The Rosemary Ainslie Energy-Collection System

For many years now, people studying science-related subjects in universities around the world, have been told things which are at best, out of date, and at worst, deliberately incorrect. For example, a common starting point for analysis is to assume "a closed system" although it is perfectly clear that there is no such thing on the planet.

With few exceptions, calculations are generally based on the assumption that energy does not flow into a system or a device from the outside. The influence of sunlight is one of the few external inputs recognised, and it's effect on solar panels, producing rainfall, causing winds, etc. are admitted because these things are so obvious to the average person that there is no denying them.

These same people fight tooth and nail to persuade people that "space" is empty and that there is nothing in it. This is, of course, ridiculous, since light passes through space, as do radio waves, X-rays, cosmic particles, and other things. It is certainly a weird notion that distant objects can affect each other if there is absolutely nothing in between them. It would be a neat trick to explain the effect of gravity if there is absolutely nothing in the gap between them.

The matter has long since left the realm of common sense as the British scientist Harold Aspden has demonstrated with laboratory measurements, the presence of an "unknown" field which acts like an incompressible gas. What his work has demonstrated is now known as "the Aspden Effect" and the experimental results are as follows:

Harold was running tests not related to this subject. He started an electric motor which had a rotor mass of 800 grams and recorded the fact that it took an energy input of 300 joules to bring it up to its running speed of 3,250 revolutions per minute when it was driving no load.

The rotor having a mass of 800 grams and spinning at that speed, its kinetic energy together with that of the drive motor is no more than 15 joules, contrasting with the excessive energy of 300 joules needed to get it rotating at that speed. If the motor is left running for five minutes or more, and then switched off, it comes to rest after a few seconds. But, the motor can then be started again (in the same or opposite direction) and brought up to speed with only 30 joules **provided** that the time lapse between stopping and restarting is no more than a minute or so. If there is a delay of several minutes, then an energy input of 300 joules is needed to get the rotor spinning again.

This is not a transient heating phenomenon. At all times the bearing housings feel cool and any heating in the drive motor would imply an increase of resistance and a build-up of power to a higher steady state condition. The experimental evidence is that there is something unseen, which is put into motion by the machine rotor. That "something" has an effective mass density 20 times that of the rotor, but it is something that can move independently and take several minutes to decay, while the motor comes to rest in a few seconds.

Two machines of different rotor size and composition reveal the phenomenon and tests indicate variations with time of day and compass orientation of the spin axis. One machine, the one incorporating weaker magnets, showed evidence of gaining strength magnetically during the tests which were repeated over a period of several days. This clearly shows that there is an unseen medium which interacts with everyday objects and actions.

Bob Boyce of the USA developed a toroidal transformer pulsing system which he uses for the electrolysis of water. His system is notable for the fact that he gets efficiency levels more than 1,000% that of Michael Faraday who set the standard for university teaching on the subject. One of the most likely explanations for this seemingly massive outperforming of Faraday's maximum possible gas output results is that Faraday was perfectly correct and excess energy is flowing into Bob's system from the outside.

There is extremely strong evidence that this is so, because five independent experimenters have demonstrated this inward energy flow, using Bob's toroidal transformer to charge batteries. One man who lives in South Africa has a young daughter who drives her small electric car around each day. The car is powered by one 18 Amp-Hour lead-acid car battery. There is nothing unusual about this as these miniature cars are readily available around the world. There is also nothing unusual that the child's father charges up the battery overnight, so that the little girl can drive around the next day. What is most unusual is the fact that the battery charging is powered by the battery which is being charged. According to university teaching, the charging is a "closed system" and so it is not physically possible for that to happen.

The little girl does not know this and drives around happily each day. The battery in her car has been recharged this way more than thirty times. This would appear to be direct evidence of energy flowing into the charging system from the outside. Achieving this is not an easy thing to do, quite apart from the fact that most sensible people are very reluctant to have the output of any system fed back to the input of that same system as that is positive feedback which easily leads

to power runaway. The preference is to have one twelve volt battery charge a separate forty-eight volt battery bank because doing that avoids any possibility of excessive feedback.

As with most systems, the practical details are a key feature. In this case, the toroid is a MicroMetals 6.5 inch iron-dust toroid which is precision hand-wound with three separate windings of solid, silver-plated copper wire with a teflon covering. These three windings are pulsed in turn with a complex waveform signal, creating a high-speed rotating magnetic field which has no moving parts. A rotating magnetic field like that has long been known to produce excess power with a RotoVerter system constructed from two off-the-shelf 3-pahse motors, having a power output well in excess of the power input needed to make it run.

This inflow of outside power is a feature of Rosemary Ainslie's heating system. Rosemary has designed and laboratory-tested a heating system which can have substantially more output power then the input power needed to run it. She achieves this by pulsing a heating element in an unusual way using this circuit:
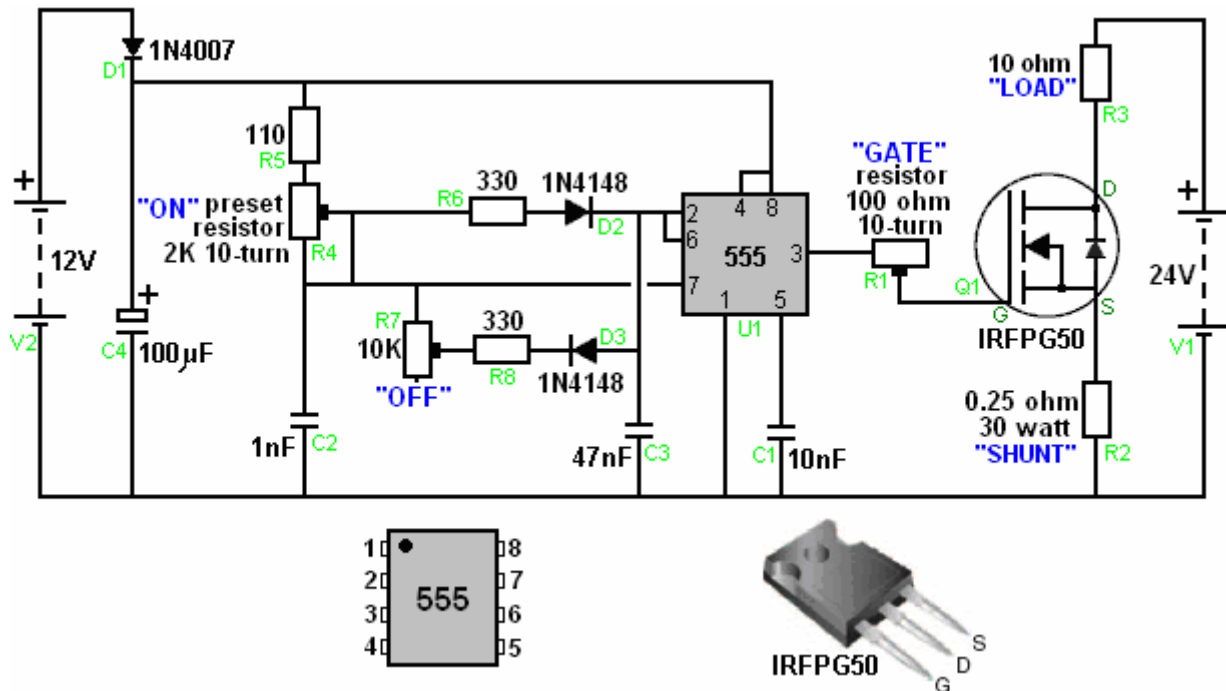

Circuit Components	
Part	Description
C1	0.01 µF Capacitor
C2	0.001 µF Capacitor
C3	0.047 µF Capacitor
C4	100 µF Capacitor
D1	1N4007 Diode
D2	1N4148 Diode (1N914)
D3	1N4148 Diode (1N914)
Q1	IRFPG50 HEXFET MOSFET, from International Rectifier
R1	100 Ohm Potentiometer 10-Turn 2-watt, Vishay Spectrol #SP534
R2	0.25 Ohm 30 watt 1% non-Inductive Resistor, Caddock Electronics Inc. #MP930
R3	10 Ohm + - 5% Prototype wire wound "Quantum" Load Resistor
R4	2K Ohm Potentiometer 10-Turn 2-watt, Vishay Spectrol #SP534
R5	110 Ohm 1/8 watt Resistor
R6	330 Ohm 1/8 watt Resistor
R7	10K Ohm Potentiometer 10-Turn 2-watt, Vishay Spectrol #SP534

Most circuits which draw energy in from the local environment, generally need to be tuned to achieve resonant operation. It is also found that a waveform rich in harmonics is needed to produce the best results. For example, Ronald Classen recently produced an analysis of the operation of Bob Boyce's electrolyser toroid pulsing. Bob's circuit generates three separate waveforms, one at about 42.8 kHz, and two harmonics, one at around 21.4 kHz and the other at about 10.7

kHz.   He examined the operation with the two harmonics slaved exactly to the master frequency and then with the two harmonics free-running and not quite synchronised, so that a random pattern of harmonic pulses were generated. Surprisingly, he found that the random arrangement gave much higher gains than the "precision" circuit.

The same sort of situation is found here in the Ainslie circuit as very precise adjustment of the "Gate" preset resistor "R1" has a major effect on the circuit performance while the other two, R4 and R7, are used to adjust the frequency of the pulses and the ratio of "On" time to "Off" time. Like almost every other circuit which produces a greater power output than the input power required to make it operate, very careful adjustment is needed. The characteristics of the "Load" heating element "R3" are also very important. With some configurations, there is no excess power generated, while with others there is a very marked increase in power and the prototype apparatus produced power outputs in excess of four times the input power.

A quick glance at the circuit diagram makes it appear that there is no significant connection between the NE555 timer chip and the IRFPG50 FET transistor. This is not the case as the arrangement as shown generates transients which modify the oscillation of the NE555 chip. This is presumably due to the nature of the current draw by the gate of the FET or through induced currents caused by the pulsing of the inductive load heater coil "R3". We tend to think of FET transistors as having next to no current flowing into the gate, but the IRFPG50 FET can draw up to a massive 6 amps for the Gate to Source current flow. The NE555N chip supplying that gate current (with no current-limiting resistor between the two devices) can supply a maximum of only 200 mA (or possibly 300 mA at a push) which is only 5% of the possible current draw by the FET. The circuit of the NE555N chip is:
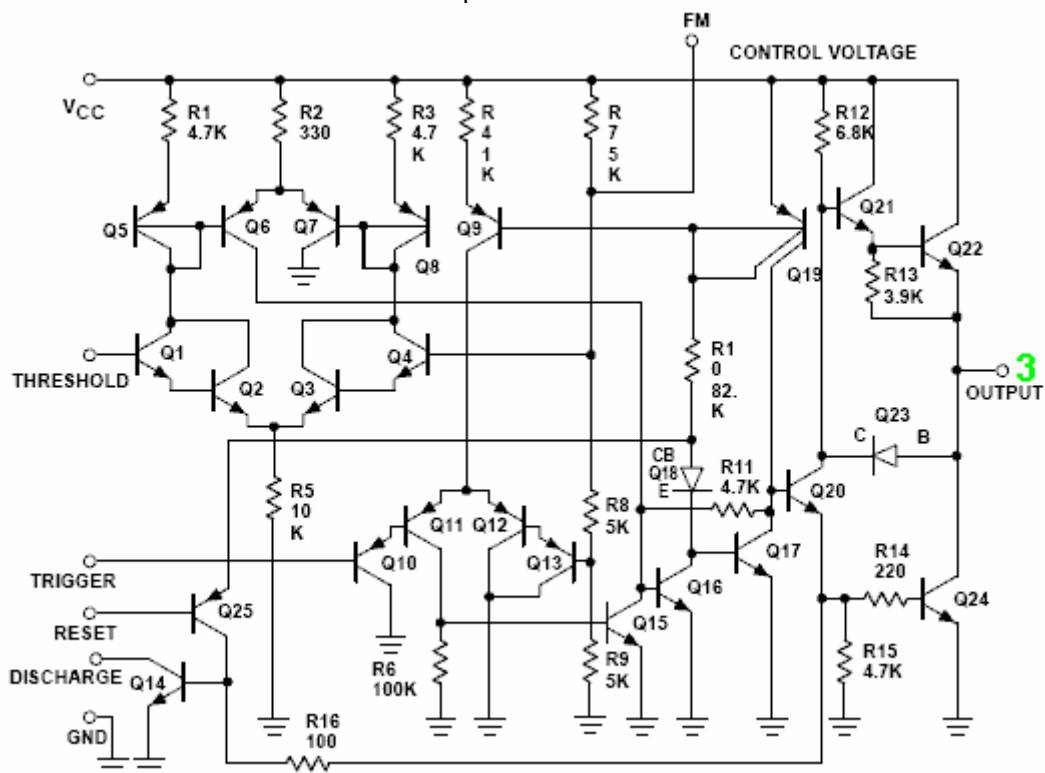

From this it appears that the direct coupling of the output could allow some modification of the chip timing and waveform if the output current draw is well above the design value, the internal resistors preventing destruction of the chip and reducing the effect so that it just modifies the functioning of the chip.

This is also suggested by the fact that the adjustment of the "Grid" variable resistor, which controls the NE555N current draw, is the most critical adjustment of the circuit. Supporting that idea is the fact that the required chip operation does not take place if the "Grid" resistor setting is too high or too low. Presumably, the setting has to be an exact amount so that the NE555N chip operation is altered to make it generate waveforms not envisaged by the chip designers. The physical separation of the "Load" resistor and the circuit board may also be important as there is almost certainly a magnetic feedback element as well.

I would love to tell you that the circuit operates in the way that the circuit diagram would suggest, with the timing and Mark-Space values controlled as expected by the 555 chip designers. However, that is definitely not the case. If the 24V battery is disconnected, then the NE555 chip section of the circuit performs exactly as expected. If the "R1" **GATE** resistor is at the correct setting and the 24V battery is then connected, the result is that the normal running of the NE555 chip is overridden and the circuit immediately switches into a completely different type of operation. The Mark-Space

ratio is forced into an approximately 55% setting and the pulsing rate is bounced to over 500 kHz (well beyond the capability of the NE555 chip, as many actual chips can't even reach 45 kHz in practice) with this waveform:
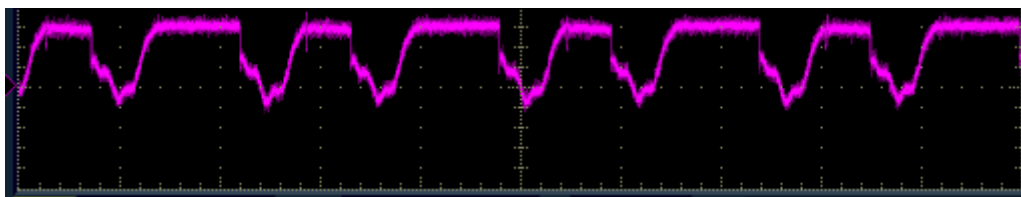
which you will note has repeating pairs of pulses, neither of which is a square wave. The overall circuit is clearly not operating as an NE555 chip circuit any longer but is oscillating in an unexpected way. This high radio-frequency pulsing produces electromagnetic waves which radiate out from the load resistor, an effect which is seen on a nearby television set. This is not really surprising, as the circuit should really be presented like this:
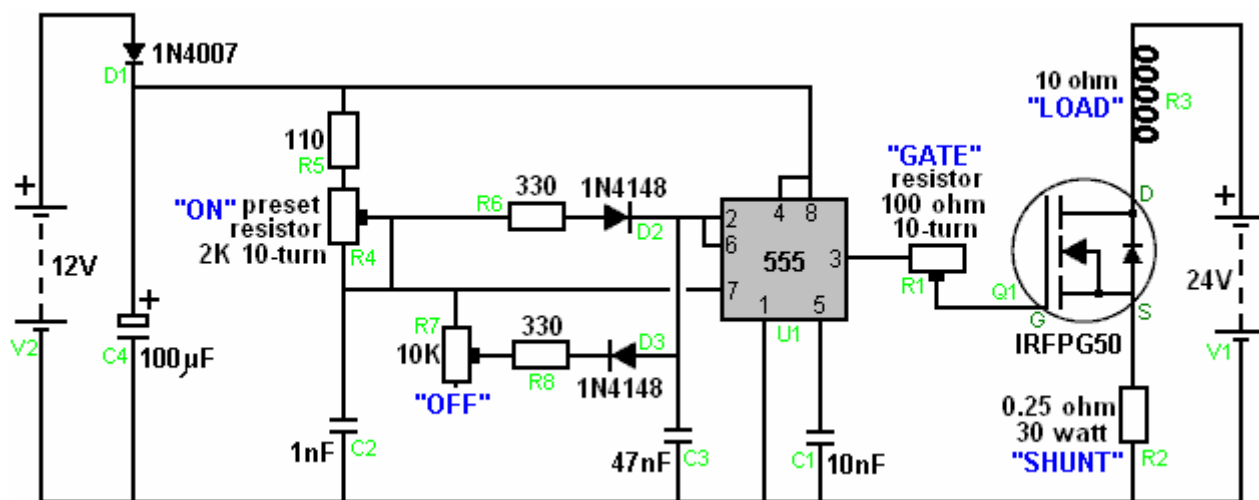
This is because the 10 ohm "resistor R3" is actually a coil of wire. The specification for this component shows that it has a length of 150 mm (6"), a diameter of 32 mm (1.25") and is an air-core coil, wound with 48 turns of resistance wire with a 1 mm gap between each turn. The lack of a core, allows the coil to oscillate at this high frequency, and any coil driven at that frequency radiates radio waves.

It is almost certain that these electromagnetic waves are inducing voltages in the wiring surrounding the NE555 chip circuit, causing it to run wildly outside its design. The wire-wound adjustment resistors are little coils which have the potential for picking up transmitted waves. This pickup mechanism is strongly supported by the fact that only an NE555N chip will operate in this way and three other makes of 555 chip which were tested, failed to produce this runaway action. The higher runaway frequency is important for achieving power gain. Don Smith states that the extra power being drawn into a circuit is proportional to the square of the pulse frequency. If this is correct, then moving the pulse rate up to over 500,000 per second will have a major energy effect and explain why tuning the circuit into this high-speed mode is important.

The practical method of tuning the circuit into its self-oscillating non-symmetrical, power-gaining mode is by monitoring the voltage of the "V1" 24V battery. When the circuit is out of tune, the battery voltage gets pulled down quite noticeably. When the circuit is tuned correctly, there is a slight increase in the battery voltage. If the circuit has been built as described, using an NE555N timer chip and a high inductance load "resistor" coil, then tuning the circuit is performed as follows: Connect a digital voltmeter across the 24-volt power supply and note the exact reading. Set the "ON" preset resistor to its minimum value of zero ohms. Set the "OFF" preset resistor to its maximum value of 10K ohms. These resistors are generally left at these settings throughout.

The "GATE" resistor is now adjusted very carefully, watching the voltmeter reading. As the circuit comes to its best possible tuning, the battery voltage will rise. Pick the resistor setting which gives the highest battery reading. The rise in battery voltage is caused by the inflow of external energy. Some of this flows through the "LOAD" causing heating effects which can be 17 times greater than would normally be expected. Part of the inflowing energy flows back into the power supply, and that flow lowers the current draw from the 24V battery, which in turn, allows it to show a higher voltage reading. This mechanism is exactly the same as described by Tom Beardon when explaining the operation of John Bedini's battery-charging pulse circuits - part into the load and part back into the power supply.

4

Although it is not mentioned in the Parts List, it is very important to mount the FET transistor on a heat sink as the current flowing through it causes it to heat up. Also important is to use a mica gasket between the FET and the heat sink. A mica gasket is a thin layer of mica which electrically insulates the FET from the heat sink while still acting as an extremely good conductor of the FET heat to the heat sink. This is necessary because the "Drain" pin of the FET is connected electrically to the metal mounting strip of the FET and if the FET is not insulated from the heat sink, then the heat sink acts as a radio aerial and radiates an embarassingly large level of radio waves. The heat sink can be a simple sheet of aluminium, or it can be a commercial finned design of which there are many from which to choose. A suggested physical layout for this circuit is given towards the end of this document, and can be used if you are inclined so to do.

This is a circuit which cries out for replication and investigation by both experienced and inexperienced experimenters. There are no expensive components in the circuit and the circuitry could hardly be any more simple than it is. If this circuit can be scaled up to operate as a household heater it would mean that electrical heating costs could be reduced to a tiny fraction of what they are at the present time. That sort of cost reduction would make a major difference to a very large number of people, which makes this circuit very interesting indeed.

A website which has a considerable amount of interesting information on this design and the history surrounding it can be found at: http://www.free-energy.ws/rosemary-ainslie.html

The operating methods which are used in this style of circuitry are describe in considerable detail in a patent application (WO 99/38247) has been filed for this system. Reading those descriptions can be helpful, so here is a digest of part of that patent:

Patent: WO 99/38247   Date: 22nd January 1999   Inventor: Rosemary A. Ainslie

HARNESSING A BACK EMF

ABSTRACT

A method of achieving high efficiency of energy usage which includes passing current through an inductor, causing the current to be repeatedly interrupted, thereby generating a back EMF in the inductor and thereafter, harnessing the back EMF so generated , to supply energy to an energy-receiving or processing device. The frequency of interruptions should be 40 Hz or more and is achievable by rectifying the current. The invention extends to apparatus for harnessing such back EMF and energy generating means comprising an inductor and a current interruptor connected to an energy-receiving device.

FIELD OF THE INVENTION

The invention relates to a method of harnessing back EMF for use in powering a load or replenishing a depletable energy source and extends to apparatus used in performing the method.

BACKGROUND OF THE INVENTION

Conventional switching circuits are well known in electrical energy conversion technology, and switch mode systems have been employed to enhance energy utilisation efficiencies. The concept of absorbing electrical energy released by the collapse of auto-electronic emissions from a discharge tube is disclosed in US 5,449,989. This document discloses a circuit which includes an output port connected to a current sink which is able to absorb at least a substantial portion of such emissions. The current sink may be an electric motor or a secondary battery.

The concept of applying a back EMF in electrical circuitry is also known. For example, in US 5,521,476 there is disclosed a control circuit for a disc drive motor, in which back EMF blocking circuitry is employed to prevent dissipation of a back EMF through a power supply. By contrast, publication WO 9,613,892 discloses the use of a back EMF to trigger a response in a control system for a mechanical system, so that driving pulses are generated to accomplish a desired displacement motion.

In the present invention, to achieve high energy efficiencies, greater than unity in relation to a conventional test circuit, a back EMF which is generated in an inductor, is harnessed so as to return energy associated with the EMF, to a depletable energy source which is supplying such a circuit, or to a load included in the same primary circuit as the energy source. It is envisaged that a wide range of electrical supply sources will derive benefit from the invention disclosed below.

A first aspect of the invention is a method of harnessing back EMF in an electrical circuit in order to increase the efficiency of energy usage to 90% or more, (compared to a Resistor-Temperature v Wattage calibration circuit). This is done by arranging the circuit so that it contains an inductor and an energy-receiving device configured so that the current flowing through the inductor generates a back EMF whose energy is used to provide both additional energy to the circuit itself, and the back EMF energy to the energy-receiving device.

In a preferred form of the method, the back EMF is generated by interrupting the current flow through the inductor, ideally, interrupting and restoring the current flow repeatedly and rectifying the current. The rate of interruptions should be at least 40 times per second and preferably 50 or more times per second. The duty cycle of the interruption should be at least 50% and ideally be 75%. That is, the current flow through the inductor is "On" for 50% to 95% of the time and "Off" for 50% to 5% of the time.

In a further preferred form of the invention, a back EMF is generated which is large enough to cause the comparative energy efficiency to be at least unity. This can be achieved by setting and controlling a suitable value for a variable selected from one or more of:
     The frequency of interruptions from the wave rectifier;
     The duty cycle;
     The thickness of the wiring in the circuit;
     The efficiency of the inductor core,
the value being set in accordance with the operational requirements of the desired application.

In another preferred form of the invention, the energy-receiving device is either an energy-requiring load, and/or an energy storage device, ideally a replenishable source of either DC or AC electrical energy. Ideally, the method also includes providing at least one inductive load associated with each receiving device. The inductor may be a transformer or other suitable inductive device.

A second aspect of the invention is a method of restoring electrical energy to a source, which is done by providing a closed circuit containing a source of electrical energy which passes current through the inductor, creating an extruded magnetic field around the inductor, which field is then collapsed, creating a back EMF which is then fed to the source with an energy usage efficiency factor of 1 or more when compared to a Resistor Temperature Versus Wattage Calibration Circuit.

This feedback of energy can be to an energy-requiring load or to an energy storage device.

In a further preferred form of the invention, the bias-changing mechanism is a wave rectifier and the method of use is to make the wave rectifier output interrupt the electric current.

Ideally, the inductor used should have a solid core which is capable of inducing a magnetic moment associated with a collapsing magnetic field.

The method used in this invention includes selecting a value for:
     The frequency of interruptions from the wave rectifier;
     The duty cycle;
     The thickness of the wiring in the circuit;
     The efficiency of the inductor core,
so that the magnitude of the back EMF generated when the magnetic field collapses, is in a predetermined range which suits the requirements of the energy-receiving device and its intended use.

In one preferred form of the invention, the inductor is a transformer with a primary winding large enough to create sufficient voltage from the back EMF, to feed power back into the circuit. If the current feeding the inductor is AC, then the current interruptor can be a diode or a triac.

A further aspect of the invention is an apparatus comprising an inductor having a core suitable for the generation of back EMF from collapsing magnetic fields, and an electrical circuit containing that inductor, a replenishable energy source, and energy-receiving device and means for changing orbital bias of a magnetic field set up in use and associated with the inductor, both it and the source with variable frequency and variable Mark-Space ratio, being configured to operate the inductor, and arranged so that the magnetic field of the inductor is made to collapse and be restored repeatedly, thereby generating electrical energy, the circuit being capable of conducting the energy and providing it to the energy-receiving device.
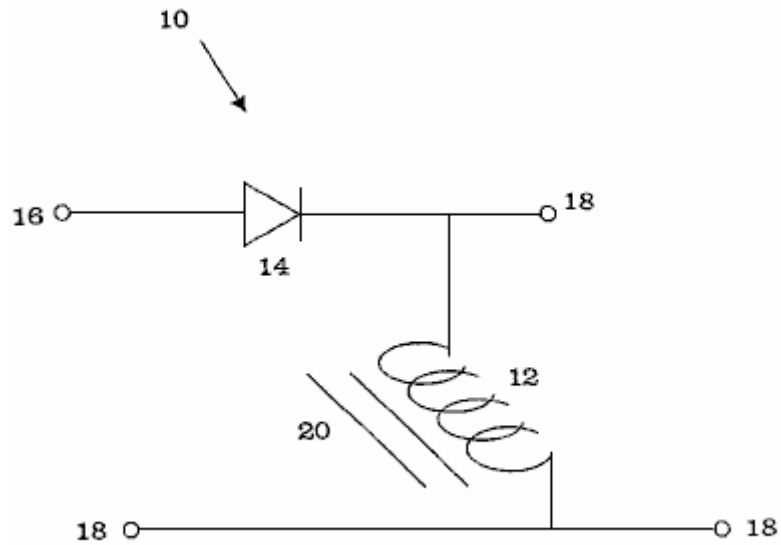

A BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1

Fig.1 illustrates schematically, a circuit to which the invention may be applied.
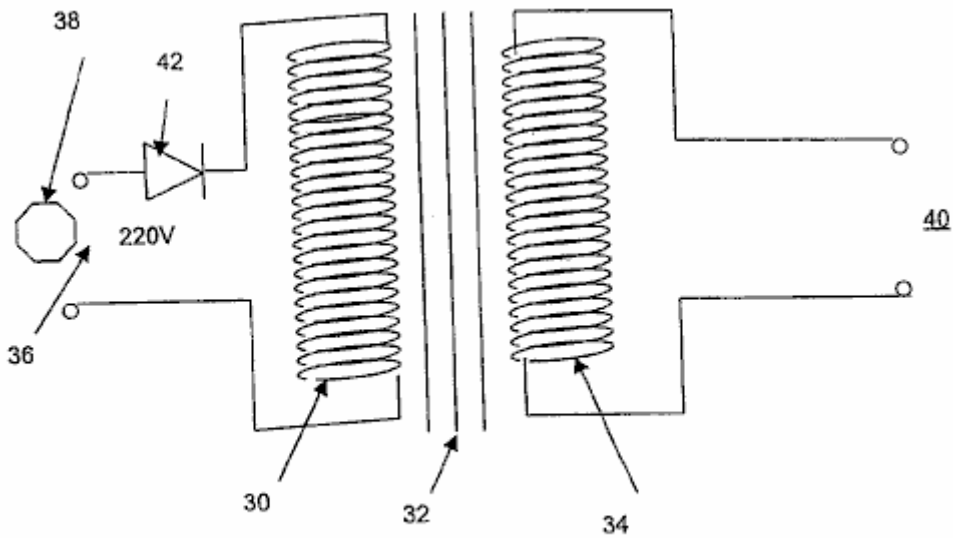

FIGURE 2

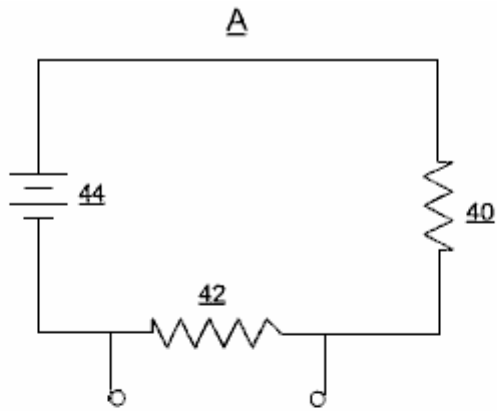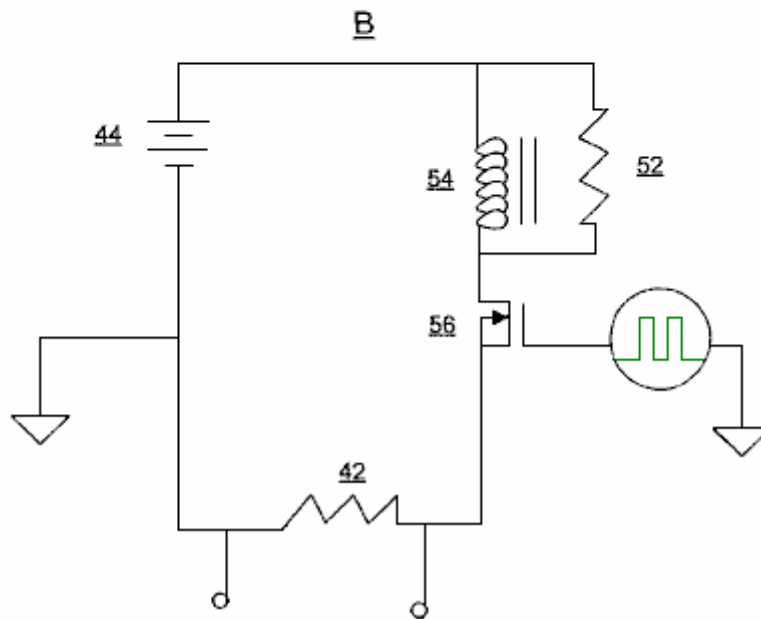**Fig2.** illustrates an electrical generator which may be used with this invention.

FIGURE 3

Fig.3A illustrates a control circuit which is described in Example 1 below, and Fig.3B illustrates a test circuit, the performance of which is compared with the circuit shown in Fig.3A.
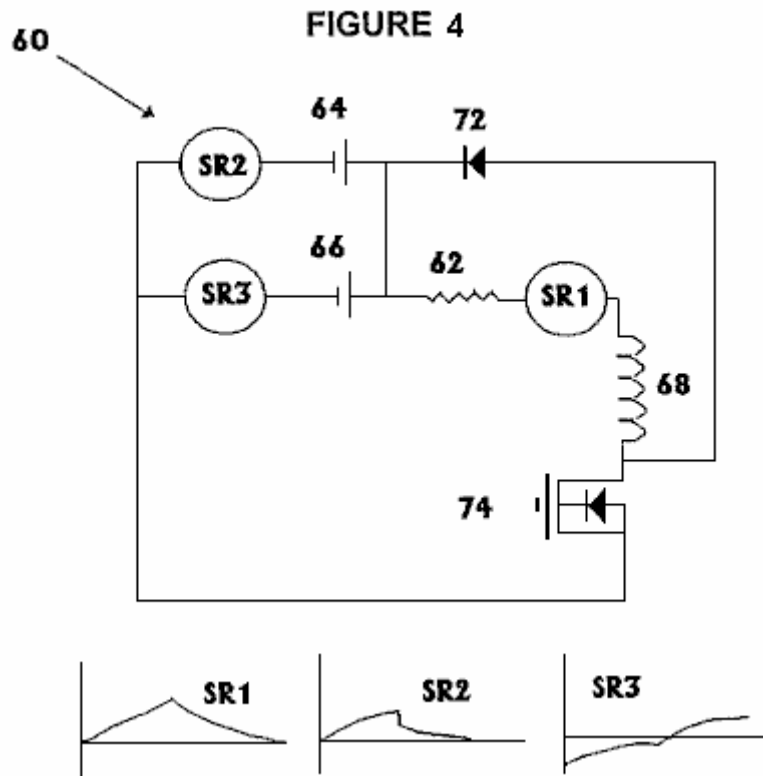
FIGURE 4

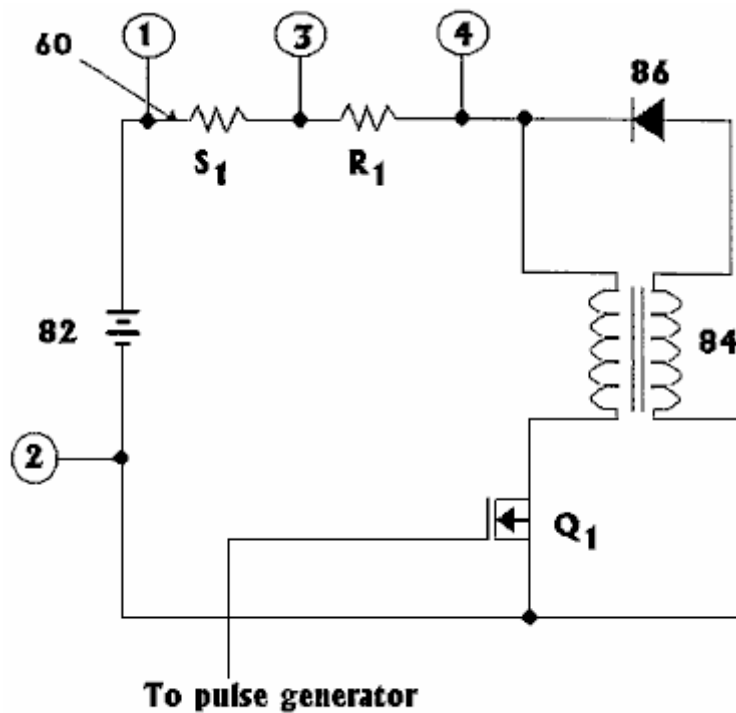**Fig.4** illustrates the test circuit described in **Example 2** below.

To pulse generator

FIGURE 5

Fig.5 illustrates the circuit referred to in **Example 3** below.

DETAILED DESCRIPTION OF THE INVENTION

By connecting an inductor in a load-bearing circuit and causing back EMF to be established in the inductor, there may be created a voltage of sufficient magnitude to restore energy to the circuit's source of power and so reduce its rate of depletion. It is not suggested that the load would consume less energy, but that additional energy from the back EMF can be supplied to either the load or the power source supplying that load.

The circuit can be supplied with either DC or AC power and while the inductor may be any suitable inductor, the use of a transformer is preferred. An alternative is a winding or a choke, preferably containing a core capable of inducing a magnetic moment associated with a collapsing magnetic field - typically an iron core, but it could be any suitable liquid or gaseous medium or combination with or without additional solids.

To generate back EMF, the current flowing through the inductor needs to be interrupted repeatedly which can be done by any suitable means. A preferred method is the use of a variable-duty cycle chopper. If the current is AC, then the interruption can be cause by using a wave rectifier such as a diode or a triac. If the current is DC, then the current interruption is achieved by the use of an oscillator, MOSFET or an equivalent means whereby a fluctuating magnetic field in the inductor can be created.

The method of recycling energy which is the substance of this invention has the following steps:
(1) Setting up a circuit containing an inductor which has an extruded magnetic field and which is arranged in such a way as to allow electrical energy to be passed both to and from the inductor, and
(2) Changing the orbital bias of the magnetic field around the inductor, causing the collapse of the magnetic field and the creation of the back EMF current.

These two steps are repeated in rapid succession and when the current flowing through the inductor is interrupted, an alternative circuit is provided in order to direct the back EMF current to the desired destination. Preferred inductor core materials are iron and other ferrous materials.

The circuit does not need to be complicated but it needs to be able to either interrupt or reverse the current through the inductor as already described. The invention will now be described in greater detail by referring to the diagrams:
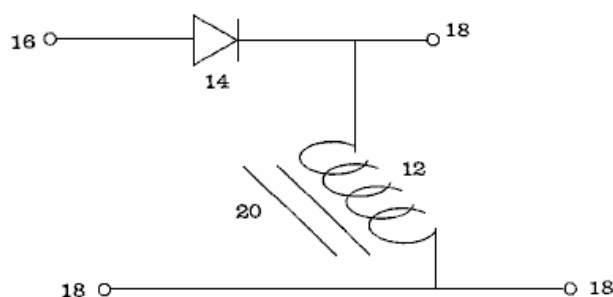

FIGURE 1

In **Fig.1**, the wave rectifying diode **14** is placed in series with a primary inductor **12**, and acts as an interruptor of the electrical current supplied to the circuit. If a sine wave or square wave waveform is applied to the circuit through points **16** and **18**, a pulsing DC waveform is created in the winding of inductor **12**. The interruption of each waveform cycle in the inductor winding **12**, induces a fluctuating magnetic field in the iron core **20** inside the inductor.

It is thought that the back EMF causes a reverse waveform in the inductor winding **12** which is a full sine wave in the case of an alternating current powered circuit, or a full square wave if the circuit is powered by DC pulses. The inductor **12**, may be connected with a load (not shown) in series or in parallel at any of the points marked **18**.

Depending on the frequency of the interruptions, the duty cycle, the thickness of the wiring and the efficiency of the core, the voltage across the inductor **12** may be conducted through a closed circuit to be used in powering the load or returned to the power source. It is desirable, though not essential, that the frequency of interruptions should be not less than 40 Hz although 500 Hz or higher is more appropriate for some applications.

An example of a suitable closed circuit employing such a system is a battery powering a lamp. A transformer may be connected in series with the lamp along with a current chopper which has a variable duty cycle. The output from the transformer can be routed through a diode, a high value resistor and a capacitor all in series. Here, when the chopper service is on, the current flows through the load and transformer. Repeated opening and closing of the current-chopper

system causes the generation of electric current in the transformer secondary and that current is passed back to the battery, **exceeding** the current draw.
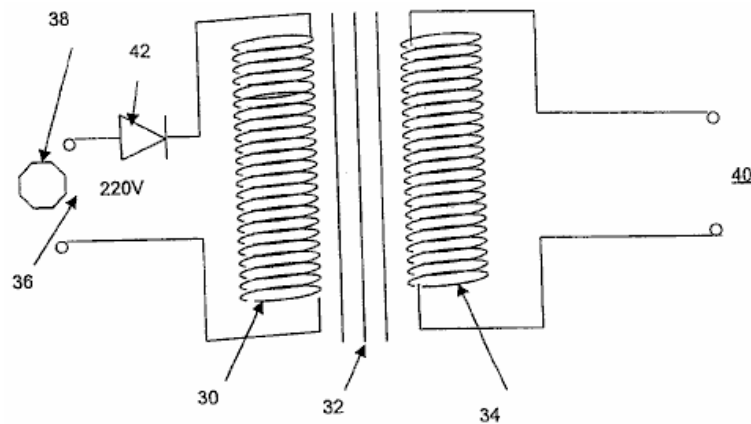

FIGURE 2

Fig.2 shows another variation of the circuit where a primary winding **30**, having for example, 220 turns around a cylindrical core **32**, made of a ferrous metal such as iron or an iron alloy, is associated with a secondary winding **34** of about the same number of turns. The secondary winding is wound around the core adjacent to, or on top of the primary winding **30**, producing a magnetic coupling between the windings, enhanced by the core **32**. The circuit input **36** is connected to an AC source **38**, typically a 220V 50Hz mains supply. The circuit output is taken from the secondary winding **40**. A diode **42** is connected in series with the primary winding **30**, causing the full-wave AC input to become a pulsating input to that primary winding.

On each positive-going half cycle, the primary winding induces a corresponding current in the secondary winding **34**. However, when, due to the blocking effect of diode **42**, the magnetic field resulting from the current in the primary winding **30** collapses, the resulting back EMF in the primary winding induces a corresponding negative-going waveform in the secondary winding **34**. Hence the output **40** from the secondary winding is a full-wave AC waveform.

Although this description is for a circuit with one inductor, it is clear that additional inductors could be used to achieve even greater enhancements in system performance. For example, two or more primary windings could be wired in parallel where just one is shown in **Fig.2** above, each providing a separate, independent full-wave AC output. Alternatively, more than one secondary winding can be placed on the transformer core, utilising the magnetic coupling of the core.

Example 1: Two tests were conducted on two wire-wound, 10-watt resistors manufactured by Philips. The resistors have identical surface areas. The object of the test was to compare the rate of current draw of a standard "Resistor temperature Versus Wattage Calibration Circuit" (the "control") indicated in **Fig.3A**:
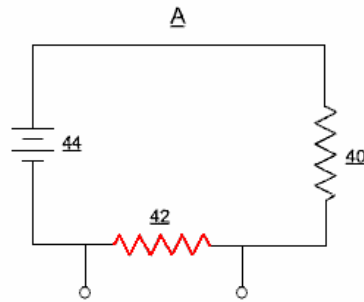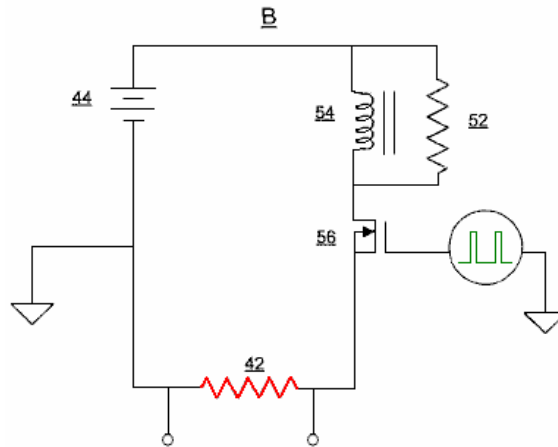
FIGURE 3

to a test using a switching device and an inductor as indicated in **Fig.3B**. The same battery was used in both tests. The control test shown in **Fig.3A**, had a thermocoupled 68 ohm resistor **40**, and a sensing resistor **42**, placed in series with the battery terminals **44**. All measurements were made after the temperature of resistor **42** had reached its maximum value of 95°C. The current was measured as being 196 mA and as the battery voltage was 12.28 volts that represents a power level of 2.406 watts.

The test circuit shown in **Fig.3B**, had a MOSFET switching circuit transistor **56** driven by a square wave signal (shown in green) whose Mark/Space ratio was adjusted until the load resistor **42** reached its highest value of 93°C and all quoted measurements were made after that time. The pulsing signal was running at 5kHz with an "On" time of 22.87% and an "Off" time of 77.13% of the time. The current flow was measured as 171.8 mA which represents a power input of 2.109 watts. The room temperature remained the same during the entire test period.

Allowing for a 5% error in the measurements, this result shows an energy output which is 8.6% greater than the power input, or COP=1.086.

Example 2: The following tests were conducted to prove that subject to specific circuit configurations, an inductor is able to enhance energy efficiency to levels beyond the standard capabilities of an electrical power supply source. The tests also indicate that if a resistor is placed in series with a power supply and an inductor as shown in the Test Circuit, then the correct wattage analysis of that power may be calculated as the energy source voltage multiplied by the amperage (V x I) and that I^{2}R no longer holds as a base calculation of the wattage and power generated in this particular system.

FIGURE 4
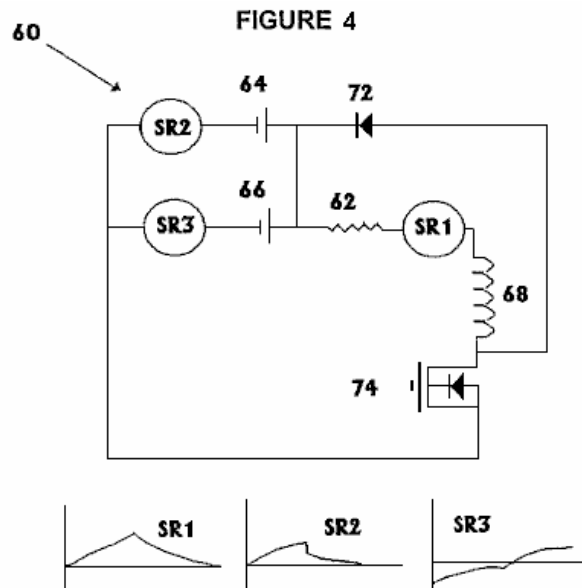
With reference to **Fig.4**, the Test Circuit **60** comprised a 47 ohm, 10 watt, Philips wire-wound resistor **62**, placed in series with two 6-volt batteries, **64**, and **66** connected in parallel. A inductor **68**, was placed in series with load resistor **62**. A positively-biased diode **72**, was placed in parallel with the inductor **68** and above an n-channel MOSFET transistor switching device, **74**. This wire was then taken back to the positive terminal of the batteries. The battery voltage was measured at 6.12 volts.

The duty cycle was adjusted to a 50:50 Mark-Space ratio, giving equal times for the On condition and the Off condition. The load resistor reached a temperature of 30°C and the ambient room temperature was 22°C. The waveforms for the three sensing resistors **SR1**, **SR2** and **SR3** are shown in **Fig.4** below the circuit diagram.

The voltage waveform across the **SR1** sensing resistor in series with the load resistor **62**, is roughly triangular but followed an exponential rise and fall during the On and Off periods of each cycle. The voltage did not fall below zero. The peak positive voltage was measured as 0.006 volts which corresponds to approximately 0.169 watts which is less than would be expected from the temperature of the load resistor. It would be expected that 0.375 watts would be required to produce the measured 30°C of the load resistor **62**.

The voltage waveform across the **SR2** sensing resistor placed in series with battery 1, marked **64**, was roughly triangular in form with some exponential curvature as shown. The average current draw from the battery was measured and calculated to be 0.025 amps, which is a power draw of 0.153 watts..
.
The voltage waveform across the **SR3** sensing resistor placed in series with battery 2, marked **66**, showed a waveform with equivalent amounts above and below the zero voltage level. The On voltage peak was 0.0055 volts and the Off voltage peak was -0.0055 volts (i.e. below zero volts). No power was being drawn from this battery and in fact, the shape of the two sections of the waveform indicate that there was actually a slight degree of charging on this battery although this was ignored as being too small to be significant.

The inescapable conclusion from these tests is that to achieve identical heating of the load resistor, the standard circuitry required 0.0612 amps while the test circuit required only 0.025 amps. This means that the pulsing circuit is more than 100% more efficient than the conventional circuit. These measurements represent a Coefficient Of Performance of 2.45 as the output power is 2.45 times the input power.

These two examples shown here do not necessarily represent optimised values and further gains may be attained by using two or more inductors, two or more energy sources or energy storage and its switching circuitry, and other measures.

Example 3: A further set of tests was conducted to investigate the relationship between power supplied by the battery marked as **82** and power dissipated by a resistor R_1 in the circuit of **Fig.5**.
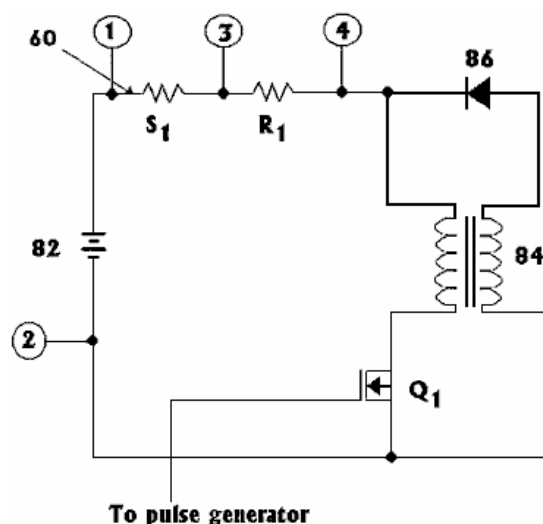
FIGURE 5

This is to test the efficiency of the energy conversion as the duty cycle of the FET switch Q_1 is adjusted. This circuit includes an inductor **84**, which has equal primary and secondary windings and a 350 VA rated core. The circuit also contains a positively-biased diode **86** and other components mentioned below. The tests were conducted with "On" times of 90%, 80%, 70%, 60% and 50% and the results are shown in this table:

Duty Cycle %	V_{1-3} Average mV	Average Current A	V_{1-2} DC V	Battery Power W	V_{1-3} rms mV	RMS Current A	V_{3-4} rms V	Load Power W	P_{load} / P_{batt} ratio
90	69.5	1.390	12.57	17.46	102.5	2.05	10.02	20.54	1.176
80	38.2	0.764	12.64	9.657	73.1	1.462	7.58	11.08	1.148
70	20.9	0.418	12.69	5.304	51.1	1.022	5.36	5.478	1.033
60	7.9	0.158	12.73	2.011	34.1	0.682	3.19	2.176	1.082
50	1.2	0.024	12.76	0.306	15.9	0.318	0.94	0.299	0.976

****

The important thing to note from these figures is the way that the ratio of the output power to the input power (which is the Coefficient Of Performance or "COP"), shown in the final column, varies with the Mark-Space ratio shown in the first column. For all On time ratios over 60% in this very simple circuit, the COP is greater than 1 which conventional science swears is "impossible" in spite of it being demonstrated over and over again by different people and different styles of apparatus.

Rosemary Ainslie's techniques shown here where the back-EMF pulses are harnessed and used to perform useful functions, achieve COP values from 4 to 17 in tests performed to date.

John Bedini's captured back-EMF battery-charging circuits have been replicated with high-voltage battery banks being charged by one 12V battery and yielding COP=11 results.

The pulse motor design of Robert Adams which utilises the back-EMF pulses and other techniques, reaches COP figures of 8 or higher, depending on the quality of the build and the accuracy of the adjustments.

Thane C. Heins demonstrates on video http://www.youtube.com/watch?v=RbRPCt1-WwQ&feature=channel a very simple transformer arrangement which produces COP=3.77 a result which you can easily check out for yourself.

Rosemary's neat technique which produces this energy gain has every appearance of being a more easily adjusted method of producing the gains of the Tesla Switch which has to have a substantial inductive load in order to get its COP>1 performance and which is very tricky to adjust.

It should be stressed at this point that it is physically impossible to draw more energy out of a circuit than the energy flowing into that circuit. Energy can't be destroyed or created and you can't have more than 100% of anything, anywhere, any time. But Rosemary Ainslie and others have demonstrated very clearly that carefully designed and operated circuits definitely put out more energy than the user puts into the circuit. I do not know of any way to prove

14

where that extra energy comes from, but it definitely comes from somewhere, flowing into the circuit from outside. However, let's not concern ourselves with trying to discover the source of this extra power and instead, just learn how to capture and use it for our own benefit.

So, let's recap on how Rosemary's circuitry is set up and used. The initial basic circuit which gives an energy gain is:
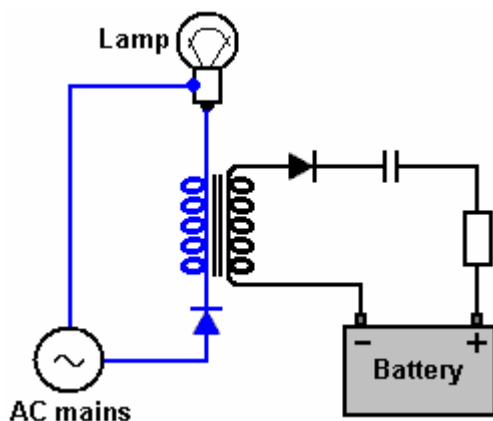
Here, a mains-powered light bulb has two components connected in its normal circuit. The first component is a diode "D" and the second a transformer "T":
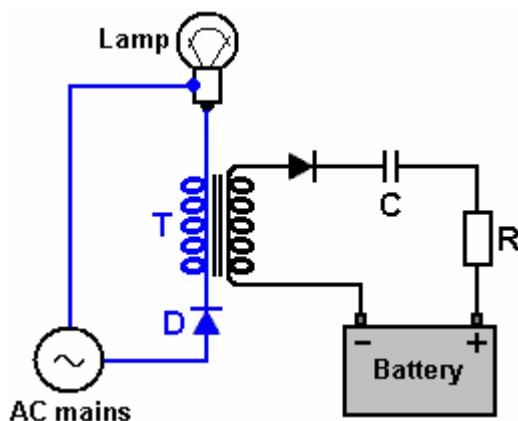

The diode has a very low resistance to current flow in one direction and a very high resistance to current flow in the other direction. We tend not to think about it, but the ordinary mains current flowing through a light bulb switches its direction of flow dozens of times per second - actually, sixty times per second in the USA and fifty times per second in most other parts of the world.

If we put a diode in the circuit as shown in the diagram above, it gets in the way of every second surge of current through the bulb. This causes the current flow to be in only one direction and there are fifty or sixty gaps per second in the flow of current through the bulb. This pulsing current flow passes through the left hand transformer winding (shown in blue in the diagram), called the "primary" winding, and it generates a voltage and current flow in the other winding of the transformer (shown in black in the diagram and called the "secondary" winding).

The two lines drawn between the two windings indicate that the transformer has some kind of magnetic core. Having a core in a transformer can be a very mixed blessing. It will work very well if there is no core material - generally called an "air-core" transformer. Energy gains in a circuit like this, increase with increased voltage and even more so with increased rate of pulsing (called the signal "frequency"). An air-core coil or transformer will operate at very high frequencies, limited mainly by the wire diameter. Most powerful transformers are usually supplied with an iron core as that improves their magnetic coupling at the very low pulse rates used with mains power. That iron core has very limited frequency performance as it is limited by how fast the iron can alter its direction of magnetisation. It is unlikely that you would get good performance even at the low frequency of one thousand pulses per second ("1 kHz"). As each of these pulses feeds a little packet of extra energy into the circuit, obviously, you would like as many as possible per second, so that the energy inflow is very great. You will notice in Rosemary's patent, that she mentions raising the pulse rate to five hundred per second to increase the power gain.

However, that does not matter here as we are using a mains electrical supply which is just creeping along at well under one hundred pulses per second in order to explain the technique in a simple form. Anyway, the voltage generated in the secondary winding of the transformer is a full-wave voltage waveform just like the original mains waveform with no gaps in it. This energy in the secondary winding could be used for a wide range of different purposes. The one shown here is the charging of a battery or a bank of batteries arranged to work at almost any voltage. Contrary to popular belief, the voltage used to charge a battery is not particularly important provided it is high enough, but what is very important is the current flow into the battery, and that needs to be controlled carefully. Ed Gray demonstrated that charging with a high voltage was a perfectly good method and he used a capacitor to control the current flow into the battery. Eventually, he gave up doing that and used an ordinary car alternator to charge the battery as it was difficult to get the capacitor value just right to achieve the desired current.
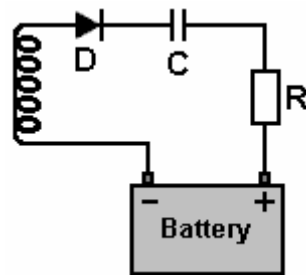
Rosemary uses the same technique but adds in a resistor "R" to make sure that the charging current never becomes excessive. The diode "D" converts the alternating voltage in the transformer winding to positive pulses, that is, pulses where the voltage rises above zero volts and never falls below zero volts. This is the sort of voltage which we need for feeding to the positive terminal of a battery.

In passing, while the capacitor "C" does act as a current-limiting device, it may also act as a conversion device as extra energy flowing into the circuit from outside can be of a somewhat different type to the electrical current drawn from the mains, and a capacitor is a well-proven method of converting the incoming energy into the more familiar conventional form.
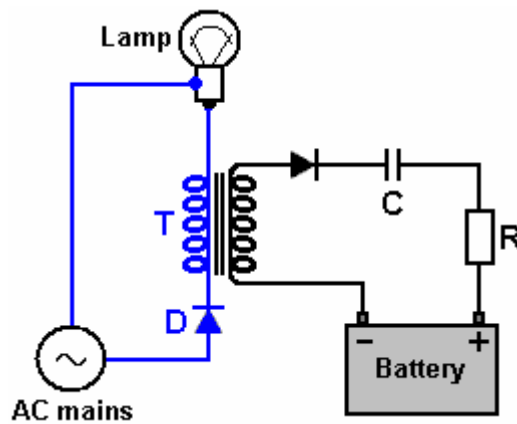

So, looking at the circuit again, the mains is converted to a pulsing 50% Mark-Space ratio current flow through the primary winding of the transformer "T". When that flow cuts off suddenly, there is an inflow of energy into the winding from outside the circuit, forming what is called a "back-EMF" brief voltage pulse in the opposite direction. This fills in the pulse gaps in the secondary winding, giving it a full-wave waveform in spite of the primary being fed only half of that waveform.

The secondary power has the negative pulses (below zero volts) chopped off by the diode on the battery side, giving a series of positive pulses at the same frequency as the mains. The capacitor "C" and the resistor "R" control the current feed to the battery and allow it to charge at a suitable rate.

So, that is the basic circuit - simple and elegant and very effective in use. But, it does not stop there as that basic idea can be used in various other ways. For example, like this:
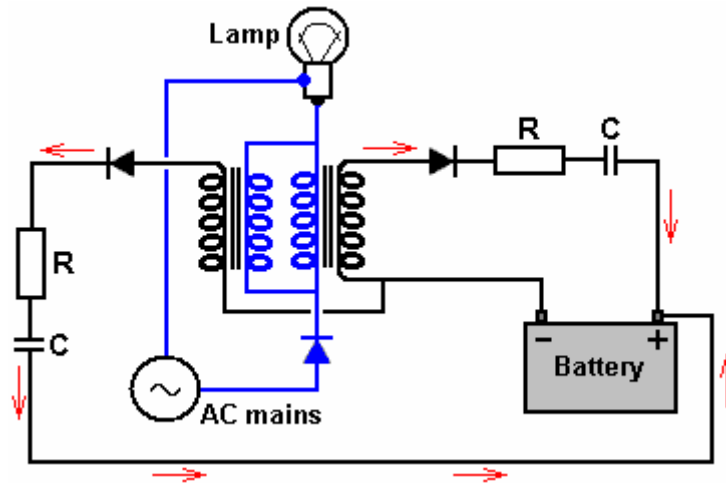
This is the same circuit, but two transformer primary windings are connected across each other (called being wired "in parallel"). The operation is exactly the same as before except that two copies of the mains waveform are made by the magnetic coupling of the transformer windings. Each is "rectified" into positive-going pulses and fed to the battery, creating a larger charging current. An alternative version of this is:
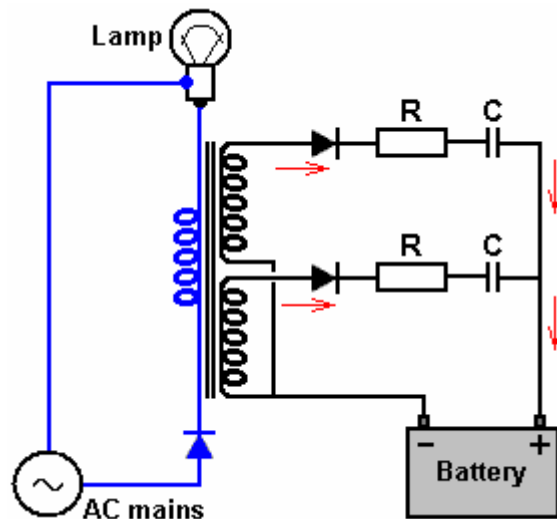
In this variation, the transformer is wound with one primary and two secondary windings. The magnetic coupling of the transformer core generates copies of the mains waveform in both of the secondary windings. Each are rectified and fed to the battery as before.

If this circuit was being built using standard off-the-shelf transformers, it might be easier to use two separate transformers connected "in series". This would depend on the application and the windings of the particular transformers to be used.

The diagrams show up to now have all suggested charging one or more batteries, but this has just been for the convenience of presenting a simple application. As is pointed out by Rosemary, it is perfectly possible to drive some other load such as a heater or a motor using these additional power take-off connections. However, for our continuing description of the circuit options, we will stay with battery charging. So, using two standard transformers, the circuit would be as shown here:
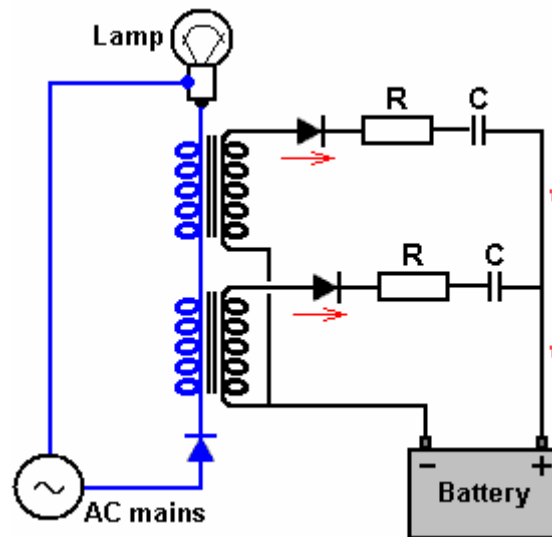
All of the Ainslie circuits mentioned so far have used the mains, but there is very considerable scope for circuits and arrangements which do not use the mains at all. Admittedly, a certain amount of electronic construction work is needed, but the results can be very rewarding. For example, instead of charging a battery bank, it is quite possible to charge the battery which is driving the circuit itself.

Now, before you start to say that this is an impossibility, please remember the little girl and her small electric car battery. Her father found that if he left the charging circuit on too long that he needed to put a bulb in as a load in order to avoid over-charging the battery, and that battery (appears to be) what powers the charging process. In all of these systems, please remember that additional energy flows into the circuit from the local environment, so charging a battery which is driving the circuit is perfectly possible. For example, Robert Adams of New Zealand ran his motor for a ten-hour test and the battery voltage was exactly the same after the test as it was before the test started. If you think that is spectacular, then consider John Bedini's self-charging motor. John ran that non-stop in his workshop for more than three years !! So please don't try to tell me that this sort of thing is impossible because that's what you have been told. Self-charging can definitely be achieved **if** you know what you are doing.

Here is an Ainslie self-powering circuit:
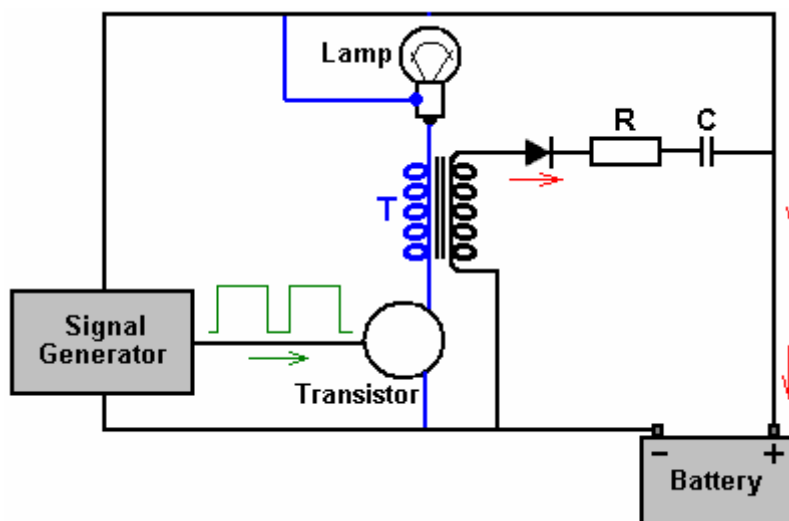
Here, the signal generator, which is probably just a simple 555 timer circuit, produces a train of pulses with a Mark-Space ratio of more than 50% On time. That signal is used to switch a transistor On and Off in rapid succession. The transistor type is deliberately not shown as it can be an NPN silicon transistor, an FET type of transistor, a Darlington pair, or one of those fancy new IGBT devices. Whatever the type chosen, the lamp will be switched on and off so rapidly that it will light up. The fluctuating current through the transformer "T" will produce an alternating voltage in its secondary winding and that will pass through the diode, resistor "R" and capacitor "C" to charge the battery in spite of the fact that the battery is powering the signal generator circuit and the lamp.

Obviously, all of the other options and variations discussed above in connection with a mains-powered version of the circuitry will apply equally well to a battery-powered version. If running from a battery or a bank of batteries and high voltage is wanted, then an off-the-shelf inverter can be used to generate the high voltage used for the mains supply.

If you would like to test the operation of the circuit and the design generally, here is a stripboard layout which might be used:

Key: ⊗ = a break in the copper strip on the underside of the board   ┼ = a hole
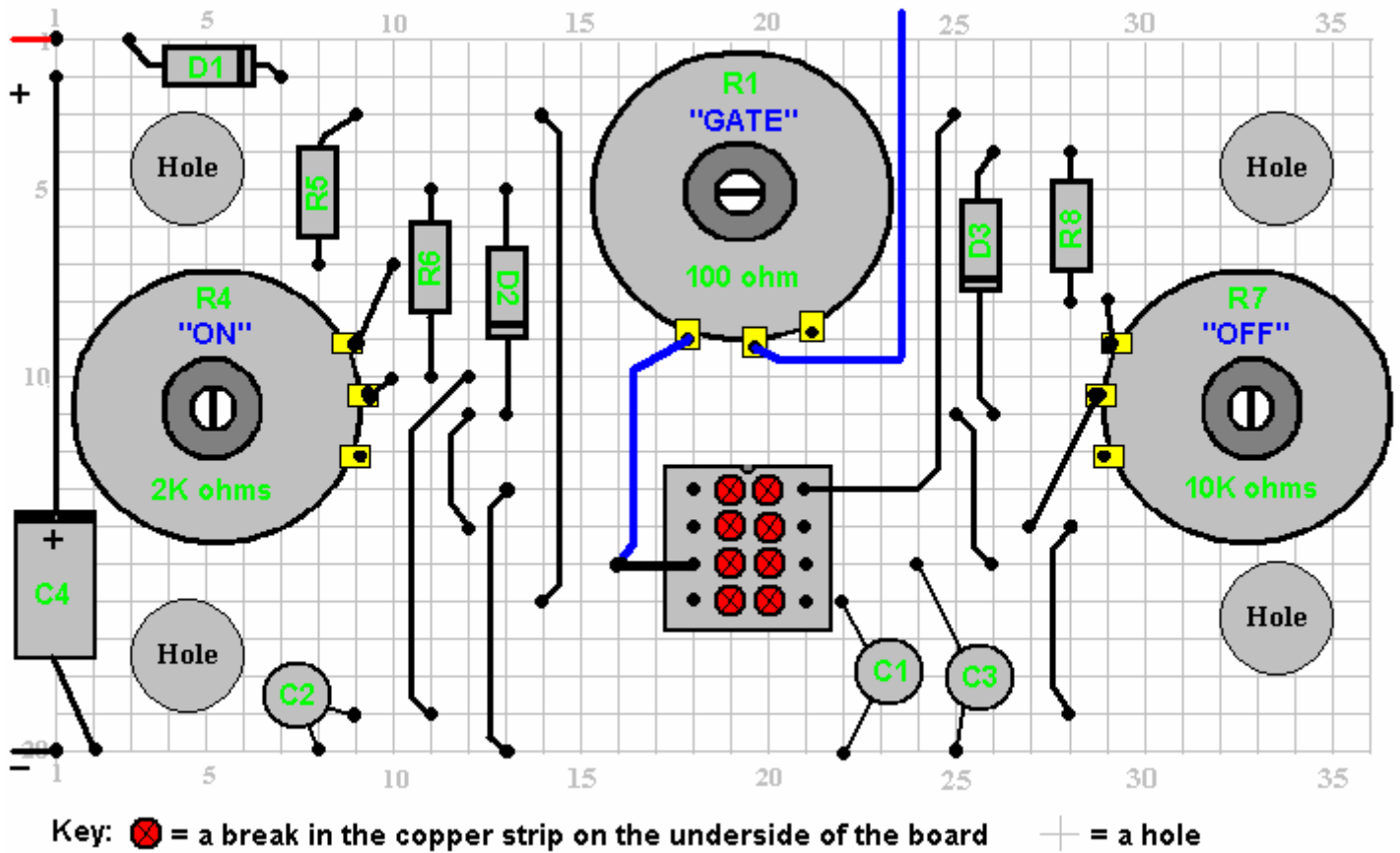
The preset resistors are high power units looking like this:

These are adjusted with a flat screwdriver inserted into the slot at the end of the shaft although they could have a knob attached. It takes ten full turns of the shaft to move across the full range of the resistor. If you are adjusting the Mark-Space ratio and the ratio goes up when you turn the shaft to the left but want that to happen when you turn the shaft to the right, then just swap over the wires going to the outermost terminals of the resistor and that will reverse the effect when you turn the shaft. You can stick the base of the resistor directly to the stripboard using "Impact" Evostick or any similar adhesive and that will hold it securely but still allow you to prise it off the board at a later date if you should need to.

There is no need to use knobs as the circuit will be set up, adjusted for best performance and then left untouched. The circuit can be built using stripboard like this:

The view above is of the underside of the board as that shows the copper strips running horizontally between the holes. The copper strip is quite thin and can easily be broken using the tip of a drill bit or alternatively, a modelling knife. The spacing of the holes is arranged to match the pin spacing of standard Integrated Circuits such as the NE555 timer chip used in this circuit. The only place where the strips need to be broken in the layout above are between the pins of the NE555 chip and if you didn't do that, then the four pairs of pins would be short-circuited together, preventing the chip from operating. It is a good idea to use an 8-pin IC socket soldered to the board as that prevents any heat damage to the NE555N chip during soldering, the IC being plugged in after the soldering has cooled down. It also has the advantage that if the chip ever gets damaged, then plugging another on in is a very easy thing to do. After the board is completed, it is also probably worth running a solder layer along the copper strips which carry some current, that is the plus and minus strips and the strip between pin 3 of the NE555N and the point where the connection to the variable resistor is made. You will notice that the layout of the board includes four holes to take mounting bolts. When these are drilled, the strips under the board need to be cleared away to make sure that no short-circuits can occur when the bolts are in place. The board mounting is like this:
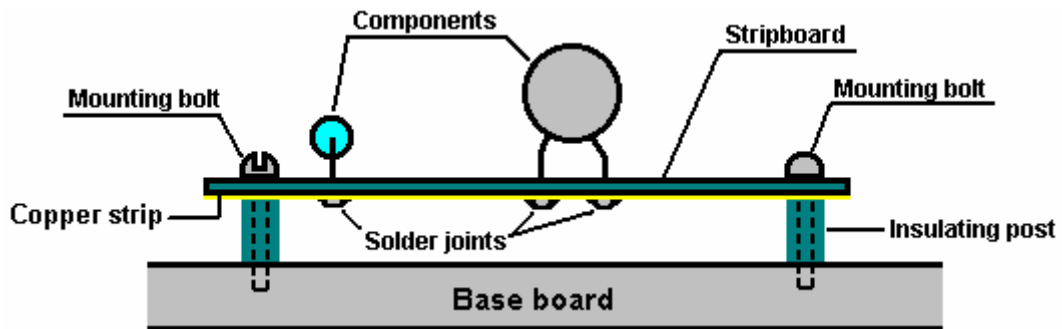

Suppose we wish to replicate and test this circuit:
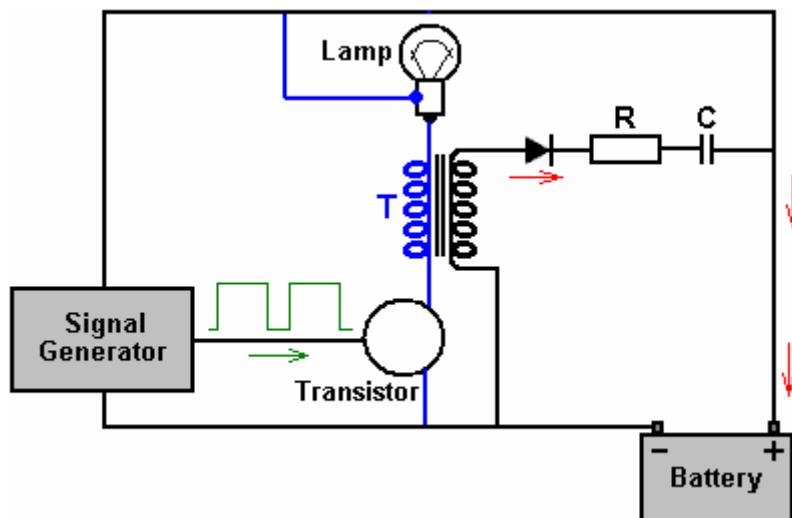
We need to remember that this is just the outline for a practical circuit and that it does not show the normal extra items like and On / Off switch and a fuse or circuit-breaker which are essentials for any circuit which contains a powerful

battery. Please remember that you can't see current flow and if there is an accidental short-circuit, the first you may know of it is smoke !!   That tends to be expensive, especially if some of the components are pricey and/or hard to get.

If we work with the Ainslie pulsing circuit shown at the beginning of this document, then a physical layout convenient for experimenting might be:
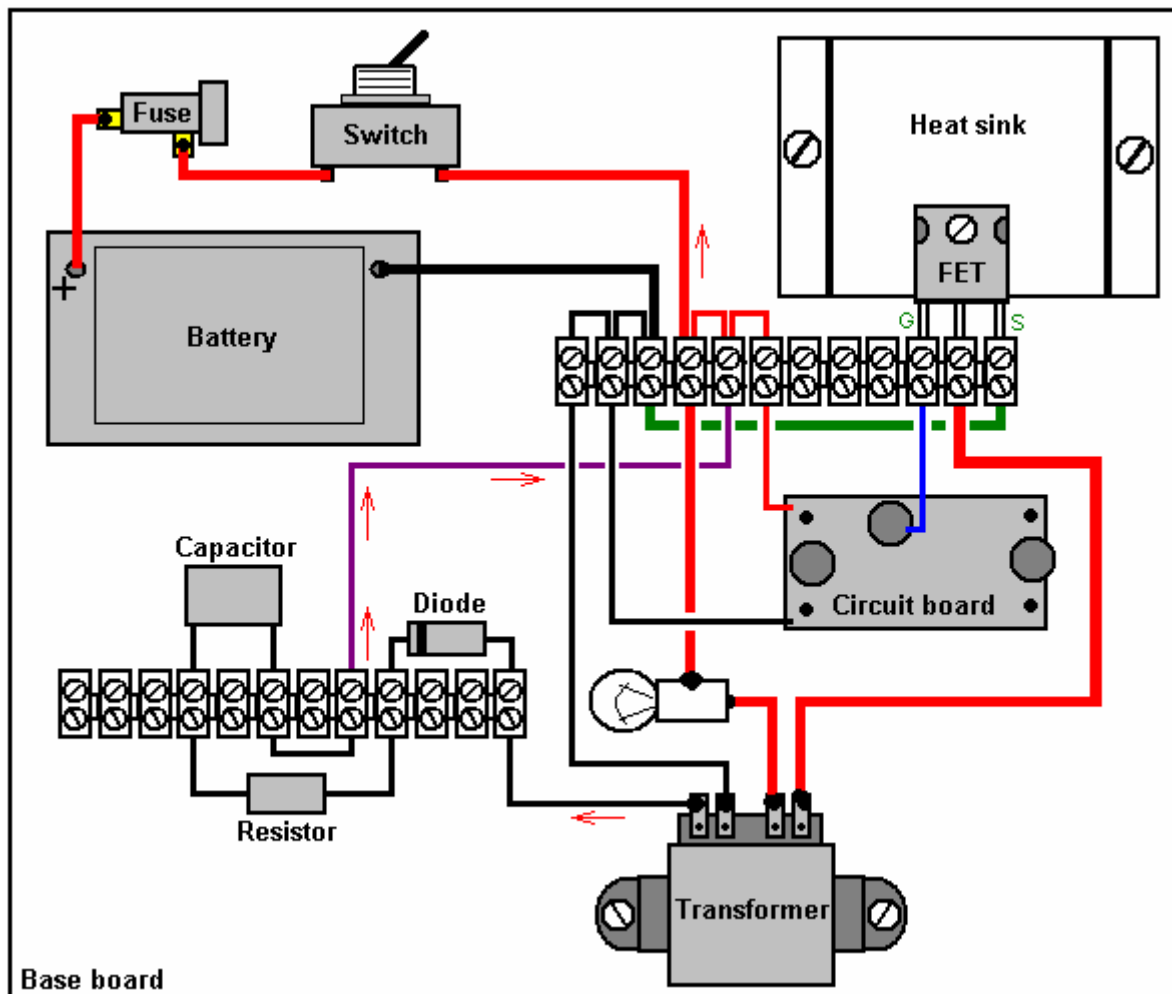
The "heat sink" shown in the diagram above, is just a piece of aluminium bent to raise the centre section slightly and allow good air circulation and clearance for the FET's locking nut. The FET is bolted securely to this plate in order to allow the aluminium plate to let the FET run cooler than it otherwise would. The lamp would be a 12V car type and while many people just solder directly to the bulb as shown here, there is no reason why a bulb socket should not be used. Car accessory shops usually have low-cost "reversing lights" which are a small plastic housing, a bulb socket, a bulb and two pieces of wire already attached to the bulb holder - very convenient, especially since it is very easy to change over to bulbs of different ratings for different tests and the bulbs themselves are cheap.

This circuit is of course, the same as the driver circuit for the heating element circuit. The green link wire shown in the diagram above gets replaced with the 30-watt 0.25 ohm resistor and the resistor should be positioned so that it is in the air, well clear of everything else as it may get hot during operation in spite of its very low resistance value.

Disclaimer: It must be understood that this document is presented for information purposes only and it must not be construed as being an encouragement to either build or experiment with this or any other circuit. The people who have investigated, designed, built or described this circuitry are in no way liable for any loss or damage caused by your actions, should you decide to experiment with this or any other circuit. Should you choose to do that, the responsibility for your actions rests entirely with you alone. This document, while presented in good faith, does not warrant that all attempted replications of the circuits described in it will definitely perform in the same way as those which were investigated during the tests which form the basis for this description.