

SECOND ORDER PERPETUAL MOTION MACHINE AND MAXWELL'S DEMON

Stanislav Konstantinov

Research Scholar, Corporation" Energy", Russian Federation, St Petersburg, Kosmonavtov Ale, Russia

ABSTRACT

The article prepared considers devices that allow you to draw energy from the environment and perform useful work with an efficiency of $\geq 100\%$, contrary to the second law thermodynamics, thanks to the Maxwell's demon implementation.

KEYWORDS: Physical Vacuum, Graphen, Ballistic Resonance, Vibrations, Maxwell's Demon, Aerodynamics, Helicopter, Cockchafer, Electric Generator Testatik

INTRODUCTION

On July 21, 2020, a scientific group from Peter the Great St. Petersburg Polytechnic University was able not only to detect, but also theoretically explain a previously unknown physical phenomenon - an increase in the amplitude of mechanical vibrations without any external influence [1].



Figure 1: A New Physical Phenomenon-Ballistic Thermal Conductivity.

The phenomenon of ballistic resonance lies in the fact that during the course of the heat equalization process, mechanical vibrations arise in the crystal lattice of the material, the amplitude of which increases with time. The authors of the discovery said: "For the past few years, our scientific group has been studying the mechanisms of heat propagation at the nano- and micro levels. In the course of work, we found that at these levels the heat does not spread in the way that we expected - for example, heat can flow from cold to hot [1].



Figure 2: Increase in the Amplitude of Mechanical Vibrations Due to Ballistic Resonance.

Professor A.V. Kosarev writes about this: "Yes, one of the formulations of the 2nd law of thermodynamics says that heat cannot spontaneously flow from a cold body to a hot one. We are now considering non-equilibrium thermodynamic states developing precisely according to the scenario of Clausius. In this scenario, spontaneous processes flow towards equilibrium and everything ends up in an equilibrium state, in which all system parameters dissipate their gradients. There is one exception to evolution according to Clausius, which is formulated in the form of Maxwell's demon. That is, if you create physical conditions under which the Maxwell demon will work, then it will be possible, including the flow of heat from a body with a lower temperature to a body with a higher temperature [2]. Maxwell's demon is a thought experiment proposed by Maxwell in 1871. It is primarily about a closed system. The proposed apparatus consists of a simple cuboid containing some arbitrary gas. The cuboid is divided into two sections of equal size with the same, uniform temperature. A demon sits on the wall separating the sections, carefully selecting randomly scattered particles so that all particles with high kinetic energy are collected in one section, and the rest - with low kinetic energy - remain in another. We can say that this demon is a metaphor for a device or machine that can carefully analyze the speed or kinetic energy of each particle in any container (Figure 1)



Figure 3: Demonic Gate.

Through this process—the action of Maxwell's demon—all high-energy particles are subsequently driven into one section. The demon raised the temperature of one part of the box compared to the other. This excess temperature or pressure can be used to power a turbine or piston. Yes, it follows that we get energy literally from nothing. In other words, the demon reduced entropy without any effort. It must be understood, however, that the insidious demon applied his tricks and, as a result, was able to contradict the law of entropy, but he did not violate the law of conservation of energy. He simply redistributed random kinetic energy to create enough pressure difference to extract energy from the initially balanced system. The cunning of the demon deceived nature itself [3]. In the experiments of St. Petersburg researchers, just such a variant of the physical conditions for the Maxwell demon was realized. And in these physical conditions, everything is determined by resonances and phase shifts. The authors themselves write about this: "In order to understand

the essence of the process, one can imagine the most ordinary swing. So it was generally accepted that it was simply impossible to achieve oscillatory resonance without external influence... But the scientific group discovered a physical paradox, according to which the excitation of mechanical vibrations occurred due to internal thermal resources (that is, the swing swinged by itself)" [1]. However, in the experiment, the increase in the amplitude does not occur indefinitely, but after reaching a certain value, it then vanishes, and the temperature becomes even along the entire crystal. Petersburg researchers not only derived equations that describe this phenomenon, but also found a practical application for the discovered phenomenon, working with graphene. That is, if different subsystems of one system that move in resonance but with a phase shift are considered as swings and external influences, then it is possible to transfer energy from a subsystem oscillating with a lower amplitude (temperature) to a subsystem oscillating with a larger amplitude (temperature). In this case, the resonant frequencies do not have to coincide, but their multiplicity is sufficient. If, at the same time, one learns to divert part of the energy from the subsystem that increases the amplitude of its oscillations, then this will be a perpetual motion machine of the second kind. In the report, I am going to present the helicopter of Professor Yuri Volodko, who managed to realize the Maxwell demon in his device, which literally draws energy from the surrounding air [4] and give a physical explanation of the aerodynamics of the flights of the cockchafer, in which Nature herself proposed the implementation of the Maxwell Demon [5]. Habitual energy is built according to a chain that meets the second law of thermodynamics (Carnot cycle): first you need to take or store the energy of any physical process, convert it into heat or into mechanical motion. In the next step, heat or motion can either be used immediately or converted into electricity and piezoelectricity. Professor Yuri Volodko proposed in 1998 a direct converter of environmental energy into mechanical energy, that is, he technically realized a physical phenomenon discovered in 2020 by scientists from St. Petersburg.

2. FUELLESS MONOTHERMAL ENGINE BY YURI VOLODKO

Professor Yuri Volodko in 1998 published the book "Laminar outflow of compressed air into the atmosphere and a fuelfree monothermal engine", which was obstructed by scientific circles. It includes the results of numerous experiments conducted by Yuri Volodko together with a group of engineers from NPO. Lavochkin, who established the effect of an increase in the gas velocity after exiting a narrow gap [4]. From numerous experiments it follows that the kinetic energy of the outflowing gas is twice or more greater than the energy expended on compressing the air. In other words, the velocity of gas molecules at the outlet of the nozzle exceeds the velocity of molecules at the inlet at the beginning of the nozzle by a factor of 2-4. Yu.I. Volodko tested more than 50 nozzles on the stand, each of which was a flat slot with gaps from 8 to 130 microns. The path length of the passed air was in the range of 0.2 - 62 mm. For all nozzles, the slot gap was chosen to be much smaller (75-1600 times) than the slot width B, and the length of the air path in the slot L was 2-1200 times greater than its gap. The calculated criterion was 100 m/s, which indicated the laminar nature of the flow. If the nozzle thrust is divided by the cross section of a narrow internal channel, then the resulting value has the dimension of pressure and can be called "effective pressure". Surprisingly, as experiments have shown, it is 2-4 times higher than the pressure in the receiver at the inlet. And this is equivalent to an increase in the speed of molecules, since pressure is the sum of the impacts of individual molecules, and the higher the speed of molecules, the greater the pressure. Thus, it turned out that the kinetic energy is 2 or more times higher than the energy expended on compressing the air. This remains inexplicable for modern gas dynamics and leads to a significant increase in overpressure [4]. Professor Yu.I. Volodko believes that additional energy is taken from the environment. On this basis, Volodko created a completely new type of aircraft, in which about 80% of the thrust is due to excess static pressure on the nozzle section, and the remaining 20% is due to jet propulsion. Using the obtained experimental data, Volodko proposed the following two devices:

- A non-standard aircraft, in which its dimensions are not much larger than the dimensions of its passenger cabin or cargo compartment. The Maybug may be the prototype of such an aircraft;
- A hypothetical power plant for obtaining mechanical (or electrical) energy without consuming any fuel at the expense of environmental energy a fuel-free engine (See Engineering Applications [4]).

The effect of compressed air spreading along the flat nozzle section is due to the cooling of the air jet with a rapid drop in pressure in it and, accordingly, the conversion of part of the internal energy of the medium into mechanical energy. In accordance with the obtained experimental data, Volodko proposed to consider a jet of compressed air with its laminar flow as a hypothetical direct converter of environmental energy into mechanical energy. Professor Alexander Kosarev offered to explain the effect of excess static pressure on the nozzle section discovered by Volodko. He considered the physical conditions for the implementation of the Maxwell demon under free thermal convection and under the conditions of Volodko slot nozzles [2]. The problem of "Maxwell's demon" is reduced to determining under what conditions it is possible to change the macroscopic parameters of the system without the expenditure of work. Many scientists proved the impossibility of the "Maxwell demon" in various ways, understanding it literally, i.e. as a mechanical device that sorts molecules by speed, and considering this device the only possible one, despite Maxwell's indication that this is only one example of the discrepancy between our conclusions and the nature of things under study. Kosarev considered the macroscopic conditions for the "Maxwell demon" in a laminar flow at the outlet of the Volodko slot nozzle [2]. Evgeny Grigorievich Oparin wrote: "Volodko Yu.I. showed that the mechanical energy of an outflowing laminar gas jet that occurs at low compression ratios (up to 1.6) significantly (by a factor of 2 or more) exceeds the energy required for its compression. This result is explained by the fact that during a laminar outflow, the energy is redistributed between three degrees of freedom in a gas that is in a closed volume before the outflow, and almost one degree of freedom in a laminar flow jet: There is a so-called "pickup" of thermal energy dissipated in the atmosphere" [6]. The laminar flow, leaving the nozzle, expands, forming a cone flow at the outlet of the nozzle to the atmosphere. The taper can be additionally organized by special inserts in the nozzle section. The nozzle and the conical laminar flow together form an ejector that draws in air from the atmosphere surrounding the jet and thereby creates a rarefaction zone at the exit of the laminar jet from the nozzle. Macroscopic conditions for the "Maxwell demon" are formed around the jet at the outlet of the nozzle, similar to those that are created in the case of free convection. First of all, the fastest molecules of their tail of the Maxwell distribution rush into the rarefaction zone from the atmosphere. Passing through the rarefaction zone, they fall into a laminar flow, introducing their high energy into it. In a laminar flow, due to its conicity, the flow-oriented part of the momentum of an incoming molecule ($\Delta M = M \cdot \sin \alpha r v$) and the kinetic energy associated with this component increase the cooperative energy of the flow. This shows how important it is to increase the conicity of the flow for intensifying the process of pumping atmospheric energy into the cone flow. Another momentum component perpendicular to the flow axis $(\Delta M = M \cdot \cos \alpha r v)$ and the energy transferred by it are used to heat up the flow and are partially dissipated in the atmosphere surrounding the flow. Features of heating a laminar cone gas flow in special channels (in a cone surface) are considered in [7]. Good luck Volodko Yu.I. was the use of slotted nozzles. In these nozzles, a large area of the rarefaction zone is achieved, which intensifies the diffusion of fast atmospheric molecules into the laminar jet, per unit mass of the laminar flow. Another important point of slotted nozzles is the maximum taper, because in comparison with the round section of the nozzle, in which the flow opens in all directions, in a slotted nozzle the flow opens only across the long side. Another positive moment in the approach of Volodko Yu.I. is the transition to laminar flow. On the one hand, this reduces the cost of work in the compressor, on the other hand, with a turbulent outflow, the dissipation of the cooperative energy of the flow increases sharply, which negates the effect of pumping atmospheric energy into the jet. The creation of macroscopic conditions for the action of the "Maxwell demon" makes it possible to use the chaotic energy of the atmosphere to obtain or enhance vector energy flows. In order to obtain a positive effect from the implementation of macroscopic conditions for the "Maxwell demon", it is necessary to ensure that the energy costs for creating macroscopic conditions and the dissipation of the emerging cooperative energy flows are less than the energy of cooperative flows additionally generated as a result of the action of the "Maxwell demon" [2]. Volodko's experiments say that the environment can be a source of additional energy. In the course of numerous experiments, he empirically derived formulas that allow the designer to evaluate the change in the volumetric air flow, the mechanical power of the drive and the bearing surfaces depending on the excess pressure at the slot inlet, on the slot gap and on the length of the slot (i.e. from the path , passed by air in the internal channel of the nozzle):

$$V / F = 46, 1 \cdot L0, 107 \cdot exp(-0.00317 \cdot H) \cdot exp(-1.31 \cdot Pex)$$
(1)

$$Wc / F = -2, 65 \cdot H + 90, 5 \cdot in L + 847 \cdot Pex + 578$$
(2)

$$S/F = (0, 00303 \cdot H - 0.351 \cdot \ln L + 4, 23 \cdot Pex + 1.22)^{-2}$$
(3)

Where Pex is Excess Air Pressure at the Slot Inlet

- H is slot gap, μm;
- L is slot length, mm;
- V / F is volumetric air flow, referred to a draft of 1 tf, (norm. m³ / s) / vehicle;
- We / F is mechanical power of the compressor drive, which is necessary for isothermal air compression, referred to a thrust of 1 tf, kW / tf;
- S / F bearing surface (total cross-section of air jets), related to thrust of 1 tf, m² / vehicle.
- Empirical formulas are obtained by joint least squares processing of experimental data for 32 nozzles using the coordinates Pex,H, ln L and the fourth coordinate, one of the following three ln (V/F), Wc/F, (S/F)⁻⁰⁵ for set of 157 four-dimensional experimental points. Confidence limits were calculated at a confidence level of 0.98. These limits correspond to a change in the volumetric air flow and mechanical power of the drive by 1.6 times, and the bearing surface by 3.6 times, up or down. Equations (1) (3) make it possible to approximately estimate the required air flow, mechanical power of the drive and the bearing surface (total cross-section of air jets), referred to a thrust of 1 tf, at various values of overpressure at the slot inlet, gap and slot length. The formulas are applicable at overpressure in the range of 0.10 0.75 kgf / cm², with a slot gap in the range of 15 135 microns and with a slot length in the range of 0.2 62 mm. [4].

3. AERODYNAMICS OF FLIGHT OF THE COCKCHAFER

According to the laws of modern physics and aerodynamics, the Maybug should not fly. The wing area is too small in relation to the body weight of the insect itself. In order to fly, the cockchafer, with an average mass of 9 g, must have a lift coefficient of 2 to 3. In fact, this insect has a calculated lift coefficient of less than one! At the same time, the cockchafer, with its own weight of 9 grams, can lift about 100 grams of cargo during flight. The flight of the cockchafer was the subject of a special study. This is the conclusion that the leader of these studies, the American scientist Leon Bennett, came

to: "If we can determine the aerodynamics of the flight of the cockchafer, we will either discover some imperfection in the modern theory of insect flight, or we will discover that the cockchafer has some unknown way of creating high lift force. In France, in one of the design bureaus, there is a framed photograph of the Maybug, under which it is written: "The Maybug flies, violating all the laws of aerodynamics, but it does not know about it and continues to fly." People do not yet know why the cockchafer flies. According to aircraft designers, "everything is calculated incorrectly for the beetle: both weight, and wings, and engine power." No matter how people think, it turns out that in order for a beetle to fly, it must be either three times lighter or three times stronger (Figure 4).



Figure 4: Maybug in Flight.

The secret of the aerodynamics of the cockchafer was discovered after the discovery by Yuri Volodko of the effect of an increase in the speed of gas after leaving a narrow gap that provides excess pressure. [4]. It turned out that the dynamics of the flight of the cockchafer and its anatomical structure just provide excess pressure, but not 2 times, as Volodko discovered, when gas escapes from a narrow gap, but 10 times. Mother Nature once again offered a more perfect solution than man found. When the beetle's wing moves down, a lifting force is created and, in addition to it, due to some rotation of the wing, a thrust force (pushing force) is also created. At the same time, air is also sucked into the space between the elytron and the wing. At bottom dead center, the beetle's wing turns around and changes its angle of attack. Now, when moving up, the wing displaces air from the space under the elytron. Moreover, the resulting air jet creates both lift and thrust, since this jet is directed at an angle downwards and backwards. Thus, it turns out that the cockchafer combined flapping and jet flight [8].

4. PAUL BAUMANN'S ELECTRIC GENERATOR "TESTATIK MACHINE M/L CONVERTER"

50 years ago, the Swiss engineer Paul Baumann broke the Carnot energy chain mentioned above and proposed a new way to extract electrical energy from the environment. He managed to build a small plant, very similar to the electrophore machine, which he called the Testatik Machine M/L Converter, in which there were no brushes to remove the charge. At the initial moment, it was necessary to spin the disk (s) of the installation and the installation immediately began to generate electrical energy, as if from nothing, violating the second law of thermodynamics. Modern theoretical physicists, who are well versed in the knowledge of the fundamental laws of electrostatics, can easily explain that the appearance of additional electrical energy in Paul Baumann's device cannot be, since the movement of a point charge in an inhomogeneous electrostatic field along the same closed circuit does not change its energy for a full turnover and does no work. The circulation theorem, according to which the efforts to replace the charges would be equal to the energy released during the flow of electric current after the separation of charges, turned out to be incorrect (Figure 5).



Figure 5: Paul Baumann's Electric Generator.

Now we come to a project in which engineering thought made it possible to obtain "free" electric energy in installations that contradict the laws of energy conservation in electrodynamics. Non-invariance equations of electrodynamics are due not so much the existence of scalar magnetic fields, as the reality of the assumption electro and magneto receptive medium (dark matter). Full invariance of the equations of electrodynamics is valid only in a completely empty Einstein's SRT. I should note that in the world successfully work already a lot of devices with an efficiency of> 100% [9]. The most famous and long-lived project is a DC generator, which has been successfully operating for about 30 years as a Perpetuum mobile, i.e. it produces energy from the vacuum. In Switzerland, the device is called Testatik Machine M/L Converter of the Methernitha religions group. Swiss physicist Paul Baumann is an inventor of this "gratuitous" energy source. Externally, the device looks like an electrostatic machine with Leyden jars (Figure 6). It has two acrylic disks with 36 narrow sectors, made of thin aluminum. Initially, rotating discs are driven manually in different directions. Rotation speed is 50 to 70 m/s. After starting, the discs rotate spontaneously, since the motor and generator of the device are combined together. At that, we achieve a DC voltage of about 300 to 350 V with 30A current. The installation was made in four variants with a power of 0.1, 0.3, 3 and 10 kW. Mechanical energy spent to rotate disks is only about 100 mW, hundreds of thousand times less than generated electric energy is. The largest installation for 10 kW has a diameter of plastic disks of more than 2 m, while the smallest - 0.2 m. The first information about how the installations are arranged appeared in Austria in 1989. Their description can be found in the book by Professor Stefan Marinov [10]. The professor's research on low-power devices (as commissioned by the community) amazed him so much that he began to doubt the fundamentality of any conservation laws known in physics. In the monograph [10], one can find additional technical details and some ideas for the implementation of the Testatik setup based on the unitary quantum theory of an oscillating charge. In particular, Professor Sapogin, relying on the Unitary Quantum Theory, argues that the Circulation Theorem, according to which the efforts to replace charges would be equal to the energy released during the flow of an electric current after the separation of charges, is incorrect for single electric charges [11]. The generator is powered by the high voltage generated by the modified Wimshurst machine, and is used to convert static electricity obtained directly from the air surrounding the machine into a constant voltage and current. Instead of Leyden jars, such as those found in the designs of conventional Wimshurst electrophore machines, cylindrical capacitors are used here with a much smaller capacity, but with a much larger outer surface area. The stationary electrodes, which receive a charge from the segments of the machine's disks, do not come into direct contact with these segments. Here non-contact electrodes of a large area with a rough surface are used, making only inductive interaction with the segments sufficient. High voltage is supplied from the disks, through fixed electrodes, to the inner plates of a pair of cylindrical capacitors spaced far from each other in order to exclude direct interaction of their outer plates. As can be seen from the book by Stefan Marinov, the main unit of the Bauman installation is an oscillatory circuit, in which fixed U-shaped capacitor plates are used as electric

capacitance. Inside the plates of the U-shaped capacitor, one or two acrylic disks rotate, with a set of conductive sectors radially glued to them from a thin foil. The rotation of the disk with conducting sectors periodically changes the electrical capacitance of the U-shaped capacitor within certain limits. Changing the capacitance of the U-shaped capacitor and leads to an increase in excess energy in Testatika But, is it such a new electromechanical system proposed in Switzerland? The physical properties of such a system were first studied in Russia in the 1930s by Mandelstam and Papaleksi [12]. They carried out their first experiments on oscillatory circuits in which an air capacitor was used. He had one of the plates was fixed, and the second rotated at a constant angular velocity by an electric motor, the rotational speed of which could be changed. What did they discover? The mechanical rotation of one of the capacitor plates has always led to the fact that an electrical charge accumulates on the capacitor plates until the air capacitor breaks through. On the face, the same effect as in the Testatika and the electrophore machine. Mandelstam and Papaleksi, in their experiments with a rotating capacitor plate, discovered a new physical phenomenon "parametric resonance", which was later in demand in radio engineering, but were not interested in the effect of direct conversion of the mechanical energy of the capacitor plate rotation into electrical energy, which then accumulated until the breakdown of the capacitor. This is what N.D. Papaleksi stated in his report "The Evolution of the Concept of Resonance" in 1947. "It turned out to be possible to excite strong resonant oscillations in an electric oscillatory system in the absence of any obvious electric or magnetic fields by only one mechanical periodic change in both its self-inductance and capacitance. This phenomenon was called parametric resonance" [12]. To explain the effect of the accumulation of electric charges on the capacitor plates in violation of the theorem on the circulation of charges, it is necessary to remember that all processes for the conversion of mechanical energy of rotation into electrical energy proceed in an inhomogeneous polarization medium of physical vacuum [13]. The hypothesis of Professor Vyacheslav Dyatlov about the existence of an inhomogeneous physical vacuum in the form of vacuum domains, where energy can accumulate, makes it possible to explain the existence of luminous plasmoids and ball lightning. It can be assumed that the described domains of dark matter should represent volumetric rotating resonators and serve as accumulators of electromagnetic and gravitational energy. The hypothesis of the existence of an inhomogeneous quantum vacuum (dark matter) in the form of rotating vacuum domains (spinors) allowed Professor Vyacheslav Dyatlov to combine Maxwell's electrodynamics and Heaviside's gravidynamics. This made it possible to determine the energy of a quantum vacuum domain (VD) in electric, gravitational, magnetic and spin fields [13]. Based on this, Dr. Vyacheslav Dyatlov suggests calculating the energy of a vacuum dipole (VD) as a four-dipole in four fields (E - electric, M - magnetic, G gravitational, S - spin) in the following form:

$$W = W_E + W_G + W_M + W_S \tag{4}$$

 $W_E = -\mathbf{d}\mathbf{E}_0; \qquad \qquad W_G = -\mathbf{d}_G \mathbf{E}_{0G};$ Where $W_M = -\mu_0 \mathbf{l}_M \mathbf{H}_0; \qquad \qquad W_S = -\mu_{0G} \mathbf{l}_S \mathbf{H}_{0S}.$

- μ_{0}, μ_{0g} magnetic and magneto spin permeability's
- $\mu_0 = 1.257 \cdot 10^{-6} \text{ m} \cdot \text{kg} \cdot \text{s}^{-2} \cdot \text{A}^{-2}$
- $\mu_0 = 1.257 \times 10^{-6} \,\mathrm{m} \cdot \mathrm{kg} \cdot \mathrm{c}^{-2} \cdot \mathrm{A}^{-2} \ \mu_{0G} = 0.9329 \times 10^{-26} \,\mathrm{m} \cdot \mathrm{kg}^{-1}$

Generally speaking, the fields \mathbf{E}_{0} , \mathbf{E}_{0G} , \mathbf{H}_{0} , \mathbf{H}_{0S} depend on spatial coordinates, but they can be approximately considered constants within the domain. The hypothesis of Professor Vyacheslav Dyatlov about the existence of

inhomogeneities of the physical vacuum (dark matter) in the form of rotating vacuum domains (plasmoids) made it possible to transfer the theory of electrogravidynamics to the field of observed macroprocesses. It is the plasmoids that appear between the plates of the U-shaped capacitor when the acrylic disks rotate. As Stefan Marinov noted in his book, during the operation of Testatik, a slight crackling was observed, accompanied by the smell of ozone [10]. This indicates the polarization of the vacuum in the space between the plates of the U-shaped capacitor, with the formation of plasmoids. The time sequence of the formation of plasmoids during the development of electrical instability, when the electrically neutral plasma forms a single, either positive or negative plasmoid, was described by V.I. Pustovoit [14]. Each aluminum conductive sector glued radially to the circle represents an electric pointer. It differs from the magnetic one in that in the free state it indicates the direction of the external electric field strength and at high external field strengths it has a sufficiently large electric dipole moment. The greater the length of the arrow and the greater the strength of the external field, the greater the dipole moment of the electric needle. Therefore, when the end of the electric arrow approaches the plate of the U-shaped capacitor, its charges are attracted to the plate and do positive work on the arrow. Approaching close to the capacitor plate, the arrow is discharged through the smallest distance of the gas gap and changes the signs of the charges at its ends. The force of interaction of the ends of the arrow with the plates of the capacitor immediately changes. It jumps up and becomes repulsive. The moment of electric force does not change its direction in space and continues to rotate the wheel with conducting sectors in the same direction, again doing positive work. Microdischarges lead to the appearance of dry crackling and the formation of ozone, which is observed in Testatik. This is how the Testatik motor works. On this principle, it is possible to create a variety of rotary motors and micromotors of direct and alternating current of a new generation. How does the Testatik generator work? At the moment of discharge of an electric arrow on the plates of a capacitor, its dipole electric moment changes its direction to the opposite in milliseconds. A change in the dipole moment will always lead to a change in the electric induction vector in the same space. And this, in turn, will generate the Maxwell bias current density vector, which is proportional to the rate of change in electric induction jd = (dD/dt). Since the U-shaped capacitor is in the circuit and is closed to the inductance, a short pulse of the Maxwell bias current will cause a short pulse of the same conduction current *jb* in the inductance. What is "bias currents"? Maxwell called component $jb=1/4\pi$ (dE /dt) in their equations "bias current", meaning that the electric field is created in the medium of physical vacuum (ether) due to the relative motion of its constituent oppositely charged particles that form the dipole polarization A sequence of conductive sectors moving periodically in the plates of a U-shaped capacitor, against the background of a direct current, will generate an alternating pulsed current. It will periodically supply excess energy to the system. On this principle of operation of Testatika, it is possible to build electromechanical alternators of a new generation. The excess energy supplied by the generator will be sufficient both to create a high voltage on the plates of the U-shaped capacitor and to compensate for the dissipative losses of the system.

5. CONCLUSIONS

Thus, the discovery of a phenomenon that violates the second law of thermodynamics, made in 2020 by the scientific group of Peter the Great St. Petersburg Polytechnic University, paves the way for a kaleidoscope of projects of perpetual motion machines of the second kind, allowing the implementation of the Maxwell's Demon, drawing energy from the environment.

6. REFERENCES

- 1. Kuzkin V.A., Krivtsov A.M., "Ballistic Resonance and Thermalization In The Fermi-Pasta-Ulam-Tsingou Chain At Finite Temperature", - Physical Review E, Volume 101, Issue 4 (Year: 2020) Pages: 042209
- 2. Kosarev A.V. Macroscopic conditions for the realization of the Maxwell demon. http://erq.h17.ru/pub/info/demonmaxwell.doc
- 3. J. Clerk Maxwell Theory of heat // Publisher London, New York [etc.] (1908)
- 4. Volodko Yu.I. Laminar outflow of compressed air into the atmosphere and a fuel-free monothermal engine // M .: "Public benefit" (1998)
- Stanislav Konstantinov, Physics of May Beetle Flight and Volod'ko's Fuel-Free Engine -International Journal of Advanced Research in Physical Science (IJARPS), Volume 7, Issue 10, (2020), PP 23-25, 3-25, ISSN No. (Online) 2349-7882
- 6. Oparin E.G. Physical foundations of fuel-free energy Limitation of the second law of thermodynamics // M.: "URSS", (2004), 136p.
- 7. A.V. Kosarev Dynamics of evolution of non-equilibrium dissipative media // IPK "Gazprompechat", LLC "Orenburggazpromservis", (2001), 144s
- 8. Alexander P. Biomechanics. M.: Mir, (1970)
- 9. Stanislav Konstantinov, The Energy of the Future Energy Research (CITS), Volume 3, page 49-63, (2019), ISSN: 2617-4553, DOI: 10.31058/j.er.2019.33002
- 10. Marinov S. "THE THORNY WAY OF TRUTH". Part V, Documents on the violation of the laws of conservation. TESLA INSTITUT, Austria, A-1180 Wien, Postfach 100, (1989)
- 11. Leo G. Sapogin; Ryabov Yu.A.; Boichenko V.A. The Unitary Quantum Theory and a New Sources of Energy. Science Publishing Group, USA. (2015), 525. ISBN: 978-1-940366-43-2.
- 12. Papaleksi N.D. Collection of scientific papers. Under the editorship of Professor S.M. Rytov. Edition of the Academy of Sciences of the USSR (1948)
- 13. Dyatlov V.L. "Polarization model of inhomogeneous physical vacuum" Novosibirsk, Institute of Mathematics, (1998)
- 14. Pustovoit V.I. On the mechanism of the occurrence of lightning Radio engineering and electronics, V. 51, No. 8 P. 996 - 1002, (2006)