

# Energy turnaround or Energy revolution ?

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9. November 2013

Classical energy sources, such as uranium, oil or gas have increasing disadvantages like the pollution of our environment, growing prices and the exhaustibility of the energy carrying media. New alternatives are necessary. Probably we will have a change of energy policy towards solar cells and windmills. Or do we expect not a smooth change of energy-policy but rather a real revolution ? A new type of energy comes into discussion, the zero-point-energy of the electromagnetic waves of the quantum vacuum, with the abbreviation "ZPE". If this energy could really be utilized, it would be the new star in the sky of energy-policy, without any pollution of the environment, free from any risk to health, inexhaustible and available everywhere for extremely low price. The ZPE-energy only has advantages, no disadvantage - but is it possible to utilize it ? It is beyond controversy, that ZPE-energy exists. But the experts argue about its useability.

The verification of the existence of the ZPE-energy goes back to the fathers of quantum theory, such as W. Heisenberg, N. Bohr and E. Schrödinger. What they showed for the harmonic oscillator was transferred to electromagnetic waves by H. B. G. Casimir anno 1948, and this is why we nowadays call it ZPE, the zero-point-energy of the electromagnetic waves of the quantum vacuum. For 49 years Casimir was not taken serious, until finally in 1997 Steve Lamoreaux from the elite-university Yale verified the Casimir-effect experimentally. Therefore, two electrical neutral metal plates are mounted in a distance a few nanometers from each other, and the zero point waves cause an attractive force between the plates. The so called Casimir-force, measured by Lamoreaux, confirms the usability of the ZPE-energy. In computer industry, those forces have to be taken into account since 2005. The remaining question is, whether the ZPE-energy can be used to drive an engine permanently?

Before we tend our attention to this question, we want to know, whether the ZPE-energy reservoir is large enough for industrial power supply. Therefore we regard measurements of astrophysics, analyzing the accelerated expansion of the universe. From these measurements, we know the consistency of the universe as following:

- about 5 % invisible matter, such as stars, planets and the newspaper you're reading just now,
- about 25-30 % elementary particles not discovered up to now,
- about 65-70 % dark energy and ZPE-energy, we are speaking about.

This means, that ZPE-energy is incredibly much more than the total mass of our Earth. The energy reservoir is not only inexhaustible, but it has a permanent flux since the very beginning of universe, without giving any harm to humans, animals or to the Earth.

By the way, it should be mentioned that vacuum-energy is also existing in the particle-wave-dualism of physics. It was Richard Feynman, the father of quantum electrodynamics who brought it their, namely by describing the polarization of the vacuum. Vacuum energy is known in many sections of physics. This makes the question about its useability very urgent and serious.

Already since decades of years, this utilization of ZPE has been discussed controversially. Allegedly Nikola Tesla is said to have driven a car with this energy in 1930. But the car disappeared. Many inventors have been seen, with dozens of ZPE-motors, too many names to get an overview. Lots of them turned out to be charlatans. This brings a lot of discredit to the ZPE research. Finally the proponents of ZPE become louder same as the opponents. This is a real problem for the great revolution of energy supply.

But in reality, working prototypes of ZPE-engines have been inspected and verified officially. This means that the scientific question about the utilization of the ZPE-energy is answered positively - if there would not be the political component of energy supply. Two functioning ZPE-converters shall be mentioned here exemplarily, because they already have official certificates, made on the basis of scientific inspection. Both developments are brand-new and thus hardly known yet:

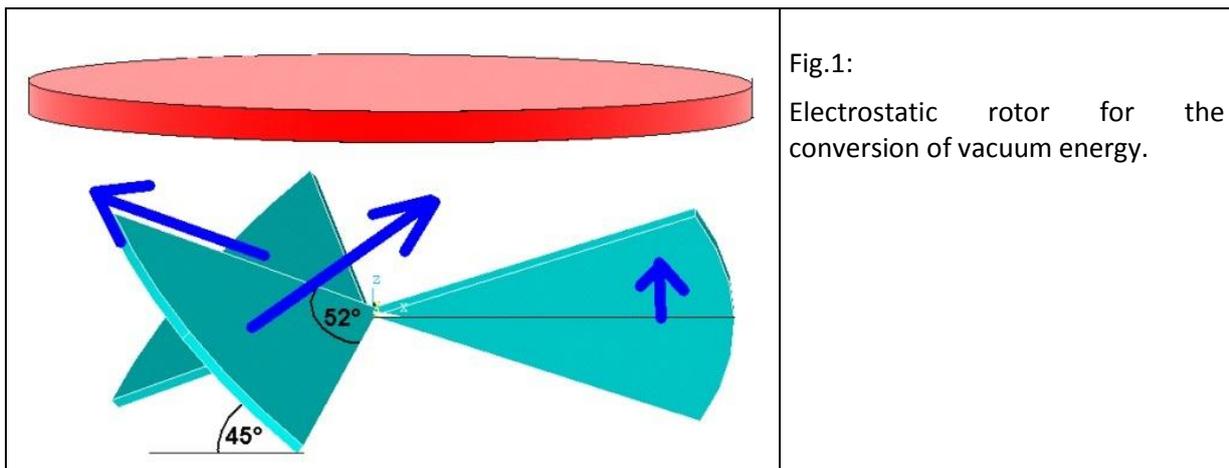
The operation of the US-American „terawatt-converters“ (Energy from Intermolecular Fluctuations, <http://www.terawatt.com>) is confirmed by certificates of the highly respected organizations of TÜV-Rheinland and Underwriters Laboratories Inc. The engine works in the range of few hundred Watts.

More powerful, in the range of Kilowatts, is the Australian „lutec-converter“ (LEA electric producing device, <http://www.lutec.com.au/>), which has a certificate of the world’s largest inspection organization SGS (Société Générale de Surveillance SA). The patents of the ZPE-converter are taken over by the Asian company „Evergreen Enterprise International Ltd.“.

As a physicist, working in fundamental science, the author is skeptic from the very beginning. Thus he could only believe in the utilization of the ZPE-energy after verifying it with his own hands in the laboratory, following the motto: “I only believe what I see with my own eyes.”

Thus I developed and conducted my own experiment, namely as a guest at the Otto-von-Guericke University at Magdeburg. Therefore I needed a profound theoretical basis. After developing this, I manufactured a setup according to figure 1. In the top there is a metal disc, drawn in red color, which has the name “field source”, because it is charged electrically and thus produces an electrostatic field. Same as a plastic ruler can be rubbed and then attracts little pieces of paper (as most of the readers know from childhood), the field source attracts the rotor-blades drawn in light blue color, where the attractive forces are drawn in dark blue. An adequate bearing is used to avoid that the rotor flies up to the field source. The tangential component of the attractive force makes the rotor spin - and now we see the crucial trick: The electrical load cannot leave the field source, so that the rotation is continued endlessly, without consuming any electrical current. This means that the rotor produces mechanical power-output without taking electrical power-input. In cooperation with the University of Magdeburg, the author proved that this is really the case, and he published it in scientific literature. An overview over his scientific publications is open-source available at the Internet-page of the author:

<http://www.ostfalia.de/cms/de/pws/turtur/FundE>



With this experiment, the conversion of vacuum-energy into mechanical energy of a rotation is verified at University-level, but the practical benefit is only a fundamental scientific confirmation. The output-power of this rotor with a diameter of 64 mm is only 150 NanoWatts, and the necessary electrical voltage is 30000 Volts. Having in mind, that mankind on Earth nowadays needs power in the order of magnitude of about ca. 1500 ExaJoules per year, it is clear: The electrostatic rotor was only a fundamental scientific experiment, but the energy supply of mankind needs something totally different.

The necessary enhancement of the output power is so tremendous, that the electrostatic principle cannot be used at all, because the electrostatic field has not enough energy-density. Remarkably more energy density than in the electrostatic field, is being found in the magnetic field. Even laypersons know this without complicated thoughts. Just remember the weak forces between the plastic ruler and the paper pieces – and compare it with the rather strong forces between a magnet and an iron screw. If we ever want to convert remarkable power out of ZPE-energy, any electrostatic principle is not the appropriate candidate. Much more sensible is every magnetic principle.

In order to make the construction of such vacuum-energy systems possible, the author developed a fundamental computation-method for magnetic vacuum-energy converters of all type. This method is based on a dynamic upgrading of the “Finite element method” and thus is called DFEM-method. In order to verify this method, the author constructed a ZPE-converter in theory and simulated it on the computer. In this example, a permanent magnet rotates within the coil (see fig.2), and thereby induces a voltage into the coil. This voltage makes an LC-circuit oscillate. The field’s energy of this oscillation-circuit acts back onto the magnet due to a Lorentz-force of the coil. If the system is adjusted appropriately, ZPE-energy is being converted into mechanical energy of a rotation of the magnet, as well as into electrical energy of the oscillation circuit, so that both mentioned types of classical energy can be taken out of the system. Size and power of the machine can be scaled. It seems possible build such a ZPE-motor with about the size and power of a conventional drilling machine – with the difference, that no power-input it necessary.

For this operation requires the adjustment of an electrical and a mechanical resonance to each other, the converter is named “Electro Mechanical Double Resonance”- Converter (EMDR). A collection of my scientific articles, going down to the fundamental system of inhomogeneous differential-equations with variable coefficients can be found at:

<http://www.ostfalia.de/export/sites/default/de/pws/turtur/DownloadVerzeichnis/Serie-deutsch-5Artikel.pdf>

The author would like very much to build up a prototype of this theoretically invented construction, in order to verify his theory and in order to develop a clean source of energy, but unfortunately he does not have the working conditions to perform this development.

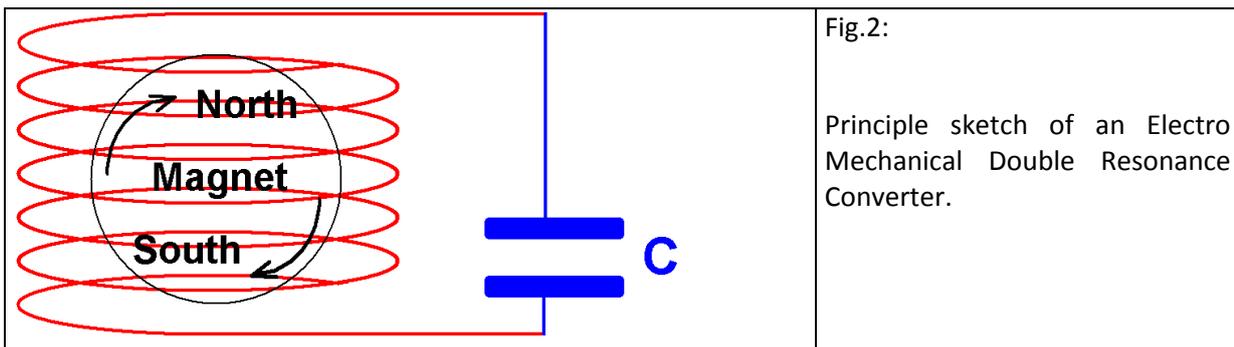


Fig.2:  
Principle sketch of an Electro Mechanical Double Resonance Converter.

In future we will see, whether mankind will try to solve its energy problems by slight changes, such as windmills and solar cells, not getting rid of the problems of energy storage and accumulators, with all its chemical waste, or whether mankind will follow a real energy revolution, with ZPE-generators working all around the clock, making energy storage needless, and being extremely low in price, because only the engine has to be bought, but there is no need for any substance carrying the energy.