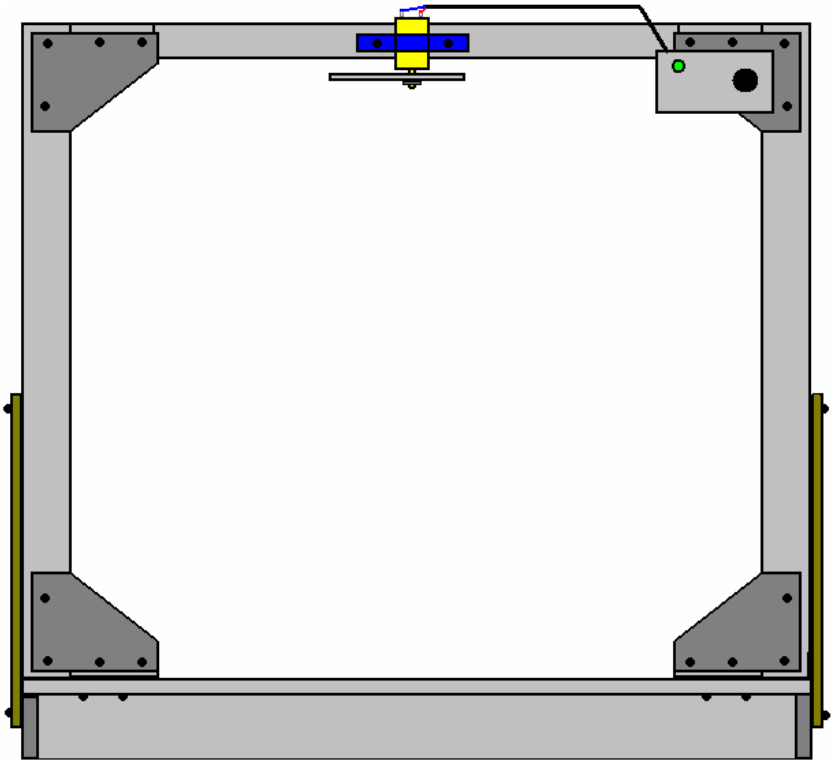


One slight disadvantage is that a packing piece is needed for the triangular MDF bracing pieces which increase the frame rigidity at the top:

At this stage, the construction will look like this:



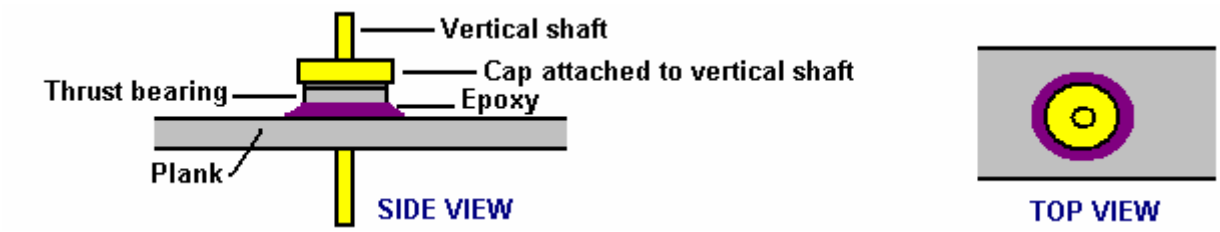
At this point, the 300 rpm motor with it's actuator arm and the speed-control box can be fitted. The motor is located centrally, and the control box can be positioned anywhere convenient. The control box is merely a 12-volt battery pack of 1.2V NiMh AA-size batteries connected through a push-to-make press button switch and the commercial DC Motor Speed Controller, to the 300 rpm motor. With this arrangement, the motor can be powered up by pressing the button and adjusting the speed slowly up from stationary, getting the rotor weight moving gradually faster and faster until its best operating speed is reached. When everything is in place, then the rectified output of the alternator is fed into the control box, so that the Start button can be released and the device becomes self-powered from part of the output power. The initial step looks like this:



It should be explained that, with the exception of the 25 mm thick plank, all of this construction is only loaded very lightly as rotating the top of the axle shaft does not take much power or effort at all. Almost all of the rotating weight is located at the bottom of the axle shaft and that weight rests on some form of bearing which rests in the middle of the 25 mm plank.

For a small version of the generator, such as this one, the rotating weight does not need to be all that great and so, the forces generated by the weight and its rotation about the bearing need not be a major thing. However, in spite of the fact that we are only dealing with limited forces which can be handled by simple components, people may be inclined to use a thrust bearing instead of allowing the weight to rest on the shaft of the alternator. A bearing of that kind may look like this:

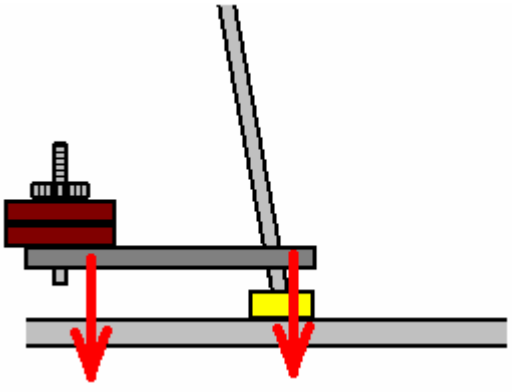
Here, the base and inner ring do not move while the top outer ring revolves freely and can support a major load while it rotates. If we choose to use one of these, then an arrangement like this could be used:



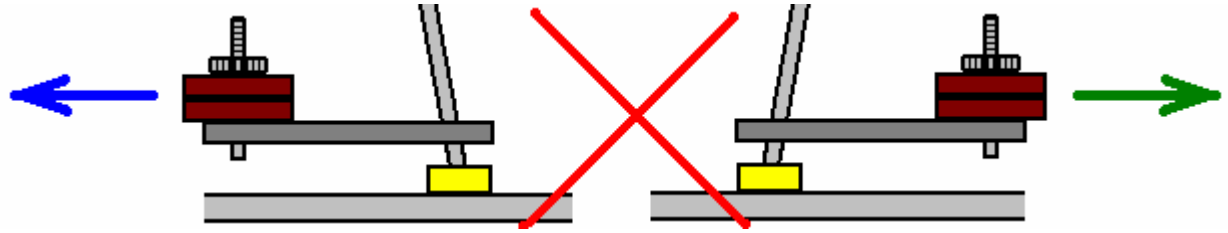
This combination has a cap (shown in yellow) with a central vertical shaft (yellow) attached to it, tightly encasing the upper ring of the bearing whose lower ring is securely attached to the 25 mm thick plank (grey) perhaps using

epoxy resin (purple). This allows free rotation of the upper ring and vertical shaft while carrying significant loading. The power take-off in the arrangement shown is from the shaft projecting beneath the plank. Generally speaking, the electrical power output increases with increased speed of rotation, so gearing the alternator up so that it rotates much faster than the axle shaft is desirable and this arrangement may be convenient for that. If it is important to have the power take-off above the plank, then a strong bracket can be used to raise the bearing high enough above the plank to accomplish that.

There are two separate forces acting on the bearing. One is always downwards as the bearing supports the rotating weight:

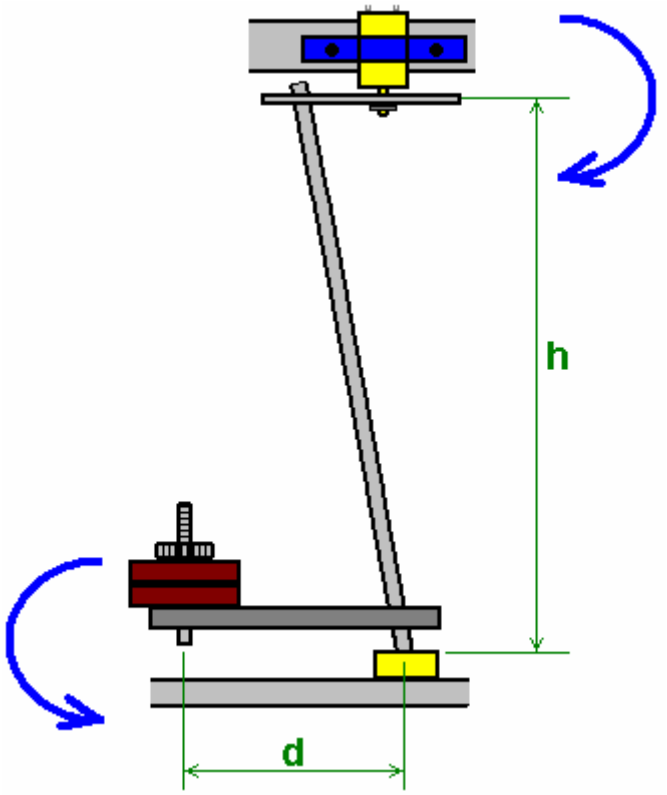


Then there is the sideways forces caused by the rotation of the (unbalanced) weight:



This sideways force is normally considered to be a major problem, however, in this instance, the weight is not being whirled around and trying to escape from the shaft in a horizontal direction, but instead, the weight is turning under gravity powered by its own weight, and the forces generated are quite different and in a different direction. Also, the rate of rotation is very small compared to the speeds which we automatically think about when considering an orbiting weight, typically, this rotation only being between 150 and 300 rpm.

As far as the loading on the axle drive motor is concerned, the situation is like this:

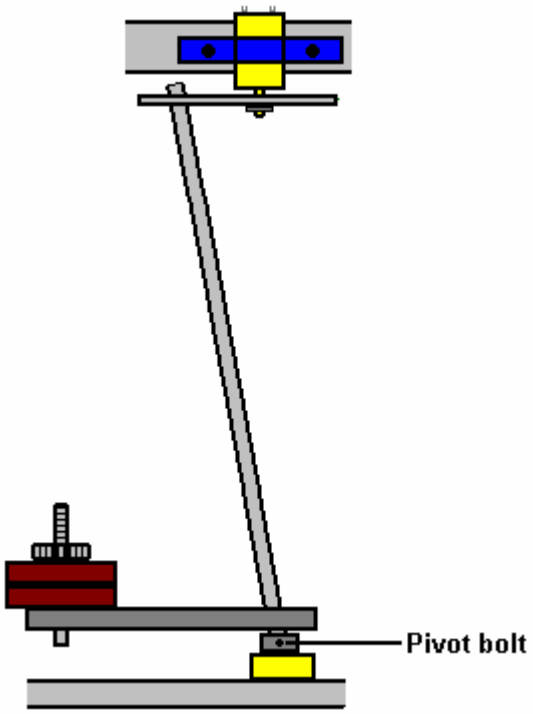


This is the position when at rest. The pull on the motor shaft at the top of the axle shaft is **W x d / h** where **W** is the weight at the end of arm **d**. The situation changes immediately the top of the axle shaft is rotated and the weight **W** starts to swing under the influence of gravity.

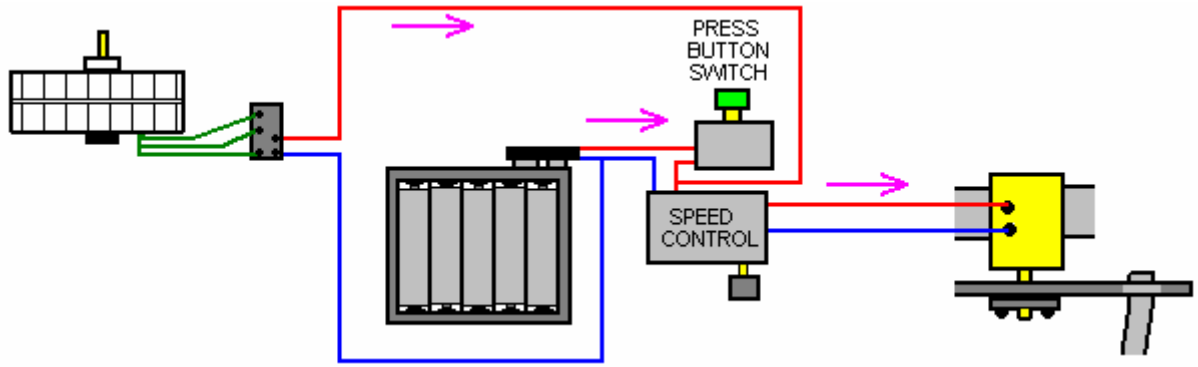
I am told that the axle shaft needs to be light. With small weights, a rigid wooden shaft is adequate and it does not flex under the loading. I am assured that the bottom of the axle shaft needs a universal joint and a major version of this generator where the weights are very high, that is certainly true as the shaft will flex if designed to its minimum specification, but under these much less stressed conditions, there will be no flexing of the shaft when it is pulled sideways and as the shaft angle is a constant, I do not believe that any such joint is necessary. However, many people will wish to include one. These bearings come in different forms, and one of them looks like this:

It must be remembered that if a joint like this is fitted, then it will not be in constant motion, that is, the joints will take up one particular position and will maintain that position during the whole of the time that the generator is in operation.

A compromise would be to provide a hinged movement in one plane by pivoting the axle shaft joint just above the thrust bearing:



The electrical connections are quite straightforward:



The 12-volt battery pack of 1.2V AA-size batteries is connected to the motor speed controller when the button of the press-button switch is held down. This powers the motor, and as the axle shaft speeds up progressively, the generator starts producing power which is always fed to the speed controller box. As soon as the generator gets up to speed the press button switch can be released and the system runs on power produced by the generator. Excess power will be drawn from the generator output, but those links are not shown in the diagram.

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Alright, having looked at generating power from gravity, next we can consider sunlight:

A Solar Panel Desk Lamp

Solar panels can be very useful items in spite of their very low efficiency and high cost. When thinking about solar panels people generally imagine a set of many large solar panels mounted on the roof of a house. The cost of doing that is far too great for most people to consider it. However, at this time, there are one billion people in the world who do not have any electricity at all. It appears that the most useful electricity feature for them would be electric lighting at night. With the components which have become available recently, providing good lighting at realistic cost is now possible.

Small solar panels offered for sale as “10 watt, 12 volt” capacity can now be bought reasonably cheaply. Made in China, these panels can provide a current of just over half an amp These panels which have an aluminium frame are typically 337 x 205 x 18 mm in size and look like this:

Tests which I have run show that a 1000 lux very realistic level of lighting can be provided with a total of just 1.5 watts of electrical power. The best lighting source that I have found is the “G4” style, LED arrays made in China using the recent “5050” chip technology. These are cheap and have a very heavily non-linear light output for current draw, which is a fact which we can use to our advantage. These LED arrays come in “white” or “warm white” versions (my preference is the warm white variety) and they look like this:

With a diameter of 30 mm and pins which are easy to connect to, these are very convenient devices which have an excellent lighting angle of 160 degrees and a light output of 165 lumens for a 1.2 watt electrical input.

One of the problems with such a unit is the selection of a suitable battery. Lithium batteries are excellent but the cost of a suitable lithium battery is ten times greater than the cost envisaged for the whole unit, effectively excluding lithium batteries. Lead-acid batteries are far too large, too heavy and too expensive for this application. Surprisingly, what appears to be the best choice is the very popular AA size Nickel-Manganese rechargeable battery which is 50 mm long and 14 mm in diameter:

Rated at up to 3 Amp-Hour capacity, they are very low cost, are lightweight and can be placed in a battery box like this:

The battery box can be adapted to hold seven batteries rather than the intended eight batteries, producing a nine volt battery pack with 1.2V batteries. If three of these battery packs are used with the solar panel, then there is no need for over-charging protection as NiMh batteries can deal with overcharging current if it does not exceed 10% of the battery's milliamp-hour rating, and that simplifies the design very considerably.

However, some of these small NiMh batteries do not live up to the maker's claims and so you need to run a load test on any particular make of battery which you may consider using. For example, here are six different types of these batteries tested in groups of four, with a load of about 50 milliamps at five volts. The same load was used to test each of these batteries:

Fusiomax 800

Digimax 2850

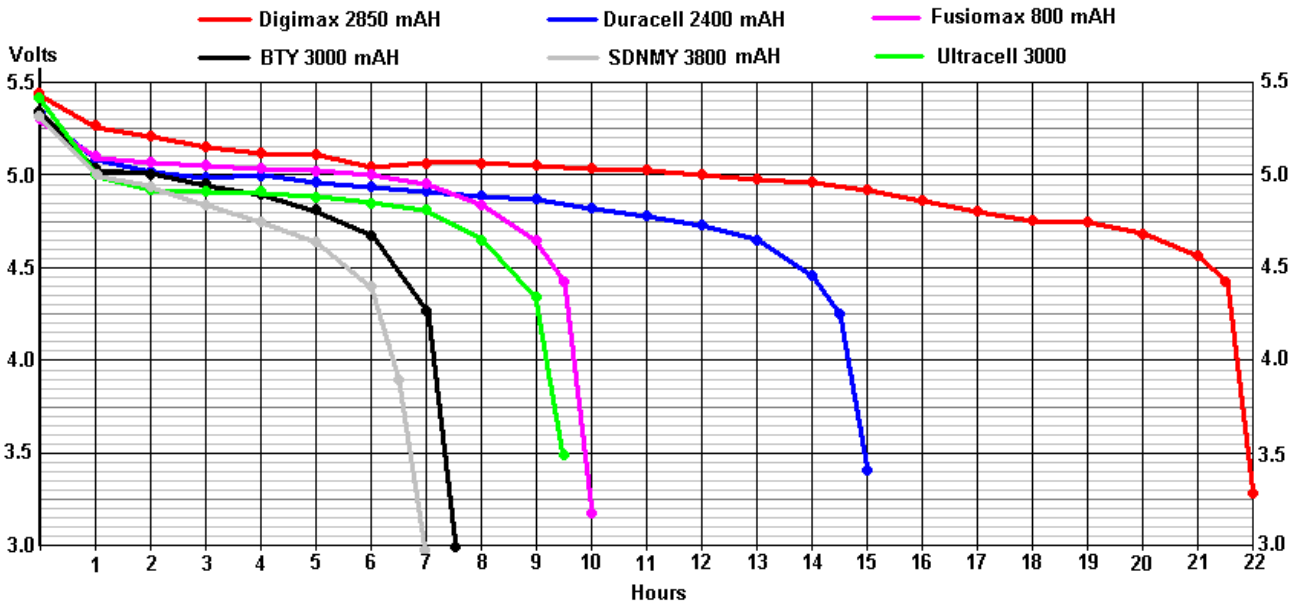
Duracell 2400

SDNMY 3800

BTY 3000

Ultracell 3000

The results were most revealing:



The BTY 3000 batteries do not actually claim on the battery to be 3000 mAHr (although the sellers do) and so, the "3000" could just be a trading name. The tests results for the BTY 3000 were so staggeringly poor that the test was repeated three times with longer recharging time for each test, and the one shown above is the 'best' result. You will notice how far short it falls when compared to the low-cost Fusiomax 800 mAHr batteries. The terrible performance of the BTY 3000 batteries is only exceeded by the incredible "SDNMY 3800 mAHr" batteries which show almost negligible capacity in spite of their amazing claims of 3800 mAHr.

NiMh batteries are 66% efficient. You should only ever charge a 3000 milliamp-hour NiMh battery at 300 milliamps or less and so with a 10-watt solar panel, overcharging is not a problem.

Light meter tests provide some very interesting results for the LED arrays. When using two LED arrays side by side in a light box, the figures for voltage / current draw / light produced using 1.2-volt NiMh batteries were:

9 batteries 11.7V 206 mA 1133 lux: 2.41 watts 470 lux per watt (the manufacturer's intended performance)

8 batteries 10.4V 124 mA 725 lux 1.29 watts 562 lux per watt

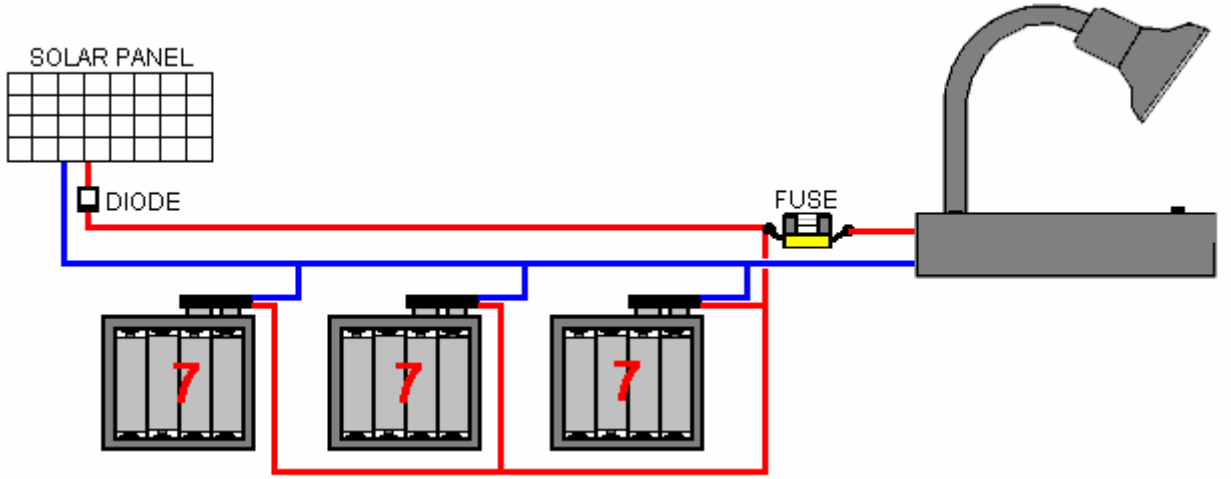
7 batteries 9.1V 66 mA 419 lux 0.60 watts **697** lux per watt (a very realistic performance level)

6 batteries 7.8V 6 mA 43 lux 0.0468 watts 918 lux per watt

This is very revealing information, showing that one of these LED arrays fed with just 33 milliamps can produce very impressive 210 lux lighting at a wide angle of illumination. To put that another way, feeding five LED arrays with 9 volts, generates a very acceptable 1000-lux lighting level for just 165 milliamps which is only 1.5 watts. That is spectacular performance.

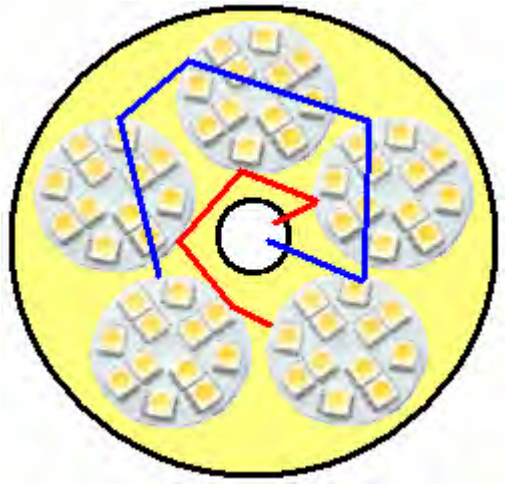
Equally impressive is what happens when the battery voltage drops when the battery is nearly fully discharged. The LED performance rises to combat the loss of voltage and even at a ridiculously small 3 milliamps fed into each LED, there is a 21 lux light output from each LED array. The effect is that while the lighting does dim slightly, it does so very gradually in a barely noticeable way. With three sets of genuine high-capacity AA NiMh batteries, we can expect a minimum of eight hours of continuous 1000-lux lighting from our desk lamp. That is a total of twelve watt-hours, and the solar panel feeding 66% efficient batteries at nine volts, is capable of replacing one of those usable watt-hours in twenty minutes. In other words, just two hours forty minutes of good daytime lighting can provide eight hours of 1000-lux lighting every night.

The only moving component in this system is the On/Off switch and the circuit could not be any more simple than this:



All solar panels have a diode to prevent the panel drawing current from the batteries during the hours of darkness and it is not unusual for the panel to be supplied with a diode already connected in place. Personally, I would consider a fuse to be unnecessary but it is standard practice to fit one. The batteries are installed in a base box which supports the solar panel and gives sufficient weight to produce a very stable lamp. The five LED arrays are connected in parallel and fitted into a suitable lamp housing such as this one:

Only the flexible stem, 120 mm diameter lampshade and On/Off switch are used. The lamp is adapted as follows: A circular disc of any kind of rigid material is cut, the diameter being slightly less than the diameter of the mouth of the lamp. Five LED arrays are attached to the disc and connected in parallel with all of the plus wires connected together and to one of the wires feeding through the shaft of the lamp, and all of the minus wires connected together and attached to the other wire passing through the column of the lamp:



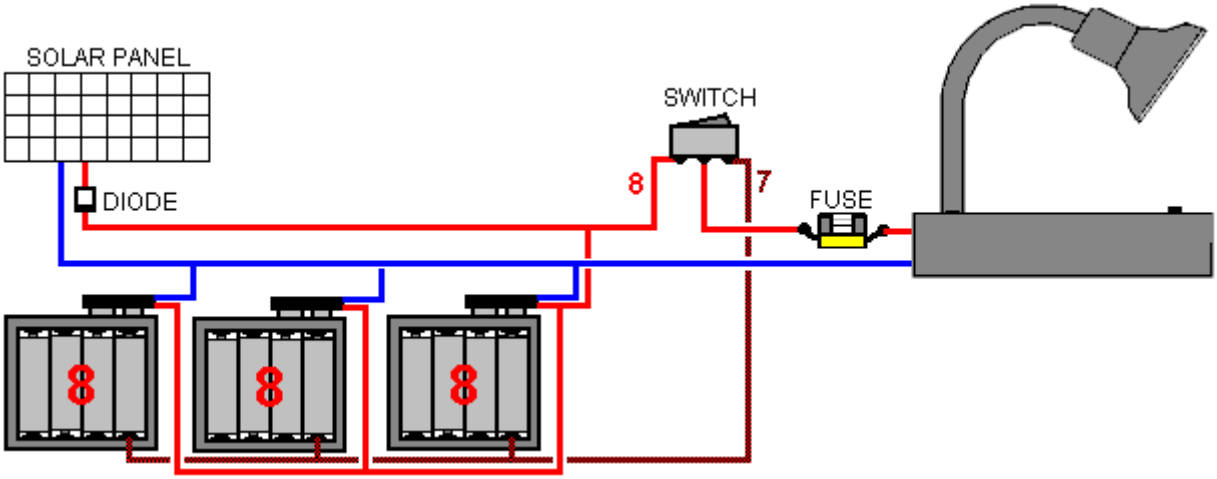
This disc is then eased through the mouth of the lamp shade where it sits about 10 mm below the rim of the shade due to the taper of the shade. Position the disc so that it is square on to the rim and glue it in position. If frosted plastic is to be used, then mark the sheet around the rim of the shade and cut out the resulting circle, drill some ventilation holes in it although the LED arrays always run cold, and glue the frosted plastic disc to the rim of the shade.

While this is an exceptionally simple and robust design, it is actually an affordable and very desirable unit which can provide years of cost-free lighting at a very satisfactory level. The prototype looks like this:

This is, of course, a perfectly ordinary and quite standard type of a solar-powered light. The difference here is that it is a very effective light suited to lighting a desk to a high level all night long. It is mobile and has a wide angle of lighting and if necessary, it could be used as a torch indoors or outdoors.

It is also possible to extend the design very slightly, to provide an even longer period of lighting or if preferred, a period of even brighter lighting. This can be done by using eight batteries in each battery holder – which has the advantage that standard battery holders can be used without any need to adapt them to hold just seven batteries.

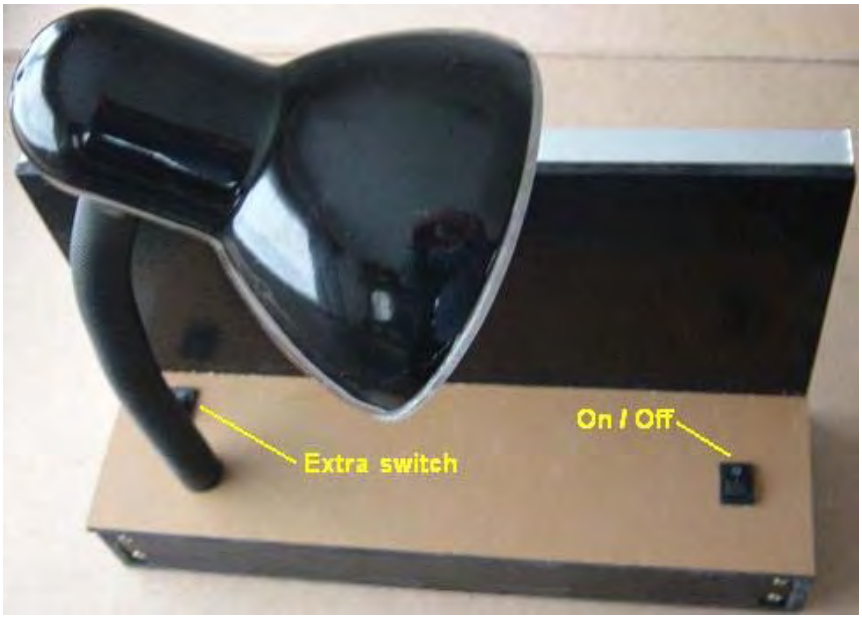
This has the slight disadvantage that we do not want to supply the extra voltage to the LED arrays because doing that would cause a greater current draw than we want. We can overcome this by using an extra change-over switch and having two connections to each battery holder. The circuit could then become:



With this arrangement, the lighting unit is fed by either eight batteries or by seven batteries, depending on the position of the change-over switch. When the solar panel is charging the batteries, all eight batteries per holder get charged no matter what position the extra switch is in.

This has the advantage that when the battery voltage starts to drop after a few hours of powering the light, then the switch can be operated, raising the voltage reaching the lamp by the voltage of the extra battery, possibly producing a brightness exceeding the maximum when using just seven batteries in each battery holder. This arrangement has the slight disadvantage that the user could switch in all eight batteries from the beginning, producing a much higher current drain and while that would give a higher lighting level, the overall time is likely to be reduced. Mind you, it is possible that this might suit the user

If this style of operation is chosen, then I suggest that the extra switch is located well away from the On/Off switch so that the user does not get confused as to which switch does which job. Perhaps the second switch might be located near the stem of the lamp support, like this:



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Next, let us consider a system which does use water but which is not affected by rainfall or the lack of rainfall. This is a simple system where almost all of the components can be bought ready to use:

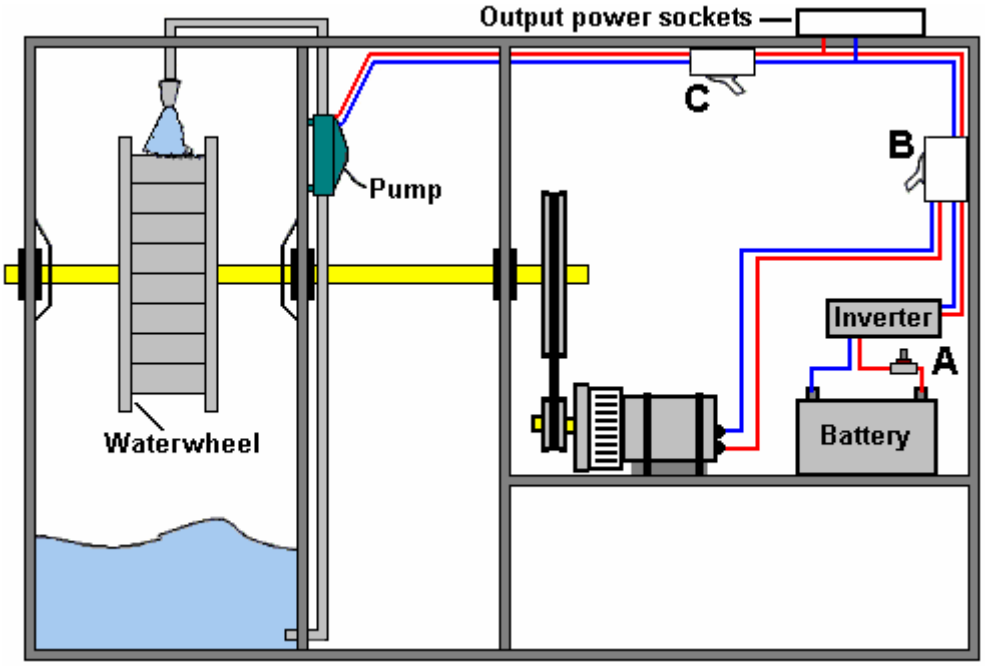
James Hardy's Self-Powered Water-Pump Generator.
There is a video on Google which shows an interesting self-powered water-pump driven, electrical generator at:
http://www.youtube.com/watch?v=IGpXA6qhH_Q

This is a very simple device where the jet of water from the pump is directed at a simple water-wheel which in turn, spins an electrical alternator, which powers both the pump and an electric light bulb, demonstrating free-energy.

Initially, the generator is got up to speed, driven by the mains electrical supply. Then, when it is running normally, the mains connection is removed and the motor/generator sustains itself and is also able to power at least one light bulb. The generator output is normal mains current from a standard off-the-shelf alternator.

James has Patent Application US 2007/0018461 A1 published in 2007 on his design. In that application he points out that a major advantage of his design is the low noise level produced when the generator is running. In the video and the pictures above, the demonstration has the housing opened up in order to show how the generator system works, but during normal use, the compartments are completely sealed.

In his document, James shows the overall system like this:



The housing is divided into three separate compartments. The first compartment has a strong axle shaft running through it, supported on ball or roller bearings – possibly ceramic for this environment. The bearings are protected by being covered by splash guards which keep the water (or other liquid) off them. A waterwheel of almost any type is mounted on the shaft and a high-capacity water pump directs a stream of liquid on to the waterwheel, striking the paddles at right angles in order to provide the maximum impact.

This first compartment is sealed in order to contain all of the liquid inside it and the bottom is effectively a sump for the liquid. A pipe located near the bottom of the compartment feeds the liquid to the pump which is located in the second compartment. The pump boosts the liquid through a nozzle, directing it at the waterwheel. While almost any nozzle will work, it is usual to choose one which produces a concentrated jet of liquid in order to generate the largest possible impact. One would expect that the larger the diameter of the waterwheel, the more powerful the system would be. However, that is not necessarily the case as other factors such as the overall weight of the rotating members might affect the performance. Experimentation should show the most effective combination for any given pump.

The rotating shaft is given a third bearing supported by the side of the final compartment. The shaft then has a large diameter belt pulley mounted on it, the belt driving a much smaller pulley mounted on the shaft of the generator. This raises the rate at which the generator shaft is rotated. If the pump operates on AC mains voltage, then the generator will be one which generates mains voltage AC. If the pump operates on, say, 12 volts, then the generator will be one which generates 12 volts DC. The diagram above, shows the arrangement for a mains voltage system as that is probably the most convenient. If a 12-volt system is chosen, then the inverter can be omitted.

The generator is started by pressing the 'normally open' press-button switch marked "**A**" in the diagram. This passes the battery power through to the 1-kilowatt inverter which then generates AC mains voltage. The switch marked "**B**" is a "changeover" switch, and for starting, it is set so that it passes the AC power through switch "**A**" to the pump. This causes the pump to turn on and direct a powerful jet of liquid at the waterwheel, forcing it around and so powering the generator. When the generator gets up to full speed, switch "**B**" is flipped over, disconnecting the inverter and feeding the generator power through to the pump, keeping it running and supplying additional power to the output power sockets mounted on top of the housing. The press-button switch is released, disconnecting the battery which is no longer needed. Switch "**C**" is an ordinary On/Off mains switch which is needed if you want to turn the generator off.

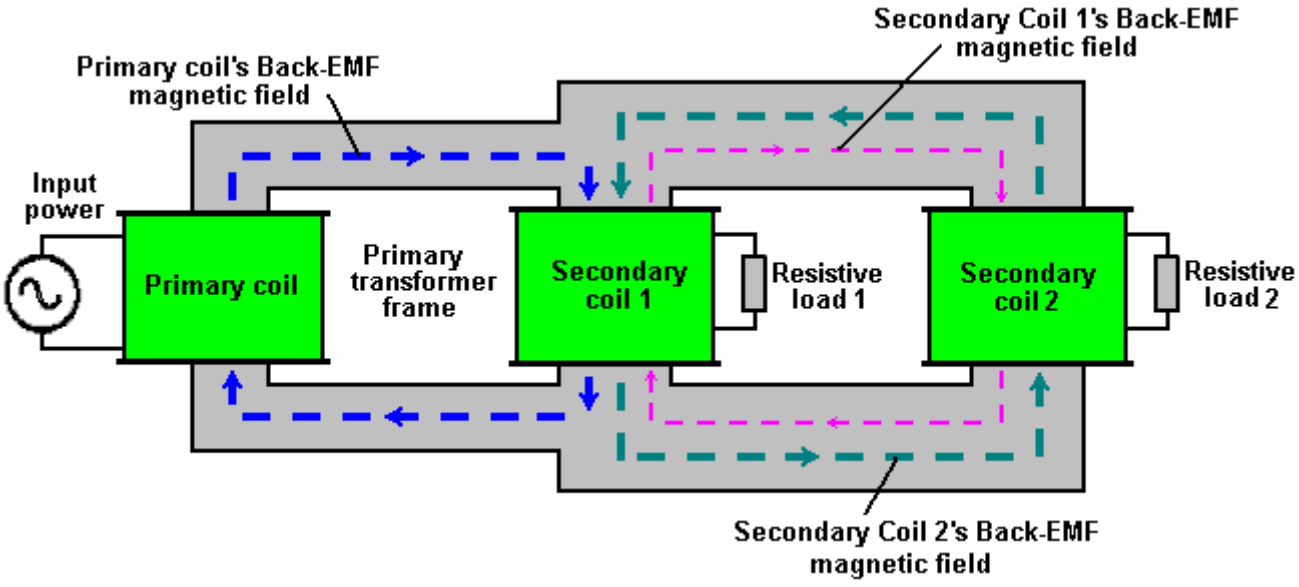
A major advantage of this generator system is that the main components can be bought ready-made and so only very simple constructional skills and readily available materials are needed. Another advantage is that what is happening can be seen. If the pump is not working, then it is a simple task to discover why. If the generator is not spinning, then you can see that and sort the problem. Every component is simple and straightforward.

James suggests that a suitable pump is the 10,000 gallons per hour "Torpedo Pump" from Cal Pump, web site: http://www.calpumpstore.com/products/productdetail/part_number=T10000/416.0.1.1:

The Transformers of Thane Heins.
A conventional transformer is deliberately wound in a symmetrical fashion so that the power flowing in the primary winding induces power in the secondary winding and when the power in the secondary winding is drawn off to do useful work, a Back-EMF magnetic flux is produced and that opposes the original magnetic flux flow, requiring additional input power to sustain the operation.

Thane has developed, tested and applied for a patent on his transformer arrangement where the output power of his prototype can be thirty times greater than the input power. He achieves this by using a figure-of-eight double toroid transformer core. His Canadian patent CA2594905 is titled "Bi-Toroid Transformer" and dated 18th January 2009. The abstract says: The invention provides a means of increasing transformer efficiency above 100%. The transformer consists of a single primary coil and two secondary coils. The two secondary coils are set on a secondary toroidal core which is designed to be maintained at a lower magnetic resistance than the primary toroidal core throughout the entire operating range of the transformer. Thus, when the transformer secondary delivers current to a load, the resulting Back-EMF is not allowed to flow back to the primary due to the higher magnetic resistance of that flux path, instead, the secondary coil's Back-EMF follows the path of least magnetic resistance into the adjacent secondary coil.

You will notice that in the following diagram, the secondary transformer frame on the right is much larger than the primary transformer frame on the left. This larger size produces a lower magnetic resistance. This seems like a minor point but in fact it is not, as you will see from the test results.



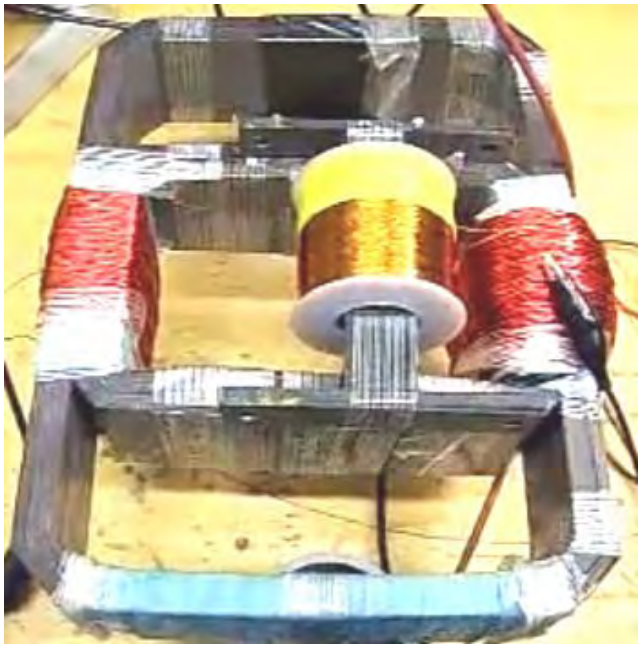
In this transformer, that opposing magnetic flow is diverted through a larger magnetic frame which has a much lower resistance to magnetic flow and which, as a result, bleeds off the problem flux, sending it through secondary coil 2 in the diagram above. This pretty much isolates the input power from any opposition, resulting in a massive improvement in the operation efficiency.

In the patent document, Thane quotes a prototype test which had:
A primary coil winding with 2.5 ohms resistance, carrying 0.29 watts of power.
A secondary coil “1” with a winding of 2.9 ohms resistance, receiving 0.18 watts of power.
The Resistive load 1 was 180 ohms, receiving 11.25 watts of power.

The secondary coil 2 had a winding of 2.5 ohms resistance, and received 0.06 watts of power.
Resistive load 2 was 1 ohm, receiving 0.02 watts of power.

Overall, the input power was 0.29 watts and the output power 11.51 watts, which means that the output power is 39.6 times greater than the input power.

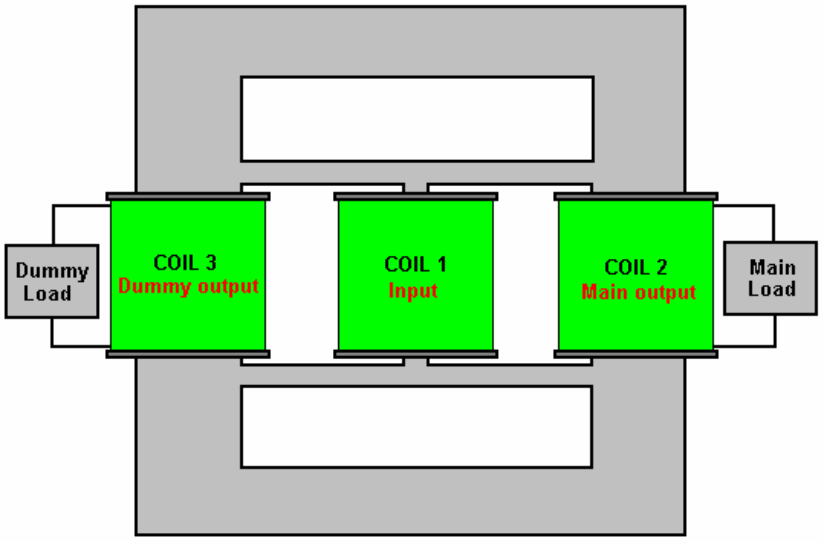
A variation of this arrangement is to attach an outer toroid to the existing bi-toroid arrangement, like this:



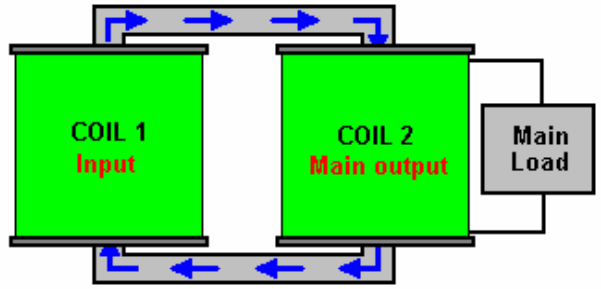
This prototype, as you can see, is fairly simple construction, and yet, given an input power of 106.9 milliwatts, it produces an output power of 403.3 milliwatts, which is 3.77 times greater.

This is something which needs to be considered carefully. Conventional science say that "there is no such thing as a free meal" and with any transformer, you will get less electrical power out of it than you put into it. Well, this simple looking construction demonstrates that this is not the case, which shows that some of the dogmatic statements made by present day scientists are completely wrong.

This version of Thane's transformer is made like this:

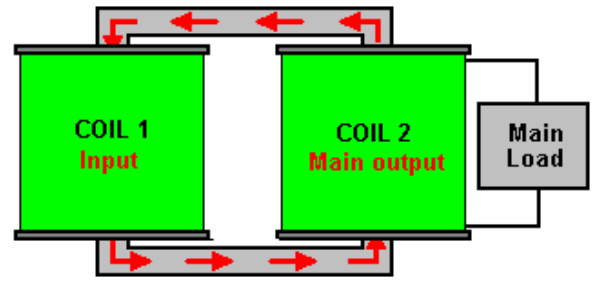


The way that off-the-shelf transformers work at the moment is like this:



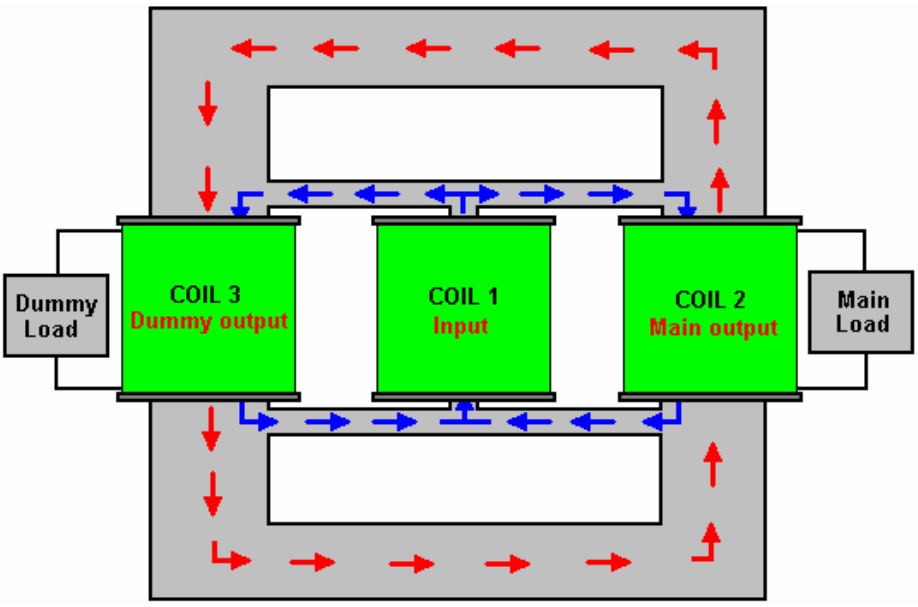
When a pulse of input power is delivered to Coil 1 (called the "Primary winding"), it creates a magnetic wave which passes around the frame or "yoke" of the transformer, passing though Coil 2 (called the "Secondary winding") and back to Coil1 again as shown by the blue arrows. This magnetic pulse generates an electrical output in Coil 2, which flows through the electrical load (lighting, heating, charging, video, or whatever) providing it with the power which it needs to operate.

This is all well and good but the catch is that the pulse in Coil 2 also generates a magnetic pulse, and unfortunately, it runs in the opposite direction, opposing the operation of Coil 1 and causing it to have to boost it's input power in order to overcome this backward magnetic flow:



This is what makes current scientific "experts" say that the electrical efficiency of a transformer will always be less than 100%.

Thane has overcome that limitation by the simple and elegant technique of diverting that backward pulse of magnetism and channelling it through an additional magnetic path of lower resistance to magnetic flow through it. The path is arranged so that Coil 1 has no option but to send it's power through the frame as before, but the return pulse takes a much easier path which does not lead back to Coil 1 at all. This boosts the performance way past the 100% mark, and 2,300% has been achieved quite readily (COP=23). The additional path is like this:



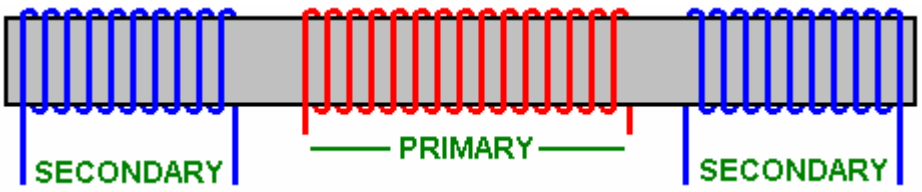
Not shown in this diagram are the reverse pulses from Coil 3. These follow the easier outside path, opposing the unwanted back pulse from coil 2. The overall effect is that from Coil 1's point of view, the tiresome back pulses from Coil2 have suddenly disappeared, leaving Coil 1 to get on with the job of providing power without any hindrance.

This simple and elegant modification of the humble transformer, converts it into a free-energy device which boosts the power used to drive it and outputs much greater power. Congratulations are due to Thane for this technique.

At the present time there are videos showing how this transformer works:
http://www.youtube.com/watch?v=5KfwiXJ8apk and
http://www.youtube.com/watch?v=GcAYhM0LX9A&playnext=1&feature=sub&list=TLJjwIlLxS9jQ.

The Single-bar Transformer Suggestion.

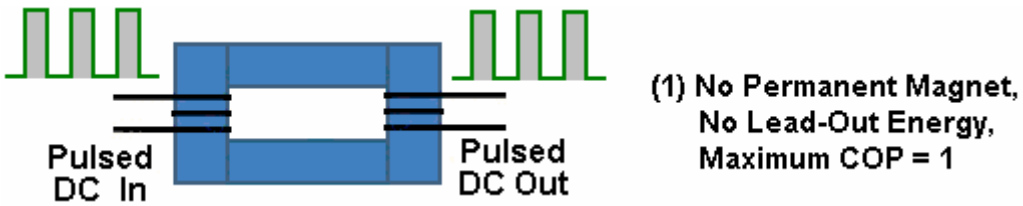
A suggestion has been made that the effect shown by Thane Heins can be achieved very simply by using a transformer frame which is just one straight bar of laminated iron or other suitable material (such as the nanocrystalline 'Metglas'). The key factor is the direction of winding of the secondary winding. The idea looks like this:



In this arrangement, the two secondary loads have equal current requirements and so, the back-EMFs produced by them are of equal size but act in opposite directions, effectively cancelling each other. As far as I am aware, this has not yet been tested, but the performance should be well over 100% efficient.

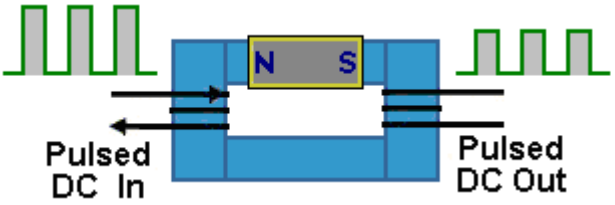
Lawrence Tseung's Magnetic Frame.

It is possible to boost the output power from a transformer by embedding a permanent magnet in the frame of the transformer. Lawrence Tseung has produced a design using this principle. For convenience, we use the term "Coefficient Of Performance" abbreviated to "COP" to indicate operating efficiency. At COP=1 the performance is 100% efficient. At COP>1 the output power is greater than the input power that **we** have to provide to make the device work. Lawrence Tseung took a magnetic frame and placed a permanent magnet in one of the arms of the frame. He then applied sharp DC pulses to a coil wound on one side of the frame and draws off energy from a coil wound on the other side of the frame.



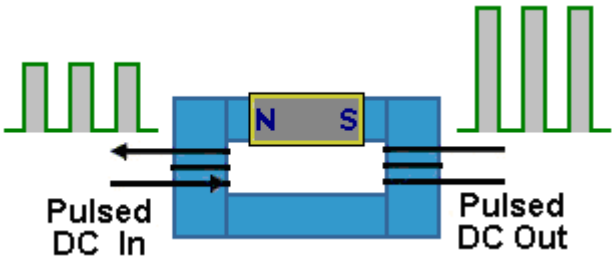
Lawrence comments on three possible arrangements. The first on shown above is the standard commercial transformer arrangement where there is a frame made from insulated iron shims in order to cut down the unwanted "eddy" currents which otherwise would circulate around inside the frame at right angles to the useful magnetic pulsing which links the two coils on the opposite sides of the frame. As is very widely known, this type of arrangement never has an output power greater than the input power.

However, that arrangement can be varied in several different ways. Lawrence has chosen to remove a section of the frame and replace it with a permanent magnet as shown in the diagram below. This alters the situation very considerably as the permanent magnet causes a continuous circulation of magnetic flux around the frame before any alternating voltage is applied to the input coil. If the pulsing input power is applied in the wrong direction as shown here, where the input pulses generate magnetic flux which opposes the magnetic flux already flowing in the frame from the permanent magnet, then the output is actually **lower** than it would have been without the permanent magnet.



(2) Permanent Magnet Opposes Magnetic Flux: COP < 1

However, if the input coil is pulsed so that the current flowing in the coil produces a magnetic field which reinforces the magnetic field of the permanent magnet then it is possible for the output power to exceed the input power. The "Coefficient of Performance" or "COP" of the device is the amount of output power divided by the amount of input power which the user has to put in to make the device operate. In this instance the COP value can be greater than one:



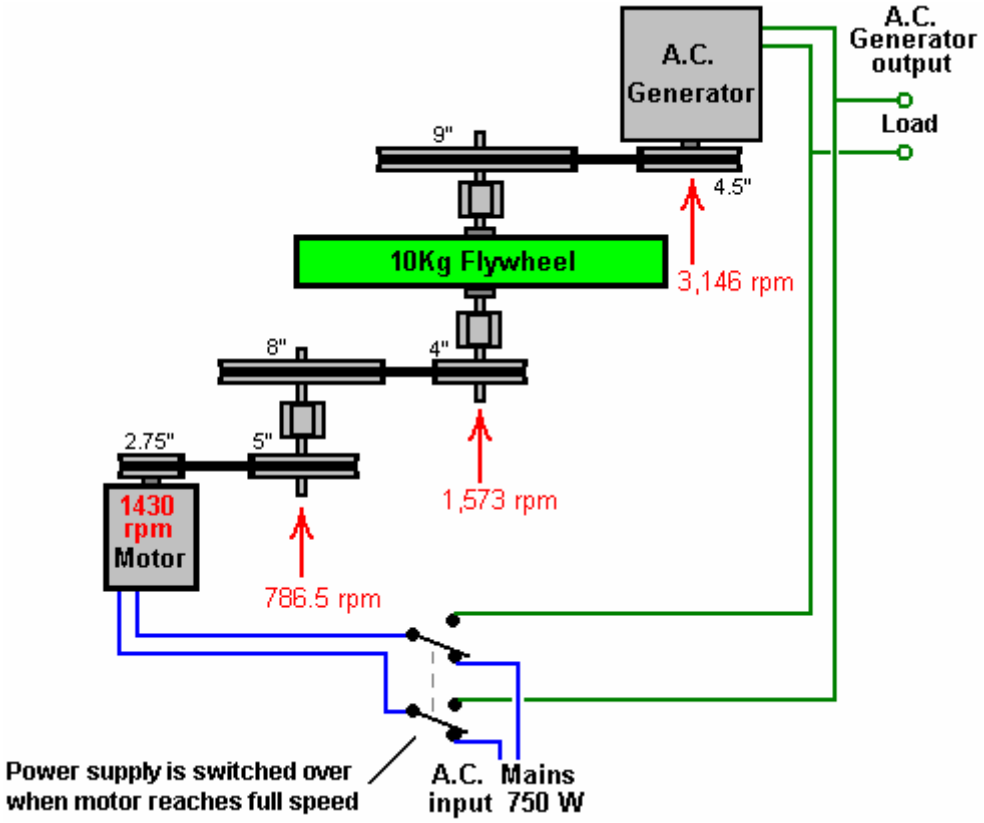
(3) Permanent Magnet Enhances Magnetic Flux: COP > 1

As it upsets some purists, perhaps it should be mentioned that while a square wave input signal is applied to the input of each of the above illustrations, the output will not be a square wave although it is shown that way for clarity. Instead, the input and output coils convert the square wave to a low-quality sine wave.

There is a limit to this as the amount of magnetic flux which any particular frame can carry is determined by the material from which it is made and it's cross-sectional area. Iron is the most common material for frames of this type and it has a very definite saturation point. If the permanent magnet is so strong that it causes saturation of the frame material before the input pulsing is applied, then there can't be any effect at all from positive DC pulsing as shown. This is just common sense but it makes it clear that the magnet chosen must not be too strong for the size of the frame, and why that should be.

As an example of this, one of the people replicating Lawrence's design found that he did not get any power gain at all and so he asked Lawrence for advice. Lawrence advised him to omit the magnet and see what happened. He did this and immediately got the standard output, showing that both his input arrangement and his output measuring system both worked perfectly well. It then dawned on him that the stack of three magnets which he was using in the frame were just too strong, so he reduced the stack to just two magnets and immediately got a performance of 50% more output power than the input power.

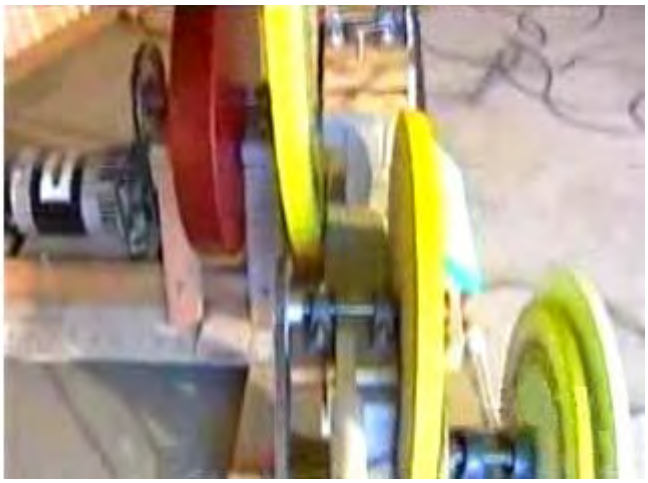
Chas Campbell's Flywheel System.
Mr. Chas Campbell of Australia demonstrated electrical power gain with a flywheel system which he developed:



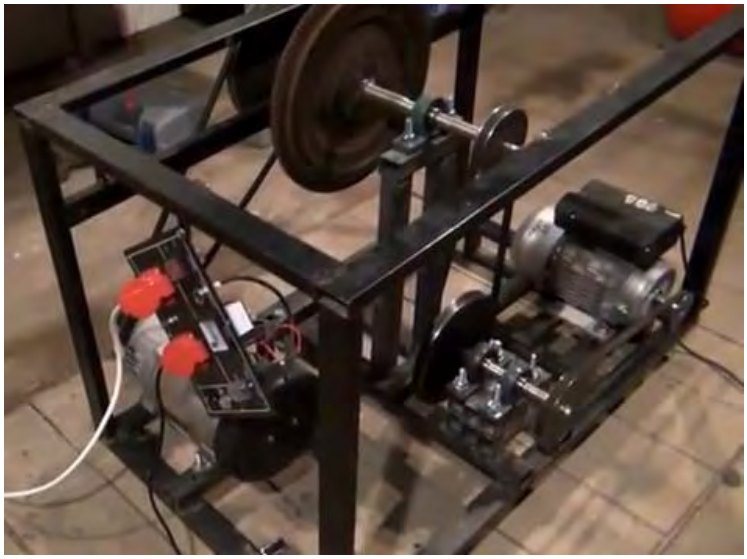
Chas has now confirmed the excess energy by getting the flywheel up to speed and then switching the drive motor input to the output generator. The result is a self-powered system capable of running extra loads.

Let me explain the overall system. A mains motor of 750 watt capacity (1 horsepower) is used to drive a series of belts and pulleys which form a gear-train which produces over twice the rotational speed at the shaft of an electrical generator. The intriguing thing about this system is that greater electrical power can be drawn from the output generator than appears to be drawn from the input drive to the motor. How can that be? Well, Jacob Bitsadze points out that the effect is caused by the perpetual inward acceleration of the material of the flywheel due to the fact that it rotates in a fixed position. He refers to it as being 'the rule of shoulder of Archimedes'. The important point is that Chas Campbell's system is self-powered and can power other equipment.

Now take a look at the construction which Chas has used:

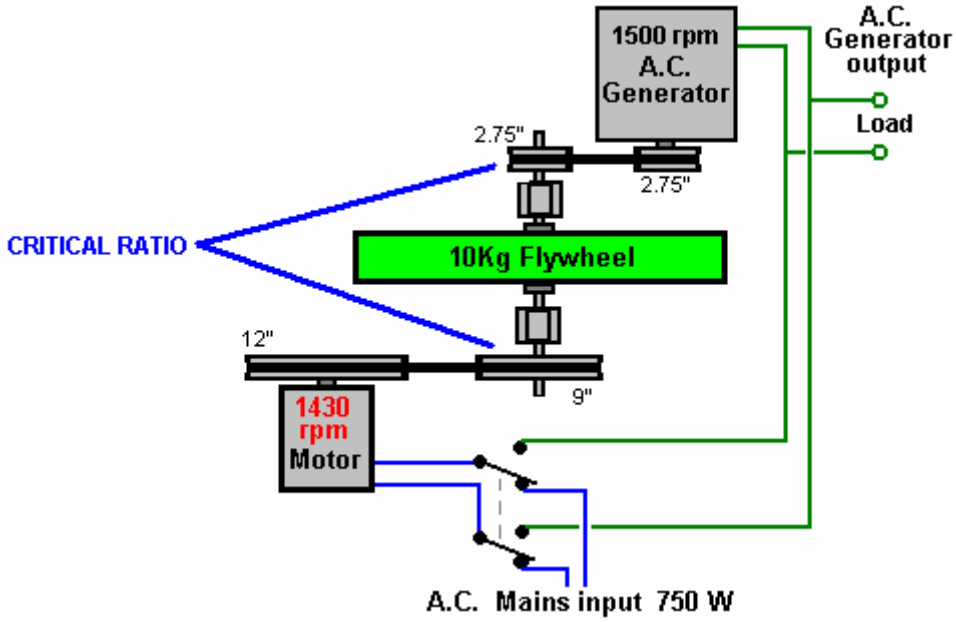


You notice that not only does he have a heavy flywheel of a fair size, but that there are three or four other large diameter discs mounted where they also rotate at the intermediate speeds of rotation. While these discs may well not have been placed there as flywheels, nevertheless, they do act as flywheels, and each one of them will be contributing to the free-energy gain of the system as a whole. A replication video with 750 watts input and 2340 watts output is here: http://www.youtube.com/watch?v=98aiISB2DNw and this implementation does not appear to have a heavy flywheel as you can see from this picture, although the largest pulley wheel looks as if it contains considerable weight:



Jacob Byzehr's Flywheel Analysis.

In 1998, Jacob lodged a patent application for a design of the type shown by Chas Campbell. Jacob has analysed the operation and he draws attention to what he considers to be a key design factor:



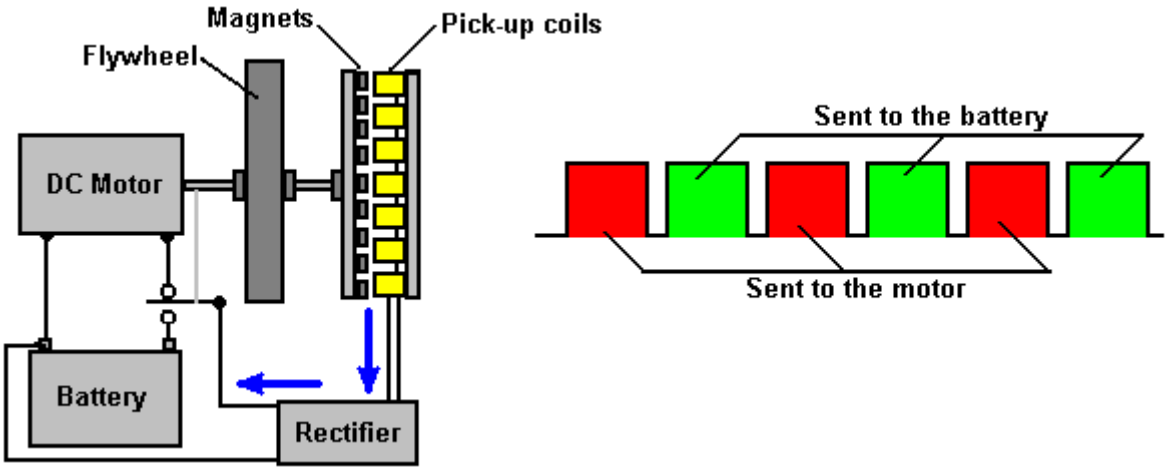
Jacob states that a very important feature for high performance with a system of this kind is the ratio of the diameters of the driving and take-off pulleys on the shaft which contains the flywheel, especially with systems where the flywheel rotates at high speed. The driving pulley needs to be three or four times larger than the power take-off pulley. Using Chas' 1430 rpm motor and a commonly available 1500 rpm generator, the 12:9 step-up to the shaft of the flywheel gives a satisfactory generator speed while providing a 3.27 ratio between the 9-inch diameter driving pulley and the 2.75" diameter power take-off pulley. If a generator which has been designed for wind-generator use and which has it's peak output power at just 600 rpm is used, then an even better pulley diameter ratio can be achieved.

John Bedini's 800% Efficient Pulsed Flywheel.

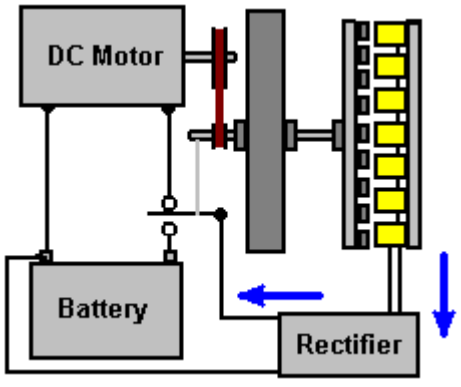
The Chas Campbell system is not an isolated case. On page 19 of the book "Free Energy Generation - Circuits and Schematics" John Bedini shows a diagram of a motor/generator which he has had running for more than three years continuously, while keeping it's own battery fully charged. At John's web site http://www.icehouse.net/john1/index11.html about half way down the page, there is a black and white picture of a very large construction version of this motor built by Jim Watson and which had an excess power output of many kilowatts, due to the very large size and weight of it's flywheel. The excess energy is drawn from the Earth's gravity field, and so, two factors are involved.

The first is the size, weight and speed of oration of the flywheel itself and the second is the effectiveness of the drive connection between the drive motor and the flywheel. In John's prototype, the flywheel is relatively small, limiting the output power and calling for careful manual tuning of the system, and John shows the motor being directly linked to the shaft of the flywheel, and if that is the case, then in my opinion, that limits the output power considerably as can be seen from the work of Jacob Byhehr earlier in this chapter.

The general strategy is that the motor spins the flywheel and the flywheel shaft spins a disc with permanent magnets mounted on it. The magnets have their South poles facing corresponding helically wound coils which are connected in series. As the magnets pass by the coils, a voltage is generated and current is then drawn from the coils and fed, first to the motor to power it and then secondly to the battery to keep it charged.
John shows his switching mechanism as a mechanical attachment on the flywheel shaft with a conducting sector of about 110 degrees of arc. This gives equal duration pulses being fed back to the motor and then to the battery, with there being a short gap between each pulse and the following one:



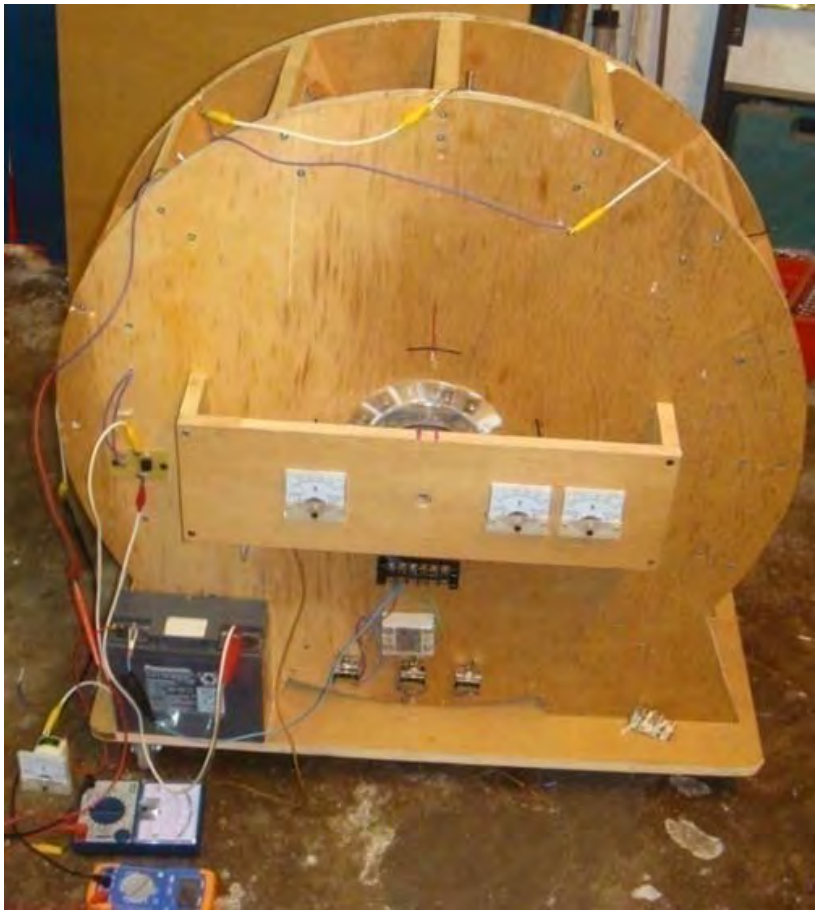
While this is a simple concept, in my opinion, there is scope for improvement. As current is drawn from the output coils, the current flow creates magnetic effects which cause drag which opposes the rotation of the flywheel. This suggests that controlling the timing of the current draw with the switching arrangement used by Robert Adams would convert that drag into a push which would help the flywheel on its way instead of impeding it. Probably of greater importance would be to gear the drive motor up as Jacob points out. Leaving the generator disc directly attached to the flywheel shaft, the motor might be geared up by, say, a 2:1 ratio:



John's mechanical switching has the advantage of always being synchronised with the flywheel but it has the disadvantage of wear and tear on the mechanical parts. An electronic circuit to replace the mechanical parts should not be difficult to arrange and if you want the feedback from the generator section to be synchronised with the flywheel (which actually does not seem to be in any way necessary), then an optical disc or a magnetic sensor can be used. This generator system of John's can have considerable excess output.

Lawrence Tseung's 330% Efficient Pulsed-Flywheel.

Lawrence has formulated his theory of "lead-out energy" which indicates that excess energy is drawn from the environment when there is an impact or sudden inertial change. The method of producing this effect which he has followed is to create an unbalanced wheel and demonstrate that excess energy is produced. It should be stressed that energy is never created or destroyed and so, when he measures more energy in his device than the energy which he uses to power it, energy is not being created but is instead, being drawn in from the local environment. Lawrence has demonstrated a prototype to members of the public:



This simple device was demonstrated to have 3.3 times more output power than the input power needed to make it operate. This is an early prototype which was demonstrated in October 2009.

Mr Tseung remarks: "The **Lee-Tseung Lead-Out Energy Theory** was first disclosed to the world on 20th December 2004 at Tai Po, in Hong Kong. The Lead-Out Energy Theory basically says that one can lead-out (or bring-in) Energy from the surrounding environment into a Lead-Out Energy Machine. The total Input energy is equal to the sum of the Supplied Energy plus the Lead-Out Energy. For example, if the supplied energy is 100 units and the lead-out energy is 50 units, the device's total Input Energy will be 150 units. This means that the Output Energy can be more than the Supplied Energy of 100 units provided by the person who is using the device".

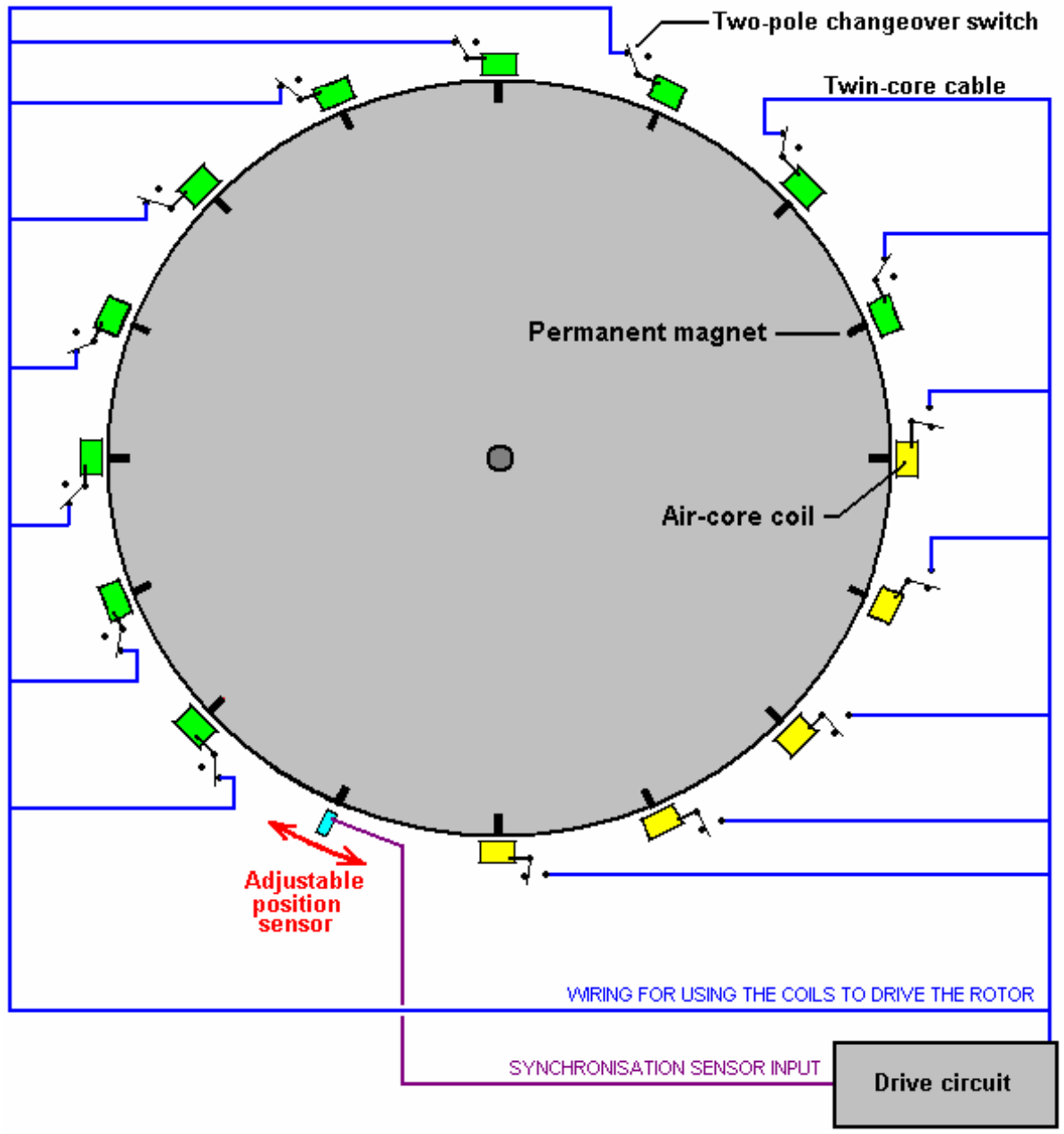
If we ignore the small loss of energy caused by less than 100% efficiency of the device itself, then the Output Energy will be the whole of the 150 units. If we use 50 of the output energy units and feed back 100 of the output units as the Supplied Energy, then that Supplied Energy can again lead-out another 50 units of excess output Energy for us to use. Thus a Lead-Out Energy Machine can continuously lead-out pollution-free, virtually inexhaustible and readily available energy for us to use. We do not need to burn any fossil fuel or pollute our environment. The two examples of Lead-Out energy which we access are Gravitational and Electron-Motion energy.

The Lead-Out Energy theory does not violate the Law of Conservation of Energy. The Law of Conservation of Energy has been used as a roadblock for the so called “Overunity” devices. The patent offices and the scientific establishment routinely dismiss an invention as belonging to the impossible “perpetual-motion machine” category if the inventor cannot identify the energy source of his invention.

We got the help of Mr. Tong Po Chi to produce a 60 cm diameter Lead-Out Energy machine in October 2009. The Output Energy of that device is greater than the Input Energy by a factor of 3 times. These results are confirmed by voltmeters and ammeters measuring the Input and Output energies.

The Tong wheel has been shown at two Open Shows in Hong Kong (Inno Carnival 2009 and Inno Design Tech Expo) in November and December 2009. Over 25,000 people have seen it. The Better Hong Kong Radio Show has video recorded it, the discussions being conducted in Chinese.

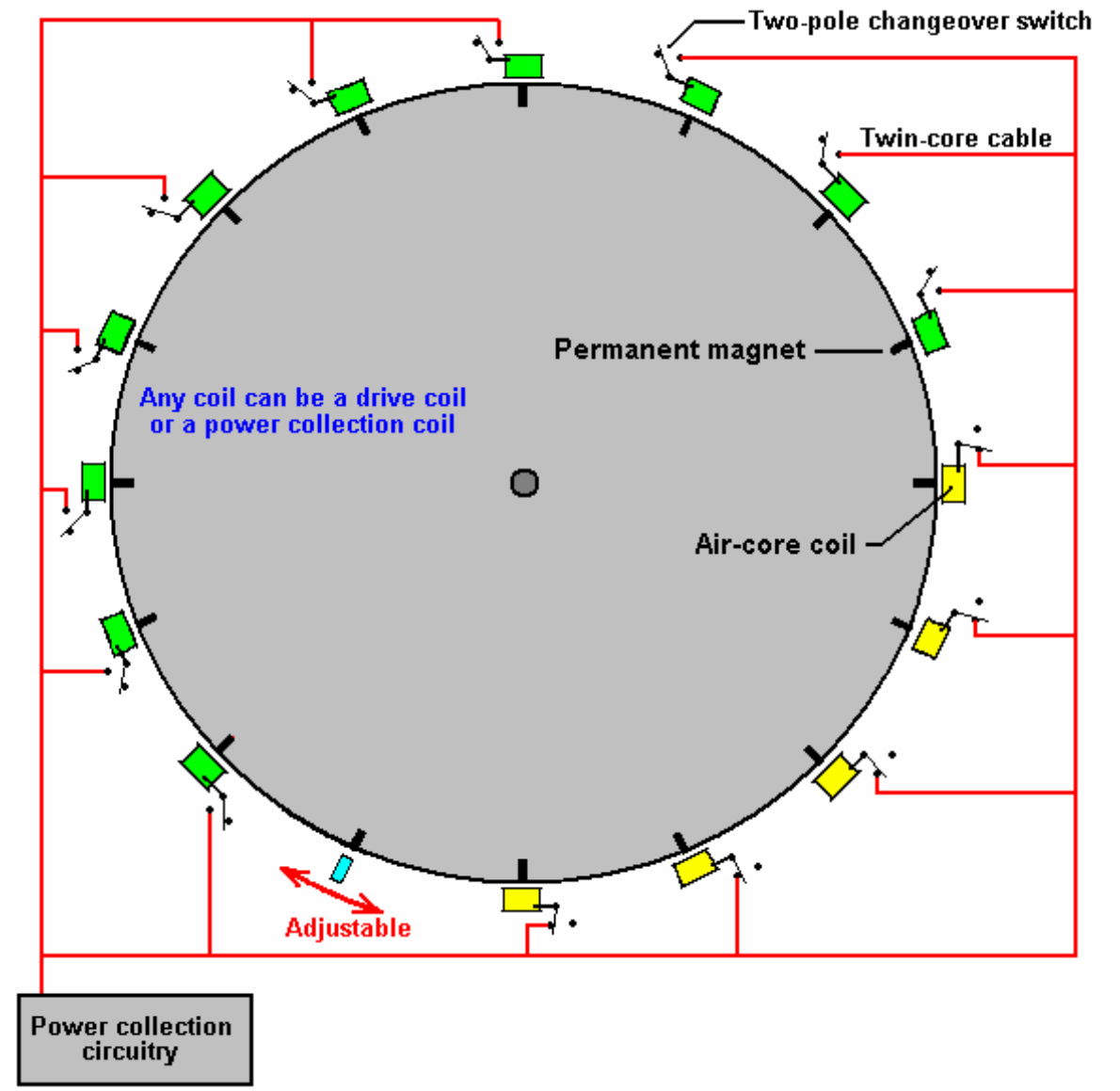
The Tong wheel has a diameter of 600 mm and this large size is considered to be important. It has 16 permanent magnets mounted on its rim and 15 air-core coils mounted around it on the stator. There is one position sensor. The coils can be switched to act as drive coils or as energy collection coils:



With this arrangement, if the positions the switches as shown for ten of the fifteen coils shown here, then they act as drive coils. The sensor is adjusted so that the drive circuit delivers a brief energising pulse to those coils just after the magnets have passed their exact alignment position with the coils. This causes them to generate a magnetic field which repels the magnets, thrusting the rotor around.

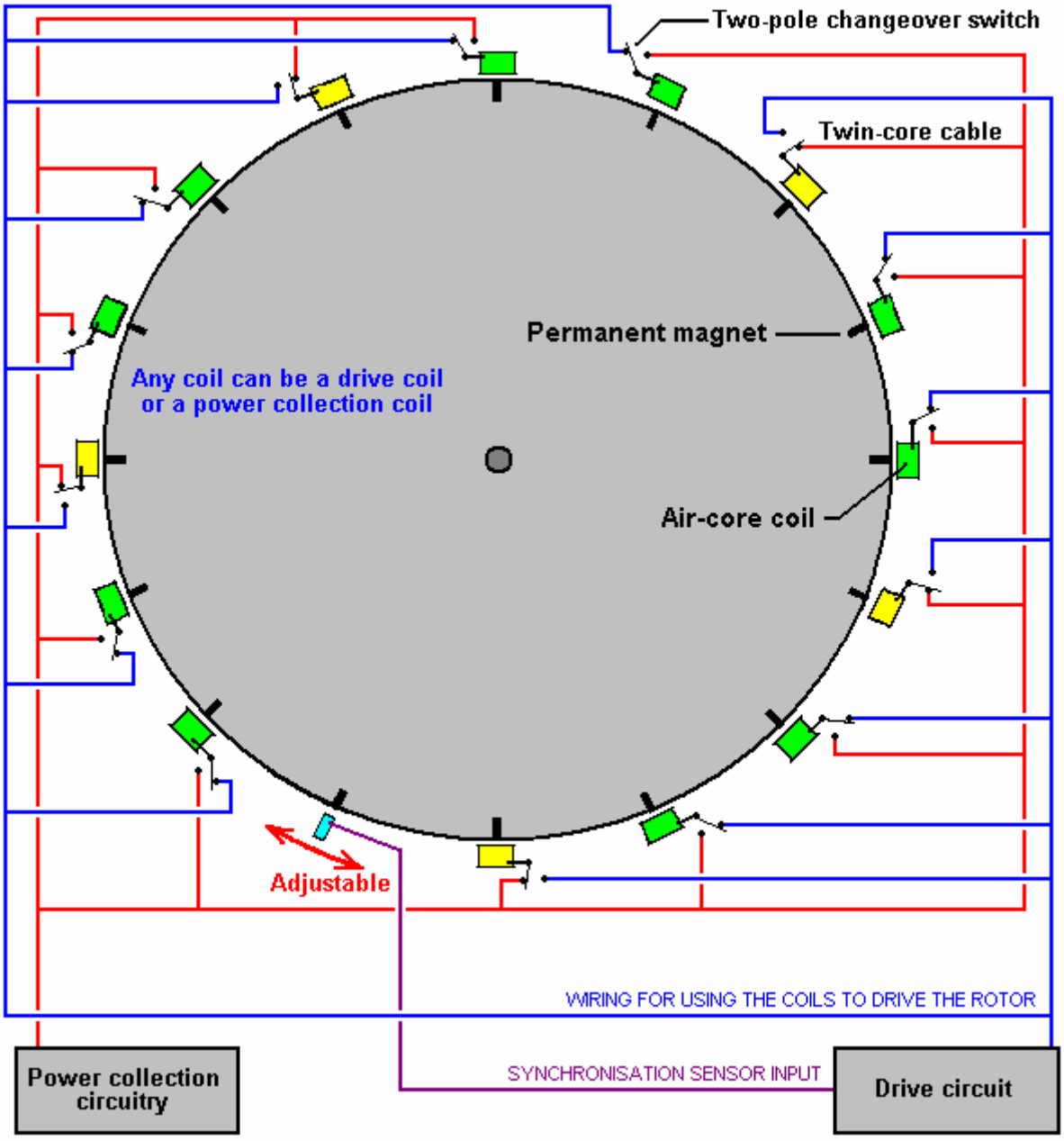
The pulse is very brief, so very little power is needed to accomplish this pulsing. As mentioned before, any number of coils can be switched to provide this driving force. With this particular wheel construction by Mr Tong, the best number has been found to be ten drive coils.

The power pick-up is achieved by gathering the electricity generated in some of the coils as the magnets move past them:



In this particular arrangement, five of the coils gather energy while ten provide the drive. For the sake of simplicity, the diagram shows the five collection coils adjacent to each other and while that would work, the wheel is better balanced if the drive coils are evenly spaced out around the rim. For that reason, this switching would actually be selected to give five sets of two drive coils followed by one pick-up coil as that gives a perfectly balanced thrust on the wheel.

The two diagrams above are shown separately in order to make it clear how the drive switching and the power pick-up switching are arranged. The full design arrangement and the balanced switching are shown in the following diagram which indicates how the full design is implemented on this particular implementation of the wheel design. The sensor can be a coil feeding a semiconductor switching circuit, or it can be a magnetic semiconductor called a Hall-effect device which can also feed a semiconductor circuit. An alternative would be a reed switch which is a simple mechanical switch encased in an inert gas inside a tiny glass envelope. Suitable switching circuits are described and explained in chapter 12 of the eBook “Practical Guide to Free-Energy Devices”.

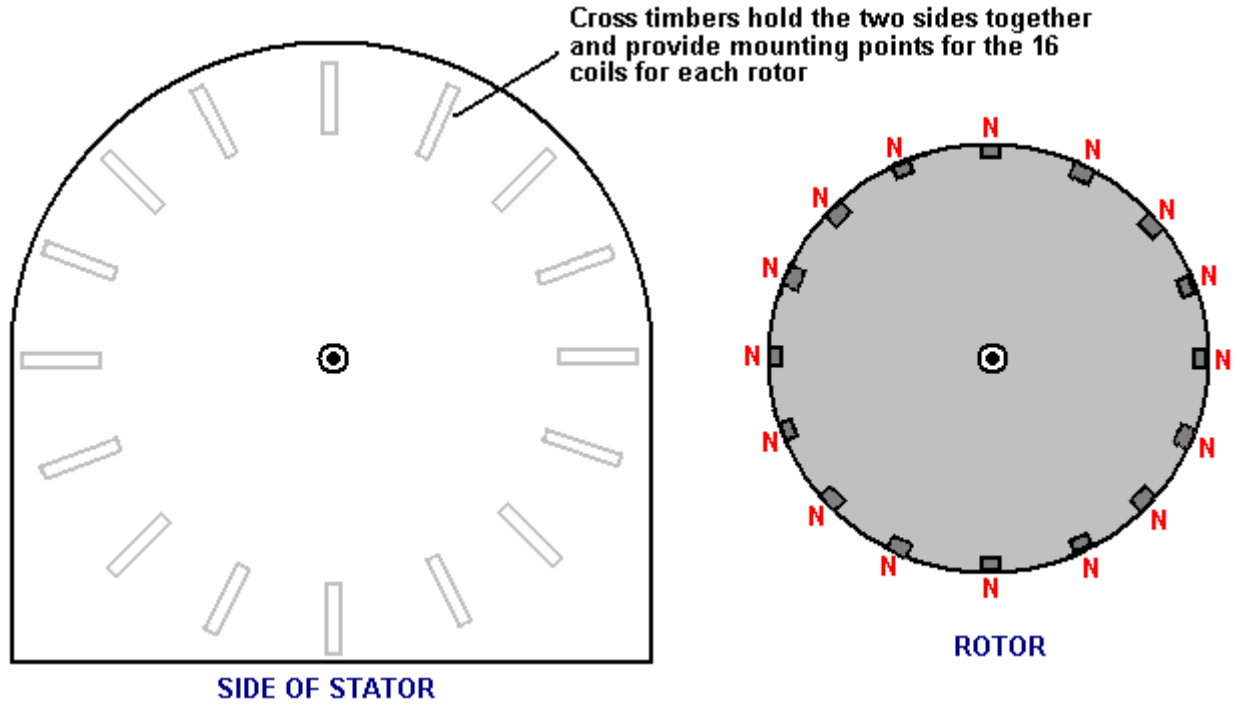


Mr Tseung remarks that the large wheel size is due to the fact that the Pulse Force takes time to impart the impulse to the wheel and lead-out energy from the environment into the system. If you want to see this actual wheel, you can email Dr. Alexandra Yuan at ayuan@hkstar.com to make an appointment. The Tong wheel is located at the Better Hong Kong Radio Studio in Causeway Bay, Hong Kong. Just say that you want to see the Lead-Out Energy Machine. The demonstration can be in English or in Chinese. Ideally, there should be a group of at least six visitors with one or more being a qualified engineer or scientist, and you are welcome to bring your own cameras and/or test equipment. It is planned to produce a version which has a 300 watt output, and another with a 5 kilowatt output. Educational kits are also planned.

If you decide to replicate this particular design, then to raise the output power level you might consider putting another set of coils around the wheel and either using them as fifteen additional energy pick-up coils or alternatively, pulsing the wheel twice as often. Adding one or more additional rotor discs to the same rotating shaft is also an option and that has the advantage of increasing the rotor weight and improving the effect of the impulses on the rotor.

The diameter of the wire used to wind the coils is a design choice which has a wide scope. The thicker the wire, the greater the current and the larger the impulse given to the wheel. The coils are normally connected in parallel as shown in the diagrams.

Because of the way magnetic field strength drops off with the square of the distance, it is generally considered good design practice to make the coils one and a half times as wide as they are deep, as indicated in the diagrams above, but this is not a critical factor. This design is, of course, a version of the Adams motor described at the start of this chapter. Although motors of this kind can be built in many different ways, the construction used by Mr Tong has some distinct advantages, so here is a little more detail on how I understand the construction to be carried out.

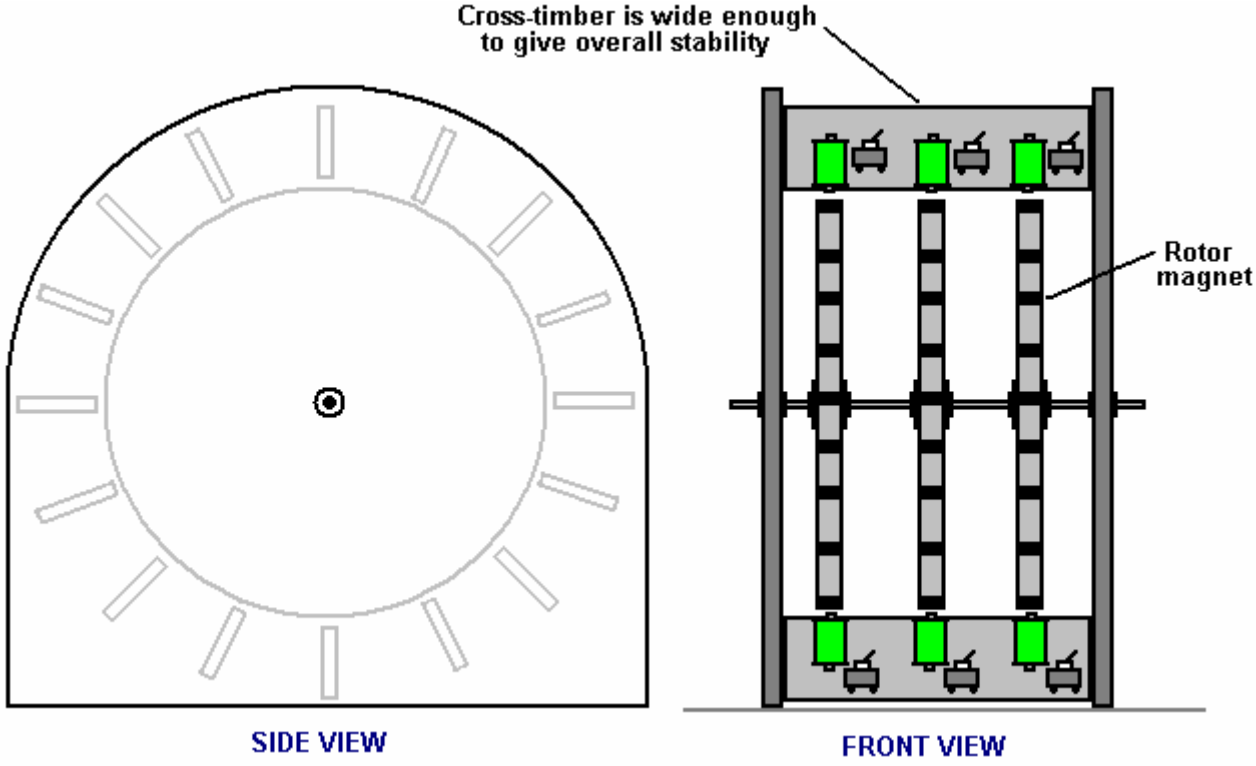


There are two side pieces which are attached together by sixteen cross timbers, each of which are held in place by two screws at each end. This produces a rigid structure while the construction method is as simple as is possible, using readily available materials which are worked with the most basic of hand tools. The construction also allows the motor to be taken apart completely without any difficulty, transported as a “flat-pack” package and then assembled at a new location. It also facilitates people who want to see the motor taken apart after a demonstration in order to assure themselves that there is no hidden power source.

Each of the cross timbers provide a secure mounting platform for an electromagnet and it’s associated switch. In the implementation by Mr Tong, there appears to be just the one rotor, configured as shown above with sixteen permanent magnets mounted in it’s rim. The magnetic poles of these magnets are all orientated in the same direction. That is to say, the magnetic poles facing outwards are all either South or all North poles. It is not critical whether the outward facing poles are North or South as Robert Adams used both arrangements with great success, but having said that, most people prefer to have the North poles facing outwards.

Robert has always said that one rotor was enough, but his techniques were so sophisticated that he was able to extract kilowatts of excess power from a single small rotor. For us, just starting to experiment and test a motor of this type, it seems sensible to stick with what Mr Tong has experienced success. However, this build by Mr Tong is not his final motor but just one in a series of continuously improved motors.

The following diagram shows an arrangement which has three rotors attached to a single shaft and while you may choose to construct this with just one rotor, if the cross timbers are long enough, then one or two extra rotors can be added in very easily at a later date.



Here, just two of the cross timbers are shown. The electromagnet coils used by Mr Tong are air-core as that type have the least effect on the passing magnets. However, electromagnets with cores tend to be much more power for any given current flowing through them. In theory, the core should be made of lengths of insulated iron wire as that would reduce power loss through eddy currents flowing in the core, but Robert actually recommends solid metal cores, and as he was the most experienced person in this field, paying attention to what he said seems sensible.

The core material needs to be a metal which magnetises easily and powerfully, but which does not retain any of its magnetism when the current stops flowing. Not many metals have those characteristics and soft iron is usually recommended. Nowadays, soft iron is not always readily available and so a convenient alternative is the central bolt of a masonry anchor which has excellent properties:

The shaft of the bolt can be cut quite easily with a hacksaw, but be sure to remove (or file down) the head of the bolt as the increase in diameter has a marked negative effect on the magnetic properties of the electromagnet core if it is left in place. The bolt shown above is a M16 x 147 mm masonry anchor bolt with a bolt diameter of 10 mm. Some makes of dry-ink felt white-board markers have a rigid body which fits the 10 mm bolt exactly and provide an excellent tube for constructing an electromagnet spool.

With a core in the electromagnets, the rotor gets additional rotating power. Initially, the magnets on the rotor are attracted to the electromagnet cores, giving the rotor a turning force which does not require any current to be supplied. When the rotor magnets are at their closest point to the electromagnet cores, the windings are powered up briefly and that gives the rotor magnets a strong push away, causing the rotor to spin.

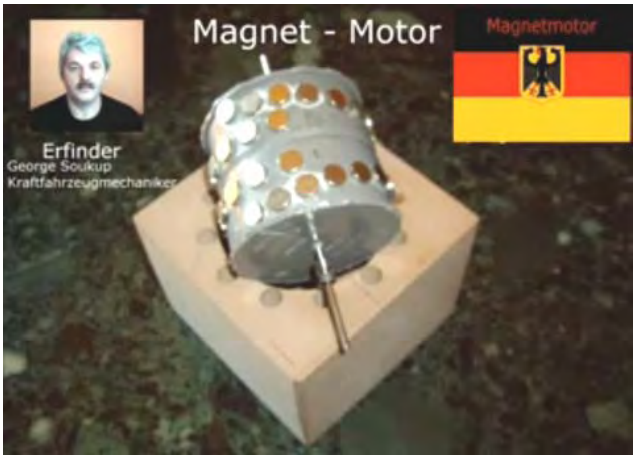
There are many different designs of simple drive circuits and it is probably worth trying out different types to see which works best with your particular build of motor. In the same way, there are many kinds of collection circuits for taking off some of the excess power generated. The most simple of these is just a diode bridge, perhaps feeding a battery and charging it up for use at a later time. If you get sophisticated with the collection circuit and just take power off for a very short period of time at the correct moment, the cutting off of the current draw, causes a back-EMF magnetic pulse in the collection electromagnet which causes it to give the rotor an extra drive push – both current collection and rotor drive in one combined package.

Simple Permanent Magnet Motors

We are assured that permanent magnets cannot do any useful work. That is not true. The people who say that always think in terms of symmetrical systems while in fact, an asymmetrical system is essential. Two people trying to push a car can be an example. For a symmetrical situation you put one person at the front trying to push the car backwards and the other person at the back trying to push the car forwards. That does not work well. You need the asymmetrical arrangement where both people are placed at the back, trying to push the car forwards, and that can work well.

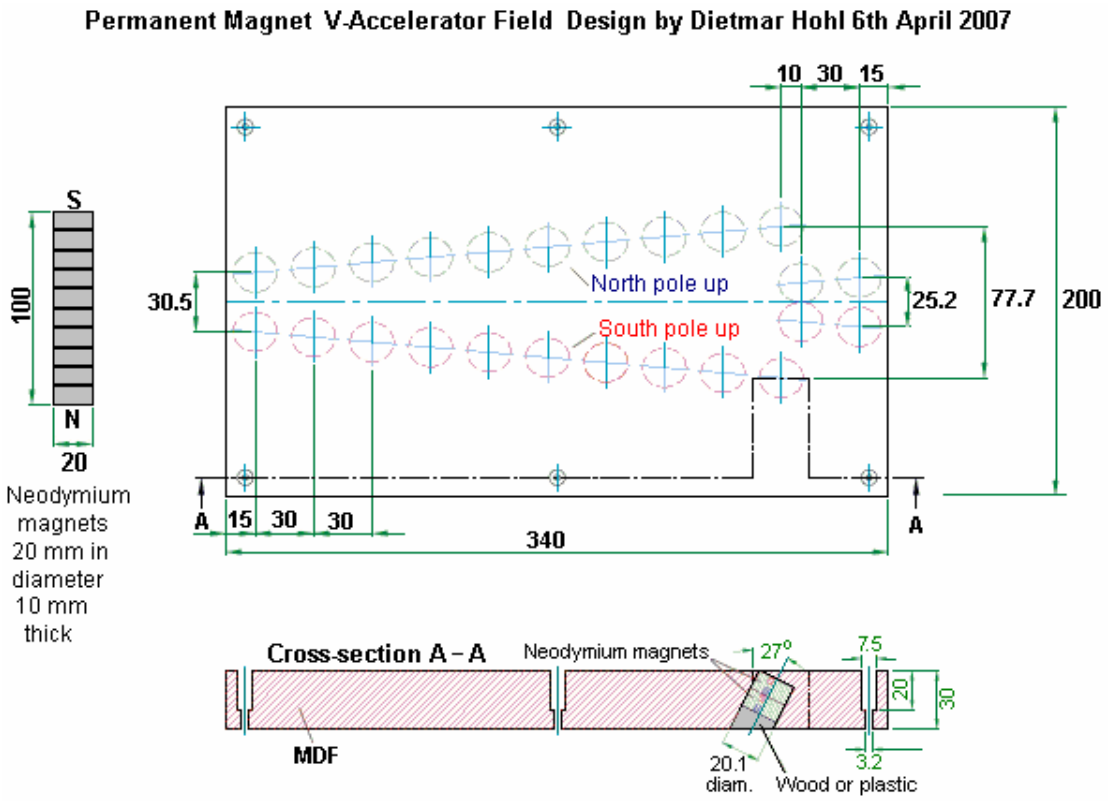
Doing that with magnets is not easy as you can't see the magnetic lines of force and so it is very hard to work out how to adjust the set pf magnets to give the best performance. One way which can work well is using magnets positioned in a V-shape.

George Soukup has done this very successfully and he mounts a rotating cylinder with the V arrangement of magnets inside a block of wood and he positions fixed magnets in cylindrical holes in the block. The arrangement looks like this:



Dietmar Hohl's Permanent Magnet Motor

If you would like to make a simple motor of this type, then the information provided by Dietmar Hohl, passed to me by Jes Ascanius of Denmark, shows you how. He uses 20 mm diameter round neodymium magnets 10 mm thick, stacked in pairs in the stator of this layout where dimensions are in millimeters:

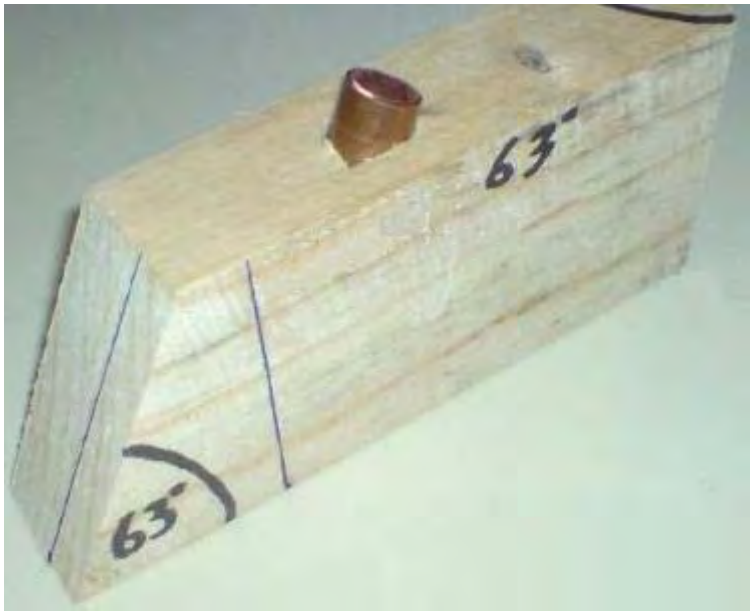


This shows a magnetic gate arrangement built on a flat piece of Medium-Density Fibreboard 30 mm thick. The holes drilled in it are 20.1 mm in diameter and positioned so as to take two of the 10 mm thick magnets stacked together. The holes are drilled at an angle of 63 degrees to the horizontal or 27 degrees to the vertical, whichever way you prefer to think of it. On one side of the board, the inserted magnets have their North poles facing upwards, while on the other side of the board, the magnets are inserted with their South poles facing upwards. Dietmar shows six holes to take bolts or screws to fasten the piece of MDF to a larger board or table. Those do not form any part of the magnetic system and can be omitted. A video of one version of it in action can be found at http://www.free-energy-info.tuks.nl/Vtrack.mpg.

The gate operates by causing a stack of ten of the magnets to roll along the V-shaped track and pass smoothly across the junction with the next set of V-positioned magnets. There can be as many of these V-sets as you want and the magnet stack will still keep rolling. This is one of the few magnetic gate designs which adapts to drum operation as a motor rotor.

The magnets are positioned at an angle in order to use the magnetic fields at the edge of the magnets. They are stacked in pairs in order to increase their power. The power of the motor depends on the strength of the magnets, how close the stator magnet stacks are to the VF-track magnets and the number of stacks of stator magnets. If you decide to construct one of these motors, then it is suggested that you make things easier for yourself by keeping the curvature low, using three or four of the Vs. With Dietmar's dimensions, a 2-V drum would be 216.5 mm (8.5") in diameter, a 3-V drum would have a 325 mm (12.8") diameter and a 4-V drum a diameter of 433 mm (17") and those dimensions include the 30 mm (1 3/16") strip which holds the magnets, so the inner drum diameters are 30 mm less in each case.

When making the motor drum, it is possible to use a flexible material to hold the magnets. This allows the strip to be laid out flat while the holes are drilled, and then attached to the outside of a rigid drum with a 60 mm lesser diameter than the ones mentioned above. Jes Acanius of Denmark shows how a jig can be made to make drilling the holes easier:



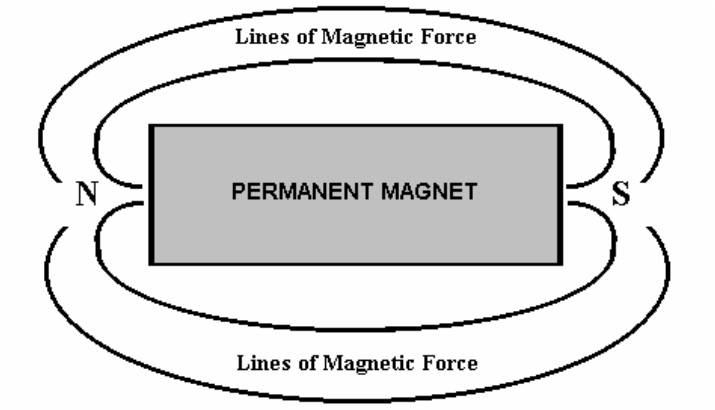
This one has had a length of copper pipe inserted at the correct angle, in order to direct the drill bit at the exact angle required. This motor has been successfully replicated by Jes Ascanius of Denmark who used 10 mm magnets which were to hand, and again with square magnets which were pushed into round holes and not even angled in this proof-of-concept implementation which only took one hour to build using scrap material to hand, and which did work:

With Dietmar's design using angles magnet pairs, the number of magnets needed is quite high. For a single V, there are 58 magnets. For a 2-V version, 106 magnets. For a 3-V version, 154 magnets and for a 4-V version, 202 magnets if there is only one stack of stator magnets, so ten extra magnets need to be added to the count for each additional ten-magnet stack of stator magnets. The motor power is likely to increase as the diameter increases as the lever arm that the magnet has to turn the drum, increases – double the diameter to (almost) double the power.

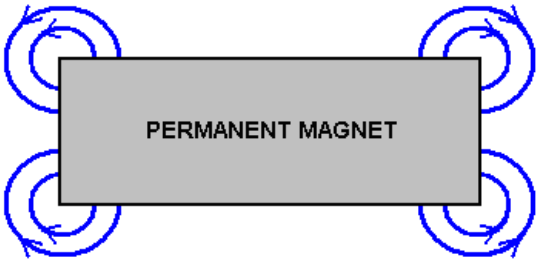
A Simple Permanent Magnet Track and Motor

It is very difficult to use the power of permanent magnets to make a motor powered by them alone. The Dietmar Hohl design shown above is one of the very few which can readily be made and tested at home. The problem is that almost all magnets have a symmetrical magnetic field, while what is needed for a magnet-powered motor is an asymmetrical magnetic field. Consequently, magnets have to be combined in ways which distort their normal field shape. You will notice that in the Hohl motor, the drive magnets are angled and that is an important feature of using magnets in motors.

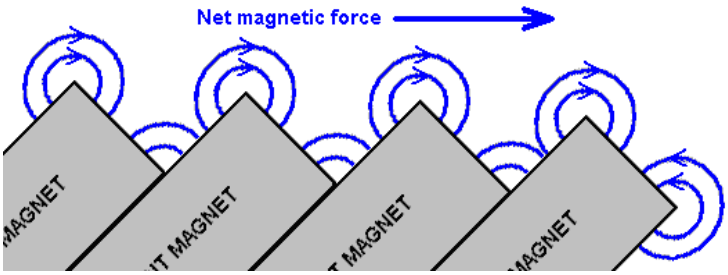
Schools currently teach that the field surrounding a bar magnet is like this:



This is deduced by scattering iron filings on a sheet of paper held near the magnet. Unfortunately, that is not a correct deduction as the iron filings distort the magnetic field by their presence, each becoming a miniature magnet in it's own right. More careful measurement shows that the field actually produced by a bar magnet is like this:

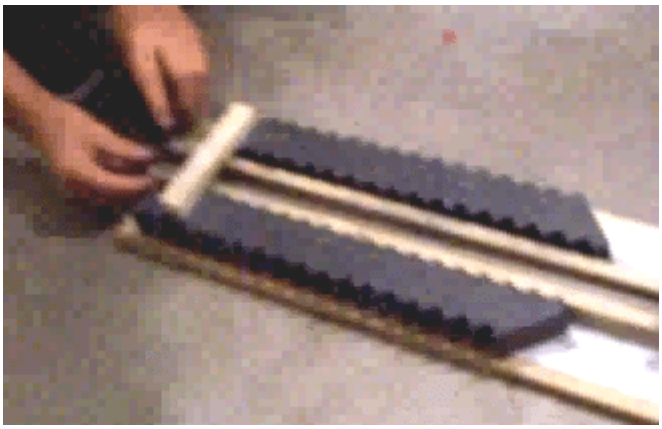


There are many lines of force, although these diagrams show only two of them. The important factor is that there is a rotating field at each corner of a typical bar magnet. It follows then that if a row of magnets is placed at a an angle, then there will be a resulting net field in a single direction. For example, if the magnets are rotated forty five degrees clockwise, then the result would be like this:



With this arrangement, the opposing corners of the magnets as shown here, are lower down and so there should be a net magnetic force pushing to the right just above the set of magnets. However, the situation is not as simple and straightforward as you might imagine. The additional lines of magnetic force which have not been shown in the diagram above, act further out from the magnets and they interact, creating a complex composite magnetic field. It is frequently found that after four or five magnets that a short gap needs to be left before the line of magnets is continued on.

Two boys; Anthony and Andreas, have used this magnet arrangement to create a magnetic track and they have a lot of fun, sending a magnet sliding between two of these rows of angled magnets. Initially, they used the cheaper ceramic magnets and got a very satisfactory movement when using a neodymium magnet as the moving component:



You will notice that they have managed a row of 18 ceramic magnets on each side of their track and the results which they are getting are very good. They have three videos on the web at the present time:

https://www.youtube.com/watch?v=Vo2-Qb3fUYs

https://www.youtube.com/watch?v=VeXrFfw4RSU

https://www.youtube.com/watch?v=VTbFfEEE_qU

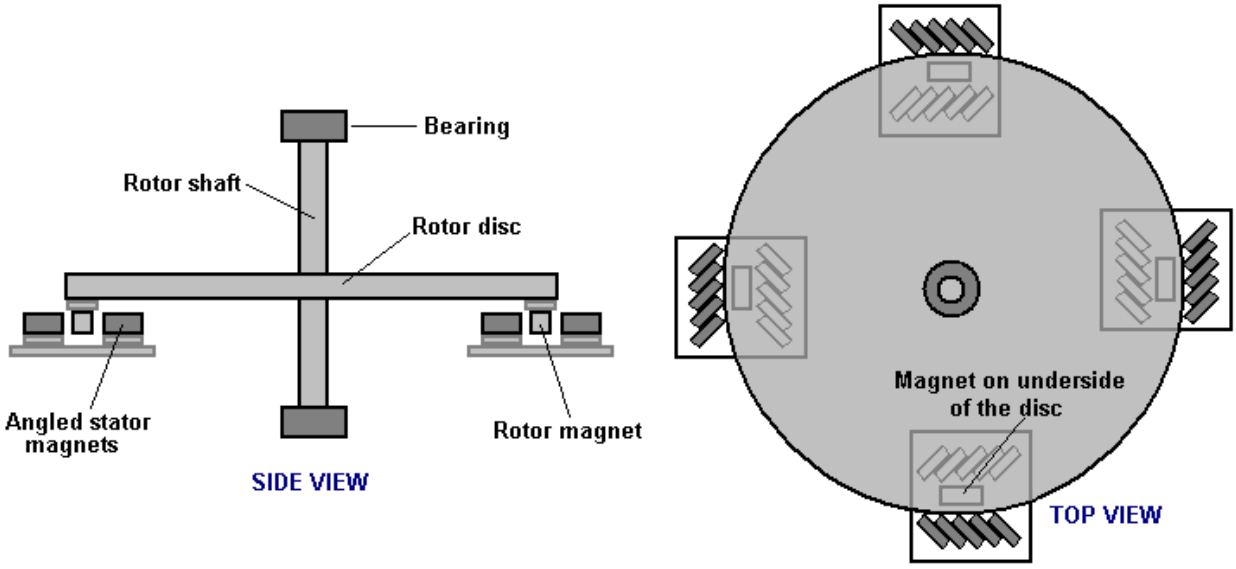
The moving magnet is made up of four 12 mm x 12 mm x 12 mm (or half-inch by half inch by half inch) neodymium magnets attached North - South - North - South - North - South - North - South:

They have not disclosed all of the details of what they are using (accidentally rather than by intention). The ceramic stator magnets are 48 mm x 20 mm x 10 mm with the poles on each of the main faces. They position each magnet with it's North pole facing towards the track and they angle the magnets at 45 degrees. There is a 15 mm gap between the stator magnets and the moving magnets on both sides of the track. Wooden strips direct the moving magnets.

Neodymium magnets have very different characteristics to those of ceramic magnets (and that is not just strength of the magnetic field). It is not unusual for experimenters to find that devices will work well with one type of magnet but not with the other type. Here the developers have also tried using two sets of five angled neodymium magnets on each side of their track and the result was a more powerful thrust on their moving magnets.

The magnets are held in place in this picture, by wooden dowels driven into the base plank. They used these in order to avoid any magnet-fastening material which could alter the magnetic field.

The next step would be for them to power a motor using their magnetic track technique. However, this has been tried many times and the conclusion is that it is **VERY** hard to change a straight magnetic track into one which forms a complete circle. Therefore, I would suggest the following arrangement:

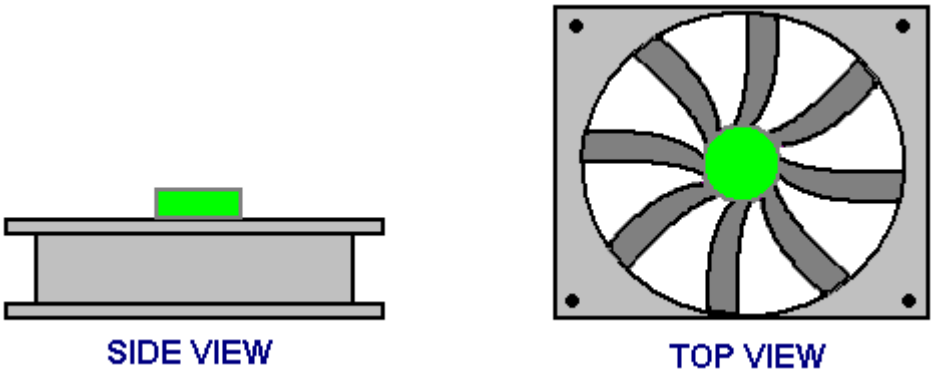


Here, a simple disc rotor has four magnets (of the type used to move down the magnetic track) attached to the underside of the disc and positioned so that they move through four short sets of four, or at the outside, five angled stator magnets as the disc spins. It does not matter if the rotor shaft is horizontal or vertical. If the disc spins well, then sets of two air-core pick-up coils can be positioned between each of the stator magnet arrays so that electricity is generated as the rotor magnets pass by overhead. If a constructor decides to attach two rotor discs to the one rotor shaft, then the two rotors should be positioned so that the rotor shaft gets pushed every 45 degrees of rotation rather than every 90 degrees as shown here. This style of motor is definitely within the scope of the average person to build should they be inclined to do so.

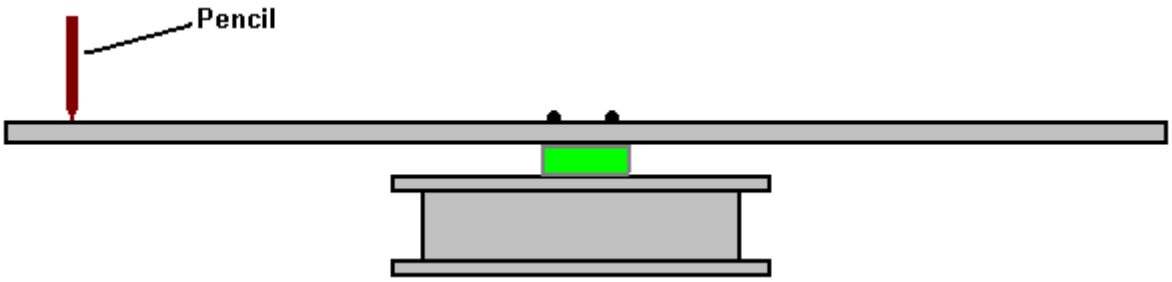
I have been asked to say how I personally would go about constructing a prototype of this nature. As I have very limited constructional skills, I would do it like this:

For the bearing, I would pick a computer cooling fan, as these have very good bearings and if one is not to hand inside an old, obsolete computer, then they can be bought very, very cheaply. The diameter of the fan is not important. These fans generally look something like this:

As the part of the fan which spins round does not normally project above the stationary frame, a spacing disc of wood or plastic is needed to provide the clearance. The disc is glued to the centre of the fan using perhaps, Impact Evostick, epoxy resin or super glue. It would then look like this:



A square of wood can then be screwed to the spacer, like this:



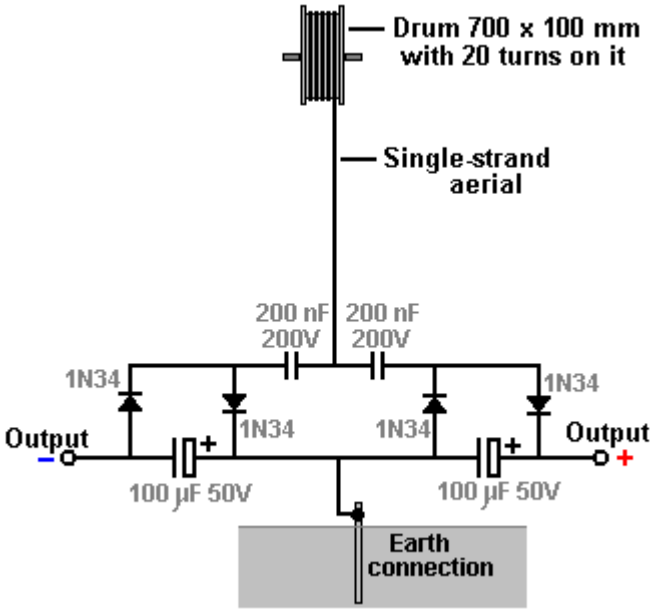
And as I am hopeless at creating good-quality mechanical devices, I would then hold a pencil very steadily against a support and give the wood a spin, so that the pencil draws a perfect circle exactly centred on the bearing of the fan. Then, marking the wood and the spacer so that there is no doubt as to which way round the wood is attached to the spacer, I would unscrew the wood and cut around the pencil line very carefully, smoothing the edges of the disc gently with fine sandpaper. Screwing the disc back in place, a spin should confirm that the edge of the disc stays steadily in place with no wavering of the edge. Actually, if the disc is not perfect, that is not a major problem as it is the rotor magnets which need to be positioned accurately, and for that, another pencil line can be produced by spinning the disc when the desired position has been determined.

Permanent magnets vary enormously in size and strength, so when magnets are purchased, it is a matter of testing them using a track of the type used by Anthony and Andreas. The stator magnets are angled at about 45 degrees to the track and with just four on each side, it is a case of finding the spacing between the two sets of angled magnets which pushes the stator magnets furthest along the track.

Jes Ascanius' Version of Nikola Tesla's Aerial System.

Let me tell you about the practical and useful aerial (antenna) applications used by Jes Ascanius, a Danish developer, to whom thanks is due for sharing his designs. Initially, he set up a system to charge his mobile phone battery overnight from an aerial. Then he went on to produce a full-size Tesla Aerial System. Let's start with the very simple system and progress from that to the more powerful arrangements.

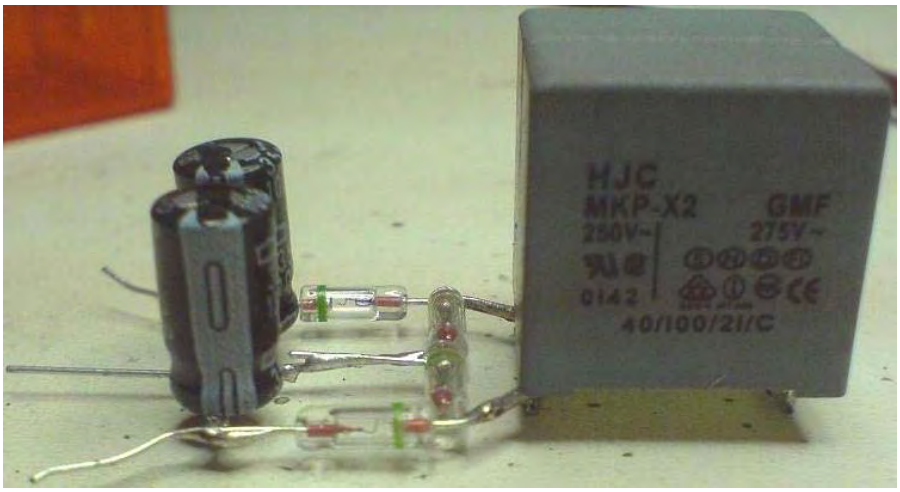
The initial circuit uses one strand of solid wire which rises vertically to a 700 mm diameter drum where there are some twenty turns. The arrangement is like this:

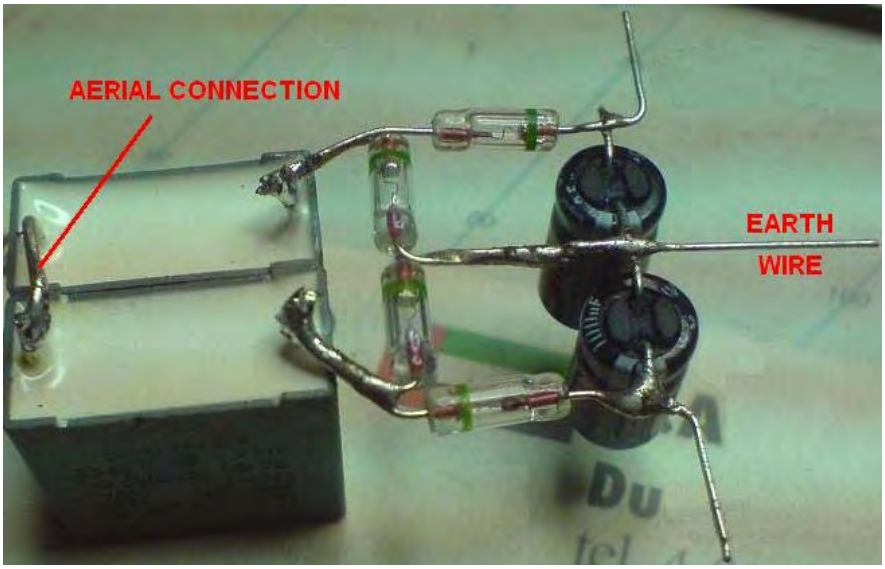


The aerial wire is several metres long, and in the prototype, was supported by (and insulated from) the eaves of a house. The aerial should be vertical or near vertical and a proper earth connection provided by driving a metal rod into the ground or connecting a wire to a metal plate and burying the plate in the ground as a good electrical connection is needed here. The earth connection used here is a 12 mm copper pipe 3 metres long, driven into the ground and the ground around it saturated with water:

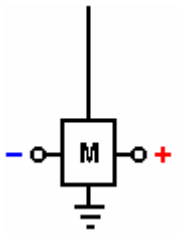
The wire used to connect with the earthing rod is very important and should not be less than 8 swg copper wire, that is, 4 mm diameter and 13 sq. mm. cross-sectional area. As with all free-energy devices, the exact constructional details are very important.

The diodes which he used are germanium 1N34 or 1N34a which are particularly suited to this application. Ceramic disc types are recommended for the 200 nF capacitors. The prototype build looked like this:

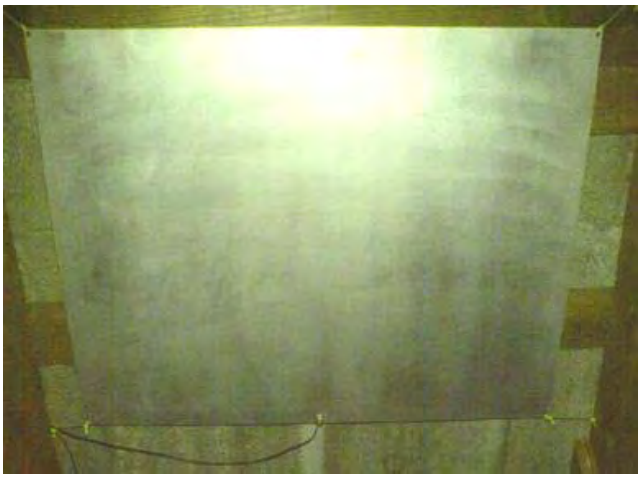




Now, consider this circuit as described, to be one modular building block which can lead to unlimited power from an aerial. I will represent the circuit shown above as a rectangle, showing the above circuit as:

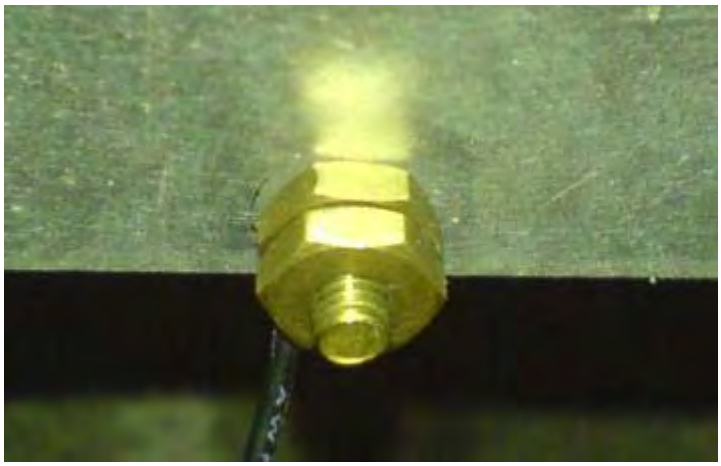


While it is possible to use more than one module with the aerial to get more power, the Danish developer then switched to the full-blown Tesla arrangement by attaching a 600 x 800 x 2 mm aluminium plate inside the sloping roof of his house:



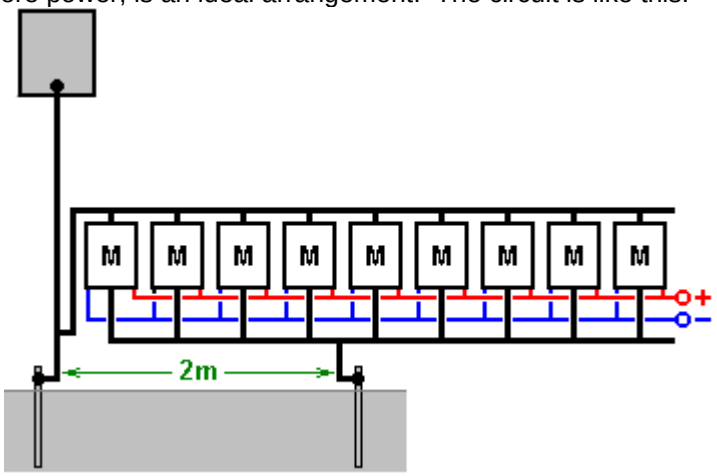
The plate being suspended using nylon cord to prevent it touching the roof or anything else:

The plate is positioned between 3 and 3.5 metres (10 to 12 feet) above the ground and the attachment to the plate is also heavy-duty 8 swg (4 mm diameter) cable:



The cable is connected to the aluminium plate using a brass bolt and nuts which the builder thinks may be significant, quite apart from avoiding any galvanitic connection to the circuit. The cable is then run vertically downwards to the circuit. For this arrangement a second earthing point is also used. This is a galvanised iron pipe 3 metres long, driven vertically into the ground which is saturated with water. The second earth is 2 metres away from the first earth and there is no known significance in the use of an iron pipe as it was used because it was to hand at the time..

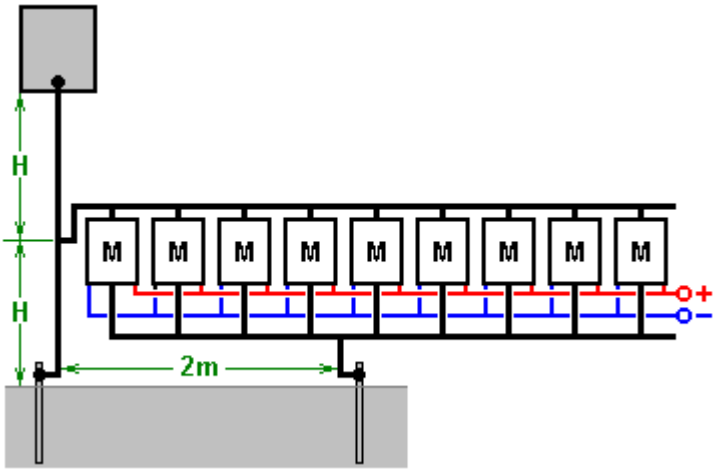
This arrangement provides serious power, enough to cause injury to, or kill a careless human. With two modules, it will light an LED very brightly, driving it to 2.6 volts. If the LED is removed, then the voltage climbs to about twenty volts and is easily sufficient to charge a 12V battery or battery bank although that takes time. With twenty modules a 12V battery can be charged over night. It is estimated that with two hundred modules, the power would be sufficient to power a household although that has not yet been done. It should be borne in mind that each module is easy and cheap to make, so arranging for a stack of them where additional modules can be added at a later date for more power, is an ideal arrangement. The circuit is like this:



This circuit looks completely mad as the aerial input to the circuit appears to be directly short-circuited by the second earth connection. In spite of this, the circuit works very well when connected this way. Additional modules can be added without any known limit. Increased power can be had by either raising the aluminium plate higher above the ground, to say, 10 metres (33 feet), or by adding one or more additional aerial plates. As you

have a good aerial connected through to a very good earth, there has to be the possibility of the equipment being hit by lightning, and so it is recommended that a protective spark-gap is installed between the aerial and the earth, close to the circuit, so that if high-voltage is suddenly applied to the aerial, the spark gap will fire and shunt the excess power through to the earth. Alternatively, possibly a better solution is to install a standard lightning rod system a few metres away from the aerial and a metre or two higher up, so that it forms a more attractive point for a lightning strike.

Further experimentation has shown that altering the connection point for the aerial has a significant effect on the results. If the connection is made at the mid point between the aerial plate and the earth connection, it produces a greater output:



With this arrangement a single module produces around 30 volts while the original method of connecting near the earth was giving about 26 volts with two modules. Jes Ascanius has carried out further experimentation and he states that diodes with response times under 30 milliseconds produce a greater output and he recommends the use of BYV27 diodes which have a 200-volt 25nS rating as he gets three times the output from them. He also recommends using them in Joule Thief circuits.

Dragan Kljajic has been experimenting with this circuit and has started by building many of the original modules on a printed circuit board. He can pull 96 watts continuously from his aerial plate. He intends to extend this arrangement much further, but is being hindered at present by a local civil war.

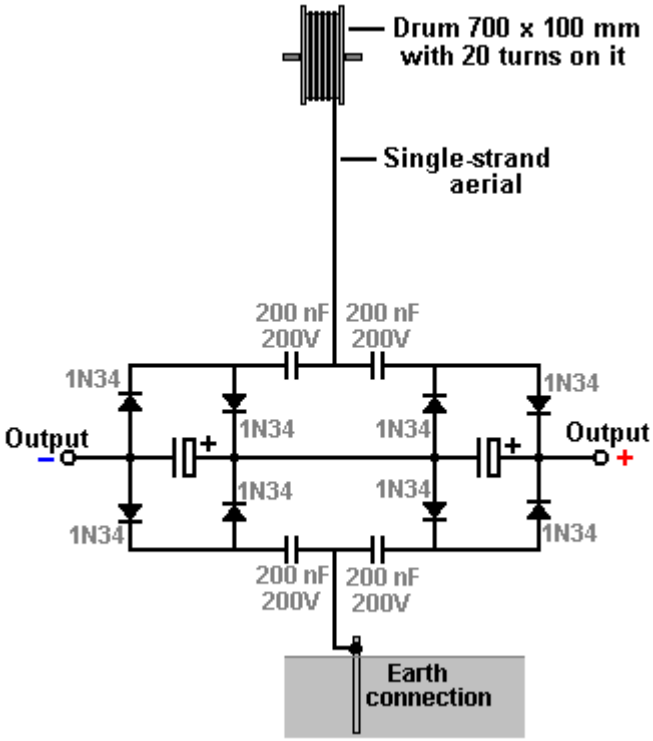
Here is a forum: http://www.energeticforum.com/renewable-energy/10947-jes-ascanius-radiant-collector.html where some builders of this system share comments. One comment is that there is an increased risk of a lightning strike where you have an earthed aerial, and so it is advisable not to place the aerial plate inside a house, but perhaps suspended between two trees. Also, using a car spark plug connected across the module set can protect against lightning strikes damaging the circuitry.

As a result of queries, Jes stresses the following points:

1. The plate **must** be high off the ground.
2. The plate **must** be polished and insulated.
3. The wire **must** be single-strand solid wire.
4. There **must not** be any part of the wire above the circuit, which is not insulated.

He further comments: you can use aluminium foil and cling film to make many collector plates 0.4 m x 5 m and connect them close together to feed the aerial wire. Remember, no uninsulated wire anywhere. Any queries should be asked on the forum shown above.

A modification of this circuit of Jes Ascanius' by a developer who prefers to remain anonymous, doubles the output of each module by adding a mirror image of the circuit like this:



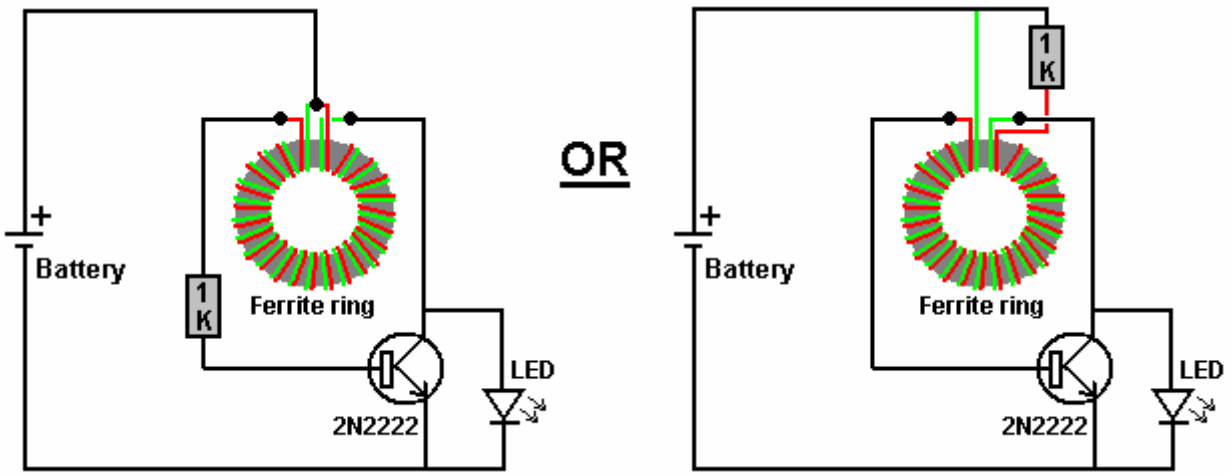
As can be seen, the addition is of four diodes and two capacitors. Presumably, using BYV27 diodes rather that 1N34 diodes would create a further enhanced output.

Lawrence Tseung's Self-Powered "FLEET" Generator.

The "FLEET" ("Forever Lead-out Existing Energy Transformer") device is a self-powered electrical generator which has no moving parts and which can be constructed cheaply. It has been developed by a Hong Kong based team of people: Mr Lawrence Tseung, Dr. Raymond Ting, Miss Forever Yuen, Mr Miller Tong and Mr Chung Yi Ching. It is the result of some years of thought, research and testing.

Mt Tseung has applied his "Lead-out" theory to the category of low-power circuits known as the "Joule Thief" circuits. These circuits originated with an article by Mr Z. Kaparnik, in the "Ingenuity Unlimited" section of the November 1999 edition of the "Everyday Practical Electronics" magazine.

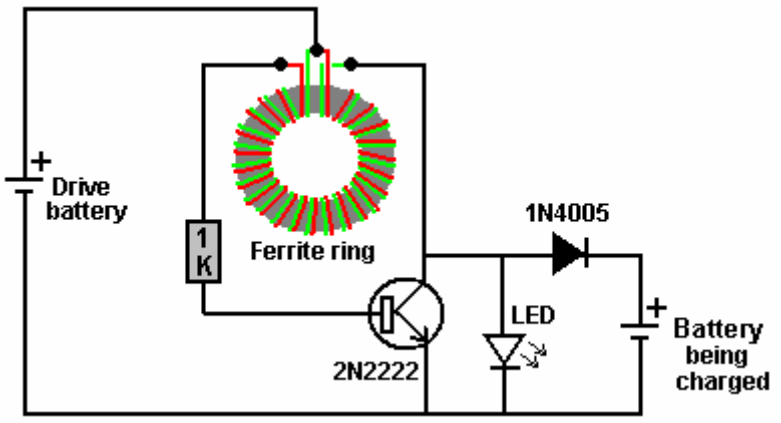
The initial circuit allowed the very last energy to be drawn from any ordinary dry-cell battery, and used to light a white Light-Emitting Diode ("LED") for use as a small torch. It allows a battery which is considered to be fully discharged, to drive the circuit until the battery voltage drops right down to 0.35 volts. The initial circuit uses a bi-filar coil wound on a ferrite ring or "toroid". Bi-filar means that the coil is wound with two separate strands of wire side by side, so that each adjacent turn is part of the other coil. A coil of that type has unusual magnetic properties. The Joule Thief circuit is like this:



It is important to notice how the coil is wound and how it is connected. It is called a "toroid" because it is wound on a ring. The ring is made of ferrite because that material can operate at high frequencies and the circuit switches On and Off about 50,000 times per second ("50 kHz"). Notice that while the wires are wound side by side, the start of the red wire is connected to the end of the green wire. It is that connection which makes it a "bi-filar" coil instead of just a two-strand coil.

This "Joule Thief" circuit was then adapted by Bill Sherman and used to charge a second battery as well as lighting the Light-Emitting Diode. This was achieved by adding just one more component - a diode. The diode used was a 1N4005 type because that was to hand at the time, but Bill suggests that the circuit would work better with a very fast-acting Shottky-type diode, perhaps a 1N5819G type.

The circuit produced by Bill is:



When driven by a 1.5 single cell battery, this circuit produces about 50 volts with no load and can supply 9.3 milliamps of current when the output is short-circuited. This means that you could charge a 6-volt battery using a 1.5 volt battery.

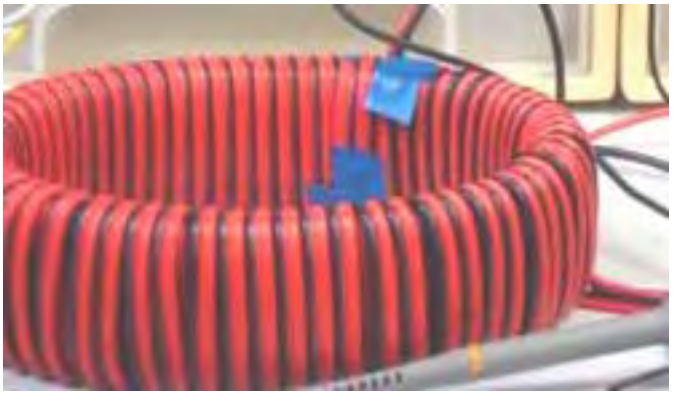
As a first step towards what the team calls their "FLEET" device, the toroid has been enlarged to a much greater diameter. The coil is now wound on a section of plastic pipe. Many sizes and shapes of toroid can be used, the one shown here is 170 mm (6.5 inches) in diameter and 45 mm (1.75 inch) deep:

This section of pipe is "bi-filar" wound with two wires side by side as already described for the Joule Thief construction. As before, the start of one wire is connected to the end of the other wire. Then, the winding is given a layer of electrical tape to hold it in place and to provide an easy working surface for a second winding.

The wire used for the winding is the widely available red and black pair of wires, sometimes called "figure of eight" because the cut end of the wires looks like the numeral 8. The wire should be able to carry 2.5 amps. It must be side-by-side wire and **not** one of the twisted varieties. It looks like this:

The second winding is made in the same way but the connections are slightly different. As before, the end of the first wire is connected to the start of the second wire, but that connection is then insulated and not used in the following circuitry. This just connects the two windings one after the other, known technically as being connected

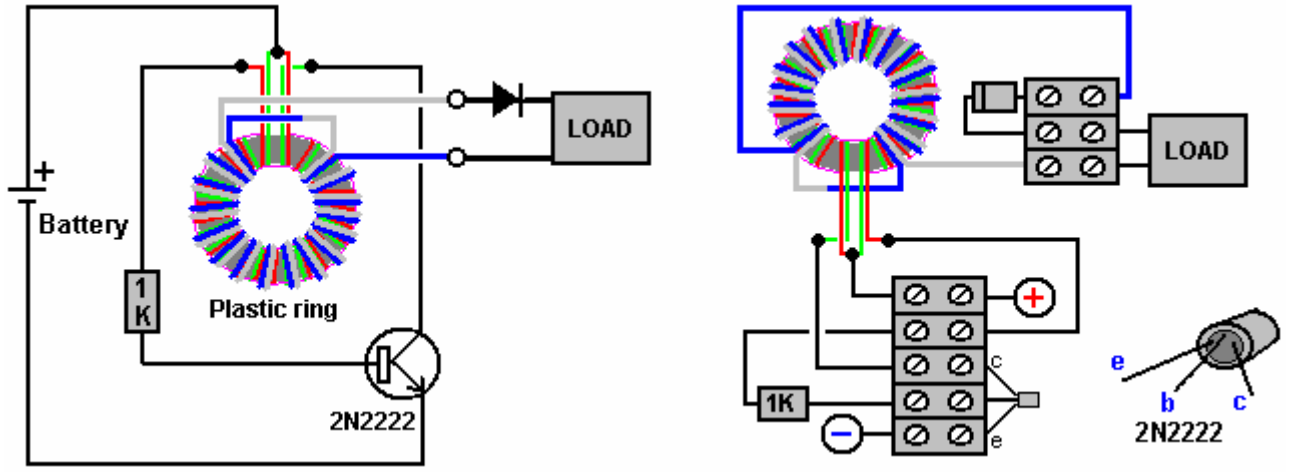
"in series" and is the equivalent of making the winding with just a single strand of wire. The completed coil may look like this:



Many different coils sizes and constructions have been tested:

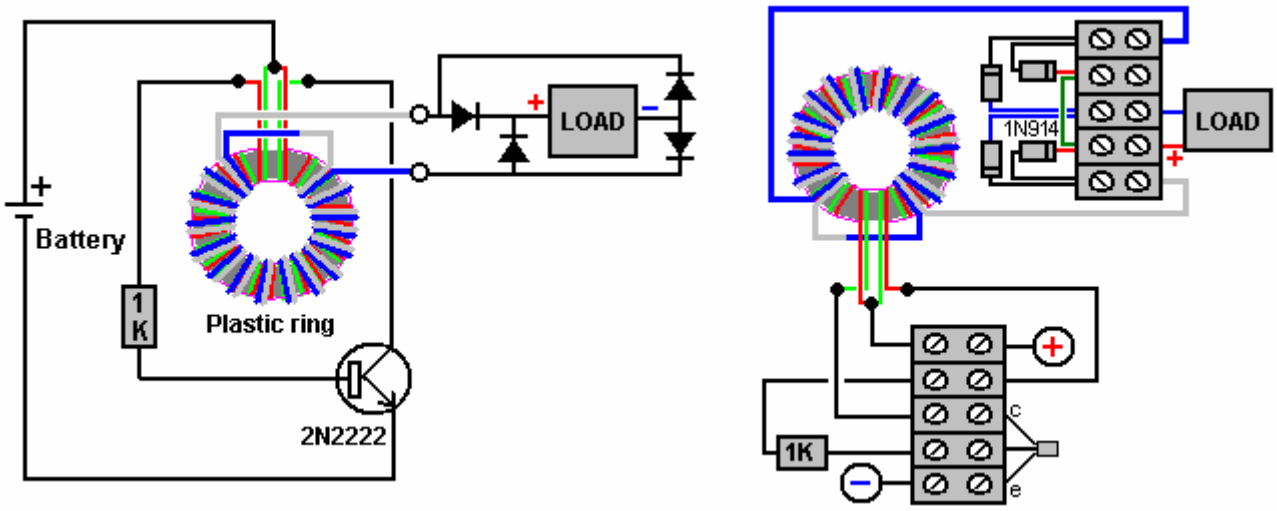
The arrangement is for the inner winding of the toroid to be oscillated by the Joule Thief circuit already described. This causes a pulsating magnetic field to envelope the outer winding of the toroid, producing an electrical output which is capable of doing useful work. The really important thing about this arrangement, is the fact that the amount of power coming out of the circuit is very much greater than the amount of power needed to make the circuit operate. The additional power is led out of the local environment and drawn into the circuit, becoming available to do useful work.

The overall circuit then looks like this:



While the outer winding is shown here with thicker wire of a different colour, this is only to make the arrangement easier to understand. In reality, the outer winding is with exactly the same wire as the inner winding, and it will normally go all the way around the toroid. The total amount of wire needed to make the windings is about 70 metres and so it is normal to buy a full 100 metre reel of the twin-core wire, which allows both windings to be made and leaves spare wire for other things.

What has worked better for me personally, is using a bridge of four diodes rather than a single diode:

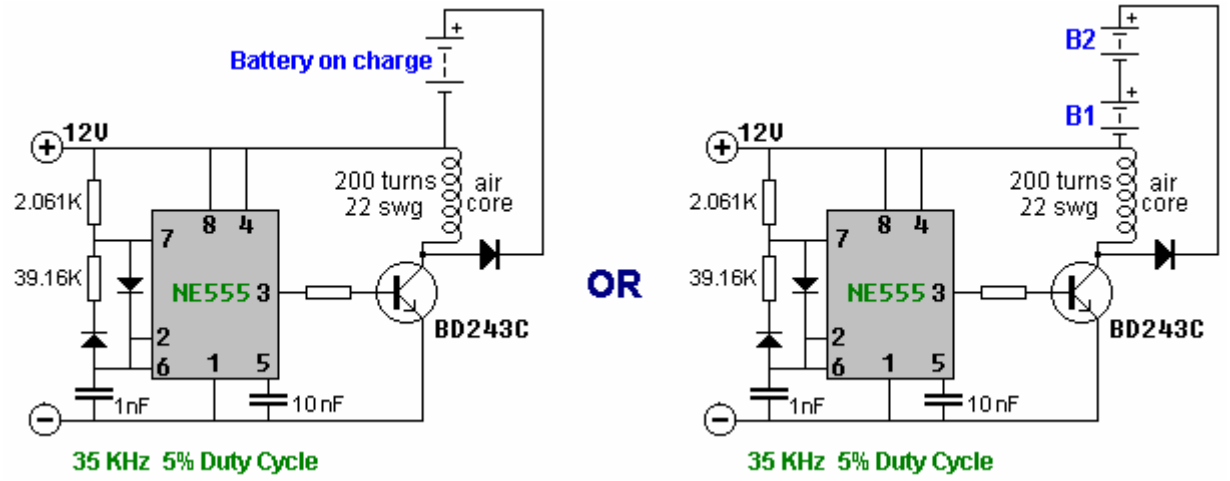


I have used this circuit, driven by a 1.5 volt battery, to charge 12-volt batteries, but the best results are in the five to six volt range. I have used this circuit to confirm COP>1 by charging one small 12V lead-acid battery with an identical battery, swapping the batteries over and repeating the process several times. The result was that both batteries gained genuine, usable power. I suspect that the effect would have been much greater if I had charged two or more batteries in series. It must be realised that a lead-acid battery is only 50% efficient and so you have to feed twice the power into it as you get back when powering a load with that same battery. That means that the FLEET system which I used was more than 200% efficient. The toroid was an 8-inch diameter, 10 mm by 12 mm piece cut from a plastic pipe which happened to be to hand and the wire used was plastic covered 6-amp equipment wire, again, because it was to hand at the time. Winding the toroid and setting up the circuit was done in a single evening.

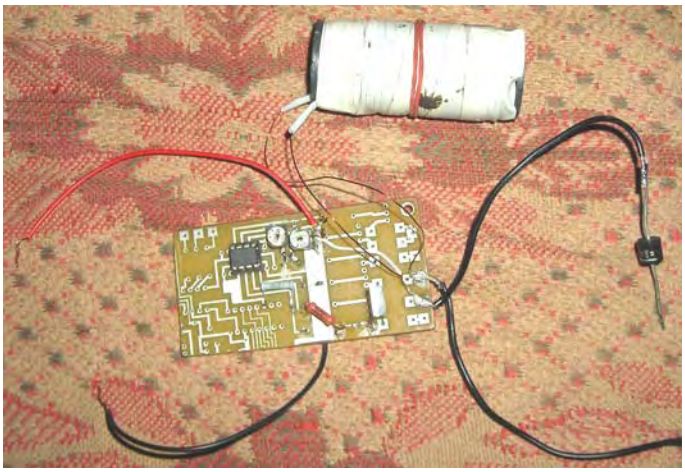
Overall, this is a very simple, cheap and easily constructed device with an efficiency greater than 100% and which has the potential of providing large amounts of free, useable, electrical power. All in all, this is a very important device and full credit must go to the development team who have carried the research to this point.

The ‘Alexkor’ Solid-State Battery Charger Circuits.

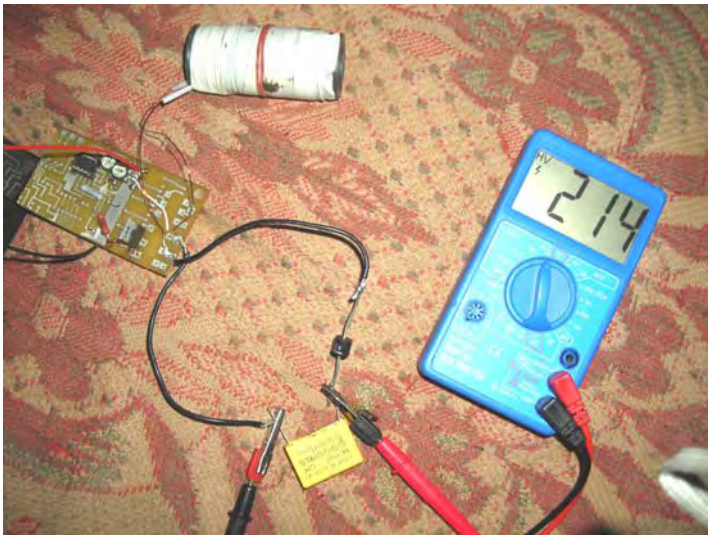
'Alexkor' has developed a practical battery-charging circuit which works very well. It can be constructed as a single unit as shown here and while only one battery is shown as being charged it is possible to charge more than one battery by connecting them in series.



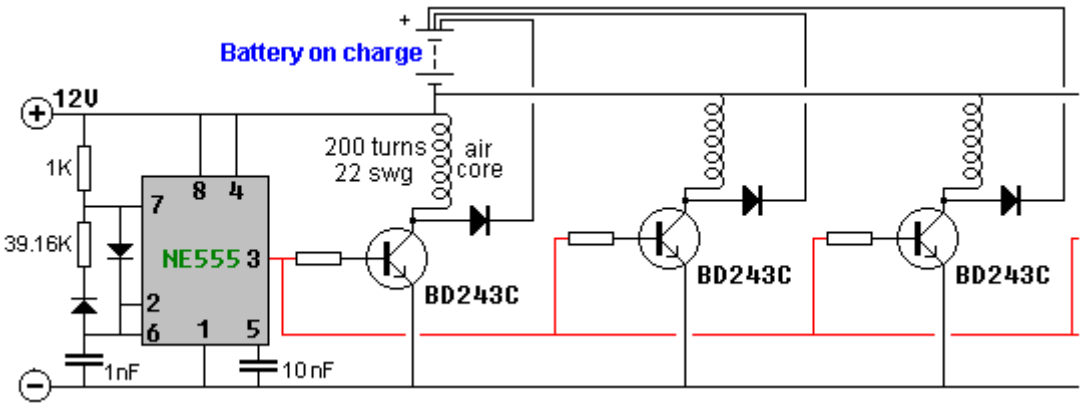
Here, the coil is wound with 200 turns of 0.7 mm enamelled copper wire and the actual construction is compact:



And to get an idea of the performance, Alex uses a capacitor to see the size of the voltage spikes produced by the circuit:



This is the first step in the process as the same circuit can be used to drive many coils of this type. The resistor feeding the base of the transistor is about 500 ohms for the prototype, but using a 390 ohm resistor in series with a variable resistor of say, 1K, would allow a good standard resistor value to be selected for each transistor/coil pair:



As can be seen from the photographs, Alex uses adjustable resistors to adjust the settings to their optimum values. The simplicity of this circuit makes it very attractive as a construction project and using more than one coil should make for impressive performance figures. Alex says that the best results are achieved with just the one (1000V 10A) diode and not a diode bridge, which is borne out by the teaching comments on the above web site. Multiple transistor chargers like the one above, work best when there is a separate wire from each coil to the battery being charged.

Why Aren't Free-energy Generators in the Shops?

This is a very fair question. Unfortunately, the answer is unpleasant. About 4% of humans are sociopaths, that is, people who have no feelings for other people and just do not care what happens to them, seeing other people as just objects to be manipulated and used, no matter how damaging that is to those other people.

Many of these unfortunate sociopaths become rich as a result of their total lack of concern for others and some of those have come together to form a very powerful group known as the New World Order which has managed to subvert governments and impose many protection-racket style scams on all ordinary people. Those scams force people to give them more than 80% of their earned income. If you want to learn more about this, then visit the www.yourstrawman.com web site.

When Henry Ford in America started making his first cars, he intended to have them powered by a magneto system designed by Nikola Tesla. Tesla funded most of his research and development by adapting some of his inventions and selling them to people like Henry Ford. If Ford had continued with his plan, then his first cars would have run without the need for any kind of fuel.

Unfortunately, Ford was 'persuaded' to abandon that idea and instead, to use a liquid which was a waste product of the oil industry as they had a problem in getting rid of that product, which was called 'gasoline' and is commonly known today as 'petrol'. This really suited the oil industry because not only did it get rid of the problem, but they even got paid in the process – something which I'm sure that they found highly amusing.

However, as there were very few filling stations, motorists on long journeys had to fill up with alcohol instead of gasoline and they did that at one of the fifty thousand or so farms which had alcohol stills – alcohol being a useful fuel around the farm.

Once the oil industry expanded and had enough gasoline to power all of the cars and trucks all of the time, they introduced "Prohibition" which, with their usual lack of truthfulness, they put forward as a restriction on humans drinking alcohol. It had nothing whatsoever to do with drinking alcohol, nor did they care at all about people drinking. Mind you, they made that a profitable sideline business at that time. The real purpose was to shut down those fifty thousand alcohol stills and establish a monopoly on the supply of fuel for vehicles. When that had been accomplished, Prohibition was dropped as it was no longer needed.

However, the New World Order people found that the profits from oil sales was so great and the degree of control caused by their manipulation of fuel prices was so great, that they are determined at all cost, to prevent any move away from burning fuel in vehicles. They have been waging a campaign for just that thing for about one hundred years now. To achieve their aim, they have to convince people that it is essential to burn a fuel in order to produce power (which, of course, it never has been). For this, they have to swear that free-energy generators are "impossible", because if they don't, then it will become obvious that while burning a fuel will indeed produce power, it is not necessary to do that.

In order to suppress knowledge of free-energy devices, they have taken control of the main media outlets, so that only what they have to say is ever heard. They have taken control of the teaching establishments and universities by awarding funding and "research" grants to those establishments, **provided** that research is only done in areas which will not conflict with the sale of oil products. Honest scientists who do not support the official (wholly untruthful) stance, are sidelined, ridiculed and become unemployable.

The New World Order people also influence governments in the same way – for example, their International Monetary Fund made a major loan to the government of the Philippines and one of the requirements of that loan was that the government of the Philippines would not allow the introduction of any technology which would compete with oil sales in the Philippines. In case you are not aware of it, Daniel Dingel of the Philippines had adapted his car so that it ran on water. Do you think perhaps, that Dingel's achievement might have influenced the IMF?

Even devices which increase the mpg performance of vehicles are opposed by the New World Order people. For example, American cars have a ridiculous consumption of 13 mpg or less. My son in the UK has an ordinary, production-line Audi saloon car which does 60 mpg at 60 mph, which represents 50 mpg at 60 mph on an American gallon which is 20% smaller than the original imperial gallon. That is four times better performance than most American cars. Why?

Some years ago Cal-Tech spent millions proving that on-board fuel reformers would give us all better fuel economy and cleaner air. They did long-term testing on buses and cars to provide proof. They teamed up with the very large auto-parts supplier Arvin Meritor to put them in production vehicles. Then "One Equity Partners" bought out Arvin Meritor's division that did all the final work to get fuel reformers in all our vehicles. They created a new company, EMCON Technologies, and that company dropped the fuel reformer from their product line, not because it did not work but because it did work.

Lone individuals are intimidated, opposed financially, put in prison, put in mental institutions and even murdered. For example, Bob Boyce in America was running the engine of his car on the gas mix produced when you pass a current through water. The car was in his workshop behind his house. The police tried to give him a three and a half year long prison sentence for "running a vehicle on an non-approved fuel" – a charge which he beat in court.

For another example, Bill Williams in America in April 2006 ran his 1975 F 250, 360 cu. in. (5.9 litre) Ford pickup truck on a Joe Cell which allowed it to run without using any gasoline as well as giving it spectacular performance. Two armed thugs showed him a thick dossier containing details and photographs of his children and their movements and demanded that he destroy his Joe Cell and stop talking about it.

Allen Caggiano also in America, produced a high-mileage low-pollution carburettor which gave him 111 miles per (US) gallon on his 1973 Dodge Coronet station wagon. He was put in prison for 15 years for doing that and publicising it.

Recently, Paul Zigouras in America developed a system which could convert 15 gallons of water into a fuel gas in just one minute and ran a 200+ HP marine engine on the gas. He was paid US $6,000,000 so that his system could be shelved.

So, please understand that powering vehicles without gasoline, or even with gasoline but with a high mpg performance is the most fiercely defended against topic for the New World Order people.

My free download "Practical Guide to Free-Energy Devices" eBook (www.free-energy-info.com) gives a great deal of detail about this subject, but here we will just mention some of the basics.

HHO Systems

When an electric current is passed through water, a gas mixture is produced, most of which is hydrogen and oxygen. I am going to refer to the gas mix as "HHO" indicating that most of it is individual hydrogen atoms and individual oxygen atoms, and I will call the process "electrolysis".

'Scientists' assure us that burning this gas mix will produce less energy than the energy needed to produce that gas mix in the first place. They say this either because they are told to say that, or because they are just not aware of the technology.

When you go to the textbooks, you discover that the very competent Michael Faraday investigated electrolysis and determined how much gas was produced for any given flow of current through water. Faraday was certainly right and we can accept his results for what he did. However, we do not need to do what Faraday did as technology has advanced considerably. One of the most knowledgeable people in this area is Bob Boyce in

America, and he shows how electrolysers can be constructed in the most effective way, using carefully prepared stainless steel plates and a chemical catalyst (potassium hydroxide or sodium hydroxide). Bob does not consider an electrolyser to be ready for use until it produces more than twice the gas conversion rate per amp of current that Faraday considered to be the maximum possible. In other words, Bob's electrolysers are more than 200% efficient compared to Faraday's results. Bob then applies a voltage pulsing system to his electrolysers and that raises the overall efficiency to more than 1000% of Faraday's result.

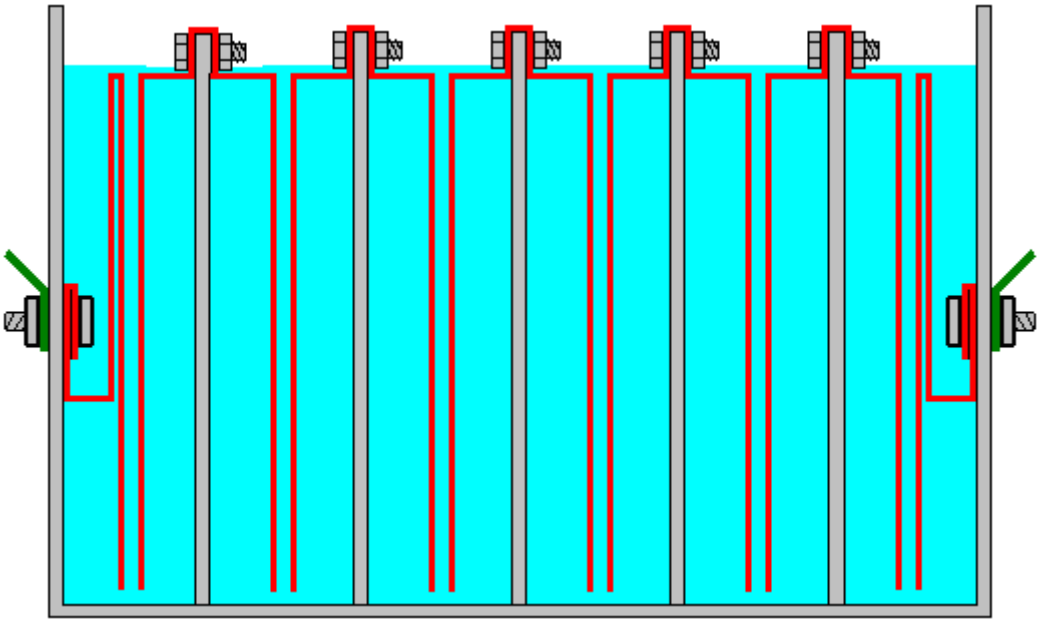
Further, when 'scientists' do their calculations, they use Faraday's result and they look up the energy produced by burning hydrogen gas (H2). Their results are highly incorrect. Firstly, the production efficiency is more than ten times greater than they imagine. Secondly, freshly produced HHO gas is typically four times more energetic than hydrogen (H2) gas and oxygen (O2) gas. Those alone, push their calculations out by a factor of forty times.

Worse still, their knowledge of the process is so limited that they are not aware that the bulk of the energy from 'burning' HHO gas does not come from the hydrogen but actually comes from 'charged water clusters' (which they have probably never even heard of). Ted Suartt and Rob Gourley (http://www.wateriontechnologies.com/) have developed a process and applied for a patent where they intentionally harvest just these clusters, and it is likely that Steve Ryan of Aukland who ran his motorcycle on 'processed' water was producing the clusters directly.

Finally, our 'scientists' are probably not aware that if fine droplets of cold water are fed into an internal combustion engine running on HHO, that the heat from the HHO ignition converts those water droplets into flash-steam which produces high pressure inside the cylinder and makes the engine operate as an internal combustion steam engine (that process does not harm the engine in any way).

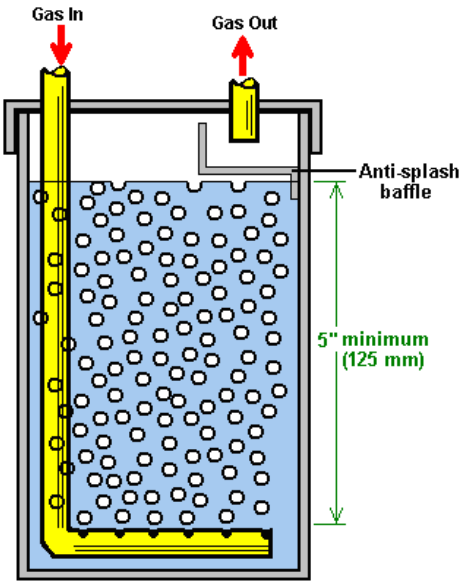
Moving on to the practicalities, HHO boosters can raise the mpg performance of a vehicle by up to 100%, but American cars have been tied back to such a ridiculous engine size and low mpg performance, that even doubling at 13 mpg figure to 26 mpg is also ridiculous. Yes, I know that it halves the present fuel bill, but it is still ridiculous as US Ford company engineers can run a 351 CID V8 at more than 248 mpg but are just not allowed to do that. I suppose that a 50% gain on a European car with 40 mpg performance, would represent twenty extra miles per gallon and so might be worth doing.

However, if you want to fool around with boosters for gasoline vehicles, there are several designs in my "Practical Guide to Free-Energy Devices" eBook, such as a simple home-build rectangular electrolyser:



Or an easy-build cylindrical type:

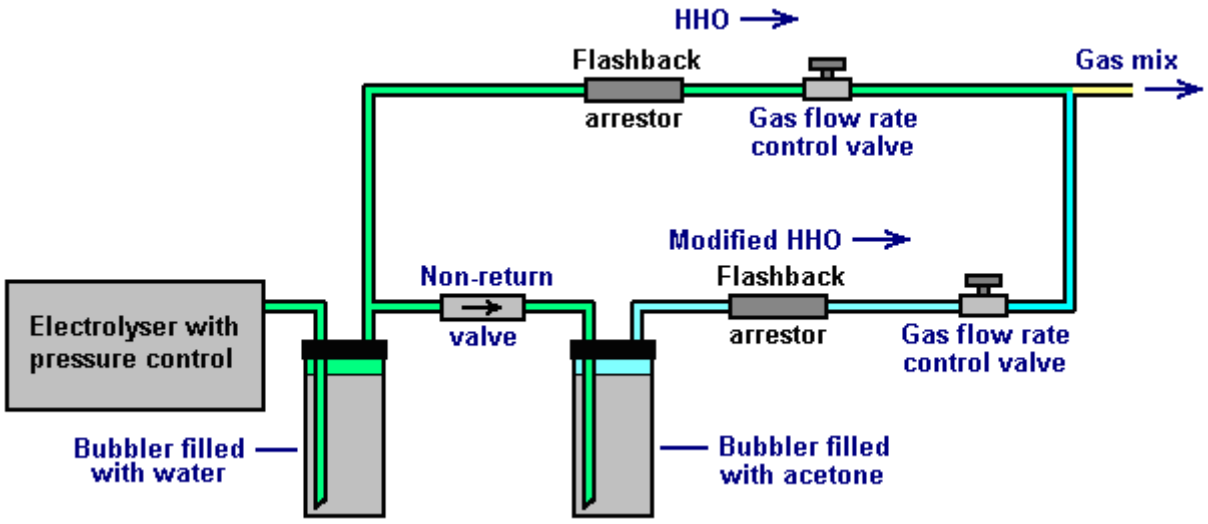
These need to be installed along with protection devices such as contact breakers and bubblers:



But more suited to our present subject is the ability to run a standard petrol generator on water alone:

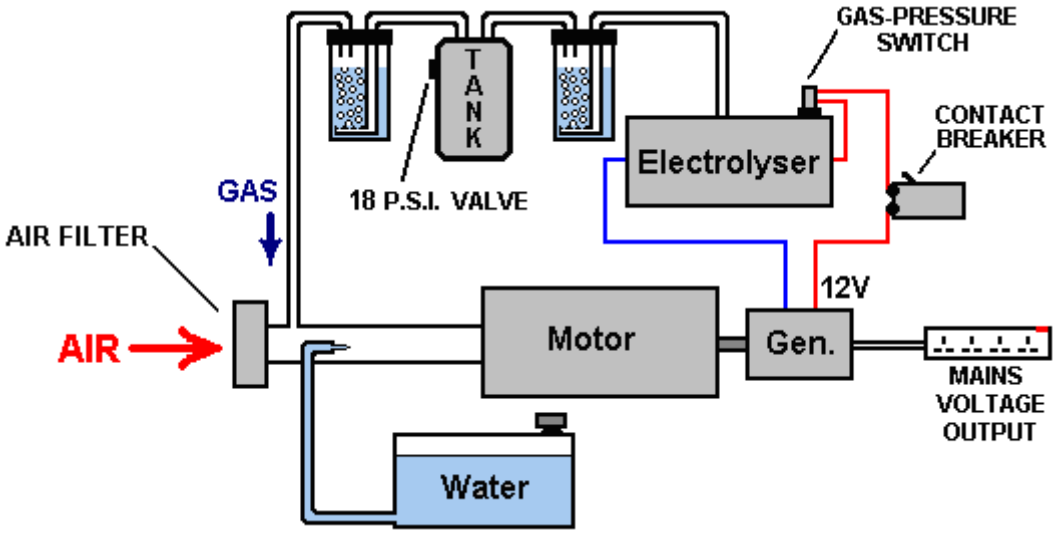
Small engines of this type have an incredibly low efficiency, possibly even as low as 10%, and yet, it is quite possible to make one of these generator self-powered, and it is even possible to do that without modifying the generator in any way.

If you want to run the generator on HHO alone, then the generator needs to have it's spark timing adjusted as HHO has a flame-front speed about a thousand times faster than that of petrol. It is possible to slow down that flame-front speed and so avoid having to modify the generator. That can be done by bubbling all or part of the HHO through a suitable liquid such as acetone – a technique patented by Henry Paine in his 1884 patent and independently discovered by David Quirey of New Zealand who napplies it like this:



The result is a system which can run a generator (which powers the electrolyser). Generators running on water have been used for years in an Australian commune which is located where the electrical grid will never go as doing that is just not economic for a power company.

The power of a generator is increased considerably if cold water mist is added to the air entering the engine:



With added water droplets, it does not take a large HHO flow rate to sustain the system while it is providing kilowatts of excess electrical power.

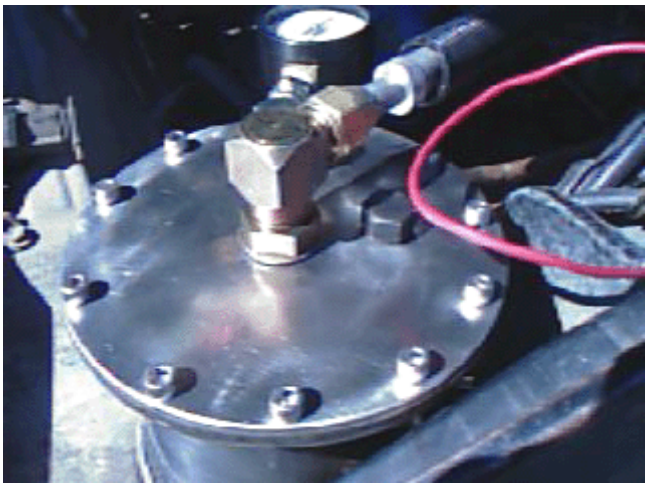
The Joe Cell

In 1992 in Australia, Graham Coe, Peter Stevens and Joe Nobel developed previously patented units which are now known by the generic name of the "Joe Cell", primarily because it was Joe Nobel who did the physical

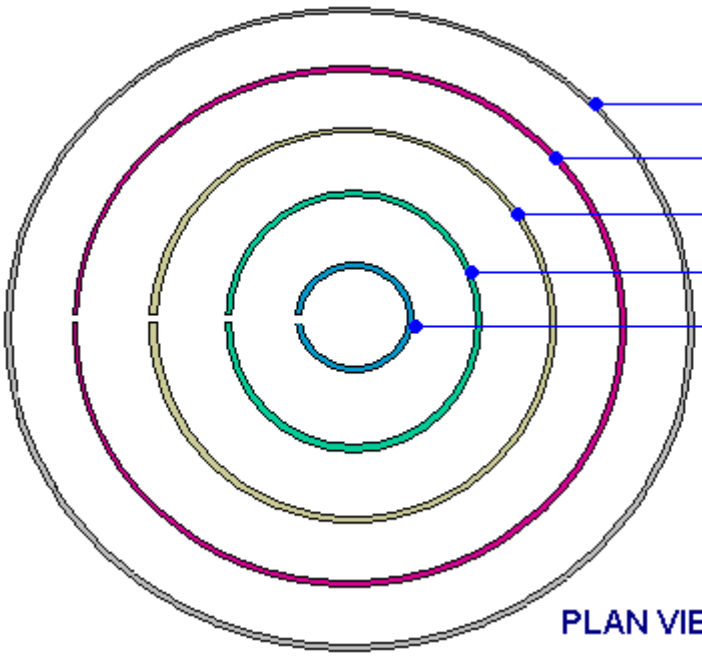
construction and testing of their replications. Peter introduced Joe to Graham and they rehashed the patented cells which Graham knew about, using materials from the Local Dairy Production Facility NORCO. A two hour long video showing the Joe Cell was produced by Peter and Joe and the unit shown operating in the video was attached to Peter's Mitsubishi Van. Joe had his equipment stolen and his dog killed, so he decided to keep a low profile, moving out into the Australian bush and not generating much publicity, in spite of fronting the two hour video recording.

The Joe Cell is a remarkable device. It consists of a series of concentric stainless steel cylinders filled with water which gets charged up with energy. We live in an energy field, sometimes called the 'Zero-Point Energy' field. We don't generally notice it as we have lived in it all of our lives. The Joe Cell can channel this energy into the engine of a vehicle and run it without using any fuel at all. This is a relatively new technology and so it is still developing.

In April 2006, Bill Williams in America built a Joe Cell and installed it in his Ford pickup truck. It gave spectacular performance, so Bill produced engineering drawings of its construction and posted them on the Yahoo watercar forum. He also gave me permission to publish his drawings in my "Practical Guide to Free-Energy Devices" eBook where you can see them any time you wish. The very next day Bill was threatened and told that his family would be attacked if he did not destroy his Cell and stop talking about it. His cell looked like this:

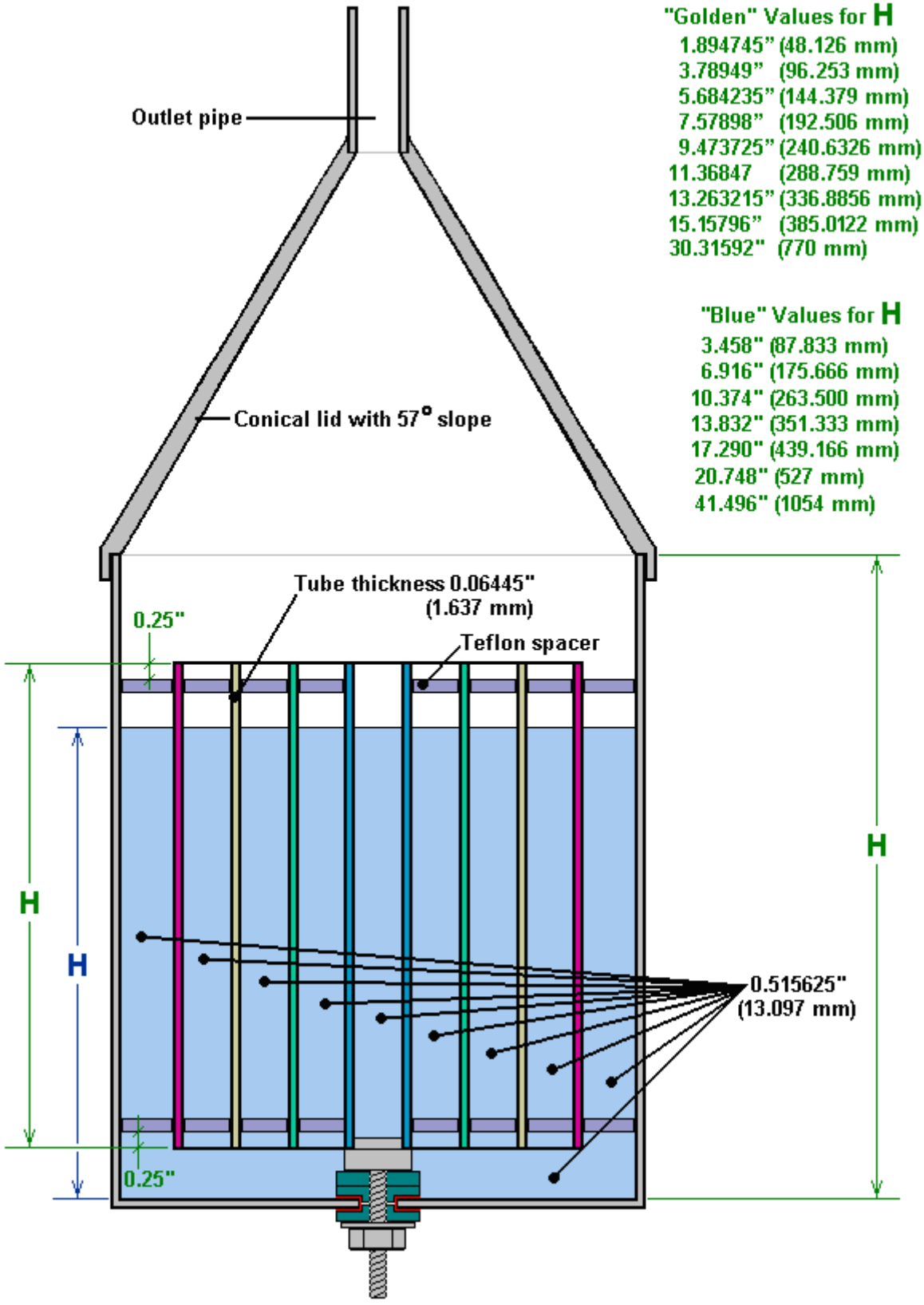


The Joe Cell design has been improved very considerably by David Lowrance through his understanding of the underlying principles. His Cell dimensions are highly specific:



Diameter	Circumference
6"	
4.84375"	15.217089"
3.6875"	11.58462"
2.53125"	7.95216"
1.375"	4.3197"

Metal thickness 1/16"



Ordinary tap water placed in a Cell with these dimensions goes immediately to the required energy level. The channelled energy is fed to the engine through an aluminium pipe and insulation is provided by making the last inch of the pipe of a plastic material. The connection can be to a bolt head on the engine block as only energy is being channelled and not any form of liquid or gas. A Joe Cell also has healing properties.

Leading on from the improved Joe Cell design, is an imitation of its action suggested by David Lowrance which involves using coils of wire. The idea for a set of 3 concentrically-wound 'torsion-field' coils. In early testing it has become apparent that a field **is** being generated, as demonstrated by their effect on two test engines, even with no power being applied to the coils.

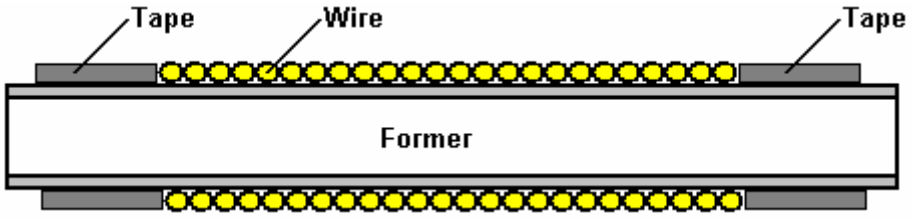
This is the very early stage of the investigation so this initial design is being released with the hope that others will wind and test similar coils and report their results to the appropriate groups, so that we can learn more about them through further experimenting on a variety of different engines.

The initial set of coils were wound on 7/8" (22 mm) diameter stainless steel tubing which happened to be to hand. The use of stainless steel is not significant and two successful replications have used half-inch (12 mm) PVC plastic pipe, as using a non-ferrous material is the main requirement.

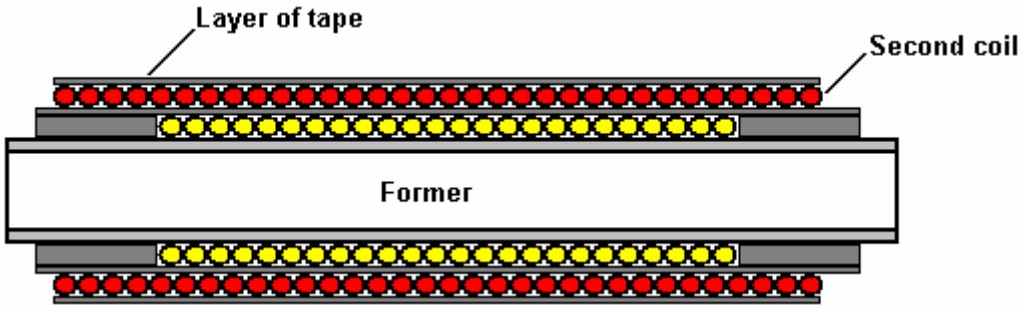
The wire diameter has an effect and while 20 gauge (0.812 mm diameter) enamelled copper wire was used for the coils shown here, coils wound with 12 gauge (2.05 mm diameter) copper wire work much better and it is now thought that the weight of copper in the winding is important.

For the first layer, a length of 311 cm is used and wound on the former in a clockwise direction. The ends of the wire are secured with tape, leaving three or four centimetres of wire exposed at each end of the coil, for connection purposes. This is the first layer wound and secured:

The wire for the second layer is cut to a length of 396 centimetres. This second coil layer will be longer than the first layer, so before winding it, it's necessary to build up the area at both ends of the first layer with tape:



This is so that the second layer of wire will have the same diameter along it's entire length. It is probably a good idea to completely cover the first layer of wire with tape to ensure good electrical insulation.

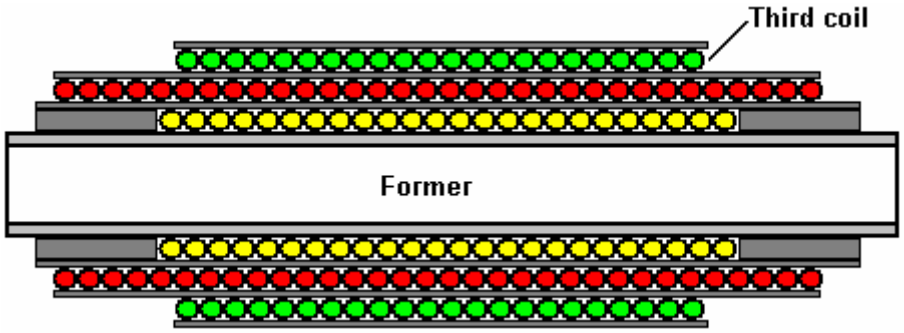


The second wire layer is also wound in a clockwise direction:

The wire for the third layer is cut to a length of 313 centimetres. Since it will be covering less length along the former, there is no need to build up the ends of the earlier layers. So, simply cover the second winding with tape,

and then wind on the third layer, but this time, the coil is wound in a counter-clockwise direction and then the entire coil is covered in tape to protect it.

To be sure that the second and third layers are centred over the earlier layers, it is a good idea to locate the centre of the wire and start winding from the middle outwards in both directions:



It has been found that one end of the centre winding is similar to the centre tube of the Joe cell, and the opposite end of the outer winding functions like the canister of a Joe cell. In theory, this can be tested by connecting a small capacitor between these two points, and checking for a low DC voltage using a digital voltmeter. Like a Joe cell, polarity is really the important issue to test for, since we want the positive polarity end to transfer the energy, and the negative polarity end to be connected to engine ground. If the polarity is wrong, simply use the opposite ends of both coils.

In the testing the negative end was connected to chassis ground, and the positive end to a Hull-effect type oil probe already installed in each test vehicle. The oil probe is Robert Hull's contribution to this technology. He found that if you apply a torsion field to the oil, it will charge up an engine in a way similar to a Joe cell, but more consistently than a Joe cell would. There are two basic types of Hull-effect probe - the simplest is just a wire inserted down the dipstick tube. However, the preferred method is to remove the oil-pressure sensor and insert a T-fitting, then slide an insulated stainless steel rod into the high-pressure oil at that point. By using an oil probe, one can eliminate the aluminium transfer tube in favour of a length of wire.

The experimenter who wound the 20-gauge coils then wound a larger diameter set using 12-gauge wire on a 1.5-inch (38 mm) diameter former. He fitted these over the original set and connected just two wires, one end of the innermost of the six coils and the opposite end of the outermost coil. This gave about a 25% reduction in the fuel used by an old Honda Accord car with an Electronic Fuel Injection system.

Patrick J. Kelly
July 2014