

# **Energy flow in a simple circuit and the interaction with the quantum vacuum**

Marcus Albert Reid, September 2007

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Information: To emphasize certain aspects the author makes use of self invented words. The essay will give a picture of the basic energy conversion process within an electric circuit and the quantum vacuum.

### **About the cause of the electromagnetic interaction**

There are different methods to describe the nature of the electromagnetic interaction. The classic model which is over 130 years old and still in use today considers the electromagnetic field as a static and materialistic force field in space. It is common belief that the mechanical output energy for example from an electric motor is the direct cause of the electric input energy. This view is based upon the assumption that the magnetic field from the electromagnet is supposed to exist like a piece of material in space and then suddenly after it has spread into space, it does not possess any internal dynamic anymore. This idea derives from the work of James Clerk Maxwell. Maxwell believed like most scientists at that time in a static and materialistic ether. Even though, the material ether theory was disproven in the year 1887 through the work of Michelson and Morley and the work of Albert Einstein in the year of 1905, in the field of the classic electromagnetism a static and material ether is still assumed today.

Another newer view, the model of quantum electrodynamics, describes the electromagnetic field as a quantum field. In empty space time the quantum field contains a dynamic form of energy, the -vacuum energy- or the virtual photon flux. Virtual photons emerge permanently from the quantum field and disappear again a very short time later in that domain. Through this process the virtual photons carry and cause the electromagnetic interaction. The orientation of charges of the appearing virtual photons (particle pairs) in empty space in the absence of mass is a purely entropic process. An electric source charge causes the polarization of the virtual photons and thereby a force field is created. A real force such as the force on a magnetic charge caused by a permanent magnet appears only on the surface and within the charge. Applied to an electric motor this means that the input energy has only an indirect connection with the output energy, because the mechanical force, on the axis is caused through the local action of the polarized virtual photons onto the rotor.

“The quantum electrodynamic theory attributes the electromagnetic interaction to the exchange with a particle, which is the photon. This process works in such a way, that an electron produces a photon which then travels to another electron and thereafter disappears again into the vacuum. During this process the photon produces an electromagnetic force... The exchanged photon which has caused the classic electromagnetic force is in reality a virtual photon.”

*(Prof. Phys. Lisa Randall, Harvard University, -Warped Passages. Unraveling the Mysteries of the Universe's Hidden Dimensions- Nov. 2006, page 187) The text was translated by M. Reid from the German version into the English language.*

An electron polarizes the quantum vacuum in its proximity. The energy of the electron and the energy of the surrounding polarized vacuum is theoretically of unlimited density. The difference between these two unlimited energy densities represents the typical charge of an electron. So the electron permanently radiates its charge energy into the surrounding space. Due to the polarization of the vacuum within the proximity of the electron, the potential of the vacuum is pressed into an observable state.

The polarization of the vacuum can be visualized like a virtual negentropisation where the reduction of the entropy is so strong that the threshold for the creation of an observable photon is reached. In this process there are permanently new virtual photons born which cause and carry the electromagnetic force. So an observable photon is a polarized virtual photon which creates an observable effect onto another charge. Therefore an electron creates permanently new charge energy which is radiated at light speed into space.

Space time has a charge but it is only a force free and mass free virtual charge. The field within space time has no mass. Therefore space time cannot contain a force field because a real force exists naturally only on and within an observable charge. In a quantum mechanical sense we can comprehend the force field as virtual force x time. We can view this virtual force field as a broken symmetry of space time which interacts permanently with the steadily appearing virtual photons. Thereby the virtual photons are polarized. So the polarized quantum vacuum is the product of the curvature of space time and time (time unit of the appearances of virtual photons) and therefore one could say, that an observable force onto an observable charge is the effect of the conversion of time energy into an observable energy form. When work is done only time energy is converted into an observable energy form, because when doing work, the curvature of space time in total is not unbent. When doing work the space time curvatures are only shifted, not wasted. Therefore the author believes that the virtual photon flux is the time generator for a mass. So observable energy is literally generated from local space time when time energy (virtual photon flux) and a curved space time accelerates an observable charge.

A permanent magnet for example can stick constantly to a metal plate. The magnet takes the energy for this action from the quantum vacuum in a virtual form. So the magnetic force is an energy conversion effect from a virtual vacuum energy state into an observable energy state, which is triggered by a broken symmetry. In this case asymmetry means to convert something virtual into something observable or to convert time energy into a force.

The Casimir effect for e.g. shows, that the virtual energy from the vacuum directly exerts a mechanical force onto macroscopic systems. If you move two very plane metal plates close towards each other, then the outcome of this is that they feel an attractive force. *New Scientist, 1.10.2005 Energy from the vacuum! „Extracting Energy via the Casimir effect“*

“You can visualize the vacuum as a reservoir of energy – virtual particles are particles which emerge from the vacuum and have borrowed temporarily some of its energy. Their existence is transient and they disappear again into the vacuum taking the borrowed energy with them. This energy might return to the place of origin but it can also be transferred to another particle at a different place... Virtual particles act as a mediator and can influence the interaction of stable particles.”

*(Prof. Phys. Lisa Randall, Harvard University, -Warped Passages. Unraveling the Mysteries of the Universe's Hidden Dimensions- Nov. 2006, page 261-262) This text was translated by M. Reid from the German version into the English language.*

### **The vacuum polarisation is cost free**

The following Gedankenexperiment shows that one can generate more energy on the output of a pendulum than was input before only by the input operator. The surplus of energy derives from the quantum vacuum. In this Gedankenexperiment we will visualize a superconductor (II) on the end of a pendulum. On the opposing side of the superconductor is a common permanent magnet. Now we will reduce the temperature until the material superconducts. Let's assume that the pendulum will then move for the following seconds slowly to one side without an input operator inducing any observable energy into the system. The energy which the pendulum uses for its motion derives from the quantum vacuum.

To polarize the vacuum the input operator has to input some energy into a permanent magnet or a superconductor only once. The force resulting from the continuing vacuum polarisation is for the input operator cost free and by doing this one can produce, with the help of an asymmetrical system, over an unlimited period a useful and observable amount of work.

"The two infinitely large charges on our dipolar ensemble are not reduced slightly even once, irrespective of the quantity of observable energy extracted from the charge carriers. From a static electric field over an unlimited period a limited amount of energy can be obtained and with this a limited amount of work can be performed over an unlimited period."

*(Quote: Tom Bearden, "Energy from the Vacuum")*

Most scientists and engineers claim that the first law of thermodynamics is one of the best verified laws in physics. One can see that since there are millions of applications which show the same amount of energy in the output as in the input. But just because we find the same amount of energy in the output as in the input, this does not necessarily mean that energy cannot be created or destroyed.

In all electromagnetic systems the output energy has only an indirect connection with the input energy. One has to be very careful because we are not allowed to transfer common experiences from our daily life to the phenomenology of electromagnetism.

If you pour a drink into a glass and after you drink the beverage your mind will tell you that you are drinking the exact same liquid which was poured into the glass before. But in electric systems the energy which was input into the system by the input operator has nothing to do with the energy which we will receive subsequently in the output. Indeed, within an electromagnetic motor for e.g. the energy changes seemingly directly from electric energy into a mechanical form of energy. But the mechanical energy is not a direct consequence of the input operator energy.

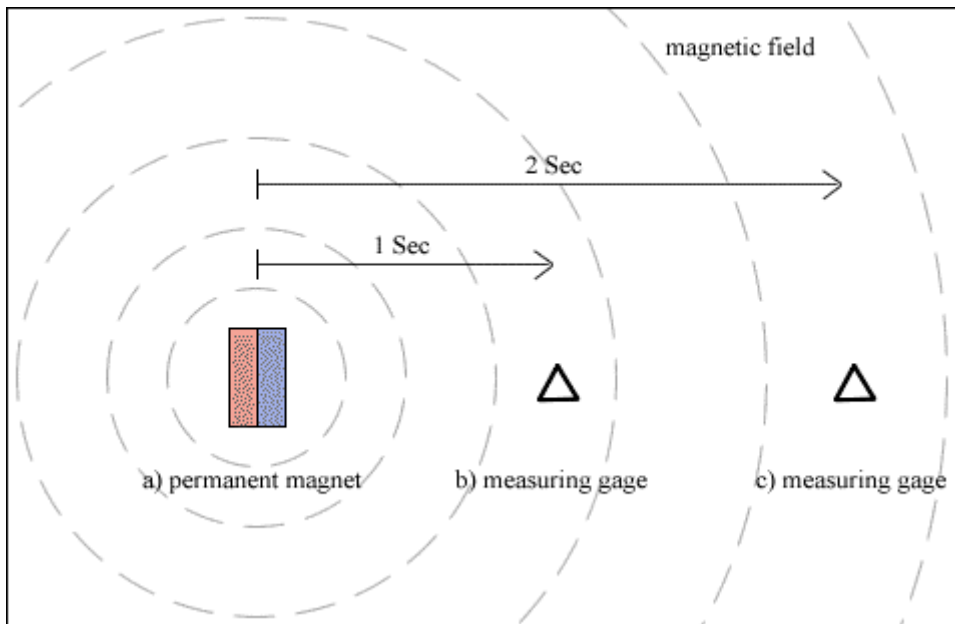
So what is going on?

In electric systems there is even a double and hidden intermediate energy conversion step. In these two energy conversion processes the input operator energy is primarily passed on to the vacuum and then energy is transferred from the vacuum to the output. Within all common electromagnetic systems there is a symmetry between both intermediate vacuum energy conversion processes. This is the cause for the conservation of energy. Strictly defined there is no conservation of energy but only a situation of symmetry. Out of the quantum vacuum, energy is permanently created and destroyed. This dynamic process where energy is permanently created and destroyed is usually symmetrical which means that you will never observe the net production or annihilation of energy at the end of a common observable energy conversion process. But as soon as you destroy the symmetry between the energy creation and annihilation process, an observable surplus energy can be created from the vacuum. A so called asymmetric electric system is able to break the symmetry between the energy creation and annihilation process and therefore it is possible to extract more energy from the quantum vacuum as was induced before by the input operator.

### **The hidden dynamic within static electric and magnetic fields**

First we would like to show with a simple Gedankenexperiment that the magnetic field from a permanent magnet and the electric field from an electric source charge are not static fields. The potentialisation of an electric circuit such as the propagation of a magnetic field from a coil or a permanent magnet are effects of the quantum field. Behind every static force field is a hidden dynamic energy flow which draws its energy via a mechanism of asymmetry from the quantum vacuum. So called static force fields are permanently newly created and are therefore not static at all.

The following e.g. is from the book "Energy from the Vacuum" by Dr. Bearden. It shows that the magnetic field from a permanent magnet is permanently newly created. Let's imagine we are in the deep space between two galaxies, far away from any field influence. At point (a) there is a not yet magnetized ferrite block and a coil to magnetize magnets. At point (b) which is one light second away from (a) is a very sensitive magnetic field indicator. At point (c) which is another light second away is also a magnetic field indicator.



*Diagram 1. The with light speed propagating magnetic field.*

At a specific time we discharge a capacitor which delivers the energy to charge or polarize the permanent magnet. One tenth of a second later the permanent magnet is charged and the magnetic field is immediately spreading at light speed into space. When the magnetic field arrives at point (b) the magnetic field indicator gives notice instantly. Another second later the field has arrived at point (c). When the magnetic field detector indicates a field at point (c) the indicator at (b) still shows a field. At this time no energy has been input by the operator for one second and nine tenth of a second.

This Gedankenexperiment shows that the propagation of the magnetic field from a permanent magnet and the magnetic force on another charge carrier has nothing to do with the energy input by the operator (capacitor). One can also easily see that the magnetic field from a permanent magnet is permanently newly created and steadily spreads out into the surrounding space.

### **COP. and efficiency on a symmetric and an asymmetric system**

The coefficient of performance COP. describes the relationship between the energy input only by the operator and the output energy. The efficiency specifies the relationship between the energy input by the operator plus the energy by the environment and the output.

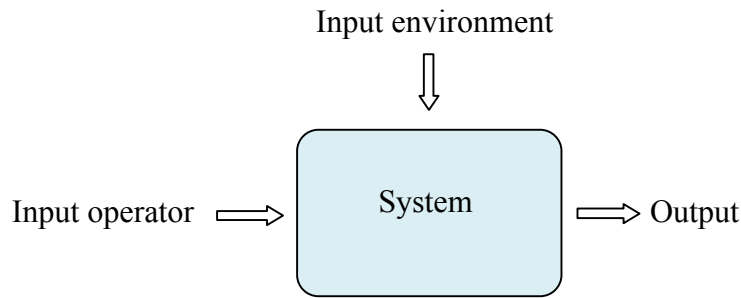


Diagram 2. This scheme shows an energetically open system

A popular example for an asymmetric energy conversion technology with a COP. of 300% is the classic heat exchanger. In this example the input operator inputs 10 Watts of energy into the system. The dark heat panel which is usually outside in the sun draws another 50 Watts into the system. So in total we input 60 Watts (50+10) into the system. But the heat exchanger only works with an efficiency of 50%, so in the end you just get 30 Watts out of the system. A system where the input operator inputs 10 Watts of energy and receives 30 Watts of energy at the output, has a COP. of 300%. Independent of how great the COP. of a system is, the efficiency will always be below 100%, because energy cannot be created from nothing.

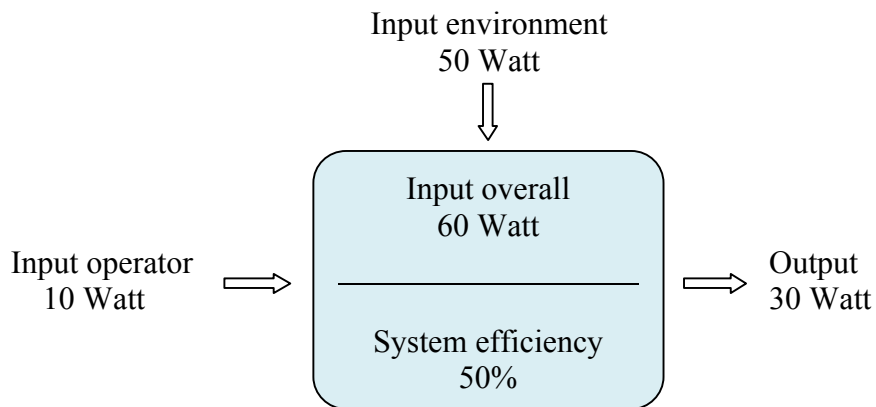


Diagram 3. Asymmetrical and energetically open system with a COP. of 300%

In this and next examples one has to notice that the energy at the output 30 Watt is not coming from the input operator 10 Watt. First of all one could think, that one third of the output energy might derive from the input operator energy. The energy quality in the output is coming exclusively from the heating panels and has nothing to do with the energy input by the operator. Of course you need the energy from the input operator to create a pressure difference, but we have to differentiate between the input energies from the operator and the environment. The input operator energy is used exclusively to create a pressure difference (asymmetry). Due to the asymmetry the energy can now flow from the environment into our heating system.

To understand the analogy of this example to an electromagnetic system we will describe a symmetric system with a COP. of 100% also using the example of a heat exchanger. In this example the input operator inputs again 10 Watt and from the heating panels we also receive 10 Watt. The heat exchanger still works with an efficiency of 50%, so half of the total input energy will be lost. So in the output we will finally receive 10 Watt. A system where 10 Watt is input by the operator and 10 Watt is received in the output has a COP. of 100%. In this example we also have to distinguish between the energy qualities. The output energy derives exclusively from the environment and has nothing to do with the input operator energy. Of course we also need the input operator energy to create a pressure difference (asymmetry) otherwise we will have no gas flow in the system.

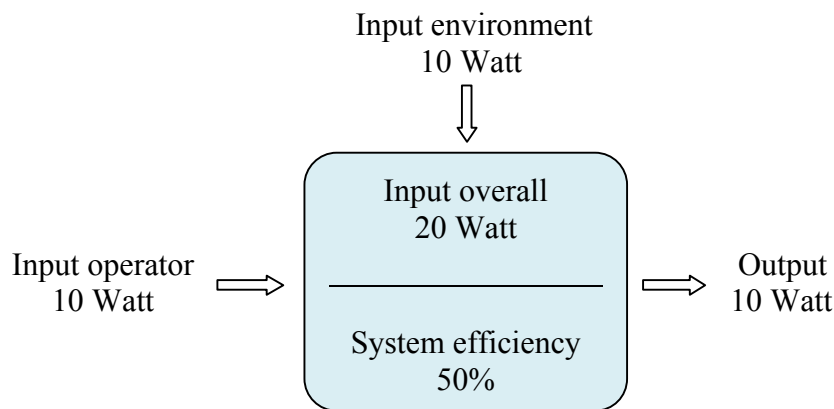


Diagram 4. Symmetric system with a COP. of 100%

### The electromagnetic system

An ideal symmetric electric system, which has a COP. of 100%, the input operator energy represents for e.g. the induced electric energy into a coil. The induction of electric energy into the coil creates an input dipole and therefore a broken symmetry. Due to the asymmetry the orientation of charges of the virtual photons (particle pairs) is directed. Consequently this means that the polarisation of the virtual photons in the direct proximity of another charge carrier, which enters into the field of interaction, becomes asymmetrical. This asymmetry finally creates the force and acceleration upon another charge carrier. In other words the magnetic field is like a virtual negentropisation of virtual photons which declines with the distance squared. So the mechanical output energy from an electric motor derives exclusively from the quantum vacuum and has nothing to do with the input operator energy. The input operator energy is only used to create a broken symmetry. So in the end the input operator energy is converted into a virtual-vacuum-negentropisationstatistic-form of energy and is therefore released into the vacuum.

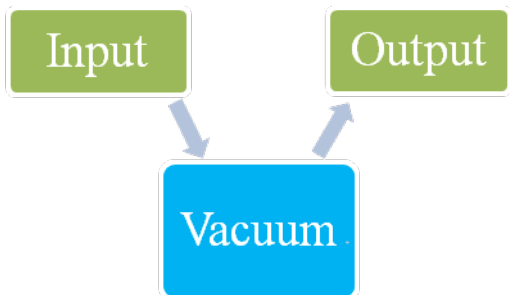
Even if this sounds unusual, this approach shows that we must not necessarily apply the first law of thermodynamics when designing an electric system. Just because we have in ideal electromechanical systems the same amount of mechanical energy in the output as was induced electrically at the input this does not necessarily mean that energy cannot be generated or destroyed

Of course everyone can decide if the laws of thermodynamics shall be applied. We do not use these laws because from our view all material systems we are dealing with are energetically open systems which are in disequilibrium with their environment. However, we will mention the violations of the first law of thermodynamics so we can distinguish better between the old model and this approach. In the sense of quantum electrodynamics every source charge is an open system, which has a permanently ongoing energy exchange with the quantum vacuum. A dipole absorbs energy from the quantum vacuum in a virtual form and converts it into an observable energy form and produces therefore a steady stream of real and measurable electromagnetic potential. Since the potential is a direct preform of real energy, the author suggests to compare the phrase “potential” with the phrase “virtual energy”. So the reason why we do not appreciate the laws of thermodynamics is because one may say that symmetrical such as asymmetrical electromagnetic systems generally convert virtual energy into real energy.

### **Basic energy conversion mechanism in an electric system**

- 1) The input operator energy into a coil is completely transferred to the quantum vacuum. This is the first fundamental violation of the first law of thermodynamics so to say. In an observable sense this energy is lost.
- 2) In this process a broken symmetry (dipole) is created.
- 3) Due to the asymmetry, the virtual energy from the vacuum gets ordered and therefore converted into a potential form.
- 4) The polarized quantum field creates a force and acceleration onto another charge for e.g. onto a permanent magnet within an electric motor. This is the second violation of the first law of thermodynamics. Energy is literally created from space time.
- 5) The intensity of the load defines how great the opposing force is onto the magnetic dipole of the electromagnet.
- 6) Due to the opposing force onto the electrons in the coil, the dipole gets destroyed and therefore the free flow of energy from the vacuum is suppressed.
- 7) If the motor shall continue to run, one must induce more energy into the coil.

- 8) The input dipole is usually destroyed with the exact same amount of energy as is input by the input operator. So one can easily get the false impression, that we are dealing here with an energetically closed system. This situation again leads to the obvious but incorrect assumption, that the first law of thermodynamics is at work (in the sense that energy cannot be created from nothing).
- 9) The mechanism of the self-symmetrizing process in point 1 and 4, hides in a very tricky way the two energy conversion processes between the materialistic system and the quantum vacuum. The self-symmetrizing process addresses the two fundamental violations of the first law of thermodynamics. They compensate each other. Both energy conversion processes in point 1 and 4 are symmetrical.
- 10) Both energy conversion processes in point 1 and 4 self-symmetrize each other in such a way, that we always receive a COP. of 100% in symmetric systems. In asymmetric systems the symmetry between the two energy conversion processes in point 1 and 4 is broken. One can receive a COP. of more than 100% if the energy conversion process in point 4 is broken in such a way, that more energy flows in from the vacuum than was lost in point 1. One can also receive a COP. of less than 100% if the energy conversion process in point 4 is broken in such a way, that less energy flows in from the vacuum than was lost in point 1.
- 11) The basic energy conversion mechanism in an electromagnetic system:
  1. Input operator energy into the vacuum
  2. Creation of a broken symmetry
  3. Vacuum energy to the output



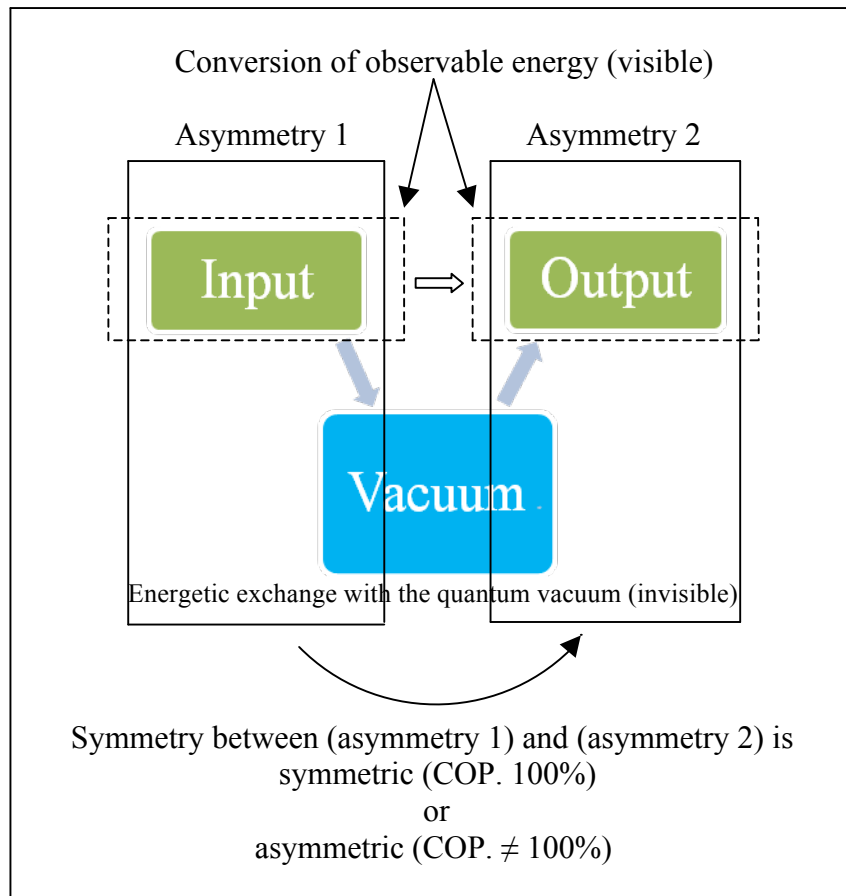
*Diagram 5. Scheme of the basic energy conversion mechanism within an electromagnetic system. Process 1, (input-vacuum) and process 2, (vacuum-output) are symmetrical in all common electromagnetic systems.*

**Ideal symmetric electric system with a COP. of 100%**

Electromagnetic systems with a COP. of 100% will always have a symmetry between both vacuum energy conversion processes. Process 1, (input-vacuum) and process 2, (vacuum-output) are symmetrical.

**Asymmetric electric system with a COP. of more or less than 100%**

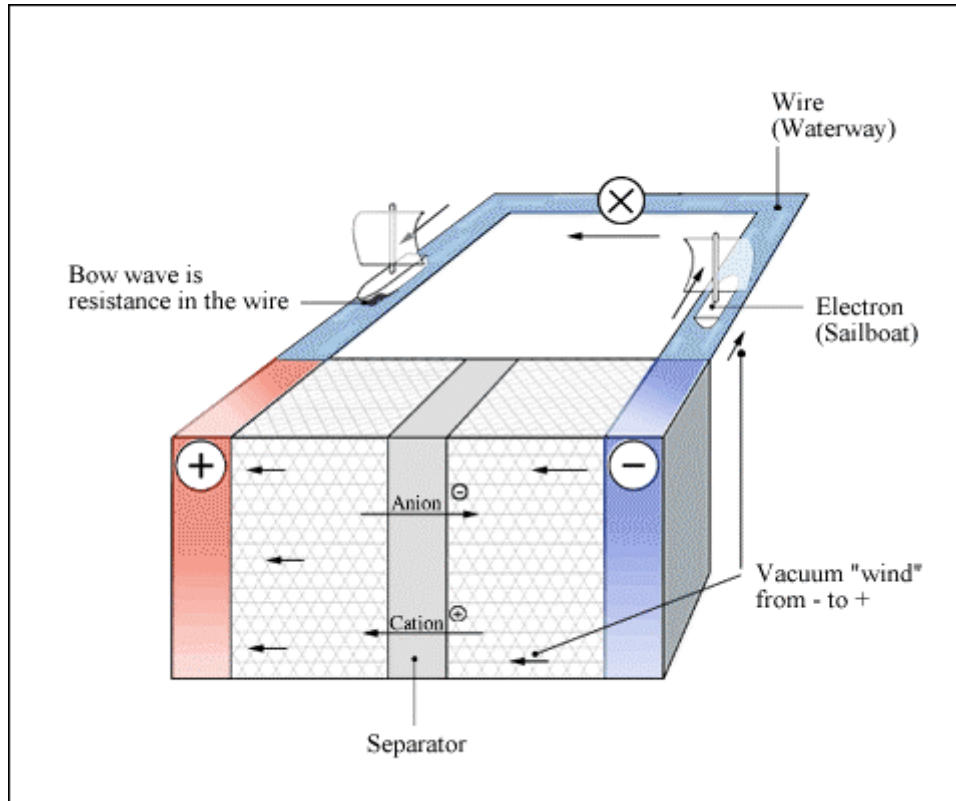
Electromagnetic systems with a COP. of more or less than 100% have an asymmetry between both vacuum energy conversion processes. Process 1, (input-vacuum) and process 2, (vacuum-output) are asymmetrical.



*Diagram 6. Vacuum asymmetry 1 (input-vacuum) and vacuum asymmetry 2 (vacuum-output) are symmetrical or asymmetrical.*

### The electric field as a wind, a Gedankenexperiment

We would like to remind that it can be helpful to visualize the electric field in and around a conductor as a wind. The electron can be seen like a sail boat which is powered by the wind and the bow wave is acting like the resistance in a conductor.



*Diagram 7. The electric field as a wind, current (electron) as a sailboat and the resistance of a wire as a bow wave in a simple circuit within a galvanic cell.*

Should there be too many sail boats at once, trying to get through the filament of the light bulb, they will cause many waves. This will reduce the speed of the electrons which leads to a higher wind pressure (electric field) in the sail. The white water appearing from the top of the waves will be radiated into space. In analogy to this picture we have the emission of heat and light from thin conductors with a greater resistance.

How easy it is for an electron to move through a conductor, of course depends on several aspects. With this Gedankenexperiment the author only wants to point out that the electric field energy flow component exists everywhere around and within a conductor. Today only the small component of this energy flow is accounted for, which exerts a force on an electron (Poynting energy flow). This is like saying, that only that wind component exists which exerts a pressure onto the sail. Of course there is also a wind outside or around the sail. In the year 1892 Hendrik Antoon Lorentz maintained, that only that part of the energy flow is of physical significance, which exerts a force on a charge carrier. Obviously this view is correct, but it eliminates right from the beginning the possibility of so called asymmetric energy systems, which are able to use a part of this unutilized energy component.

*E.g., see H. A. Lorentz, Vorlesungen über Theoretische Physik an der Universität Leiden, Vol. V, Die Maxwellsche Theorie (1900-1902), Akademische Verlagsgesellschaft M.B.H., Leipzig, 1931, "Die Energie im elektromagnetischen Feld," p. 179-186. „Figure 25 on p. 185 shows the Lorentz concept of integrating the Poynting vector around a closed cylindrical surface surrounding a volumetric element. This is the procedure which arbitrarily selects only a small component of the energy flow associated with a circuit-specifically, the small Poynting component being diverged, into the circuit to power it-and then treats that tiny component as the "entire" energy flow. Thereby Lorentz arbitrarily discarded all the extra Heaviside circuital energy transport component which is usually not diverged into the circuit conductors at all, does not interact with anything, and is wasted". Quote: Tom Bearden.*

### **The superconductor**

In a superconductor for example the electron (sail boat) moves exactly with the same speed as the wind. That means that there is no electric field wind pressure in the sail anymore. But this must not necessarily mean that the electron conduction is without a resistance in the wire. For an external observer it might just look like that. One could imagine that there is still the same resistance through the bow wave, but in addition there is also a stern wave neutralizing the bow wave. The stern wave has the same size like the bow wave and could appear through special side winds.

We assume that due to the smaller temperature a resonance phenomenon could occur between the electron, the conductor and the surrounding vacuum. Depending on the geometric structure within the material of the conductor, it will resonate at a specific temperature with a particular frequency. So when a resonance phenomenon between the conductor and the surrounding vacuum occurs, it could be that so much energy from the vacuum flows into the conductor, that the resistance in the wire is seemingly neutralized. Also if this is a speculative idea one should consider that the electric field is already a pure energy flow system from the vacuum. Therefore it is not so far off to assume that there are probably several differing electric field qualities which may cause different effects on electrons. Rotating superconductors for e.g. can drag the surrounding space time (frame-dragging) along and influence other objects significantly. Therefore it could be possible that electrons in a superconductor produce a complex frame-dragging interferometry and therefore influence the interaction with the surrounding environment in a special way. (*New Scientist, 11.11.2006, Stuart Clark goes in search of gravity's secret. "A rotating mass is expected to twist space-time – but not by this much"*)

The author will probably pick up this idea in another text. At the moment it is just our intention to suggest that it can be helpful to visualize the electric field as a wind and the electron as a sail-boat-like phenomenon.

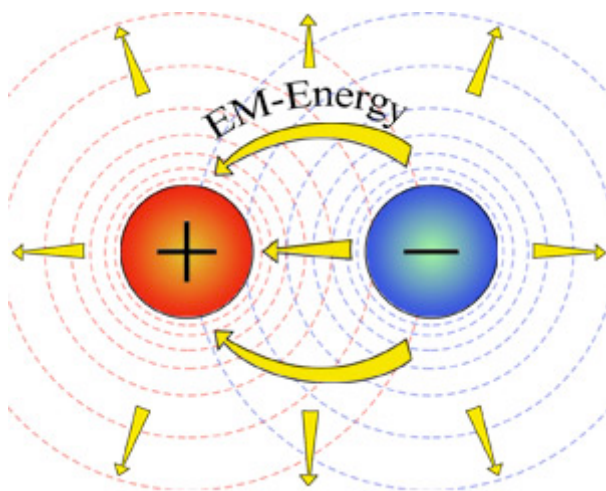
Furthermore we want to show, that it is always the electric field wind which is the causative agent, which generates the work in an electric circuit. The electric field is the real engine and represents a cost free source of energy from the vacuum.

### **The mechanism of the self-symmetrizing action**

We will explain the mechanism of the self-symmetrizing process in different electromagnetic systems. The mechanism of the self-symmetrizing action is a fundamental property of nature. This property always self enforces a COP. of 100% in symmetrical systems.

#### **A) The battery**

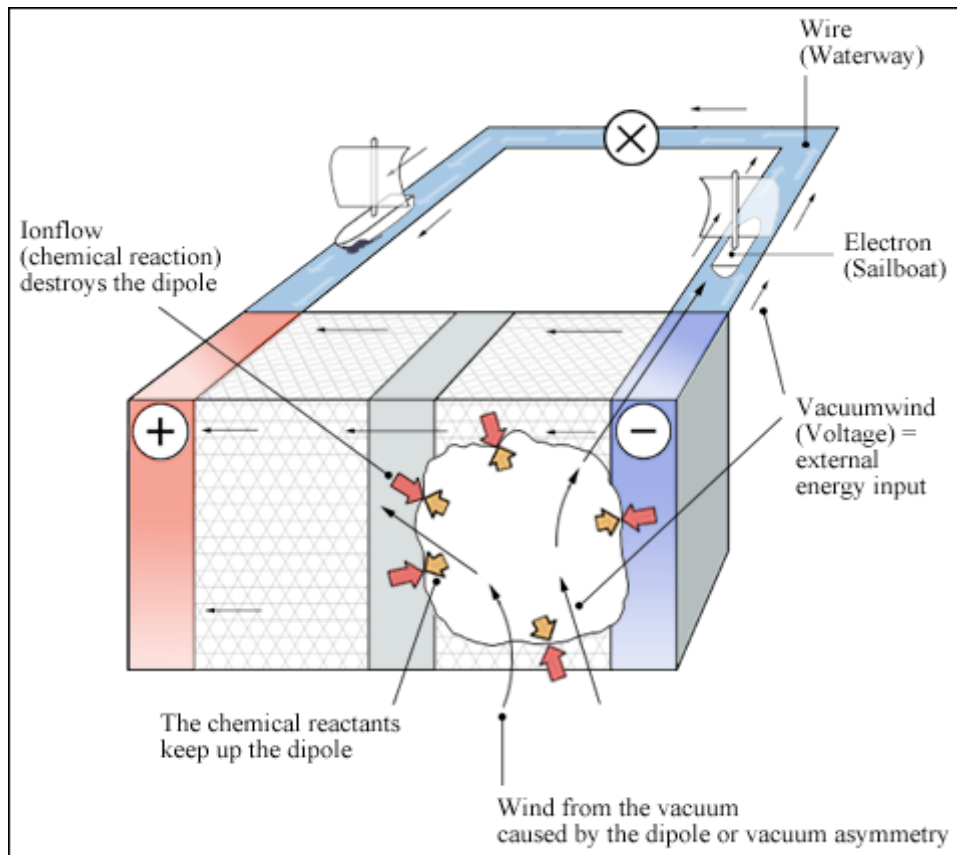
In an electrochemical battery the chemical reactants and the natural potential difference of the electrodes generate the electric potential. These materials represent in a charged condition, a dipole. The dipole polarizes the vacuum until the threshold for the production of “observable” virtual photons is reached. As long as the chemical reactants have not symmetrized each other, the dipole and therefore the quantum vacuum energy generator will continue to exist.



*Diagram 8. Electric emission from a dipole for e.g. in a battery*

- 1) The chemical reactants and electrodes create the dipole.
- 2) The dipole represents a broken symmetry in space time.
- 3) The dipole can “absorb” vacuum energy (in entropic form) and convert it into an “observable” vacuum energy form (negentropic - electric field).
- 4) The electric field exerts a pressure onto the electrons. The electric field is like a wind whih pushes (potentializes) the electrons. When you switch on the device the electrons will start to move from the (-) pole to the (+) pole.

- 5) The flow of electrons is limited by the load for e.g. a light bulb. Into the thin spiral- wound filament the electrons are packed and you will get turbulences. So the sail boats are sailing at a slower speed through the wire which leads to a greater wind pressure in the sail. In other words the wind is the true energy source in the load. As long as you don't destroy the dipole in the battery it could produce the wind forever.
- 6) Then the electrons move out from the minus and into the plus pole back into the battery.
- 7) Due to the backflow into the battery the chemical reaction starts to neutralize or symmetrize the chemical reactants via the exchange of anions and cations.
- 8) The electron flow defines the discharging speed (self-symmetrizing speed) in the battery. A greater load leads to a great energy consumption which means that many electrons flow out and into the battery in a short time. So the flow of electrons destroys the dipole.
- 9) The more you destroy the dipole, the more you reduce the wind from the vacuum. If the wind (electric field) from the vacuum becomes weaker it gets difficult to potentialize the electrons and then it is as if the battery got discharged. Strictly speaking, the battery does not get discharged but just symmetrized. With a bit of tolerance one could say that the battery does not support the load with energy. This is a function of the vacuum. The battery is just there to rip a dipole into space time and to keep the dipole intact as long as possible.
- 10) As soon as there is no wind from the vacuum, the electrons cannot be potentialized anymore, which means that the dipole is destroyed. Now the battery is empty. When you recharge the accumulator the chemical reactants will asymmetrize again. Due to that, you will receive again a potential difference and then the dipole can generate a new electric field via the quantum vacuum.



*Diagram 9. Scheme of the interaction between the chemical reactants and the vacuum*

Another interesting aspect is the distribution of the energy in the internal and external circuit. The separator prevents the electron flow from minus to plus within the battery. So the symmetrizing action occurs via the anion and cation flow which is caused through the flow of electrons into the plus pole and out of the minus pole.

### **Example for a battery powered system with a COP. higher than 100%**

A theoretical attempt for an asymmetrical system with a COP. higher than 100% allows two independent circuits. Onto the first circuit you have to attach the battery and a coil. Attached to the second circuit is another coil and the load. The first and second coil are coupled with each other like a normal transformer. By flicking a special switch for a very short time the first circuit gets only potentialized. Before the first electrons can flow back into the plus pole, one has to open the switch. By doing that, the first circuit becomes slightly potentialized and therefore a weak magnetic field appears in the coil.

This field is then transferred by induction into the second coil. Then the second circuit, which is always closed, depotentializes normally and produces a little work in the load. If you repeat this process fast enough in a short time, one should be able to produce more energy in the output than was induced only by the input operator. The aim of this approach is to split the electric field from the current. The first circuit shall only be potentialized by the electric field and the second (work producing) circuit depotentializes the electric field and the current normally. So within the first circuit, the current flow has to be kept as low as possible because the flow of current causes the self-symmetrizing process and therefore the destruction of the dipole. The MEG (Motionless Electromagnetic Generator), an invention by Tom Bearden and his partners, does use this approach besides other principles. Mr. Tom Bearden claims that the MEG has a COP. higher than 100%. The American patent office accepted the applied theory and the patent was granted in the year 2002.

### **Example for a battery-powered system including a generator with a COP. of higher than 100%**

One possible approach is the technology by Mr. John Bedini. Mr. Bedini only uses one circuit. The circuit includes a battery and a permanent magnet motor – generator. The energy is induced pulse-wise into the coils and the rest energy from the back emf. is back fed into the battery. Only when all components are correct, the diameter of the wire, coil design, wire length, motor geometry, rotations per minute and the design of the accumulator, an asymmetrical vacuum energy effect can occur within the battery. Since the ions react intensively with the sharp high voltage back emf. pulses, the chemical self-symmetrizing effect within the battery does not occur at the same speed as normally. The battery discharges slower than usual, but at the same time it creates the same amount of energy in the load. Therefore it will last over a much longer period than in the normal case. John Bedini apparently has constructed such a system which produces so much more energy in the output that he managed to create an autonomous, permanent self- running engine which has even an additional load.

### **B) The solar cell**

The solar cell is in the context of its energetic management a more complex technology. First we have to define which energy input belongs to which category. In the solar cell we have three energy inputs and one output. The first input (1. input operator) is the energy which was spent to manufacture the solar cell. In that process let's say 100 Watt hours were spent. We will ignore this part. Then we have the (2. input operator) which is the sunlight. We could also say that the sunlight is the input environment, but in our example we will say it is the (2. input operator).

The (3. input environment) is the vacuum. Like in all electric systems it is the energy from the vacuum which creates all the work in the load.

To simplify things we will ignore the (1. input operator).

- 1) The (2. input operator), the sunlight, impinges onto the solar cell. Only 17% of the sunlight, which can shoot electrons out of the p-semiconductor, comes to work, the remaining 83% are converted to heat or are reflected.
- 2) As soon as the photon hits onto an electron, it disappears with the photon into the vacuum. Thereby the energy of the photon and the electron is lost in an observable sense.  
In this process a broken symmetry is created. Shortly after the energized electron moves back to the observable dimension and then it can leave its former place. After the electron is shot into the n-semiconductor it can be transported via the external circuit back to the p-semiconductor.
- 3) In its former place, a p-hole has occurred. This p-hole will draw the electron, due to the energy from the vacuum, through the external circuit. The vacuum-suction-energy of the p-hole is the (3. input environment).
- 4) So the energy which is spent in the load, is an effect of the vacuum suction of the p-hole. The p-hole is like a dent in space time, which wants to be filled up again. This p-dent in space time represents the source charge. As one can see, it is not the sunlight which supplies the load with energy. The sunlight is only used to create an input dipole.
- 5) As soon as the electron has arrived back at the p-semiconductor, it will occupy the p-dent again. The moment the electron occupies the p-hole, the dipole will be destroyed. If you want to restore the dipole you have to input new sunlight onto the p-semiconductor.
- 6) The (1. input operator) energy (100 Watt hours) may be added to the energy calculation originally and the more time passes, the more it is compensated. The longer a solar cell is in operation, the more the (1. input operator) is amortized. In all power plants, such as for e.g. in a hydroelectric power plant, which have a cost free (2. input operator), the energy for the production of the power plant may be calculated like this.

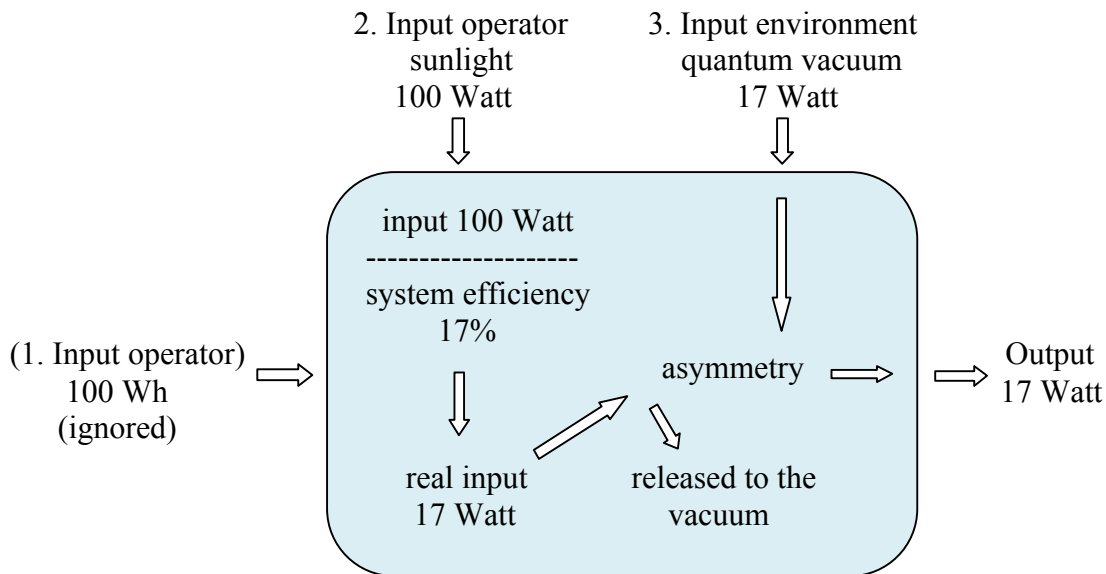


Diagram 10. Scheme of the energy management on a solar cell which has a COP. of 17% in relation to the total input sunlight energy 100 Watt. Because only 17 Watt are really input and converted into electric energy we have a real COP. of 100%. (input-light – output)

As we have shown in diagram 10, one has to distinguish between the input energies. Depending on which input you account for, you will receive differing COP's. But in solar cells there is a very interesting aspect. In the past example it was assumed that 17% of the sunlight was converted with a COP. of 100% into electricity. But the interesting aspect is that solar cells might work with a COP. of higher than 100%.

Scientists in the Los Alamos National Laboratory in New Mexico have constructed a solar cell, which absorbs the light of a specific wavelength to such an extent, that one photon can energise more than one electron. On a nano-crystalline plane it was observed, that one photon can energise up to 7 electrons. The energy for the excitation of these electrons derives from the quantum vacuum. If the energy of the photon is not converted with a higher efficiency, meaning without the generation of heat, then this would lead to a COP. of 700%. The experiment was replicated successfully by the National Renewable Energy Laboratory in Golden, Colorado.

(*New Scientist*, May 27, 2006, p 45, "Make solar cells as small as a molecule; and you get more than you bargained for. Could this be the route to limitless clean power, asks Herb Browdy")

Let's assume that a common solar cell would work with a true COP. of 700%, the diagram would appear as follows.

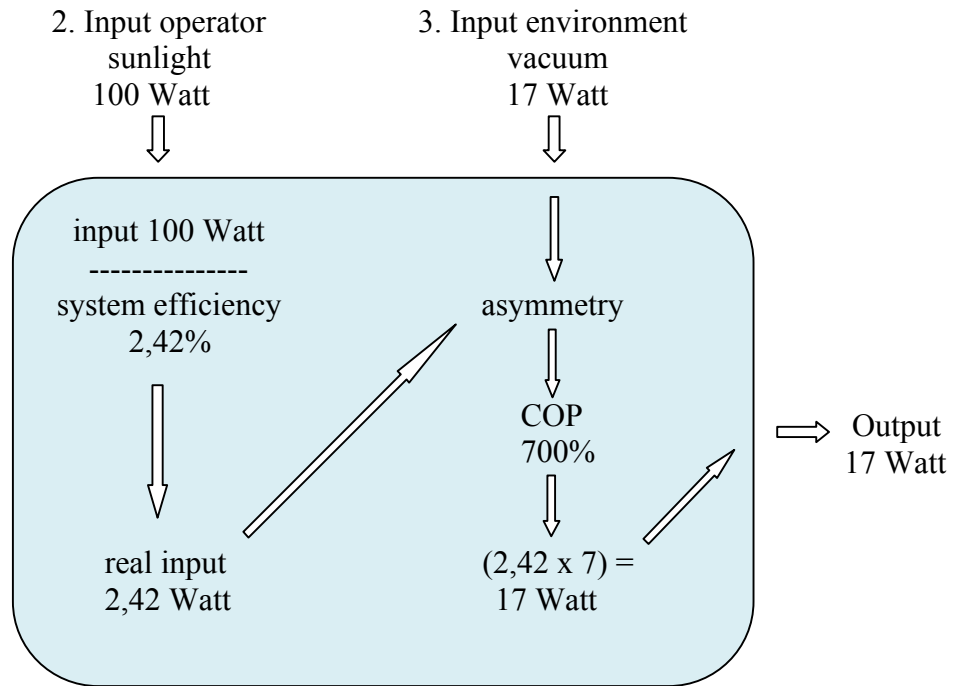
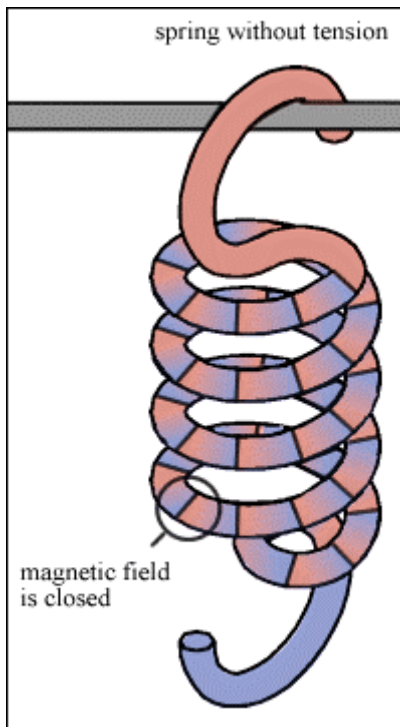


Diagram 11. The scheme shows the mechanism of energy conversion in a solar cell with a COP. of 17%. The COP. corresponding to the converted light into electricity is 700%. The efficiency of the solar cell is therefore only 2,42%, which means, that in reality 97,58% of the sun light is lost.

This concept shows how difficult it is to calculate the true COP. of a solar cell. If it is seen only with the eyes of Maxwellian electrodynamics, you will always relate the COP. to the total input of light and the output energy. But considering the fact that the interaction with the vacuum is missing in current calculations, we have come to the conclusion that the true COP. of converted light into electricity is probably not known in a single solar cell.

### C) The spring

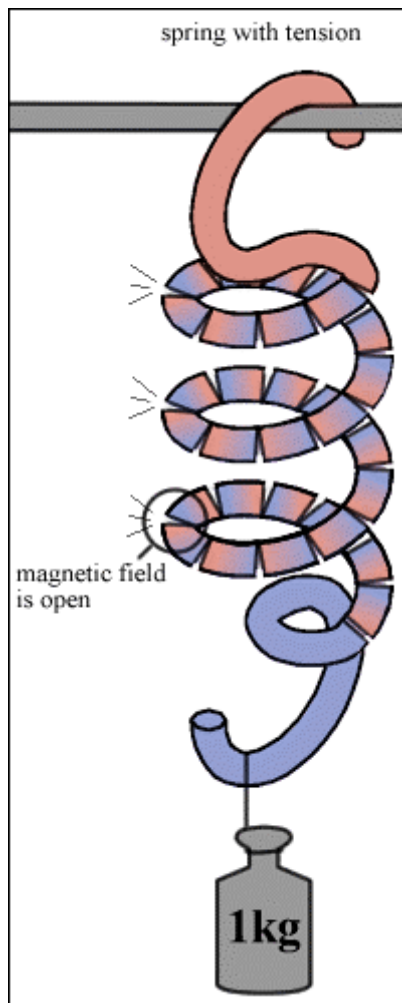
The following example will show that the energy from the vacuum also plays a fundamental role in mechanical systems. A spring consists of atoms and molecules which are bound to each other by electromagnetic forces. These forces are effects of the quantum fields and therefore the stability of a material is based upon the energetic interaction between the physical particle and the quantum vacuum. On a spring without being under tension the molecules are situated in a regular symmetric way. We visualize the molecules like small permanent magnets, which are connected to each other north to south to north.... Every molecule wants to be in the most comfortable position so to say. If you have a lot of small permanent magnets in a row, the individual fields disappear and they behave like one big magnet with only one pole on each end.



*Diagram 12. Scheme of a spring without tension and with closed magnetic fields*

A spring under tension pulls all the small permanent magnets (molecules) slightly apart and the resulting asymmetries create many small dipoles which create quantum fields.

Now you have trillions of tiny little dipoles along the spring material, which produce a potential in the form of a polarization of the vacuum. These polarized quantum fields are the cause of the mechanical tension



*Diagram 13. Scheme of a spring under tension. The mechanical “static” tension energy is held up through the dynamic energy flow from the vacuum.*

As above the author will describe the energetic management in headwords.

- 1) The spring is in a state without tension. The electromagnetic molecular dipoles are closed in themselves.
- 2) The spring will be stretched. Doing this the symmetry between the molecules is distorted and a lot of small asymmetries will appear within and on the surface of the spring material. The dipoles create polarized quantum fields, which exert a mechanical force on the other charges.

The input operator energy, which was used to put the spring under tension, was exclusively used to create an input dipole.

- 3) The mechanical “static” tension is an effect of the vacuum and has nothing to do with the input operator energy. The steady energy flow from the vacuum maintains the tension in time.
- 4) As soon as you relax the tension a small amount of work can be done. During the relaxation process the dipoles will symmetrize and the force of the tension will be reduced. Once the spring is completely relaxed, the dipole is destroyed and therefore the quantum vacuum energy generator is eliminated.

With this example one can also see the difference between a spring and a permanent magnet. The reason why we express as before is that there is an ongoing discussion about possible self running permanent magnet motors. When it comes to that topic the engineers usually say: “well instead of a magnet you can also take a spring and that is why it will never work”.

A permanent magnet can pull a piece of iron to its surface. After that has happened, a permanent magnet can pull just like that another piece of iron to its surface. Of course you have to invest the same amount of energy, which was gained before, if you want to detach the piece of iron, but the difference to a spring is that the spring can only pull for one single time something to the limit of its constriction. A spring self-symmetrizes during the first time of constriction. A permanent magnet does not symmetrize when producing some work

As far as we can judge, it is not possible to construct a self-running system by using one or several springs because a spring self-symmetrizes immediately when doing work. But with the help of permanent magnets it should be possible to realize a self-running system. A permanent magnet is already a source of potential “par excellence”. So one has to concentrate on a motor system whose geometric quality, visualized in rotation, is able to convert the symmetric magnetic field into an asymmetrical language.

In principle one can transfer the perspective about the energetic management of a spring onto many mechanical and chemical systems. One could say for e.g. that when you lift a pen with your arm the energy from to the chemical reaction in your muscles has only an indirect relation with the work done. The energy which lifts the pen comes from the quantum vacuum. But in the moment the chemical reactants in your muscle generate via a space time de-asymmetrizing action some work, the chemical reaction destroys the input dipole. But with a special asymmetrical quantum chemistry, it could be possible to generate more work in your muscle than was input by the operator only in the form of chemical reactants.

## Note

An issue which has not been discussed yet is the COP. in relation to the extraction of energy from the vacuum. Since it is not known how great the energy density of the vacuum is and how great the quality of an asymmetric system can be, one cannot make a statement concerning this topic. There are several propositions about the energy density of the vacuum, but they differentiate very much from each other. However, we believe that the energy density of the vacuum is extremely compact. So the upper limit for the extraction of energy from the vacuum is just an issue of the quality of the asymmetric energy management. As a rule one may say: the greater the asymmetry, the greater the energy extraction. The upper limit for an asymmetrical vacuum energy technology in the future will only be defined through the quality of asymmetry and the involved materials.

The Author wants to add, that there are very small variations from the 100% mark concerning the COP. in so called ideal and symmetric electromagnetic systems. An effect which reduces the COP. in electromagnetic systems is the declination of the electromagnetic force with distance due to quantum mechanical effects. The virtual photons which cause the electromagnetic interaction interact on their way through space time with the quantum vacuum. That is why they lose some of their energy. This declination must be added to the common declination with the square to the distance. Therefore electromagnetic systems have in reality a COP. slightly lower than 100%. This is insignificant in our daily life, but it is an important information, which can lead to a better understanding of the vacuum energy topic.

“Not only the photon, but all bosons which are able to transfer an interaction do interact on their way to their destination with the vacuum. Pairs of virtual particles -the particle and its anti particle- are created and absorbed spontaneously from the vacuum. This process influences the net force of the interaction. Virtual particles have an influence on the boson and change the force of interaction. Calculations show that the force of the weak interaction and the interaction of the electromagnetic force, decline with distance.”

*(Prof. Phys. Lisa Randall, Harvard University, -Warped Passages. Unraveling the Mysteries of the Universe's Hidden Dimensions- Nov. 2006, page 267) The text was translated by M. Reid from the German version into the English language.*

To complete possible effects of influences in connection with the COP. we would like to add, that one will find in all material systems common chaotic vacuum fluctuations which will cause extreme small variations from the COP. 100% mark. Generally one may say that in all natural energy conversion systems a really precise COP. of 100% does not exist.

Many people, who hear about the vacuum energy topic for the first time, often believe that such a technology has something to do with a perpetual motion machine. But a free energy or asymmetric vacuum energy engine has absolutely nothing to do with perpetual motion.

An asymmetric vacuum energy machine can have a perpetual characteristic and could run theoretically until the end of time. But an engine which has a perpetual characteristic and a perpetual motion machine are different things. Newton's first law is the law of Perpetua Mobilia. Newton's first law: "a body will stay at rest or will remain in constant motion as long as all forces onto it are zero". One could also say that a body will continue to move (like a perpetual motion machine) as long as nobody stops it from outside or changes its direction.

A body which experiences all forces onto it in a perfectly symmetrical way is like a body which doesn't interact with its environment. When all forces onto it are zero, then this system behaves like a closed system. But a closed system cannot radiate or absorb anything. This means, that also light cannot be absorbed or radiated and so this body is naturally invisible. In other words if a perpetual motion machine is a technology which cannot be seen because it doesn't interact with our reality, then it cannot exist. These thoughts describe the limits of Newton's first law, which was written at a time, when scientists didn't have quantum field theories yet. Perpetual motion machines are according to Newton energetically closed systems and are therefore only purely theoretical objects. An asymmetrical vacuum energy machine is an energetically open system, definitely no perpetual motion device and has at its best, like a hydroelectric power plant, a perpetual characteristic.