Bedini Motor Technology

By Ask Jeff Williams - (Generator) How To Build One
Video Title: Bedini Motor (Generator) How To Build One
http://www.youtube.com/watch?v=ttY7yLXZSpo

2nd Step by Step Instructions on Bedini Fan Motor (very good)
http://open-source-energy.org/?topic=192.0

Cooling System Updates:

Place Purple Ice/RC in the copper pipe and coil it around the top of the peltizer. Test coiling it around the evaporative cooler and find the best positioning/ results for best cooling location/area. Because circulation works best, you could use a wick effect with a rag soaked with copper filings or copper powder, than place in purple ice and wrap this around the exterior of the coopper/alunium box in an upward spiral position so the liquid travels upwards circuatling towards the top, taking the purple ice and copper filings along with it. or place inside a copper pipe a wick of soft cloth and allow it to flow upwards with the tail end of the copper pipe soaked in the purple ice. be sure to place this coil right next to the fan. or run teh coil on the base of the peltzier with heatsink on top and test another with the coil on top or above the heatsink or inside the heatsink with the coil going through it in an upwards spiral so that the purple ice is drawn upwards.

Purple Ice is compatible with traditional ethylene glycol antifreeze (green)

Best Motors:

425 rpm
http://www.robotmarketplace.com/products/0-FT-SSPARK-22.html

850 rpm
http://www.robotmarketplace.com/products/0-FT-SSPARK-11.html

This motor is extra power with long shaft at 12 volts:
http://www.robotmarketplace.com/products/RP-MAGNUM775.html

850 rpm - $25.00
http://www.robotmarketplace.com/products/0-FT-SSPARK-11.html

This one runs best at 6 volts (use resistors to step down voltage)

Hubs must be used $5.00
http://www.robotmarketplace.com/products/0-FT-LITE-HUBS.html

Motor Mount $5.00
http://www.robotmarketplace.com/products/0-FT-MOTOR-MOUNT.html

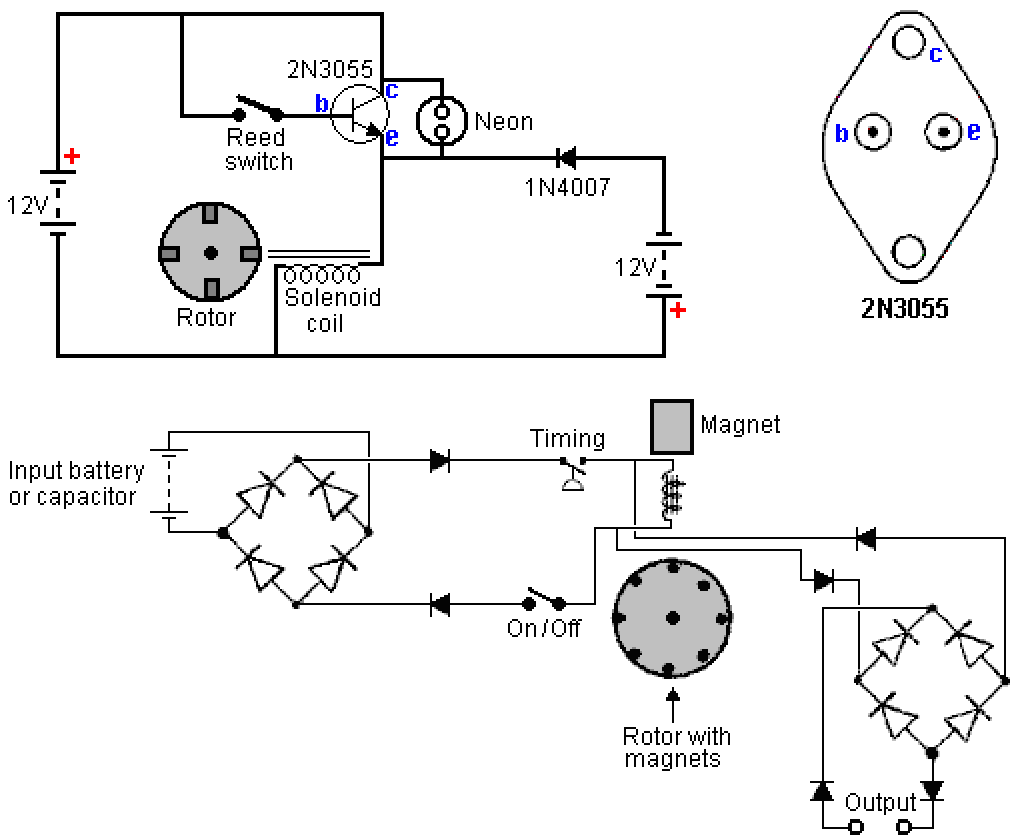
Wheels $8.00
http://www.robotmarketplace.com/products/0-DAV5530.html
Motor Controller may also be needed to keep battery voltage not over drained and for smooth run:

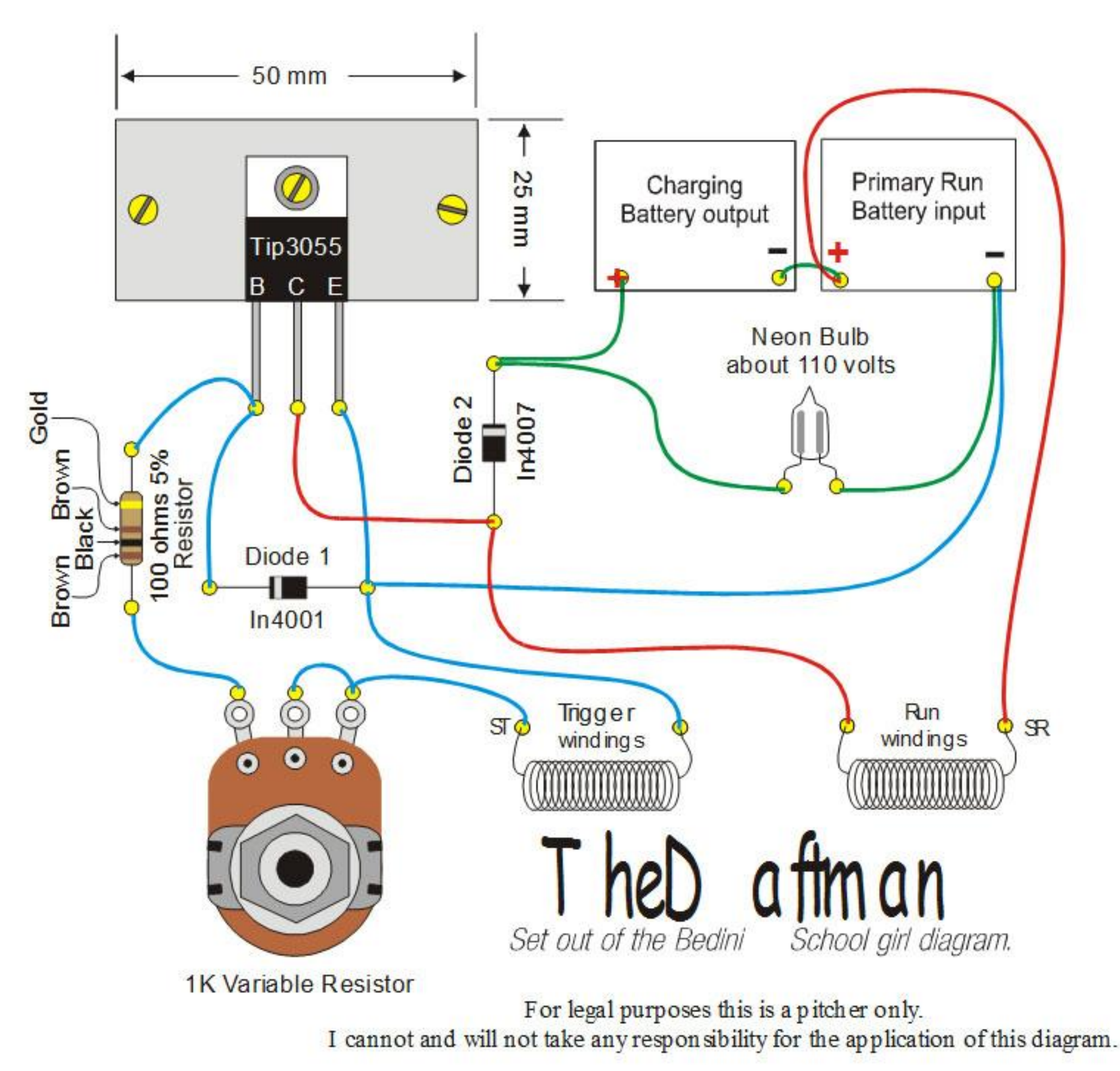
Total: $50.00 or less, including shipping

Multiple Bedini Motors and Videos:
http://merlib.org/person/john-bedini

Basic Radiant Pulse Oscillator / Motor-Driver Circuit

By Ossie Callanan





The below increased output of energy can also be used to spin a solar motor, which than spins the CPU generating fan
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Also you can replace the batteries with supercaps to make the supercaps discharge longer.

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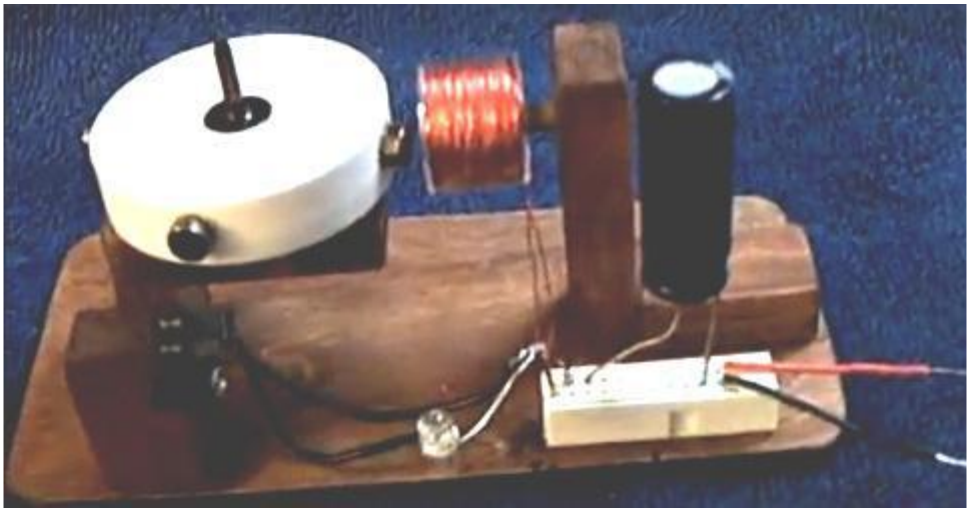
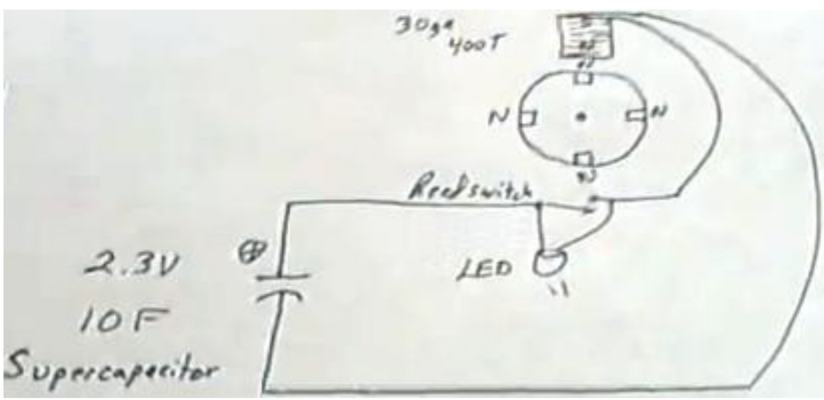
1. **Lidmotor's Low-voltage Rotor**
   One very experienced developer whose YouTube ID is "Lidmotor" (because he makes motors from the lids of jars) has a short video [here](#) showing a very simple rotor design with one of his jar lids mounted on a single bearing:



The white lid has four magnets attached to it spaced out evenly around the lid at ninety-degree intervals. Facing them is an air-core coil mounted on a non-magnetic support dowel and wound with 400 turns of '30-gauge' wire on a plastic spool. As 'Lidmotor' is American, the '30 gauge' wire is likely to be American Wire Gauge #30 with a diameter of 0.255 mm as opposed to the European Standard Wire Gauge size which has a 0.315 mm diameter. An air-core coil has no effect on the passing rotor magnets IF it is not carrying current. An output coil will cause drag on the rotor if current is being drawn from the coil, and so timed output switching as used by Robert Adams would be needed to not just overcome the drag, but to push the rotor on its way as well.

There are two very important features of this rotor drive design. One is the fact that a supercap (10-Farad, 2.3V) is used to drive the rotor and when supplied with a charge of only 0.5V to 1.0V, can spin the rotor for up to thirty minutes. That very long time is likely to be a feature of the second important item which is that he has placed an LED across the reed switch used to power the coil. When the reed switch opens, a back-EMF voltage spike occurs and the LED feeds that voltage pulse back into the 100% efficient supercap, recovering most of the current used to drive the rotor. This is the same method as used by Robert Adams in his motor designs. Lidmotor presents his circuit like this:



While the circuit shows the magnet operating the reed switch as being 180 degrees around from the coil, the photograph indicates that the switching magnet is one 90 degrees away. Any of the other magnets can be used. The reed switch operation is adjusted to get the best performance. This is done by moving the switch backwards and forwards along the moving path of the magnet to make the switching occur earlier or later. The objective is to push the rotor magnet on its way by pulsing the coil very briefly just after the rotor magnet has passed the centre of the coil. The length of time that the reed switch is closed can be adjusted by moving the switch closer to the magnet for a longer switch-closed time, or further away for a shorter switch closure. It is also possible to alter the closed time by positioning the switch across the path of the magnet travel or parallel to it.

If you are not familiar with a reed switch, it is just a glass tube, filled with an inert gas, and with two overlapping metal strips inside the tube:

Reed switch

The external magnetic field magnetises the strips and they spring together due to magnetic attraction and spring apart again when the magnetic field moves away. These switches come in various sizes and the smallest version tends to be unreliable and has a very low maximum current capacity. The larger versions are much more robust.

Lidmotor's circuit is very simple and very effective, even though the rotor will have minimal weight and no significant drag. One wonders if adding a second coil and a diode feeding the supercapacitor, if the system could not become self-running.

In the below video:
2 in supercaps in parallel and 2 in series. Motor runs for 10 mins on 6 volts on low farad supercaps:
https://www.youtube.com/watch?v=dR9EWtoxVfo

Schmatics and circuit diagrams:

1: https://www.youtube.com/watch?v=UVpqAVhgNAo

2: https://www.youtube.com/watch?v=jVJUCucs95s

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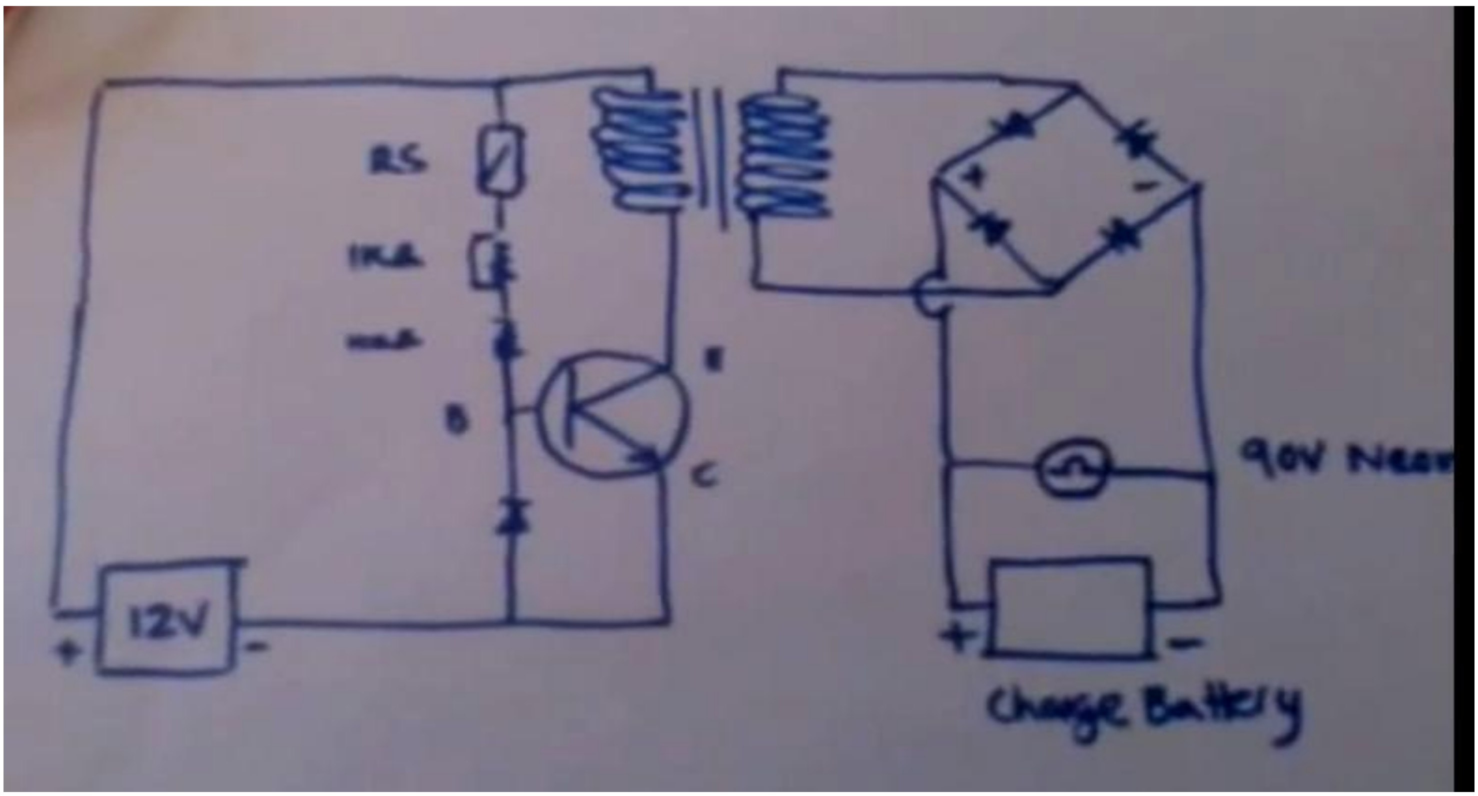
listen to video for proper parts

[**https://www.youtube.com/watch?v=NgE253EUfRc**](https://www.youtube.com/watch?v=NgE253EUfRc)



Above parts:
20 uf cap
Frojm bottom up:
Battery, transistor, 100ohm resistor, 1k pot or variable pot, reed switch, pulse bifilar coil, bridge rectifier, 90 v neon bulb, output battery or charge battery at far right bottom.

Bedini CPU Fan:

Thsi video shows in detail how to prepare the cpu fan:

https://www.youtube.com/watch?v=4lpWJpLj2ZM

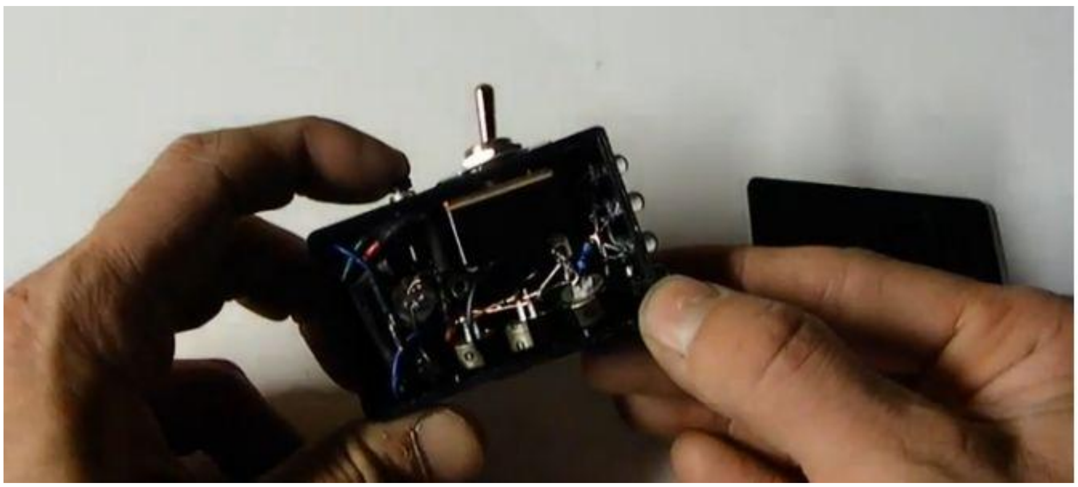
The beauty of an ultracapacitor, assuming they make it practical and get it into production and availability, is that enough power can be furnished from a much smaller ultracap to propel an electric car, i.e., by using a much smaller "EM potential energy accumulator" (instead of a normal very large battery set).

Using two such "much smaller" ultracapacitors, charged by Bedini's very novel battery chargers, means that an electric car could have just about unlimited range – say, several hundred or a thousand miles before a little maintenance, etc. The only "storage" is for a small time and very much less, since excess EM energy is being freely received from the seething vacuum interaction with every source charge.

With negative energy battery or cap charging (which some Bedini systems use), it's even more pronounced an advantage – since for a given negative energy EM flow into any impedance, the local vacuum freely converges excess EM energy flow into that same impedance. Thus the amount of negative energy flow leaving the impedance dramatically exceeds the amount of negative energy flow that the OPERATOR pays to input to that impedance.

If such systems (ultracaps and Bedini charging systems) can just get on the market and be available, then the electrical energy crisis is solved permanently. And that solves most of the fuel problem, etc. because one will not need nearly so much fuel, nuclear fuel rods, etc.

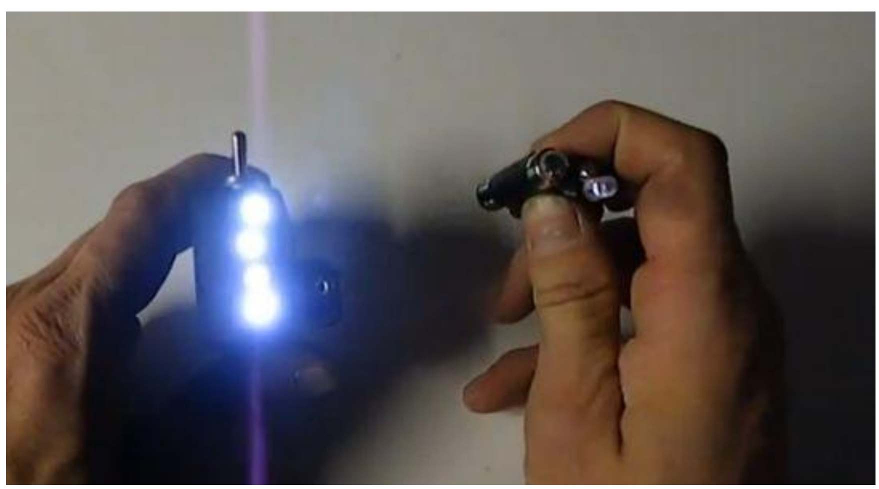
Video Title: Charging super capacitors with a joule thief -
Uses DC Boost Convertor?



So when the bicycle is parked, you can charge a large nicad battery for days on end. Than when you cycle, you can transfer the energy from the large nicad battery over into the supercapacitor into the motor using the concept shown here. Using this concept, when you press a button the energy is discharged through 3 to 4 banks of supercaps wired in series to just under six volts.

And when biking normally, the energy recycles through these 3 to 4 packs/cells of supercaps.

(https://www.youtube.com/watch?v=uM-qsZhEPu0) this can be distribted



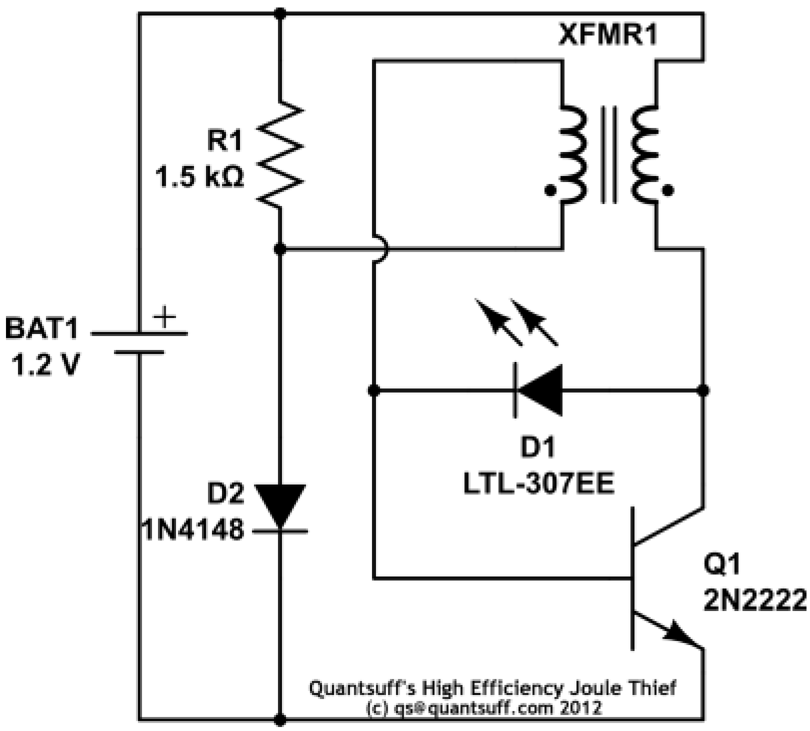
Maximizing Output:

MAXIMIZING THE OUTPUT

On the left is a typical output waveform of a low-power Joule Thief. The top curve, in yellow shows the voltage across the LED. Notice that only a small portion of time is the LED being lit, only when the curve is above 3-volts. This is calculated by the oscilloscope to be about 20% (The +DUT reading). The rest of the time is used to charge the coil. The Blue trace shows the voltage on the other coil, which is only used for timing and plays no part in powering the LED. IF we can tap into this extra 'power', wouldn't it make our Joule Thief that much more efficient?

With a small amount of rearranging, the circuit below does just that. The LED itself is now connected between the highest and the lowest voltage points of the 2 coils. A diode, D2 is added to complete the circuit.

it.



The addition of D2 represents an added drain of about 0.7mA, but aside from providing a return path to the LED, it also functions as a rudimentary power regulator by maintaining the voltage to the transistor's base just at its conducting point, regardless of input voltage. This allows the circuit to operate over a much wider voltage range, from 2-volts to around 0.9-volt with much better current (and brightness) regulation. As built, this circuit will operate down to just below 0.6v.

The total voltage driving the LED is shown above as the green curve, which is the difference of the Yellow and Blue curves (it is the difference because the LED+ is connected to the Yellow side and the LED- is to the Blue one.) A check shows us that the Peak output voltage is still around 6-volts but the period of time the LED is lit is now much longer, double that of the 'standard' Joule Thief, and consequently lowering the operating frequency by a third. Efficiency also appears to be around 15% better.

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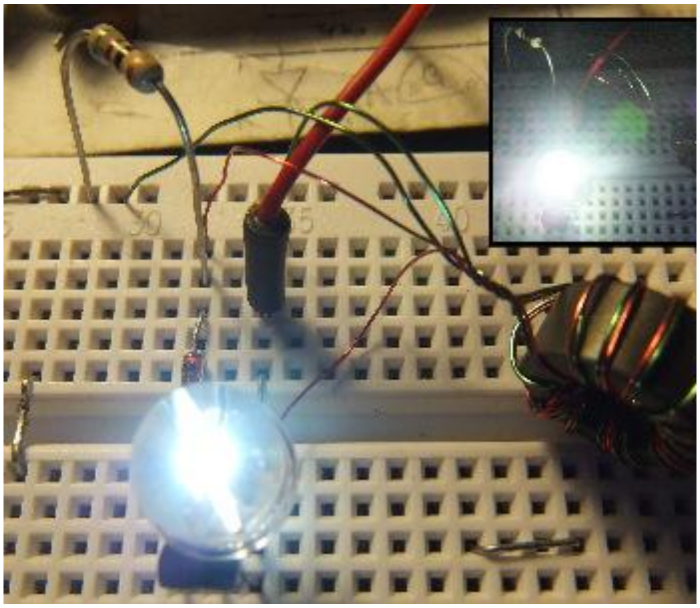
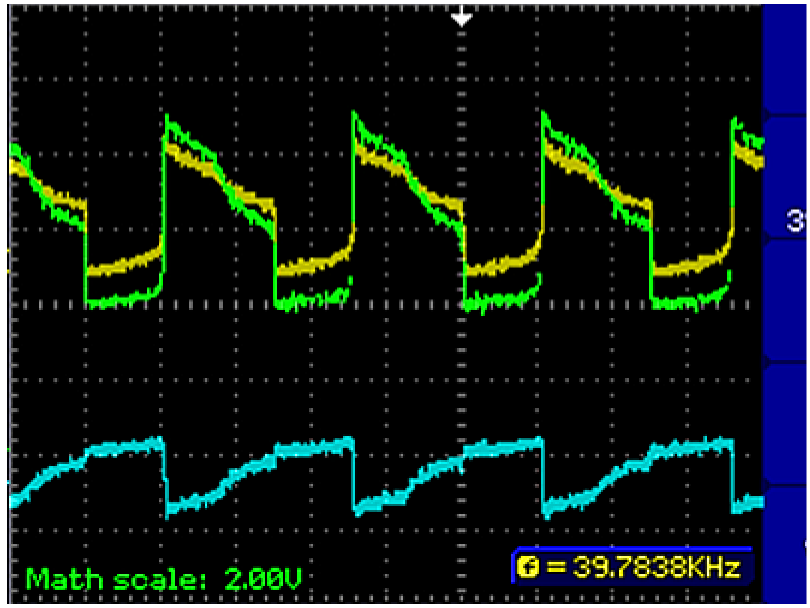
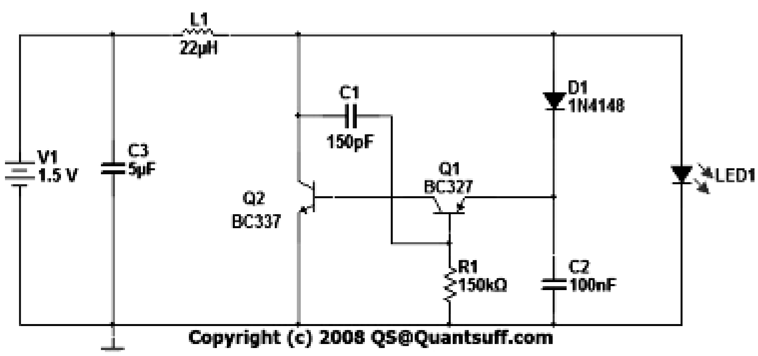
Here is the same circuit, using a 2N2222 to drive a 100mA LED! Just change the drive Resistor to 510-ohms.





Swap in a high-performance transistor, the FJN965 (2SD965) and we're driving 2 LEDs at almost a full watt without any other changes! This illustrates the importance of selecting the proper transistors. The key specifications to look for: Ic at least double the input current, about 700mA here; a good gain (>150) at the current and frequency points and as low a VCEsat as possible.

The major obstacle to scaling this design up to higher levels is the need for D2. While it works to maintain stable operations over a much wider range of input voltages, it limits the maximum current we can use to push the transistor much further.



The 2-transistor 1-cell boost circuit can also be 'supercharged' for increased output. The parts shown here will allow a 1.2v rechargeable cell to light a 25mA white LED, change R1 to 68k and the LED will run at its absolute maximum. Care must be given because the power is delivered as a sequence of pulses, some as high as 100mA, but *averages* to 25mA. As a result, the light will seem brighter and more blue to the eyes.

The circuit will accept coils from a few uH to 3mH; C1 should be 5-10pF per uH of inductance, up to 0.05uF for 1mH and larger. In general, larger inductances will supply LESS current. R1 adjusts the brightness, and can be 22M-ohm down to 33K, which in this circuit will light 100mA and 1-watt LEDs.

I have built several of these high efficiency 'supercharged' Joule Thiefs (SJTs) to try to optimize the parts values, especially the coil. I'm posting these SJT blogs to allow the reader to get better results when building a duplicate SJT. I'll give info on winding the coil, wire size, etc.

This SJT used a toroid core from All Electronics, part number TOR-54 (they have since sold out). I put a single turn (piece of straight wire) through the hole in this core and it measured 0.08 uH (I measured several of them to get an average). This means it is a low permeability core, much lower than the usual ferrite RFI suppressor sleeves that I've used (compare that to the charcoal TOR-23 cores they sell, which have 0.48 uH per turn). It also means that I have to use more turns to get the inductance up to 100 uH.

I jumble wound three solid enameled wires, each 36 inches long, wound trifilar, i.e. all three at the same time. Two were 28 AWG, connected in parallel for the primary winding. The third was 30 AWG, for the feedback winding. I cut the three wires to length, and on one end I twisted all three together to allow me to thread the wires through the core. Afterwards I cut off the twisted part. Each winding measured 124 uH.

For Q1 in the Fig. 2 circuit shown in the schematic (see link at top), I used a BC337-25. The R2 was 820 ohms, D1 was 1N4148. C2 was 1000 pF. The LED was a cheapo white LED removed from a 9-LED flashlight. A 47uF tantalum was across the supply rails.

MEASUREMENTS

I connected it to a 1.5V supply, and measured the supply current at 50mA. The LED current was 21 mA. The freq was 224 kHz. The LED was very bright. I calculated the efficiency at 89 percent, which seems too high, however the circuit did have very low power consumption.

Observations

This coil was wound using .335mm wire for the two primary windings. This is actually slightly larger than 28 AWG, about 27.5 AWG. It's taken from a fan motor winding made in Switzerland. I had to scrape the very tough insulation off the ends with a single-edged razor blade, and it took quite a bit of scraping.

I am trying to keep the coil inductance above 100uH, and with the TOR-54 this means using solid enameled wire. If I used plastic insulated telephone wire, I wouldn't be able to get a long enough length on the core to get 100uH.

A couple of precautions got to be taken whereas constructing the circuit. The USB port mustn't be supplied with excess power. The capacitor doesn't stand up to a high voltage and hence a zener diode is connected in parallel to handle the high voltage. The diode protects the capacitor when the voltage exceeds an explicit voltage

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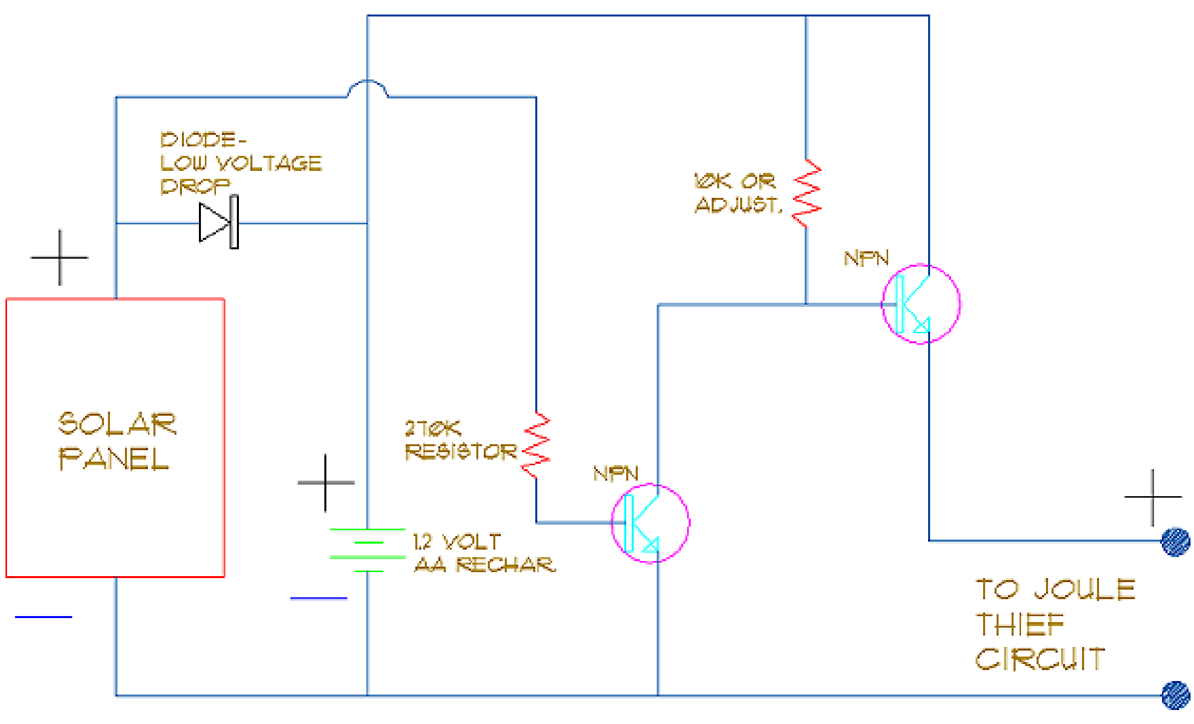
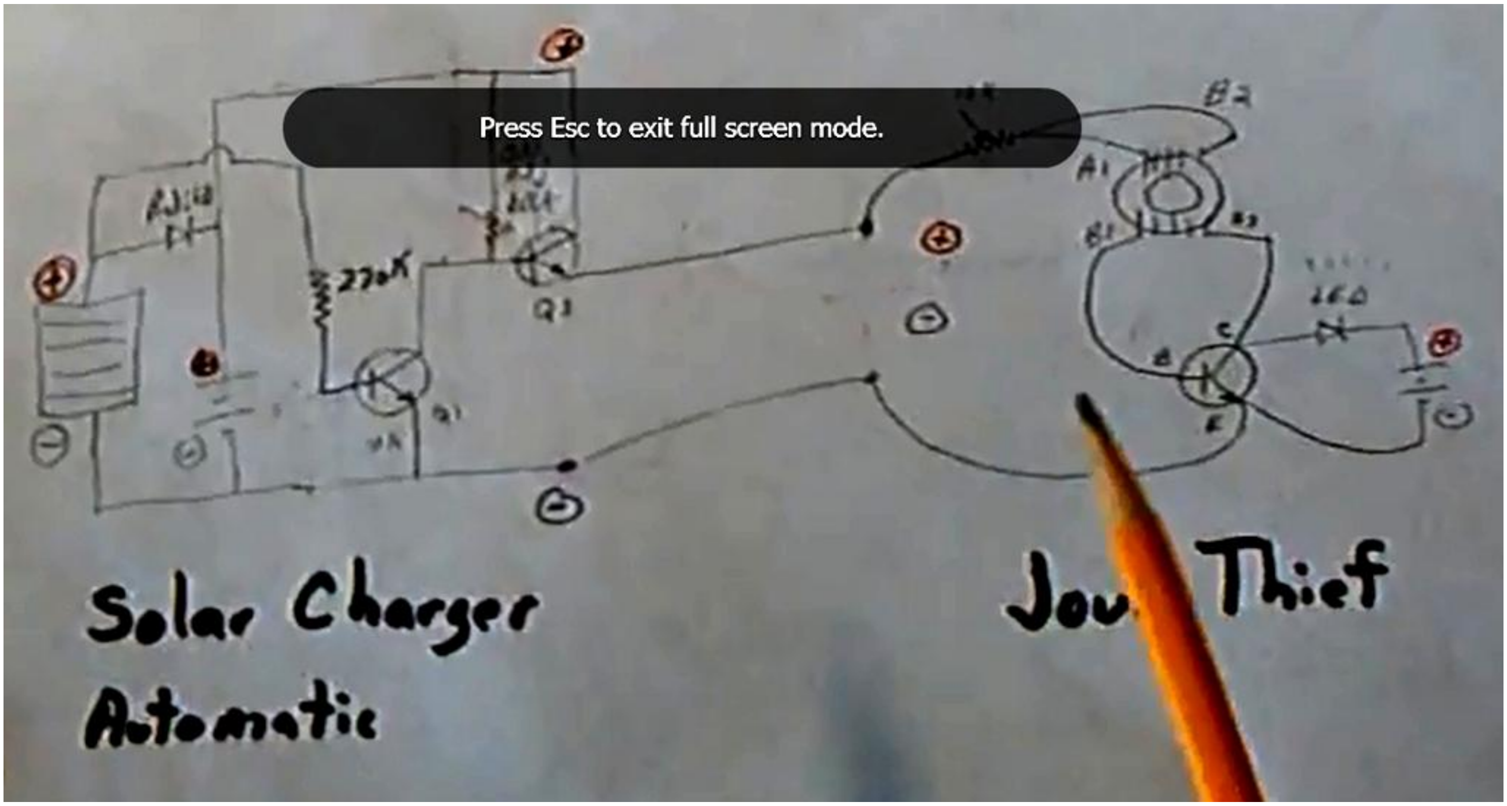
THIS IS A VERY IMPORTANT CIRCUIT, DRAWS OUT ALL POWER FROM SUPERCAPICTOR
CRICUIT IMAGE at base of page

yOU WILL HAVE TO ADJUST RESISTORS TO HANDLE HIGHER VOLTAGE

This is a Joule Thief LED/charger circuit that is being driven automatically by a modified 'solar garden light' circuit. In this video I show energy being gathered by a solar cell and put into a 50 farad 2.3 volt supercapacitor. When the light is removed from the solar cell the Joule Thief circuit automatically turns on a white LED and the red charge indicator LED turns off. While the white light is on, energy recovery is shown happening as energy flows into a second but smaller capacitor raising it to a higher voltage than the first. Many thanks to all the people who contributed ideas to this project.

ed with ImageShack.us





Safe Automated SuperCap Charging

Then charging your super capacitors, you have to take several things into consideration. Some of which we've already covered. 1) If you are using a power supply that is protected by a fuse, you have to limit the charge from the power supply from the power supply to the capacitor bank. For instance, let's say that you have a 300 farad capacitor bank that you want to charge to 6VDC. You have a 6v power supply that is capable of sourcing 1.2A MAX current before the fuse blows. For safety sake, let's find the right resistor that will limit the current to 1A: Calculations: Charge resistor value = 6v / 1A = 6 Ohms - Simple Ohm's law: R=E/I Now, let's talk POWER (Wattage)! Resistor Power = 6v x 1A = 6W (Power = Voltage x Current) In order to charge our 6v capacitor bank at 1A with the 6v power supply, you're going to need a 6 Ohm resistor with a wattage rating of 6W or higher. How long will it take to charge: This might vary a little bit because all capacfitors have a large tolerance, which is around 10-20%; meaning that the rated capacitance can be higher or lower by 10-20% than the rating labeled on the side of the capacitor. As well, your resistor will also have a tolerance, but not as large. There is a lot of math involved with time constants and the relationship between the capacitor and resistor. If you are interested in timing, check this link out: http://physics.bu.edu/~duffy/semester2/c11_RC.html You will find it to be very helpful! If you are using a solar panel to charge your capacitors, you need to make sure that the panel is matched to the capacitor bank. By this, I mean that if you are using a 12v solar panel, you're going to want to make sure that your bank is rated for 12v or higher. Preferrably 15v to 17v to be safe. You're also going to want to use a diode in series with the positive lead of the panel and the positive lead of the capacitor bank. You can see an example of this in STEP#7. This diode is used to ensure that there is no back-powering from the capacitors back through the solar cell. If you are going to use a DC crank generator, you're going to want to make sure that you use the diode as well. If you do not, all of the power you generate will be lost back through the motor windings, and you're not going to get anywhere! The diode is EXTREMELY necessary! I will be creating new instructables based on super capacitors that go more into depth on this topic. Feel free to watch the below videos. I go into detail as to how I designed my chargers. There are three of them displayed for you in these videos. 1) All power supplies need voltage and current regulation. Most of the time the voltage is tightly regulated and the current is free to vary until it maxes out. A current controlled power supply monitors the current and tries to keep it constant by varying the voltage if needed. This means that the output current is monitored and the output current controlled. While most switching power supplies are current limited, the way they act to an overcurrent condition varies. Also, the limit point is usually beyond the recommended operating range of the supply (typically 120% of rated power to allow for surges). Common overcurrent behaviors include: a) Shutdown. The supply stops delivering power and needs to be power-cycled to re-start. b) Hiccup mode. The power supply will shutdown, then restart itself. This will repeat until either the overload goes away, or a component in the power supply fails from trying. c) Foldback. This means that the output voltage is reduced. Depending on the slope of the foldback, the current limit point may also be reduced as the voltage drops. Some supplies have a combination of these. For example Meanwell's S-150 series will foldback

for mild overloads, and shutdown for larger ones. Foldback is the closest to what is needed for charging batteries or capacitors. But these power supplies are not designed to foldback until the output current is far beyond the rated power. For the S-150 the threshold is about 130% of rated capacity, so the supply is running hot when it is in current limit. This point can be adjusted by changing one fixed resistor. I have also used the SP-320 series for battery charging, but needed to add external circuitry to implement current limiting. The PSP-500 series has an internal pot to adjust the current limit point. 2) The second problem, at least for charging supercapacitors, is over what range of output voltage will the supply deliver continuous power without shutting down or hicoughing. With most batteries, the range of voltage between discharged and fully charged is not very wide, so it doesn't pose much of a problem. With capacitors, the fully discharged voltage is zero. This is a big problem in that most power supplies usually won't work into the dead short that a fully discharged cap looks like. The reason for this is because the operating power for the control circuit is usually derived from an extra winding on the transformer. While this winding is isolated from the output, the voltage it delivers is a fixed ratio of the output voltage. This ratio is chosen by the designer to deliver a operating voltage of 10-12 volts when the power supply is delivering it's nominal output voltage. Depending upon the design, the supply will usually work properly even if this voltage varies by as much as +/- 30%. Unfortunately, there is no ratio that will deliver any operating voltage when the output is zero volts. I can see two possible solutions to this problem. One is to have a linear post regulator to keep the switcher output high enough to keep operating when the capacitor is zero. This linear regulator would be bypassed as soon as the capacitor voltage is high enough for the switcher to continue directly. The second solution would be to have a power source for the operating circuitry that is independent of the output voltage. There are trade-offs between these for efficiency and simplicity. Of course, the trade-offs will vary with the actual power supply chosen, it's minimum operating voltage, and complexity of modifications.

Additional Data:

http://www.robotshop.com/en/robot-power-en.html

http://www.jameco.com/

http://www.robotshop.com/en/robot-power-en.html

Here is a list of additional Long Shaft Geared Electric Motors:

http://www.robotpower.com/where-to-buy.html

http://www.robotpower.com/catalog/

To locate/find Additional brands and suppliers of long shaft gear

motors use this search term (especially in images search) -

BaneBots 16mm gearmotors

Tire/Wheel with Gear Motor

Gear Motor 12 Shaft

long shaft robot gear motor

silver spark gear motor

Tracked Wheel for DC motors - for friction free grip

Electric motor DC 150W 12V with belt pulley

12v dc pulley motor

12v dc carbon brush motor

The current blue stepper motor you have is the following specs:
Buehler 12V Heavy Duty Motor with Encoder and Pulley

Brand new Buehler motor Heavy duty design Operating voltage: 3 - 18 VDC Nominal voltage: 12V DC No load current: 220 mA No load speed: 6800 RPM Stall current: 1600 mA Runs in either direction Sinusoidal Encoder Output: 11.5 VAC - 870 Hz @ 12 VDC input Shaft extension comes with a mounted pulley - great for driving devices with rubber belts Comes with a 4 pin female plug Pulley dimensions: .25"L x .39" Dia. Motor dimensions (not including shaft with pulley): 2.2" L x 1.33" Dia.

Motor Torque and Voltage Calculator

http://www.pololu.com/search/compare/60,116,115,51/0,8,1,94,9,10,12,11,5/s,101,102,103,104,2,106/-5

https://www.hobbyking.com/hobbyking/store/brushless_motor_rc_data.asp

http://www.ebikes.ca/tools/simulator.html

http://www.dcvest.dk/da/104690-Kreuzotter

The best motors at 12 volts with high quality can be found here:

http://www.hobbyking.com/hobbyking/store/uh_listCategoriesAndProducts.asp?cwhl=XX&idCategory=522&v=&sortlist=P&LiPoConfig=&CatSortOrder=asc

Below is one good motor:

http://www.hobbyking.com/hobbyking/store/__19831__NTM_Prop_Drive_Series_42_38_750kv_785w.html

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A bicycle wheel turns at between 350 and 500 rpm's

Supercaps will be wired in Series to total 6 or 12 volts. This can than be fed into a car cigarrete lighter adadptor to charge USB's.

12 volts can also be fed into an invertor to power AC appliances.

12 volt high torque motors:

http://innov8tivedesigns.com/c-2208-34

Because the shafts on these are so small, you will have to swap out to a longer shaft, as shown in one of the videos.

shows how to connect controller to battery on hobby motors:

http://adamone.rchomepage.com/guide5.htm

How to replace shafts:

https://www.youtube.com/watch?v=WHcNmZ81KWg

List of motors and their thrust:

http://www.osengines.com/motors/motors/motor-specifications.pdf

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Purple Ice

Purple Ice -in-1 corrosion inhibitor and wetting agent enhanced protection of aluminum Reduces surface tension of coolant allowing heat to transfer outside the radiator is a high performance, synthetic, radiator coolant additive for both gasoline and diesel engines. It is formulated to reduce the surface tension of the coolant, which improves heat transfer through the cooling system while providing additional protection against rust, corrosion and erosion. Purple Ice prevents the formation of scale deposits in the radiator for optimum coolant flow and lubricates the seals of the water pump. It is ideal for use in straight water racing applications or in antifreeze / water mixtures. Purple Ice is compatible with traditional ethylene glycol antifr ___________ Because you want free airflow, block 3 to 6 fins (or test which is momst effecicent) with glue, or epoxy and pour purple ice in this heatsink area. Test other mixtures such as ethylen glycol, ethyelene alscohol or mixtures thereof and find out which creates maximum cooling __________________ Do more tests with cloth soaked / thick mesh/ with purple ice and type mixutures which is wrapped around the heatsink.

Purple Ice is compatible with traditional ethylene glycol antifreeze (green)

Tapping the Energy of Draco.

Add to marketing notes:

Draco borders with Virgo: Next Virgo Ending VOC Wednesday, May 7 8:24 pm Thursday, May 8 8:24 am Virgo This means from Sept to Nov Draco energy is maximized From January to March the constellation will first appear low in the horizon in a northerly direction at around 6 pm, as the night progresses it will become higher in the night sky before disappearing at day break around 7 am. From April to June Draco will first appear in a more north-easterly position at around 9 pm, at around 2 am it will be almost overhead before heading down towards the horizon in the north-west until day breaks at around 6 am. From July to September the constellation will be visible almost directly overhead at around 10 pm, it will gradually move lower towards the horizon in a north-westerly direction before day breaks around 5 am. From October to December it will appear high in the sky in the north-west at around 6 pm, by 2 am it will be almost directly north and low on the horizon, by day break the constellation will be in a north-easterly direction. Constellation Bordering:
http://en.wikipedia.org/wiki/Wikipedia:WikiProject_Constellations/Bordering_constellations

Scientific study shows Zinc Oxide applied to Copper boosts cooling effects.

So test copper squares at top and use a copper pipe and or smaller copper solid wires at base.
http://oregonstate.edu/ua/ncs/archives/2010/jun/nanotech-yields-major-advance-heat-transfer-cooling-technologies

Zinc oxide can be bought at pharmacy - available at rite aid for $5.00 or less

DESITIN® Maximum Strength Original Paste is the only leading brand

that contains the maximum level of zinc oxide,
TEC Reseraching:

Continue from here:

http://shelf3d.com/Search/thermoelectric%20generator?startIndex=150

Slippage may be a problem, so test different rubbers, wheels

Continue Researching:
.700" wide + tracked wheels

Here is one source:

http://www.shoppscr.com/pro-track-star-series-cnc-drag-rears-1-316-x-700-pron245b