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New Sources of Energy

2021

*Dedicated to my parents,
to my teachers
and to all heroic researchers of new technologies*

Various ideas and technical solutions in the field of energy supply will be presented. The schemes and functional principles of energy generators that are not dependent on fuels, solar energy and wind are considered here. There are some constructive advices on experimental verification, as the initial information on this topic sometimes has no official reliable confirmation.

The book can be useful for engineers and a wide range of readers interested in designing fuel-free energy systems.

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Preface

In 2021 it will have been thirty years since I started studying the fascinating field of alternative energy. In the 1990s, in Russia it was started not only qualitative changes in politics and economy, but also it was time of new opportunities to get the new wide horizon of knowledge. The newspapers sometimes ran private advertisements in English, one of which caught my attention. It was about some new inventions... they wrote about "free energy," about sources of energy that don't use fuel. Is it fantastic?! I started to correspond with the authors of the advertisements, gradually the circle of acquaintances increased and I received in the mail the most interesting books, conference materials and articles about the work of scientists and inventors in different countries of the world.

Since 1991 I am participant in many scientific conferences, where Russian and foreign scientists and researchers reported interesting news. In 1994 I bought my first computer and started using the internet. In 1996 we organized an international conference "New Ideas in Natural Science" in St. Petersburg. We have gathered over a hundred speakers from Russia and 30 researchers from other countries. In 2001 we founded the Faraday Laboratory Ltd., and we began experimental work. Also we published the international journal *New Energy Technologies* for several years. Undoubtedly, these processes have influenced technical progress in general, as a wide exchange of ideas and practical knowledge has produced results.

The modern community of people interested in these subjects has representatives in all technically developed countries. We are united by the fact that the main directions of our research lead to the creation of new types of energy sources that do not require hydrocarbons or other fuels, do not depend on the sun and wind, and the introduction of new energy sources for new types of transport that do not operate according to the jet reactive principle. These changes mark a qualitatively new stage in the development of civilization. The importance of these areas was evident many years ago, but the world was not yet ready for their development and implementation. Maybe that's why the crisis came to our World.

However, the current situation for these technologies is very favorable precisely because of this crisis that arose at the beginning of the 21st century and is getting worse. The reason for the crisis in the modern world economy is an *artificial monopoly on fuel technologies in transport and energy supply*. The only solution here is to replace the fuel concept with fundamentally new technical solutions that completely is fuel less. Modern technologies already make it possible to generate energy without fuel, sun or wind. It's not fiction. By adopting new technologies, all industries can reduce costs and increase profit, especially transportation and agricultural production. Countries that quickly start producing new energy sources can increase their production and lower the prices of their products on the world market.

The world crisis is developing precisely because the world economy has "outgrown" the fuel system; it is cramped in the old framework. New technical solutions have been found, but they are not allowed to develop for one simple reason: fuel and raw material monopolists try to maintain their status instead of opening up new markets and new energy fuel less technologies. Only a change in the fuel concept of energy can bring the economies of the countries to a new level of development. It will also lead to the end many wars for fuel resources.

The subject that we are going to discuss here is very large and wide. I will try to tell you the most interesting technologies. I hope my book will help readers develop their experimental research.

Chapter 1

Our goal and means to achieve it

“The development and well-being of the city, the success of the nation, the advancement of all humanity are determined by the available energy. We shouldn't be content with simply improving steam engines or inventing new batteries. We have something better to work for, more challenging. We have to develop methods to obtain energy from inexhaustible sources, improve methods that do not require consumption of any materials. ”

Nikola Tesla "Mission of Science", 1900

Every meaningful activity has some purpose. In this case, our main goal is to free society from energy dependence, which should lead to the creation of better conditions for its development.

There are different forms of addiction, such as drugs and tobacco. A person who is dependent on some kind of needs does not have complete freedom of action, that is, he cannot develop normally and deteriorates. Companies and economies in energy-dependent countries are also subject to development limits. On the other hand, new energy technologies lead to increased political stability and reduce the reasons for wars in areas of oil and gas resources.

The time when all countries can get all advantage of free energy technologies will mark the beginning of a truly civilized era of humanity. We will understand that we live in an ocean of energy, it is a gift from God, and then the monopoly of fuel dealers will end. There is no reason to slow progress other than the desire of fuel dealers to maintain a monopoly.

However, there are already examples of power generators that do not require fuel on the world market. The technologies are different (pneumatic-hydraulic machines, magnetic generators, high-voltage converters, etc.) All of them have one common property that is possibility to generate a certain amount of energy everywhere and constantly for many years, regardless of the weather and other external conditions. There are still few examples, technologies are imperfect, and productions are manual or small-scale but there are facts.

Let's consider the question of the energy costs that is created by the new fuel less generators. Fuel is not used in new energy sources, but every piece of engineering has a cost of manufacture and a trading margin. Chinese inventors developed a permanent magnet drive with a shaft output of 5 kilowatts back in 2008. Inventor Wang's devices have a 40-year history of development, testing and certification. The cost of a 5 kW Wang motor was budgeted at \$500 and about \$200 in mass production. That's only \$100 – 40\$ per 1 kilowatt of installed capacity. With a resource of 5 years, which corresponds to 43,800 hours (the usual time for modern machines with a rotating electric generator), the electricity costs of such a generator will be less than 0.1 cents per 1 kilowatt/hour.

Unfortunately, the history of development of this invention is an example of the suppression of such trends in the development of civilization. According to press reports, Wang and his investors began renovating obsolete coal-fired power plants in 2010 to replace electric generator drives with Wang magnetic motors. At an exhibition in Shanghai, the inventor announced that a company had been founded in China to develop this innovative project and that the task was to introduce magnetic motor technology in many power generation systems with a total output of 10,000 megawatts as a first step. It was difficult to implement, there was strong opposition, and nothing was heard from this group of innovators in 2015. In 2021, as we can see, China remains

one of the largest consumers of hydrocarbon fuels, and most likely no revolutionary changes in the energy sector are planned there.

Another example: The English inventor Bob Amarasingham started producing his electricity generators back in 2009. He planned to set up production facilities in China because there are optimal prices for components. His 3-kilowatt autonomous power generator should be priced at around \$750, and it could hit the market in 2012. This technology is very simple. Some small electric motor turns a rotor with weights - eccentrics that work on the cardioid trajectory in the vertical plane. As a result, due to the forces of inertia, additional momentum torque appears in the system (at half the cycle of rotation of the weights) and the output power of the electric generator is many times greater than the power consumed by the drive. We'll take a closer look at the Amarasingham generators some later. Unfortunately, there are no great achievements in organizing the mass production and commercialization of this technology in 2021.

The GDS Technologies Group can be named as an interesting example of free energy innovations. These power generators are already on sale, power to order, from 5 kW to 50 kW. The author is looking for partners for the development of the production. We discussed a license agreement for Russia with him in 2014. The acquisition costs for generators of this type are around 500US dollars per kilowatt of installed capacity.

An interesting example of a new technology of highly efficient autonomous power generators was Andrei Slobodyan's generators, which were successfully developed in South Korea by 2019. Unfortunately, his laboratory was destroyed by fire and the author died. One more example of suppression of the innovation.

Many other technical solutions can be mentioned, which look much more complicated than the Slobodyan or Amarasingham generators, but with serial production they become much cheaper than conventional fuel power plants. All electronic systems drop in price quickly when their mass production begins with automated lines (robots). Likewise, new types of energy sources are initially expensive and then significantly cheaper. There's nothing special in these devices. There are some wires, electronics, microcircuits, iron, copper, casing... In the case of mass production, it is expected that prices will be about \$20 per 1 kilowatt of installed power and the lifespan of such devices will be high is guaranteed for 25 years or more. In such a world, a farmer or owner of a private house can buy an autonomous source of energy with an output of 20-30 kilowatts at a price roughly equal to his average monthly income. Calculated over 25 years, the electricity costs are around 0.1 cents per 1 kilowatt/hour.

I believe that the widespread adoption of alternative energies will have not catastrophic consequences for the fuel economy. This process is slow and it is not catastrophe. It is evolution. This problem has been around for decades, but if you are told today that oil and gas are the basis of the world economy, don't believe it! The basis of any economy can be something stable and emerging, such as high-tech space technology or modern agriculture. Resource trading can be a temporary source of money for the household, a source of reserve fund formation, but it is not a permanently reliable basis for the economy.

Trading fuel today is shortsighted, especially in the domestic market, given the opportunity to develop free energy technologies. It's like trading water for your friends near a spring in your own village. By temporarily blocking people's access to free energy technologies, fuel monopolists can now benefit from them. In the old days, about a hundred years ago, this fuel business paved the way for the industrialization of society and was dignified as the "natural monopoly". Today it is an artificial monopoly, since energy is available always and everywhere. We have real current state of the art for it, without any restrictions on performance and power level. Maintaining the monopoly

position is beneficial for a small fraction of the world's population but extremely detrimental to the rest of the population. Problems in such a situation arise not only for consumers, but also for all progressive entrepreneurs who cannot develop their business normally in the face of rising fuel and electricity prices.

Businessmen with serious analytical forecasting stay in the oil sector because they understand that oil is becoming more and more expensive as it is not only a fuel but also a raw material for the huge petrochemical industry. This raw material becomes more expensive because the quantity of the materials on our planet is limited. At the same time, as far-sighted "business people", they are expanding the subject on the well-known energy market. A new market means new horizons for business development.

The example of the Arab countries, which have been trading in oil for many years, shows that they have wisely invested their profits at the expense of the state in the training of highly qualified professionals of all professions abroad, and also seriously spent money on the purchase of new technologies. Now they don't worry too much about the price development in the oil market. Of course they are trying to get the maximum profit from the current situation, but a drop in oil prices does not threaten them with a crisis. They understand that the raw materials economy in their countries is not optimal way.

Incidentally, in 1933 a reporter for the Philadelphia Public Leader asked Tesla, "Would the drastic introduction of his inventions create problems for the existing world economic system?" Tesla replied, "It's already a bad economic system."

It is impossible to stop progress, since the laws of the market are stronger than the monopolists' desire to maintain their position. New energy technologies are being introduced for one simple reason. The reason is profit. With the introduction of fuel-free technologies, electricity costs will be reduced tenfold and all household appliances and industrial equipment will be given a new consumer quality that is "no fuel required".

This is not a fantasy, this is a real future. We have outlined the goals earlier, and the book is a means to distribute our knowledge about free energy technologies. Very few people today have reliable information about such technologies, even those who need to know because of their work. In this context, I propose to give a brief overview of new technologies and techniques, without using special terms, in order to get interest from investors, business leaders, a wide range of engineers and technical intelligences.

Chapter 2

Theory of fuel less power generators

"The use of fossil fuels is based on our ignorance."

K. E. Tsiolkovsky

All we understand that "something" cannot arise from "nothing". We can receive electricity or heat without consuming fuel, while converting the energy of a source or material resource that really exists in an open physical system. Absolutely closed, the isolated physical systems do not exist in the real world. The difference between open and closed physical systems is whether we know the source of energy entering the system from outside or whether we don't know it. It depends on our understanding of the structure of matter, on the knowledge of the properties of space-time. If we understand how a fuel-free generator works, we will have no problem improving it and implementing it in the industry.

So let us briefly consider the theory on this topic. The concept of the physical vacuum as an energy source is becoming more and more popular today. The fundamental work of Andrei Dmitrievich Sakharov and other authors on the nature of "zero point" energy has been published (Sakharov AD Quantum Fluctuations of Vacuum in Curved Space and the Theory of Gravitation, Reports of the Academy of Sciences of the USSR, Vol 12 1968, P. 1040). A detailed mathematical analysis of the problem can be found in the book "Unitary Quantum Theory and New Energy Sources" by Professor Sapogin, Moscow. In the USA, the work of Harold Puthoff is known (Extracting energy and heat from the Vacuum; Physical Review A, Vol. 39, No. 5, Gravity as a zero-point-fluctuation force. Harold Puthoff). In Europe dozens of scientists are working on the topic of new energy sources, the work of Professor Josef Gruber, Germany, is well known.

The term "zero point" (in the English-language literature "Zero-Point-Energy" ZPE) denotes a point moment in space-time to get the transition of virtual particles (for example electron-positron pairs) from the state of mutual compensation in a short-term state of two real particles with observable and measurable properties. For a short time these particles have mass and energy, so you can interact with them and organize the exchange of energy! In the state of virtual particles we cannot observe them and interact with them, so we cannot see the source of this energy.

In the work of Nobel Prize winner Ilya Prigogine, there is both possibility to increase entropy in the processes of converting a gravitational form of energy into an electromagnetic one and also possibility of other processes to get the converting of the electromagnetic form of space energy into a gravitational form of energy.

In connection with these assumptions, in my publications and in work of other authors it was developed a concept of the existence of reality with specific properties of space and time. These properties are determined by the probability density function of energy. This concept shows that it is impossible to look at space without its energy and there is no space without some energy density in the space. The theory is presented in detail by Professor of Mathematics A.A. Nassikas, Greece, Larissa University.

From this point of view, the internal structure of reality manifests itself as the coexistence of two forms of energy: gravity and electromagnetic; moreover, a local increase in one component leads to a decrease in the other, so that the total change in total energy is zero.

On the basis of these ideas it is possible to generate energy at any point in space and to convert forms of energy in space itself without using any material fuel.

There is a question about amount of energy we can absorb for our purposes in this way without significantly changing the structure of space-time.

The American scientist Tom Bearden (we have corresponded these questions since 1991) reveals the structure of the electric potential field in his concept of free energy. It also provides a zero point energy density calculation. Bearden refers to the concept of electrical potential as the bidirectional flow of photons and antiphotons proposed by the English mathematician Whittaker in 1902.

We know that the field of a static electric charge can be detected experimentally when the field is applied to some electrically charged body because the field is a gradient of the electric potential. In Whittaker's concept, the field has an internal structure that consists of two energy flows: photons are emitted from a charged body to infinity, antiphotons transfer energy to a charged body and thus maintain the energy balance of the potential field. This structure of any potential field, for example an electrical one, *does not need any energy consumption* from a source in order to maintain its existence.

Photons and antiphotons are similar in Bearden's concept, but photons move from the present to the future, and antiphotons move from the future to the present at the same speed (taking into account two opposite time axes). This leads to the assumption in my report at the conference "New Ideas in Science", St. Petersburg, 1996, that using the potential field in power generators to do useful work will change this photon-antiphoton balance. The gravitational and temporal properties of space – time in area of free energy generators can be changed.

I suggest using quantitative estimates of the expected changes. Based on the value of the Planck wavelength, which gives us an indication of the maximum oscillation frequency, we can estimate the energy density in the “empty space” to be 10^{127} joules per cubic centimeter. In terms of mass, this is 10^{93} grams per cubic centimeter. Note that osmium is the most dense substance on earth, one cubic centimeter of which weighs about 22 grams. When comparing these values, we see how small energy is “materialized” in our world, since most of it remains free for use in form of virtual particles.

Based on these calculations, even with megawatts or gigawatts generators outputs hardly we can detect any significant changes in space-time parameters.

Other energy conversion systems, for example simple converters of the dissipated heat environment energy do not produce any changes in the curvature of space or gravitational effects. With such devices we can only consider the process of efficient heat transfer from one source (environment) to another source (consumer). These are well-known "heat pumps" that are on market to be sold today, and the efficiency of 400% - 700% is no longer surprising for us.

In addition, we will consider new types of "environmental energy concentrators" that can work due to the non-linearity of the charge-discharge cycles of an electrical capacitor or due to the non-linear magnetization - demagnetization cycles of ferrites (patents of N. E. Zaev).

In the Nature, i.e. in the construction of spacetime, it is possible to create such conditions of local increase of energy of the body, although in general a zero energy balance of space-time is not violated. It's not as difficult as it sounds. The accelerated fall of any body in a gravitational field is understandable to all school children, but when the Ozanam wheel or the Bhaskar wheel rotates in the gravitational field, it seems incredible to many people! The variant with the acceleration of an electron in the E-field is also clear to any scholar. The operation of the magnetron in the current less mode, however, seems inexplicable. In this mode there is no energy consumption from the power source of the magnetron, but there is increase of energy of the moving electron in the field and it provides power as extra efficient heating due to thermal radiation! There are many other examples also.

A classic example of a concept of design of free energy generators is the theory proposed by the academic Gustav Naan in 1964. He presented the hypothesis of a symmetrical Universe where the zero energy balance is always maintained. Academician Naan writes, “A fully symmetrical universe is made up of only emptiness. That is why it can arise from the void under strict observance of all conservation laws. The statement about the possibility of appearing out of nothing (emptiness, vacuum) under strict observance of the laws of nature may seem paradoxical, because the meaning of the conservation laws is as follows: "Nothing comes from nothing". Developed here hypothesis do not disproves this idea. Nothing cannot produce “something” only, but it can produce “something” and “anti-something” at the same time.

The practical implication of Academician Naan's hypothesis for designers of free energy generators is simple. We must create two processes that always balance each other. This

could be two currents in antiphase or two opposing magnetic fluxes or other options that work while maintaining the *law of zero equilibrium of the total energy of the system*.

Academic Naan wrote from an astrophysical point of view: "Any energy can be pumped out of a vacuum, provided that a suitable mechanism provides exactly the same energy extraction for the anti-world. The sum of the energies is zero."

We come to the analysis of constructive ideas and real devices of the autonomous fuel less power supply. The purpose of the book is not to describe all of the devices known in the world. The main thing is to show the variety of technical solutions, two or three examples of different types, in order to be able to compare them and draw conclusions. At the same time, analogies are often can be seen here, even between mechanical and modern electronics devices. Analogies provide food for thought that is basis for conclusions and qualitatively new knowledge.

Chapter 3

The work of the gravitational potential field

*"By touching this knowledge, everyone risks their life.
The weak or the wicked person find madness or death here,
only the strong and the good person find life and immortality here.
It is an abyss that only brings back the brave in spirit. "*

Let's start our travel to new technologies with the strangest case that most people associate with the perpetual motion machine. It is area of mechanical machines that can do some useful work by means of the working mass in natural gravitational field of the planet. This is the so-called "unbalance wheel", which creates a permanent effect of a *shifted center of gravity*.

There are various construction options, including machines that put their rotor in water while additionally using Archimedes' force. Some structures have permanent magnets, in addition to the gravitational field they create an asymmetry of the forces in the structure.

Let's arrange the most important known events of the last centuries on this topic in chronological order:

1150 Indian mathematician Bhaskar created a "self-rotating wheel".

1235 drawings by the French builder Honnecourt (Villand de Honnecourt).

1470 drawings by Leonardo da Vinci.

1518 Mimara developed a self-rotating mill.

1610 Cornelis Drebbel, an English submarine author, proposed a perpetual motion machine.

1630 Robert Fludd developed several ideas of perpetuum mobiles.

1635 The first patent for a "perpetual motion machine" was granted in England. By 1903, more than 600 such patents had been granted.

1638 Edward Somerset demonstrated several workable devices to the King of France.

1712 Johan Bessler, also known as Orffyreus, built several perpetual motion machines.

1720 Physicist and chemist Jean Bernoulli developed a "Fluid Energy Device".

1790 Conradus Schiviers built a working model of a "self-rotating" wheel.

1827 William Congreve proposed a device that works by means of capillary interaction.

1866 Henry Prince proposed a design for a self-rotating device (part of the wheel was submerged in water).

1868 Austrian Alois Drasch was author of the first patent a "self-rotating" device in the USA.

As you can see, among the inventors of unusual sources of energy, there are sometimes respected names in the world of science, although most of the authors remained unknown and their work did not generate understanding of public.

Famous physicist Joule, also was fascinated by the idea of creating a perpetual motion machine and considered the topic to be a "very practical idea".

Let us remember the opinion of another famous scientific person about mechanical perpetual motion machines that can work by means of natural gravitational forces. Nikola Tesla wrote: "It is possible, and even likely, that over time other energy resources will be discovered that we are now unaware of. We can even find ways to use forces like magnetism and gravity to power machines without any other means. If it were possible, it would be what is scientifically called a "perpetual motion machine," a perpetual motion machine, a machine that generates its own propulsive force. In order for such a disc to rotate under the influence of gravity, we only need to invent a screen from this force. With the help of such a screen, we could do it so that this force doesn't act on one half of the disk and then it starts to spin. At least we cannot refuse such a possibility until we fully understand the nature of gravity. Assume that this force arises from a movement similar to the air flow from above to the center of the earth. The effect of such a current on both halves of our disk would be the same, and under normal conditions it would not rotate. But if half of it were covered with a plate slowing this movement, it would start rotating. "

Thus the possibility of creating such a "perpetual motion machine" was confirmed by Tesla and other scientists of the past, who assumed the presence of an Aether flow to the center of the planet. According to Tesla, such a machine would be an ideal way to generate energy for human development. He wrote, "A wind turbine, a solar engine, a geothermal engine... have limits on the amount of energy they can get. We need to open up a new path that will allow us to receive more energy."

We note here briefly that theory of gravity was proposed by Nicola Fatio de Duillier. He explained the forces of attraction of gravitational bodies through the effect of the mutual shielding of the Aether flows, which flow into every gravitational body from all sides. This concept was first discussed in his letter to Huygens in 1690.

Since the cause of gravity is the "Aether wind", various technical solutions can be considered. Let us begin our consideration of structures with the most famous example of this type of mechanical device. Almost all books and articles on the subject mention Bessler. Let me write briefly his story.

Johann Elias Bessler (Karl Orfirey) was born in Saxony in 1680. The first known exhibition "A wheel that turns by itself" was organized by him in 1712 in the city of Gera. The slender wheel, 3 feet in diameter and 4 inches thick, spun on a horizontal axis at a constant speed of about 60 rpm and could lift several pounds of some useful load! However, this demonstration of the device did not bring Bessler any profit. People did not believe in the possibility of such technology and considered author to be a fraud. In 1713 the inventor showed a new wheel 5 feet in diameter and 6 inches thick in Draschwitz near Leipzig. This model spun at 50 RPM and could lift 40 pounds. In 1715, Orferius moved to Merseburg, Germany, and built a third self-running device. The wheel was 6 feet in diameter, 12 inches thick, and spun at 42 rpm. Very famous Professor Leibniz recommended this invention to Count Karl von Hessen-Kassel, and then Karl was interested in buying the Perpetuum Mobile from Orfireus. Note that Leibniz died in 1716 so it can be real fact of his role in this innovation.

November 12, 1717, the machine was ceremoniously launched in the presence of the Leyden physicist Gravesand and the imperial architect Fischer in a specially designated room in Karlsburg. Then the room was locked and sealed with the Count's personal seal.

Two weeks later, on November 26th, the Count, accompanied by his entourage, entered the guarded room and found that the device was turning at the same speed. After that, the device was stopped, the inventor carefully examined it and set it in motion again. Forty days later, on January 4, 1718, the seal on the room door was opened again and the wheel was found spinning. The third time the room was sealed for two full months. After this time, the inspectors were faced with the same picture as before, i.e. the wheel was turning at "unstoppable speed".

Gravesand, in his letter to Isaac Newton in 1721, mentions Orferius' machine as "something very surprising, but it deserves further research." He later described it in his book "On the Possibility of Perpetual Motion", published in The Hague in 1727, as "a hollow wheel or drum, about 14 inches wide and 12 feet in diameter".

At the same time, Gravesand was extremely surprised by the lightness of the wheel design made of wooden slats covered with a waxed cloth that hide the inner structure of the wheel from view of visitors. The drum was mounted on an axle about 6 inches in diameter with iron spikes 3/4 inch in length on either side on which the axle rotated. I believe that Bessler did not use bearings and was driven into the ends of the axis (logs) with iron axles. Encouraged by the sympathy of scientists and the public about the "amazing machine", Karl Graf von Hessen-Kasselsky presented the inventor with a "prize", a rich house and a paid job at his court.

Russia Tsar Peter the Great also showed great interest in the perpetual motion machine from Orfireus. He organized long negotiations with the inventor about the purchase of his technology. He found out about Orfireus' device during his second trip to Europe in 1715-1717. Tsar Peter sent diplomat Osterman to Europe to be familiarizing himself with this invention. Librarian Schumacher, who was sent to Europe to buy works of art, sent to the Tsar Peter a detailed report of the negotiations. In the report, Schumacher reported that Orfireus was ready to sell his perpetual motion machine for a hundred thousand thalers because "this is a real perpetual motion machine and no one but a malicious person will dare to deny it".

For skeptics, I can say that deceiving the Count or the King would have been severely punished at that time. For this reason, we can increase our confidence to the information about Orferius' projects. In January 1725, Tsar Peter even was prepared for his trip to Germany to personally inspect the amazing mechanism. A detailed history of the life and inventions of Orferius can be found in the book "The Perpetual Motion Mystery", R.A. Ford, USA (English edition).

The scheme of Orferius' wheel is partly known from ancient engravings, but we can only guess at its internal structure. Fig. 1 shows the proposed construction of the Orferius machine. The pendulum is needed here to limit the speed, otherwise the wheel will accelerate constantly.

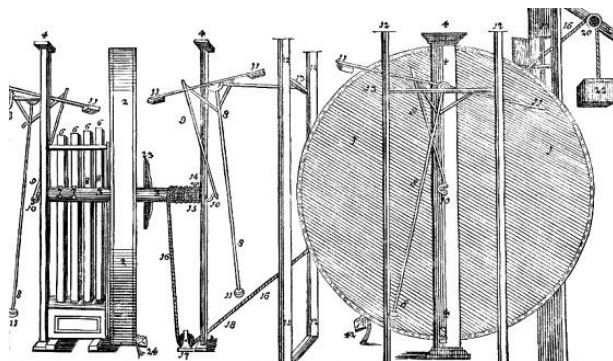


Fig. 1. Orferius wheel.

Of course, Orferius was not the first to come up with the wonderful idea of freeing mankind from the need in fuel extraction. The earliest information about systems of this kind comes from the year 1150. The mathematician - inventor Bhaskar from India used tangentially arranged pipes in which half were filled with mercury, Fig. 2.

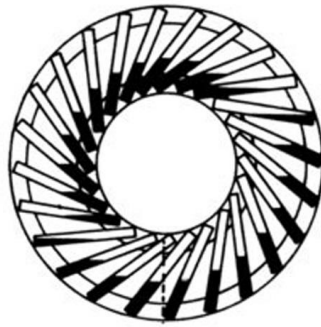


Fig. 2. Bhaskar wheel, 1150



Fig. 3 Photo of modern Bhaskar wheel.

The ratio of the diameters of the inner and outer wheels of the Bhaskar machine is just as important as the length, diameter of the tubes, and the speed of rotation of the rotor. The centrifugal force depends on the speed, which also affects the position of the liquid in the tubes. Photo 3 shows a modern version of such a wheel, dozens of different authors are now uploading their videos to the Internet.

A little later, in 1235-1240, Wilhelm de Honnecourt demonstrated a “self-rotating wheel” with seven weights in France. Later, in Italy in 1438, Mariano di Jacopo built a system of eight rods arranged radially in a plane of rotation. The rods can be bending only in one direction, which means that the left half of this physical system differs from the right half when it rotates. This difference is the cause of the imbalance of the wheel and leads to its constant rotation, Fig. 4.

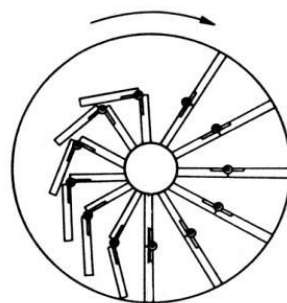


Fig. 4. Marino di Jacopo wheel, 1438

Let me remind you again that these machines should be viewed dynamically, taking into account not only gravity but also centrifugal forces.

Many famous inventors were involved in the manufacture of such machines, there are also several drawings by Leonardo da Vinci on the subject, Fig. 5.

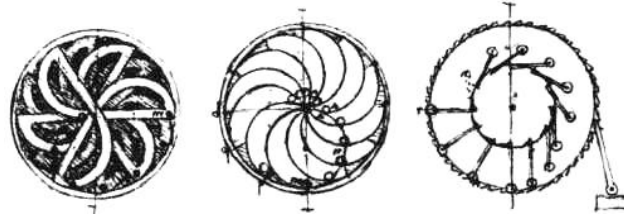


Fig. 5. Ideas by Leonardo da Vinci.

However, you need to understand that these diagrams and drawings may not always be implemented. They are not engineering documentation for creating real machines. Usually this is a general idea of the design without describing some of the basic elements of the device. They can serve as a guide for the independent search for a practical technical solution.

There are other reliable facts in history. One of the best-known and most convincingly documented cases of the self-rotation wheel with a shifted center of gravity dates from the 1620s. Edward Sommerset (Marquis of Worcestershire) built a wheel with a diameter of about 4 meters, which had 14 weights of 25 kilograms each. The tests of the machine were organized in London in the presence of King Charles, the Duke of Hamilton and the Duke of Richmond. Descriptions of these events were published in the book "Perpetual Motion Machine - before and now", Brodjansky V.M., Moscow, Publishing house "Energoatomizdat", 1989.

The most reliable ideas we can see in modern patents. Many authors have suggested a telescopic design of radial rotor bars to maintain constant torque (bars are shorter on the left than on the right side, Fig.6). There are many options for this design. Modern similar solutions use, for example, changing the geometry of the rotor elements by means of electromagnets. Due to the low power consumption for changing of the geometry of this rotor, we can get much more power in payload. You can find a description of such a machine on the Internet, The Environ Energy company offered these devices for mass production, Fig. 6. I suppose any reader also can try to build similar device with electromagnets and telescopic rods.

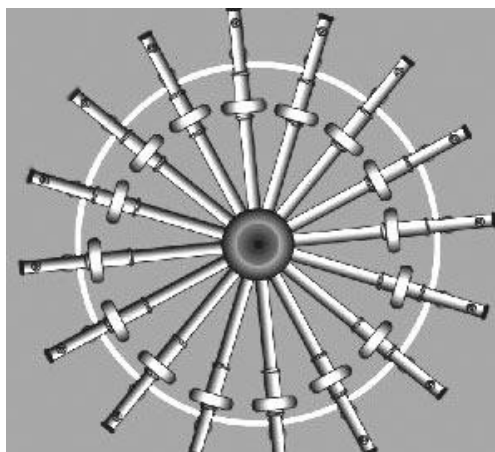


Fig. 6. Environ wheel.

Another modern machine of several kilowatts output power was tested in Canada, author Bob Kostoff calls it the "Gravity Powered Machine", i.e. "a machine that receives energy by means of a gravitational field". Details can be found on the Internet.

In Syria, "Karra Green Energy" company patented a perpetuum mobile in 2005. The device uses "the gravitational field only and nothing more". They accepted orders for the production of machines with an output of 650 kW to 5 MW. We don't yet know if they were able to commercialize their designs, but the <http://karragreenenergy.com> website has several photos and structural elements.

The diagram in Fig. 7 illustrates the famous technical solution for the perpetuum mobile that was proposed by the French physicist Ozanam.

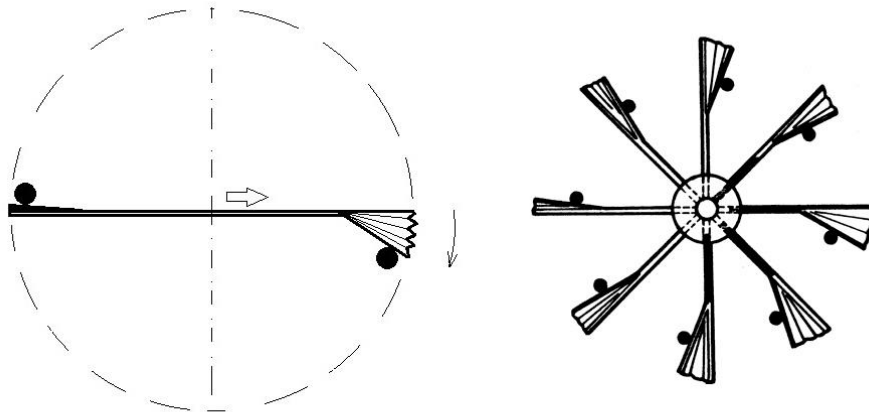


Fig. 7. Ozanam Wheel

The principle of its operation is very simple. When the wheel is turned, the weight presses on the plates and thereby changes the volume of the element (bag). When one "bag" is compressed, liquid enters the other diametrically positioned "bag", creating an imbalance in the rotor.

The rotor can be immersed in water if the paired elements are hollow. In such a machine, when one of the paired elements is folded (closed), air is pumped through pipes to the other paired element which opens. Thus, a constant torque can be generated by constantly changing the equilibrium position. It is important to consider not only gravity but also centrifugal forces.

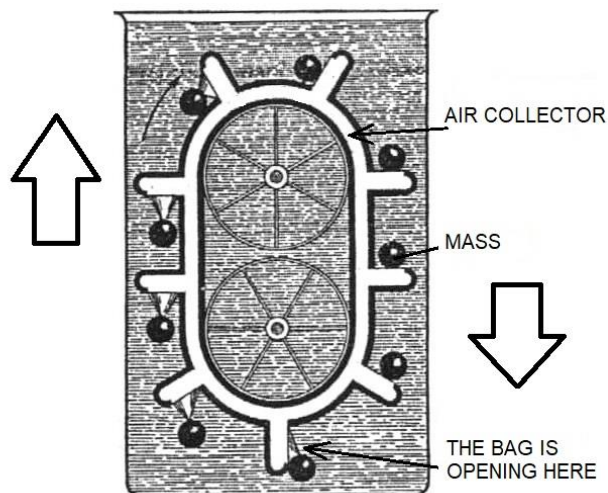


Fig. 8. Unbalanced wheels under water

The following interesting story can be told in connection with this device. In 2003, a Russian inventor from the Altai region of Russia came to my Faraday Laboratory in St. Petersburg. He brought elements of such a device to show it for me. His scheme of the device is one of the variants of the Ozanam wheel. Each element of the structure looked like a book or an accordion, that is, it consisted of two rigid panels and was surrounded on all sides by corrugated foil. On the side of the common rib where the plates are connected by a loop, a branch pipe has been made to connect the mated elements together with a flexible pipe that makes the hydraulic connection. The author said the invention works in his village. He came in St.-Petersburg to find investors, he walked through many factory directors' offices, but he cannot understand why his important innovation was not supported by someone.

In 2012 we reviewed the Ozanam scheme with a group of theorists from Moscow. The computer analysis of the model showed that the total rotor torque per rotation cycle is non-zero. In theory, such a machine could turn. There is a calculation methodology that can be used in designing powerful machines. So, here are no theoretical problems to use it in power industry.

Modern developments on this subject are extensively presented on the websites of many modern inventors. For example, in Fig. 9 shows a diagram of the generator by the Russian author Vlasov, in which pairs of piston elements are used.

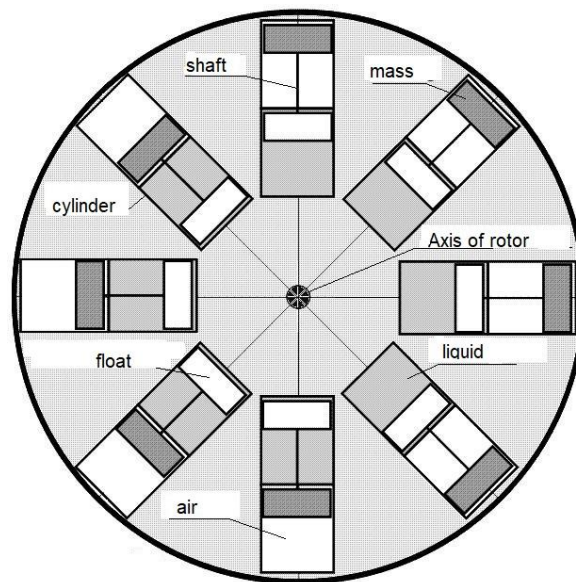


Fig. 9. Vlasov wheel

We find common aspects in all of these ideas and technical devices. There are more examples, but these schemes above are sufficient for us to provide a theoretical basis that can be useful in constructing machines that do work in the presence of a gravitational field and a working inertial mass.

Theorists say that the work of the gravitational field in a system along a closed loop (integral) is zero, so such systems do not work. Researchers say their machines work. The problem of mutual understanding can be eliminated by considering such a machine as a physical system with variable topology. In fact, in a system with variable parameters, the cycle should be divided into two processes (raising and lowering the mass). The left and right halves of the device should differ in the parameters of the interaction between the field and the working medium (mass) in different parts of the working cycle. In this case, classical physics can explain the work created by the planet's potential gravitational field.

It is very difficult to remove the influence of the gravitational field on the rising load, since we cannot “switch off” the gravitational field (until we have invented the “screen” that Tesla wrote about). In systems with a gravitational field, the parameters of the working fluid itself or the working mass change in different parts of the movement cycle, for example by moving it closer to the axis or further from the axis along the radius of rotation. In some schemes, the influence of another source of the field, such as electrical or magnetic, is added to or subtracted from the influence of the gravitational field on the portion of the trajectory of the working fluid. A similar method is the addition - subtraction of gravity and the force of Archimedes.

Thus, the gravitational field cannot be shielded, but it can be partially or completely compensated by another force field for some part of the trajectory of the working mass. Fig. 10 shows such a design by the Russian professor Valery Dudyshev, Samara.

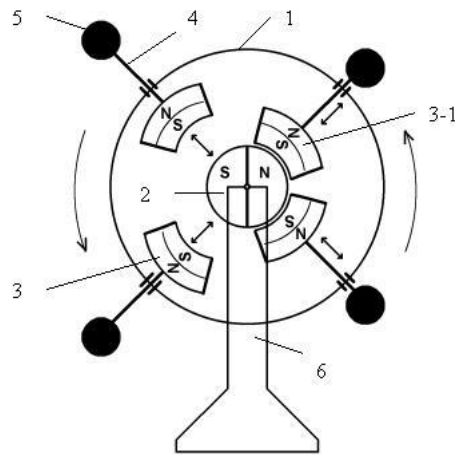


Fig. 10. Device by Professor Dudyshev.

A well-known modern author and developer of similar devices is Mikhail F. Dmitriev, he created another modern working magnetic-gravitational motor, Fig. 11. This is a machine with external control of the deviations of elements by permanent magnets (or electromagnets) on the left side of the cycle of rotation, Russian patent for useful model No. 81775.

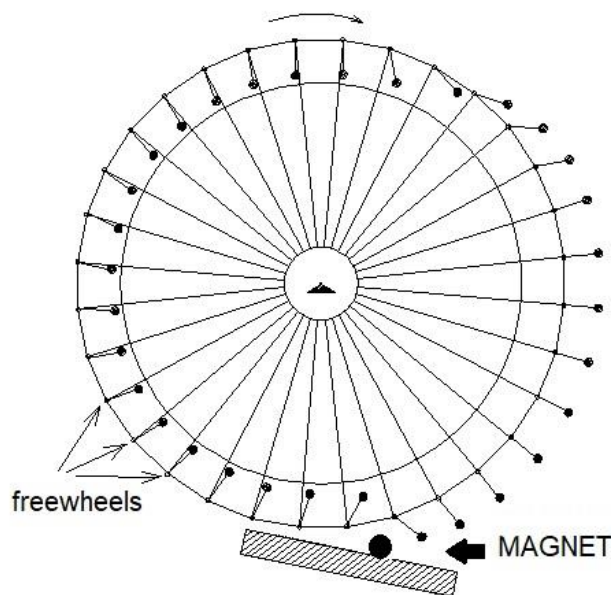


Fig. 11. Dmitriev's Magnetic motor

Figure 12 shows a photograph of the actual construction of such a wheel, which the author Dmitriev sent me for publication in this book. His website gravitationalengine.com

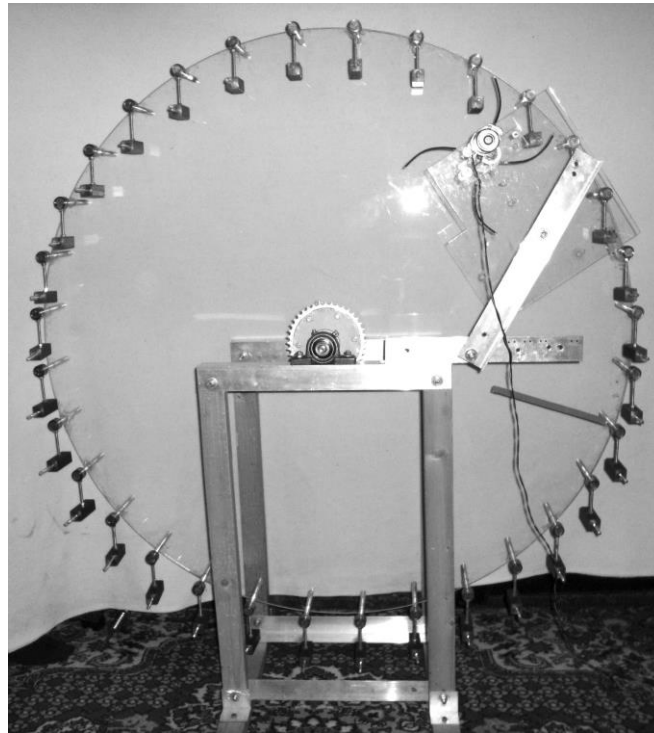


Fig. 12. Foto of the Dmitriev's magnet motor.

Let me make an important note on the construction of "self-rotating wheels". We are dealing with rotation, so it is not just a matter of gravitational, but gravitational centrifugal machines, as German Professor Alfred Evert calls them. During construction and computer modeling, it is necessary to set the speed and take into account the influence of centrifugal force on the position of the working elements. You can find useful information on this topic on Professor Evert's website at www.evert.de.

Let us consider other methods, which also have their theoretical justification and possibilities for the technical implementation.

The name "gravitational diodes", by analogy with electrical diodes, speaks for itself. These are parts of the structures of machines and mechanisms that are made of a substance with *anisotropic gravitational properties*. Objects made from this substance interact to varying degrees with the gravitational field from different spatial directions. When weighing such a "gravitational diode" from different sides, we get different values of the weight force, Fig.13.

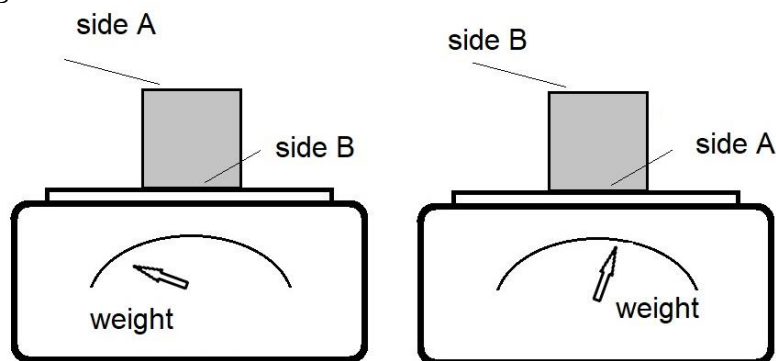


Fig. 13. Gravitation diode on the weight scales.

The production technology of such materials has not yet been discussed, but their use can be easily imagined as working elements of the rotors of any machines and electrical generators, which can constantly rotate in the "energy flow" of the gravitational field, Fig.14. Agree, the design is very similar to an ordinary water mill wheel rotated by a falling jet of water. On the left side of the rotor, "gravitational diodes" are lighter and on the right side they are heavier.

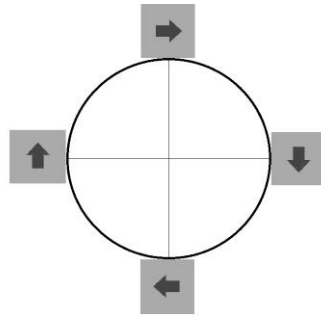


Fig. 14. Rotor with gravitation diodes.

When we try to compare this device to the stream of falling water, we are not very far from the truth. Since the time of Fatio and Le Sage, around 1748, in the kinetic theory of Aether, gravity and the weight of bodies have been considered as the force effect of the flow of Aether particles that flow from the surrounding space into the center of mass of the planet. By using "gravitational diodes" or other technical solutions, it is possible to make this particle flow work with a certain kinetic energy.

There are several methods that can be used to create an asymmetry of the interaction at different parts of the trajectory of the working mass (load). Fig. 15 shows a diagram from the Ukrainian patent No. 62956 for "self-propelled mechanism". In the lower part of the rotor, the working mass of the load must move through the structural element 20 on an orbit with a small radius.

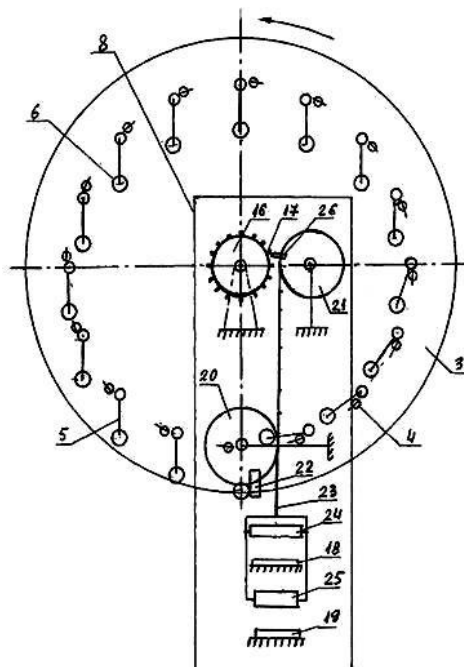


Fig. 15. Patent Ukraine N 62956.

The authors of similar inventions believe that the total work of all the elements located on the "big shoulder" of the lever can be more than the work necessary to move an element from a position on a large radius to a position on a small radius. The elements

are transferred one after the other to the desired position. In other words, the principle is: "One for all, all for one!" The fixing of elements on the rotor in extreme positions can be done in different ways and modern methods, for example electromagnetic coils with external control by an electronic circuit, enable a simple and reliable implementation.

We can also find useful applications of gravity in inventions that use Archimedean force and other effects in water. Let us note the projects of Vasily Fotievich Markelov, St. Petersburg, Russia. A diagram from his Russian Patent No. 2059110 is in Fig. 16. The turbine of the Markelov generator works due to the movement (kinetic energy) of the water flow from bottom to top, which is carried away by floating gas bubbles. Again, the turbine is rotating by water flow, but the water is moving up by the air bubbles! There are many nuances that need to be considered when designing this machine.

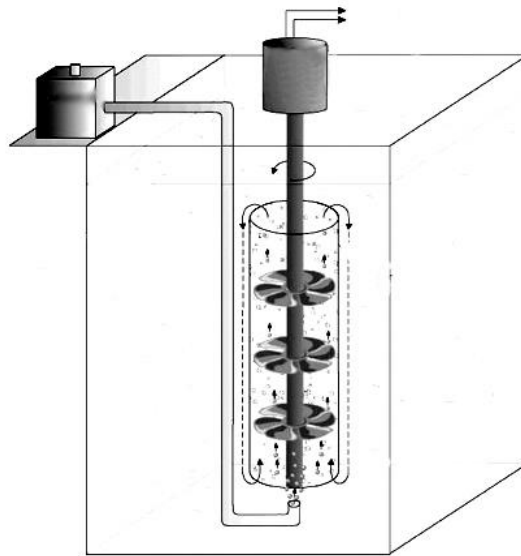


Fig. 16. Markelov's Generator

Markelov's water turbine requires careful consideration as a promising avenue for generating power on an industrial scale. On this subject, there are Russian and foreign analogues (Rosh KPP generators and GAIA generators). Applying this method on an industrial scale in machines with an output of hundreds of kilowatts does not require the construction of huge water tanks. In such cases it is possible to use non-freezing water area according to the scheme in Fig. 17. Markelov's patent shows a variant of the construction without a turbine, in which the Archimedean force is used in half of the rotation cycle that occurs when the rotor blades are filled with gas bubbles are, Fig. 17.

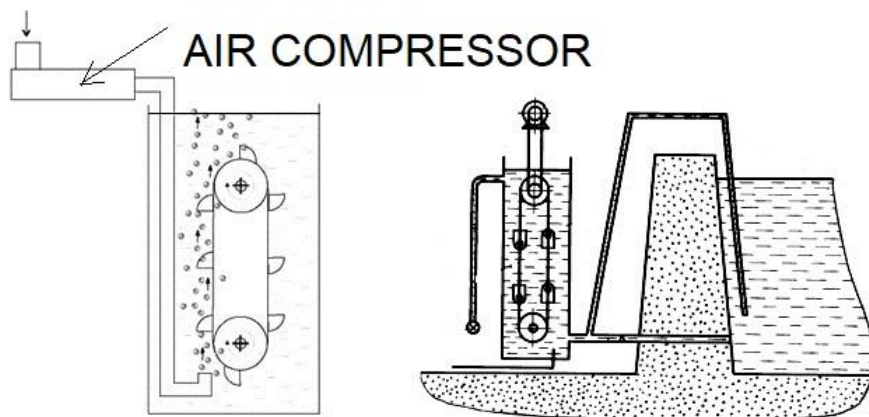


Fig. 17. Schema by Markelov.

The efficiency depends on the height of the water column, the density of the liquid and other factors and it can reach more than 1000% with simple constructions. A detailed article on this invention was published by V. F. Markelov in New Energy Technologies magazine No. 1 (16) 2004 and No. 1 (24) 2015, published by my Faraday Lab ltd.

Rosch KPP generators were offered to customers in 2015 at a price of 3,200 Euro per 1 kW of installed power. Note that some skeptics of the pneumohydraulic generators suggest that there is a special electric generator in the design of Rosh KPP power plants, i.e. it can be special generator with magnets that provides excess power regardless of Markelov's pneumohydraulic effect. Unfortunately, this Rosh technology didn't see much development until 2021. From the other hand, I like the ideas by Markelov and this topic can be serious direction of future power engineering.

The practicality of gravitational mechanisms, especially for low-cost stationary propulsion solutions, creates great public and industry demand to hit the market for new technologies in the near future. Examples of commercialization are Environ generators and English AOGFG generators. Inventor Bobby Amarasingham successfully tested his AOGFG 12 kW generator in December 2010. This device includes rotating weights and electric drives that produce constant torque. When starting, the drives consume about 500 watts (acceleration) and then only 50 watts, while the generator delivers 12 kilowatts to the useful electrical load.

Rolls-Royce engineers have tested this device and prepared contracts with manufacturers in China. The estimated market price for a 12 kW drive (excluding the price of an electric generator) was US \$ 5,000. The dimensions will not be more than 1,5 cubic meters. The weight of a 6 kW machine is approximately 120 kg, for a 12 kW machine the weight is about 200 kg.

Note that this principle takes advantage of inertial (gyroscopic) effects resulting from the rotation of eccentrics, so such machines can be much more compact than simple unbalanced wheels. For example, Dmitriev's and Amarasingam's generators are similar, but for Dmitriev's device the weight of a 5 kW machine will be about 1,000 kg. The advantages of Amarasingam technology are obvious.



Fig. 18. One of the first Amarasingam Generators

The Amarasingam's generator is quiet and rustles like a conventional air conditioning system. The plan was to produce around 100 thousand generators per year, initially machines with an output of 3 kilowatts, 6 kilowatts and 12 kilowatts. A small generator (3 kilowatts) can cost around \$ 750 in mass production. This generator was supposed to be on the market in 2012 but we never saw it.

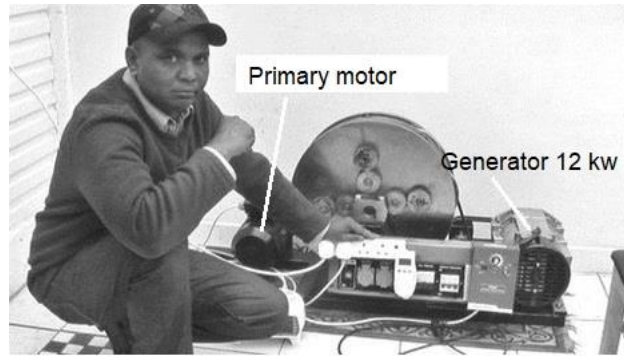


Fig. 19. Bobby Amarasingam and his 12 kW Generator

I am a representative of Amarasingam in Russia, but for many years I have not found a serious partner in Russia for the development of this technology. Nobody is interested to start mass production of this generator. In 2012 Amarasingama's marketing strategy was changed. He stopped selling licenses and looked for partners to build power plants to get profit from the sales of electricity. You can find the contacts of this author on Facebook <https://www.facebook.com/Boboats>

I will briefly explain the principles of operation of this machine at the level of my understanding. A small electric motor turns the rotor with weights - eccentrics that describe the trajectory of the cardioid in the vertical plane. An analogy is the inertial propulsion drive by author Thomson, but the rotor of Amarasingam does not turn in the horizontal, but in the vertical plane of rotation. Fig. 20 shows that the rotor on the left is heavier and the rotor on the right is lighter. In such a situation an additional torque is exerted on the rotor axis due to the force of gravity.

Much more additional torque, however, is provided here by the centrifugal force, which generates strong kinetic momentum in the part of the eccentric trajectory. Therefore, Amarasingam generators can be called inertial gravitational machines. The freewheel on axis periodically provides the generator with additional torque when the eccentric change the radius of its rotation.

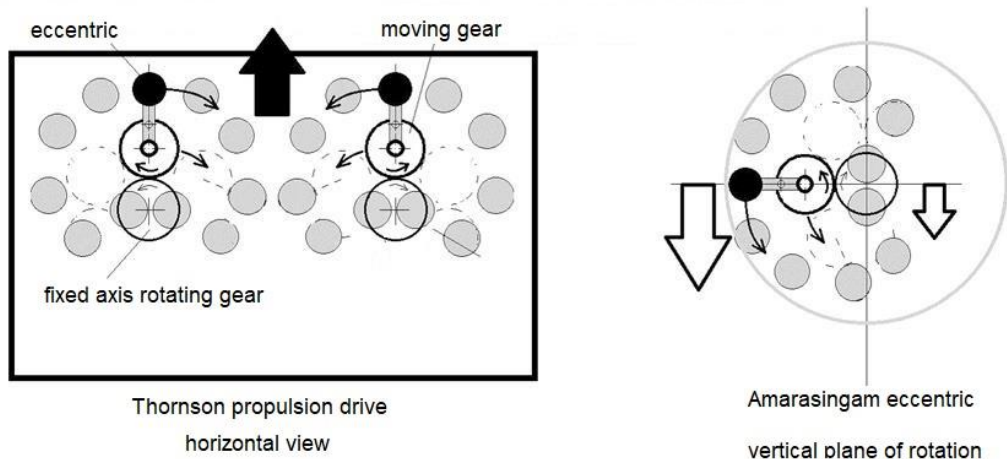


Fig. 20. Trajectory of eccentrics.

In 2011, Bob Amarasingham told a reporter for an English newspaper about supporters of Fusion Energy: "They spent \$ 500 billion trying to find a solution when the solution was so simple that even a child can figure it out."

Another well-known author of developments in this area of innovations is Russian inventor Edvid I. Linevich, he worked with European investors, the company Permoters GmbH. The description of his centrifugal converter includes a patent application from the

Russian Federation "Operating procedures of the power rotary drive and the power plant for its implementation" RU 2008105388 dated February 12, 2008. The Linevich device was tested in Austria in 2009. Small 500W drive was used to power a 6 kW generator. In this case, there are not relations with planet gravitational field but the device is very similar to Amarasingam generator. Eccentrics also provide pulsed kinetic momentum to the rotor due to changes of their trajectory. In both devices the inertia effects are responsible to generate extra power output.

The planet's gravitational field is not the only free source of energy that can be used for energy supply without fuel. We have already mentioned the role of inertia and centrifugal forces in such generators. If one considers centrifugal forces as a variant of an artificial gravitational field, new possibilities for the design of power generators can be provided. Let's move on to the next chapter to develop ideas on the topic.

Chapter 4

Centrifugal force

The patent office has long refused to accept patent applications that describe "movement through internal forces". That is correct, but we must not forget that all bodies are in constant interaction and exchange of energy with the Aether and that the phenomenon of inertia has Aether-dynamic nature. In this chapter we will look at some simple solutions that will enable you to get movement and rotation by interacting with the surrounding Aether environment.

In Cassier's Magazine Volume 29, 1906, several schemes were shown. Some special geometry of the rotor is to be used to generate an asymmetrical internal pressure of a gas or other elastic medium during its rotation. Note that Louis Cassier published interesting articles on the development of technology in the period 1891-1913. Thanks to him, we are familiar with many ideas from the inventors of that time. The archives of his journal in English are freely available on the Internet. The diagram shown in Fig. 21 was offered to the public in 1902, according to information from Cassier's Magazine.

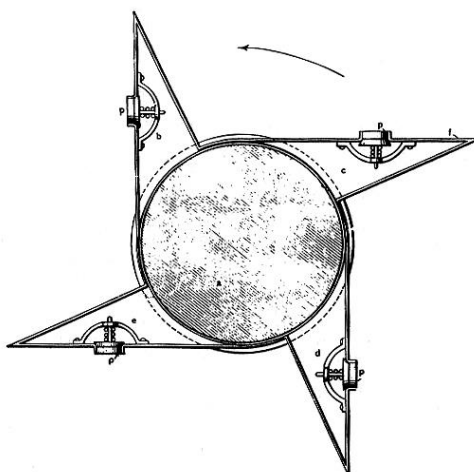


Fig. 21. The rotor with some gas.

Each of the four body elements (hollow beams) is equipped with a valve for pumping air or gas. The device itself does not start to rotate. To start it you have to rotate it manually. The author of this invention is not yet known to us. The scheme looks very promising and has no analogues in terms of its simplicity of design.

Take into account the conditions for generating torque. In the four "rays" of the body there is a gas or another elastic working medium with inert mass. The essential factor

here is the elasticity factor of the working medium, which is compressed unevenly under the influence of centrifugal force. An incompressible liquid will not achieve the expected effect in this situation, as it pushes with the same force in all directions. An elastically compressible working fluid presses unevenly on the body, mainly along the radius of rotation. The vector diagram is at Fig. 22, where the presence of a tangential component is found that causes the rotor of the machine to rotate.

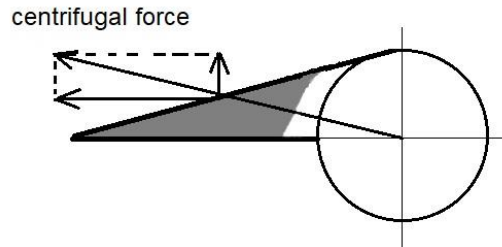


Fig. 22. Vectors of the forces.

Looking at the vectors in Fig. 22, it can be assumed that the compressible elastic "working mass" presses on the tangential sides of the housing with a greater force than on the radial sides, producing a torque and constant acceleration of the rotor.

About the laws of thermodynamics that give us an understanding of the physics of such a process. Through the energy exchange, part of the kinetic energy of the working gas molecules is transferred to the rotor, which receives part of the kinetic energy. The heat kinetic energy of the gas molecules in the rotor decreases (the gas cools down). This energy can only be replenished by extracting a corresponding amount of heat energy from the environment. In general, the laws of thermodynamics are not violated, and such a machine can only work if the environment is cooled.

Increasing the efficiency of such a construction requires solving the problem of heat exchange with the external environment.

The criticism of the skeptics that static pressure cannot generate torque is wrong in this case. There is no statics here, as the molecular movement of gas particles (or other working elastic substance) must be taken into account.

A pressure gradient here is due to centrifugal force, it compresses the gas in a radial direction. As a result, the heat motion of the molecules should be less chaotic but more ordered (linearized), and a non-zero total vector of the gas pressure force on the rotor body appears. The inclined wall of the rotor reflects the radially directed kinetic momentum of the gas molecules, while it absorbs tangential direction kinetic momentums.

We came here to the idea of centrifugal reactive machines, that is, analogues of the turbine of Heron of Alexandria. In the treatise "Pneumatics" around 120 BC Heron described various machines that were driven by compressed air or steam due to the jet effect. Heron's device "Eolipil", for example, was the first spherical steam turbine powered by a jet of water steam ejected at high pressure from tangentially spaced nozzles. The Heron turbine uses steam pressure as in modern steam and other gas turbine engines on which modern turbine performance is based.

Thousands of years have passed but we still hear words "Steam pressure". These important words are firmly anchored in the minds of all energy technicians and train drivers. In order to generate pressure, it is necessary to heat the water, i.e. burn gas, coal, heating oil and then the turbine of the electric generator will turns... Experts of old views on energy technologies, you are wrong! Pressure can be generated by centrifugal

force without fuel, almost free! This has been known for hundreds of years, but you weren't told about or you forgot it.

Around 1760 Johann Andreas von Segner invented a motor in which the rotation is generated by an outflowing water jet. Segner did not participate in developing this design to the level of a self-rotating system. Using the method of centrifugal force, he accelerated the rotor of a water mill, a machine that did useful work when a jet of water hit it. However, the performance of his machine does not only depend on the kinetic energy of the falling water jet.

The Segner watermill does more useful work due to the water jet effect. With this type of the machine, any jet pressure can be generated at the outlet, as this increases with increasing rotor speed. The centrifugal force accelerates the "working mass" and creates a negative pressure (vacuum) at the flow central inlet into the rotor. The pressure gradient here increases. This creates excess energy in such a system. Many of the centrifugal generators offered today are based on the general Segner wheel principle. The self-rotation mode of the "modernized" Segner wheel can be as shown in Fig. 23.

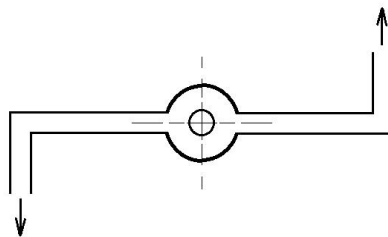


Fig. 23. Segners Rotor with central inlet and tangential outlets.

There are some important nuances. Firstly, as long as water penetrates into such a rotor, such a rotor accelerates by itself, provided the system is sealed and water automatically penetrates the rotor due to a pressure gradient. Water is not pumped out by a pump. Note that in addition to torque, there are a couple effects that are axial propulsion force. There is practical and real example of this device. It is Schauberger free energy generator.

Another aspect is that the working fluid must be elastic and compressible. The algorithm includes phases of compression of the working fluid due to centrifugal forces (energy accumulation in the form of potential compression energy) and subsequent expansion at the outlet from the nozzle. The nozzle is the narrower part of the outlet. In this case, the release of the potential compression energy of the working medium creates additional kinetic energy in the system. In order to meet these conditions, it is necessary that the liquid is first compressed under the action of centrifugal forces and then accelerated in its movement.

Perhaps using air as the working mass is easier, but it is much lighter so the speeds of rotation are much higher and this requires high quality manufacturing of rotating machine parts and machining (polishing) of the casing. In theory, it doesn't seem very complicated.

Let us consider the most famous and most reliable example of the implementation of a technical device that works according to these principles. It is famous Clem motor, which generates self-rotation mode through strong compression of the working medium (oil) and centrifugal force.

The history of the development of this invention is interesting, but also it is very sad. The author of this invention was initially not a professional, scientist or designer. In 1972 Richard Clem worked as a machine operator for heavy road machines in Dallas, USA. He

noticed that a conventional hot asphalt sprinkler system continued to rotate for an hour after the drive was switched off. The axis of such a machine is vertical, and the rotor has a conical shape. Klemm did not know the theory, he began to investigate the question empirically and built a self-rotating "Clem motor".

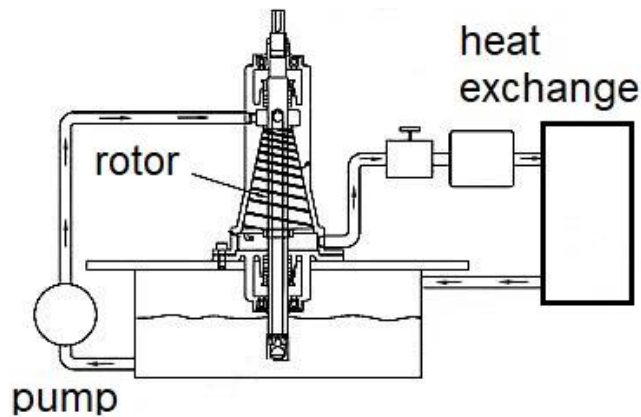


Fig. 24. General ideas of the Clem Generator.

Figure 24 shows a schematic diagram of this generator which can utilize centrifugal force when a liquid mass moves along a conically flared path. This is not Clem's original scheme, but a variant of the constructive implementation of his idea.

There are several important factors here. The essence of this technology does not just use the Segner effect. The acceleration of a fluid that interacts with the rotor transfers energy from that fluid to increase the torque on the rotor. At the entrance to the rotor, the speed of the liquid is equal to the speed of the rotor. In the section of the trajectory in front of the nozzle, the liquid moves faster than the rotor (the increase in speed is due to the centrifugal effect). Thus, the rotor is accelerated due to the absorption of some kinetic energy of the working fluid flow. At a certain speed, the external drive can be switched off and the machine goes into generator mode.

Clem used olive oil as the working medium, as the liquid was very hot during operation (up to +150 degrees Celsius). I believe that oil is used here because this liquid is more elastic than water. In the Clem design, liquid was pumped into a hollow shaft at pressures of 300 to 500 psi (21 to 35 kg/cm²), passed through the narrow spiral channels of the cone, and exited through nozzles. This created the rotation of the conical rotor. The frequency of rotation of the shaft reached 2300 rpm in this device. A heat exchanger (radiator) was used to cool the working medium (oil).

It is known that the first engine failed to work under loads and collapsed. Clem made the second version of the engine more durable. In this version the engine had an output power about 350 hp and weight about 90 kg. Richard Clem built this engine into a car and demonstrated it on the street. The battery was only used to start the engine and run the car's headlights.

According to the author of the invention, his motor "consisted of a seven-stage pump and an inverter". The pump, as its author describes it, was used to "deliver pressurized oil from the collector to the converter, where the energy was converted into power sufficient to turn the motor". The oil exited the nozzle and returned to the inlet, repeating the cycle of movement of the working fluid. The energy converter acted like a turbine, but, as Clem said, "not like a turbine in the usual sense".

The inventor sought support in financial and industrial circles and could easily convince them of the advantages of this technology. He once said that if the auto industry accepted his new invention, motorists could only change the oil in their engine every 150,000 miles *but never buy gasoline*.

The Clems engine was tested by Bendix Corporation. The test consisted of hooking up the motor to a dynamometer to measure the power produced by the motor in its self-rotating mode. The engine delivered a constant 350 hp during 9 consecutive days that stunned Bendix engineers. Then Richard Clem received a serious contract from the coal company to build several powerful machines, but suddenly died of a heart attack.

Details of the history of this invention are posted on Jerry Decker's KeelyNet page. I have known the address of his website for a long time, and I recommend the reader to look at this source www.keelynet.com. Unfortunately, Dekker died in June 2017 and the fate of his wonderful website cannot be foreseen. Perhaps it is not available now.

The theory of centrifugal mechanical machines that can operate in a self-rotating mode requires serious study. In general we can say that centrifugal force and other inertial effects are related to understanding of the Aether. Aether provides all properties of the environment media around the body. Inertial effects and centrifugal forces are external forces, not internal forces of a closed system of bodies made up of particles of matter. Similar to aerodynamics, the pressure gradient in the Aether medium in this open physical system generates a propulsive force.

To say simply, the centrifugal force increases the potential energy of the body without using the energy of the primary source, as any balloon does due to the pressure gradient in the environment. The task of the designer is not only to “release” the working mass and let it move along the line of action of the centrifugal force, but at the same time to use its excess kinetic energy effectively.

This topic holds great promise as such mass-produced machines can become simple, reliable and inexpensive power generators that can be used anywhere. In 2012, my company Faraday Lab ltd., tried to organize work on creating a centrifugal vortex energy converter. The Schauberger engine served as the basis. Documentation was created for the manufacture of a 30 kW drive. The research report with performance calculations can be found at www.faraday.ru or <http://alexfrolov.narod.ru>

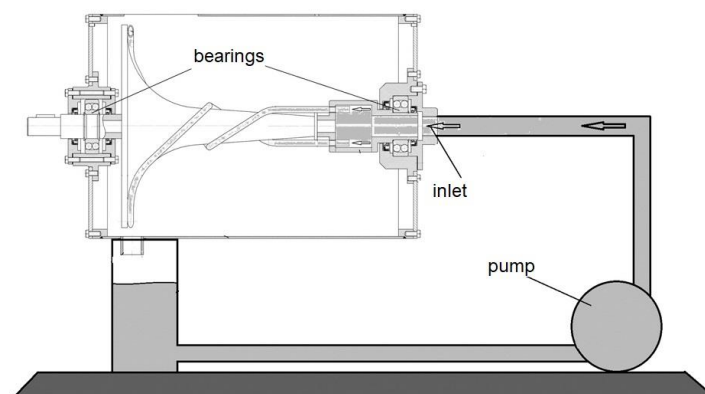


Fig. 25. Frolov's centrifugal generator of 2012.

The topic is very promising. Calculations show that a rotor with a radius of 30 cm can deliver 40 kilowatts of power to the shaft at 3000 rpm. The prototype according my technical documentation was manufactured and tested in 2012. Unfortunately, we were unable to increase the rotor speed significantly due to strong vibrations. The project was not completed. Photo Fig. 26 shows an experimental prototype.

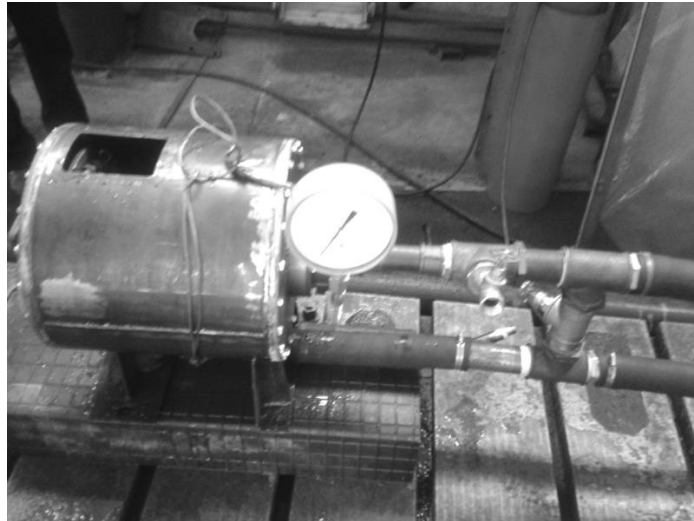


Fig. 26. Photo of prototype, 2012.

It is an analogy with famous Viktor Schauberg's generators. Photos of Schauberg's original device and its history can be found in a museum in Austria, whose website is www.pks.or.at

Fig. 27 shows Viktor Schauberg and his "home generator". Water enters the narrow part of the cone from above. It should be noted that, in addition to water, there is always a small amount of air in the pipes, and this condition is considered necessary for the successful operation of the device. A spherical air filter is shown on the photo in right side of the device. When setting up the machine, it was important to use valves and control valves to select the desired combination of water and air.

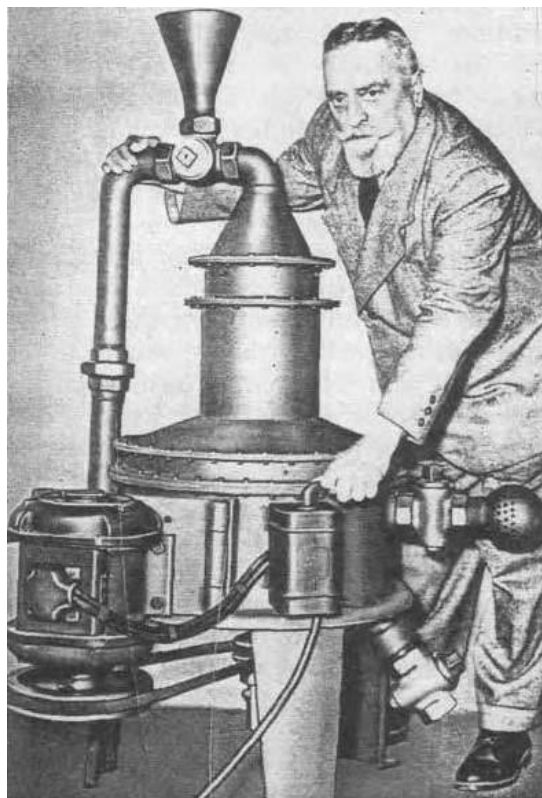


Fig. 27. Viktor Schauberg and his home generator.

On the left in Photo 27 below we can see an electric generator and pulley connecting the electric generator and the rotor. The rotor consists of copper tubes that go around a cone, as shown in photo Fig. 28.

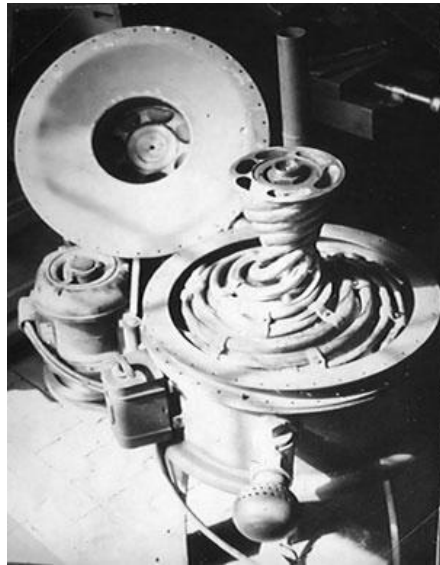


Fig. 28. Foto of the generator in Schauberger Museum.

By analyzing this information, we can draw an important conclusion. The aerated liquid has an elasticity that allows it to *store potential energy when the liquid is compressed under the action of centrifugal forces* and then convert it into the kinetic energy of the rotor. We have already noticed this nuance: the elasticity of the working fluid is necessary for the accumulation and conversion of potential energy into kinetic energy. The centrifugal force compresses the working mass and the potential energy in it increases. In the case of a spiral movement with increasing radius, this energy is also converted into kinetic energy of the working mass, its acceleration and also into an increase in the rotor torque.

In addition, an elastic medium is required because incompressible fluids cannot move in a continuous flow with acceleration, without breaks and turbulence. The turbulence will make losses of energy.

There is an interesting feature of the nozzle design on the Schauberger machine. The nozzle is narrow area of the pipe section at the outlet. Here is special insert that work like a microturbine on stream of the water. This is an important aspect. This insert does not rotate, but it creates a spiral rotation of the water at the outlet from the pipe, Fig. 29.



Fig. 29. Microturbines.

This technical solution is well known to the designers of devices in which it is necessary to increase the speed of the jet stream at the outlet from the nozzle. When the flow of water rotates around its axis, micro-vortexes are formed on its circumference, which play the role of "balls", a kind of bearing that reduces the friction of the water on the pipe walls. The insert at the end of the pipe in the form of a microturbine ensures compression of the working fluid, an increase in the jet speed at the outlet and a reduction in friction losses through the generation of rotations from the liquid jet.

A similar device with air working fluid was known in the USA in the 1960s, inventor is Karl Haskell. It is currently being developed by a group led by Ron Rockwell. There is still no patent for this invention and we have very little information, but we can determine the characteristics of this self-sufficient turbine: The speed reaches 100,000 rpm. A high electrical potential is apparently applied to the turbine to reduce friction so that the air around the device becomes highly ionized while this generator is operating.

Practical successes in Russia also are known in creation of energetically autonomous devices with a liquid working medium, for example it is "quantum thermal power plants" KTPP by author Yury S. Potapov, Fig.30.

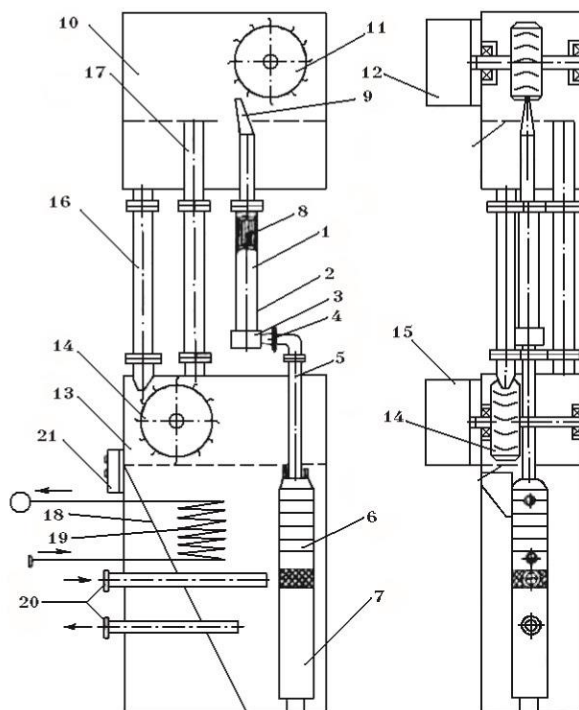


Fig. 30. Autonomous power plant by Yury S. Potapov.

Let's consider this Potapov's scheme. The pump 6 pumps water into the "cyclone" 3; after the acceleration in the cyclone, the water exits through the nozzle 9 to the water turbine 11, which is connected to an electrical generator. A second hydraulic turbine 14, which is also connected to an electrical generator, is installed in the lower tank 13. At the outlet of the nozzle 9 of the vortex heat generator, the temperature of the working medium is about 70-100 Degrees by Celsius at a pressure of 8-10 Atm. This flow ensures the operation of the first turbine. The turbine in the lower vessel is driven by a liquid that moves out of the upper vessel under its own weight.

Thus, the Potapov design can generate heat and electricity without the use of fuels and other external resources.

Let's consider another project with Yuri Semenovich Potapov of 2004-2005. It was named the "molecular motor" by Potapov. It means we tried to take off part of kinetic energy of the air molecules to get additional torque of the rotor. Photo of this device in Faraday Lab Ltd. is shown in Fig. 31.

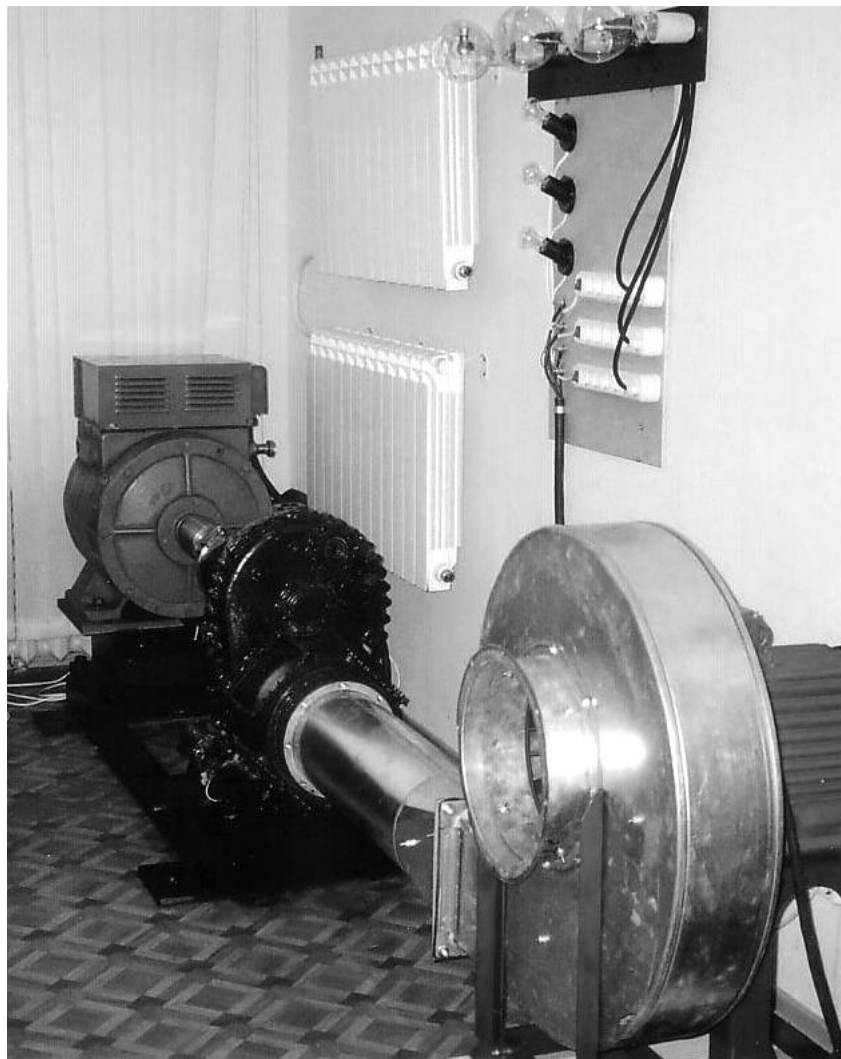


Fig. 31. Molecular generator in Faraday Lab Ltd., St. Petersburg 2004.

The name "molecular" refers to the kinetic energy of air molecules, which determines their temperature. Air molecules move chaotically, the vector sum of their velocities is zero, but we can at least partially convert their energy into useful work if we create their unidirectional movement (flow laminarization). The laminarization can be geometrically designed by some elements of the device and it does not require any energy source. Note that we will consider a similar approach later to make a specialty nanomaterial that can convert the heat motion of gas molecules into useful work.

In theory, under normal conditions, one cubic meter of air contains 1 kg of molecules, all molecules are moving at a speed about 500 meters per second. This corresponds to the kinetic energy of a 1 kg body moving at a speed of 500 meters per second. Accordingly, by taking some part of this kinetic energy, we can increase the rotor torque by cooling the environment.

Yuri Semenovich Potapov took part in the planning, and then he worked with designers of the plant to manufacture this device.

The project was funded by my company Faraday Lab ltd. In theory, we expected that there would be enough power at the turbine generator outlet through which the airflow passes to provide enough power for the electric fan and some electric payload. The turbine was supplied with air from a radial fan via an air duct, in which special conditions had to be created.

It is obvious that, similar to the cases previously considered, excess kinetic energy is already generated here by the fan since the centrifugal forces here make work to compress the air. Further energy transformation should be provided by passive components of the air duct without consuming the energy of the primary source.

The electric energy of this process was generated by standard electric generator GS-250 with a nominal output of 60 kW. The conversion of the air flow pressure into the kinetic rotational energy was provided by the turbine of a helicopter, it is gas turbine engine of the type GTD-350 via a standard reduction gear. The air supply to the turbine inlet was initially provided by a radial fan of the VBZ type with a rotor diameter about 1 meter and a consumption of 7 kW/h. Later we replaced this VBZ fan with a new VDS-5 radial fan with an output of 800 cubic meters of air per hour and a power consumption about 5 kW per hour.



Fig. 32 Alexander Frolov in Faraday Lab ltd. and generator.

Our research proved that the concept of using air as a working medium in autonomous power plants is absolutely real. We managed to get around 3 kW of useful power with incandescent lamps, which did not affect the increase in power consumption.

We can say that there is a certain "positive connection" in this experimental setup, i.e. when the generator is under electrical load or the air duct between the turbine and fan is completely closed with a cover, then the power consumption of the fan is significantly reduced (from 6-7 kW to 4 -5 kW).

The main idea here is that the kinetic energy of the air flow in this device increases due to centrifugal forces as a result of the compression of the working medium (air). At the same time, the power consumption of the fan can be minimized by various methods, for example by installing capacitor compensators for the reactive power of the drive and fine-tuning the circuits for electric LC resonance.

We examined some aspects of optimizing this design. In the section from the outlet of the radial fan to the turbine, an air duct with a diameter of 400 mm (along the diameter of the turbine) and a length of 1 meter was installed. In this duct way we have installed special reflectors to get process of rotation of the air mass when it is moving along the way. By this additional reflectors the output power of the electric generator was increased by 5-7% compared to the rectilinear movement of the air mass. The increase in power at the output of the electrical generator occurred without increasing the power consumption of the fan, due to a change in the trajectory of the air flow. The trajectory was changed from linear to vortex one.

The perspectives to get an autonomous mode were slim, as the kinetic energy of the airflow from the VDS-5 fan was insufficient to overcome the losses (efficiency of the turbine and generator). For example, if the fan consumes 5 kW of electricity, we could get up to 3 kW of power in the generator load, but a further increase in the load would lead to a loss of power quality (decrease in speed and voltage drop at the generator output). It was decided to increase the volume and pressure of the working air mass, and we have planned to use AF53 compressor with a working pressure an order of magnitude higher than the VDS-5.

Due to a lack of funding for this topic and technical problems with the turbine gearbox, the project was terminated in 2005. The experimental setup was sold to another company. I know from further research on the subject that despite the involvement of professional aerodynamics specialists, virtually no valuable results have been obtained. Unfortunately, they did not turn to me for theoretical advices on this topic.

The foreign analogues of this project, we can remember company named EF9 Energy Systems, which also raised the question of converting the heat energy of atmospheric air into useful work. Their website contains little information about the research, but describes the theory of the process in sufficient detail <http://ef9energysystems.com/> They believe that the main role in this energy conversion is played by the "Bernoulli effect". The goals of this company currently include the creation of a 50 kW generator for private houses as well as an energy generator for vehicles.

One more promising direction of research on this topic is "Hardy's generator". Fig. 33 shows a photo and diagram of Hardy's experiment. The author James D. Hardy was granted US patent 2007/0018461 A1 on January 25, 2007. The design is primitive homemade setup. There is high-pressure pump of standard high-pressure washing system. It can be powered by a 220VAC electric grid. This water pumps generate a jet of water with a pressure of about 100 atmospheres.

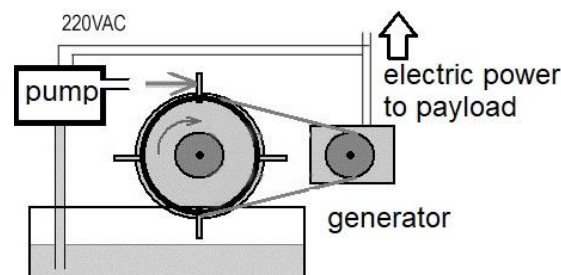


Fig. 33. Hardy Turbine

The pump output is about 350 - 600 liters of water per hour. The power consumption is about 1 kilowatt per hour. Here is great kinetic energy of water flow (350 kg per hour at a pressure of 100 atm). According to experimental data, the power for a self-made turbine and a conventional electricity generator is sufficient to work autonomously and to supply the pump and several light bulbs with electricity. A video of this experiment can be viewed on the Internet <http://www.youtube.com/watch?v=qhwQt1tJYa8>

There is similar technology by GDS company, which announced the start of sales in 2015. The developer of this technology is Greg Potter, Canada. The first product for the mass market is a 5kW water-powered generator for 5,000 US dollars. This price is 50% cheaper, including delivery in summer 2016. Hardware warranty is 1 year or 1460 hours of continuous operation. It is assumed that this generator is operated on average about 4 hours a day, for example to charge batteries.

This generator consumes water, approximately 1 liter for 16 hours of operation. The water simply evaporates, although the device works in a closed circuit.

I think this device is very similar to James Hardy's invention. The design of the GDS generator is not disclosed by the authors until there is an official statement for its operation. From the photos on the website of this company GDS it can be assumed that a tank with water is installed on the right, next to it a turbine. On the left are the batteries and a DC/AC inverter, and on the lower right is likely a high pressure pump that creates a flow of water that is fed to the turbine. Prospective GDS generator buyers are invited to see the product in operation in Ontario, Canada.

The manufacturer's production capacity is now 2,500 generators per month. Note that the GDS generators are quiet, about half as quiet as conventional diesel or gasoline-powered generators. They have no fumes and can be installed indoors.

The centrifugal forces can be used in the electrolysis of water. This significantly reduces energy consumption. In 1999 I wrote a report on the subject of "Highly efficient electrolysis of water" at a conference at the University of St. Petersburg. A technical solution has been proposed which makes it possible to change the conditions of gas formation on the surface of the electrodes. This solution is that the electrolyser or the water in it must be set in rotation.

The proposed scheme is shown in Fig. 34. The essence of the invention is that the centrifugal forces during rotation act on the gas layer and tear it off the surface of the electrodes.

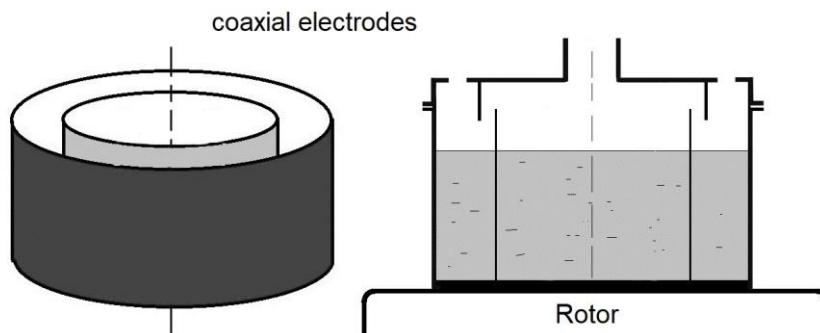


Fig. 34. Frolov's rotating electrolyser.

The energy consumption of the motor is required in the phase of the acceleration of the rotor, but in the steady state of rotation only a small amount of energy is required to maintain the rotation (overcoming frictional forces). In this centrifugal electrolyser, the

efficiency is based on the creation of optimal conditions for the polarization of water molecules near the surface of the electrodes when there is no gas layer on it (or its influence partially diminishes). In fact, this method reduces the initial dissociation voltage, which leads to a reduction in energy consumption.

Experiments can be organized according to my suggested method. I have not patented this method. The foreign analogies are known, for example, Japanese scientist Omas (Japan Techno) use low-frequency vibrations of electrolyser, and this method also cause vibrations and rotations of the water in the device. This rotation removes a layer of gas from the surface of the electrodes. The technology is described in international patent WO 03 / 048424A1, which was filed in 2004.

Another method of centrifugal electrolysis was developed in Russia. Authors Georgy Kudymov and Vasily Studennikov, Russian Patent application No. 2003104497/12 dated February 17, 2003, and International application PCT / RU 03/00413 dated September 18, 2003 "Plant for water decomposition by electrolysis". The diagram is Fig. 35.

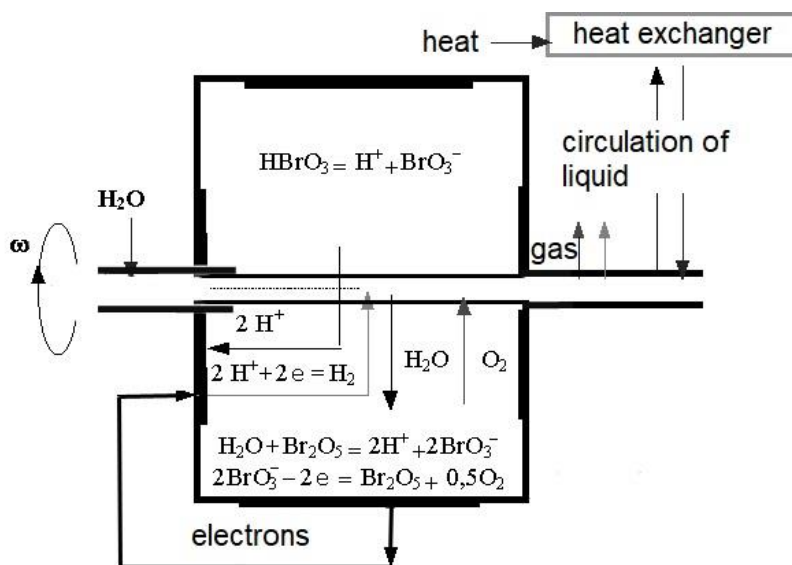


Fig. 35. Centrifugal electrolyser by Studennikov and Kudymov.

The peculiarities of the chemical composition of the electrolyte used by the authors is that it contains *heavy anions and light cations*. The electrolyte is fed to the rotor rotating at high speed. In the area of centrifugal forces in the electrolyte, the medium is separated into light and heavy ions, which leads to the occurrence of a radial potential difference and then to the occurrence of an electric current, which cycle through a rotating metal rotor. The drive power in the authors' experiments was 5 kW. The speed should be between 1,500 and 40,000 rpm.

This means that no external power source for the electrolysis is required here. It is necessary to get the electrolyte to rotate, and then a potential difference arises in the electrolyte, which supports the dissociation process. When the external circuit is closed, conduction current flows in it, which can provide significant power in the payload as the process proceeds with the release of gas (oxygen and hydrogen) from the electrolyte.

Centrifugal forces push light oxygen and hydrogen molecules from heavier ions towards the axis of the rotating volume of the electrolyte. The oxygen and hydrogen molecules are removed from the rotating volume through the bores in the shaft and fed to the consumer. This electrochemical reaction of the decomposition of water is endothermic, that is, it can only continue in the presence of a heat exchange with the external environment. For this purpose, cooled electrolyte must be heated to ambient temperature

by heat exchanger. The addition of pure water from the outside is necessary because the water breaks down into oxygen and hydrogen.

According to the authors and developers, theoretically about 20 - 88 watts of heat are absorbed for every watt of mechanical power. So, external environment heat will add energy into the system, corresponding to the amount of gas generated from water. This means an efficiency of 20 to 1 or even 88 to 1. With this device, one cubic meter of the nominal working volume of the electrolyser would make it possible to generate 3,5 cubic meters of hydrogen per second.

The information provided by the authors about their development once aroused great interest from investors, including foreign investors, but later many of the authors' statements were not experimentally confirmed. In 2010 this project was preparing to enter commercialization. The topic was worked on by the company Alambik Alpha and the Ikar Research and Development Center in Moscow. Useful articles on the topic of "chemielectric gravitolysis of Studennikov" were published by Andrey Fadeevich Makarov from Kemerovo, Russia. For more information, see our New Energy Technologies magazine at web site www.faraday.ru.

Once again briefly on the nature of any centrifugal force. The concept of the mass of matter particles including the associated Aether. The Aether connected with the matter particles, which occupies the space between the atoms, determines the inertia properties of the mass particles and is the cause of the creation of the centrifugal force.

Mendeleev wrote: "This is how Aether is defined: it is a liquid, weightless, elastic, filling space that penetrates all bodies and is recognized by physicists as the cause of light, heat, electricity, etc. We can say that Aether is like a gas... When we call Aether a gas, we understand a liquid in a broader sense as an elastic liquid that has no adhesion between its particles "(Mendeleev's book" An Attempt to the Chemical Concept of "Aether", St. Petersburg, typolithography by M.P. Frolova, 1905.)

Hence, we can say the acceleration, deceleration and any centrifugal force are effects of the elastic interaction of the body with the surrounding elastic Aether medium. The additional energy, in particular the excess torque of the rotor, which can be achieved in a technically closed physical system, can be traced back to the conversion of the energy of the medium from this point of view, in particular to the elastic deformations of the Aether medium and the thermodynamic changes corresponding to these deformations (cooling or heat emission).

At this point we can stop the consideration of ideas on gravitational field as well as centrifugal power generators. I hope the reader will still have the strength to study other principles of energy conversion. Let us come to examples of energy source design using electrical phenomena. First of all, it seems important to me to refer to the events of the late 19th century in Russia.

Chapter 5

At the origins of Russian electrical engineering

Considering the history of Russian electrical engineering, let's remember the great Russian scientist Pavel Nikolaevich Yablochkov. Pavel Nikolaevich was born on September 14, 1847 in the Saratov province. He was trained as a military engineer and served as an officer from 1866 to 1872. In 1875 Yablochkov went to the World's Fair of Inventors in Philadelphia to show the world his new unusually powerful electromagnet. However, he stayed to work in the famous Breguet watch workshop in Paris. In France,

Yablochkov patented his inventions and became one of the founders of the French Electrotechnical Society.

Yablochkov's first patent No. 110479, dated November 29, 1875, was issued by the French government for an "electromagnet". A distinctive feature of the Yablochkov electromagnet was that its winding consisted of a flat copper tape wound on one edge so that the plane of the tape was perpendicular to the core. Such an electromagnet was unusually strong compared to other electromagnets of the time.

The fact is that winding flat copper tape "edge on core" allows for a large number of ampere-turns per unit length of core, which provides a high magnetic field strength. To get more ampere turns, the electromagnetic coil is usually wound with a small diameter round wire, but this increases the ohmic resistance and heat loss of the winding. The Yablochkov transformer provides a small electric resistance (low ohmic losses) and a large number of ampere-turns per unit length of the core in the winding.

Note that flat wires increase the efficiency of transformers and can be used in designs with asymmetrical mutual induction. A flat conductor can be wind as the secondary winding of a transformer. In Fig. 36 shows how the field of a flat turn of the secondary winding B2 interacts with the field B1 of the primary coil of the transformer. In this transformer, conditions are created for the asymmetry of magnetic fields. The secondary field has no effect on the primary source, so the load in this transformer has no effect on the primary source. In fact, we can put more power into the load but the consumption power from the primary source will be much less.

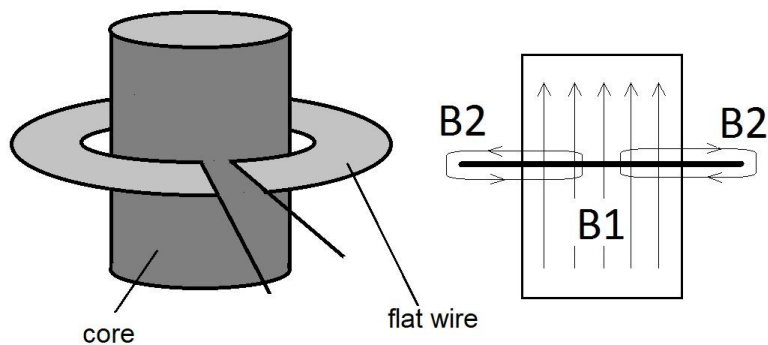


Fig. 36. Asymmetry of fields in flat coils

Yablochkov's second patent No. 111535, dated February 17, 1876, also mentions the use of a flat tape winding. Note that Tesla and other inventors later also used flat wires in the windings of transformers and electric motors, including the Mobius scheme.

On March 23, 1876, Yablochkov received a patent for a lighting lamp, the so-called "Yablochkov candle". In 1877 he received a French patent for a magnetic dynamo-electric alternating current machine in which the coils of wires are stationary. The rotation of the toothed iron disk caused changes in the magnetic flux. In fact, it is one of the first high performance generator designs (today we name it as alternators). This device generates the electromotive force but it does not decelerate the rotor. So, it can be high efficient and overunity. After 1877, Yablochkov's scheme was repeated by many inventors in their designs of free energy generators. Today we call such devices "generators without back EMF". In such generators, a low power motor can drive a much higher power generator. So, this motor-generator system can be autonomous and work without an external power source.

We also have to mention his priorities in the invention of the world's first electromagnetic energy transformer for industrial use, French patent No. 115793 dated November 30, 1876. In addition to the French patent, Yablochkov received Russian and German

patents on April 6, 1878 for the world's first electromagnetic energy transformer Transformer. In the German history of transformers, Uppenborn writes: "In 1878 we encounter the first industrial use of induction coils for lighting; that year Yablochkov accepted the German patent No. 1630, which he used to power his lamps. "

It is important for developers of free energy generators to know that Yablochkov found a way to use air (ionization of the environment) as a "source of free electrons" to increase the power in the circuit of lighting lamps. On September 13, 1877, Professor Egorov published a report in the Russian Physicochemical Society on Yablochkov's inventions, including the question of "introducing large capacitors in the generator circuit to increase the power of the lamps".

Fig. 37 shows a diagram of the distribution of alternating current with capacitors according to the French patent of Yablochkov, No. 120684 of October 11, 1877 for "A system for distributing and amplifying currents by atmospheric electricity coming from one power source for the simultaneous supply of several Lamps ".

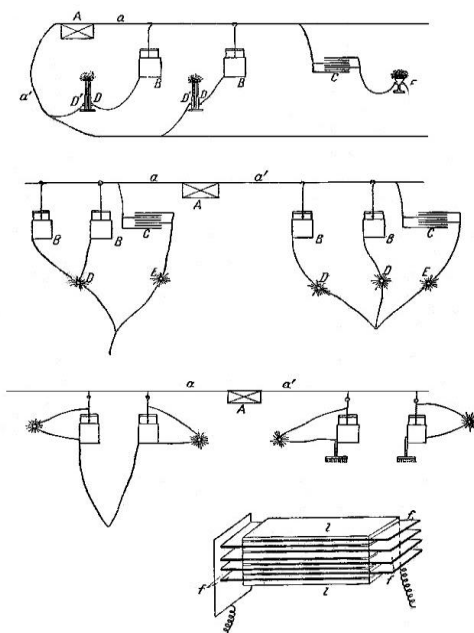


Fig. 37. Amplifying currents by atmospheric electricity

In the book "Electric Lighting" published in 1883, De Monsel writes: "In order to increase the light output of electric candles, Yablochkov came up with the idea of using capacitors with a large surface area."

Note that in addition to flat plates, Yablochkov used special "needle capacitors", so to speak "hedgehogs", similar to brushes with metal needles. It is known that the tip of the electrode improves air ionization conditions. The ionization of air is necessary to introduce additional free electrons into the circuit in order to increase the strength of the current.

Yablochkov explained: "I force the dynamic electricity supplied by the energy source to undergo a double conversion - first into static electricity and then back into dynamic electricity. The wire coming from the alternating current machines must be connected to the inner electrode of the Leiden capacitor or the capacitor of a special device and the second wire to be connected to the lamp. The addition of the capacitors not only allows energy to be distributed in different directions, but also has the goal of creating atmospheric electricity that accumulates in the capacitors... Therefore, the *sum of the amount of electricity sent to the light sources is greater than the current drawn by the original energy source is generated.* "

A similar solution can be found in modern designs of high voltage free energy generators. During their operation, air ionization is detected (Swiss generator "Testatika" in Methernitha) or the authors use the ground connection as a source of free electrons (Kapanadze generators). The perforated metal elements of the TESTATIKA generator are an analogy of the Yablochkov needle "hedgehogs" capacitors.

It is interesting that later in scientific work we can see results of "censorship". Censors tried to remove all statements on a topic related to the excess (over-unity) energy. Modern scientists cannot write in their works, as Yablochkov did in 1877, that he "consumes more energy in an incandescent lamp than it draws from a primary source". Sometimes they expressed such "over-unity" thoughts, but they make it very carefully. Later we will consider the works of Russian academician Nikolai Dmitrievich Papaleksi, dating back to the 50s of the last century. He wrote about the possibility of achieving the parametric generator efficiency "much more than 99%".

The greatest French physicists of the time, for example Mascard and Warren-Delarue, were present at Yablochkov's experiments and found that the sum of the currents from the capacitor plates into the ground was twice that of the primary generator. Notice that they write of "currents coming from the ground". A large number of free electrons, which are set in motion by a change in electrical potential in a single-core electrical line, can only be provided if the circuit is grounded and a "large-area capacitor" is present which "stores atmospheric electricity".

Grounding is a source of free electrons and a condition for generating high currents in the payload circuit. This principle is used in many free energy generators, for example by Kapanadze. This principle also applies to single-wire power lines developed by scientists from the Institute for Electrofication of Agriculture in Moscow (authors Avramenko, Strebkov, etc.).

It is interesting to note that the electrical lighting systems of Yablochkov times were single-wire, meaning they only had one wire and the other end of the wire was connected to ground. Later we will look at a similar modern power line that uses only one wire. In the days of Yablochkov there was no electricity power meter, payment was made at a fixed price (subscription fee).

The second factor to consider for Yablochkov's inventions is resonance. The presence of inductances and capacitors in the circuits can increase voltage in resonance mode. In fact, Yablochkov was the first to use resonance transformers in Russia as a combination of inductors and powerful capacitors.

Yablochkov was the founder of the French Society of Electrical Engineers, but he sold all of his shares and bought his inventions from the French Society for one million francs to get rights for development of these technologies in Russia. Yablochkov came to St. Petersburg and founded a company there called "Yablochkov-Inventor and Company. Association for electrical lighting and the manufacture of electrical appliances and machines in Russia". Yablochkov built a factory in St. Petersburg that manufactured transformers and lighting systems. The Russian Navy actively took advantage of Yablochkov's inventions. The English press wrote that the success of the Russians in the naval wars was largely determined by the use of electrical lighting and electrical machines on Russian warships.

In 1887, Yablochkov received a patent for a galvanic cell that uses hydrogen and oxygen to generate electricity. It was one of the first fuel cells in the World to be widely used now in 21st century.

It is known that Yablochkov was interested in aviation and methods of creating a driving force (traction) for cars. He was granted a patent for an electric car, which modern engineers are currently working on to produce.

Yablochkov's patents are extremely important for developers of high-efficiency power generators. His idea that the current intensity in the lamp circuit can be increased by "atmospheric electricity" is implemented in many modern projects of energy sources with an efficiency of more than 100%.

About 150 years ago any development of technical progress was limited by technical facilities of electrical engineering. The inventors had to look for optimal solutions. Practical applications can be found in machines that generate electricity most "economically". The efficiency of energy generation and conversion was crucial. The rotation of the rotor was generated by means of steam engines, which usually have a low power and some low speed of rotation. Therefore, optimal design of the electric generator was necessary in order to achieve maximum electric power even with a weak mechanical drive. Nobody considered these tasks as an "attempt to violate the law of conservation of energy". Does the generator generate high power output with minimal primary drive power? So we found the right optimal technology! Censors try today to stop the progress.

Let's look back in time and remember Nikola Tesla's main projects related to free energy technologies.

Chapter 6

Tesla's experiments and theory

"If we want to reduce hardship and poverty, if we want to give every worthy person what is necessary for the secure existence of an intelligent being, we have to give more machines, more energy. Energy is our stronghold, the most important source of multilateral strength. With enough energy we can meet most of our needs and guarantee everyone a quiet and safe life ... The development and well-being of the city, the success of the nation, the progress of all humanity are determined by the energy available. We shouldn't be satisfied with simply improving steam engines or inventing new batteries. We have something we can work on better, on what is more difficult. We have to develop methods of generating energy from inexhaustible sources, improve methods that require neither costs nor materials. "

Tesla, 1897, Electrical Engineering Review

The history of Nikola Tesla's life and his work should be studied in any modern school. His name is now associated with rotating magnetic fields, high voltage coils, alternating current systems and motors, high frequency currents and amazing experiments on "wireless energy transfer". He was involved in various technologies, including research for military applications. Some believe that Tesla and Einstein are related to the US Navy's famous "Philadelphia Experiment", which aimed to use electromagnetic methods to alter the properties of space-time in order to make a naval warship invisible. We show just a few of the ideas and unclassified technical solutions that Tesla has found in the field of free energy.

His method of "transferring" energy over a distance is particularly interesting. In Fig. 38 shows a diagram of two devices.

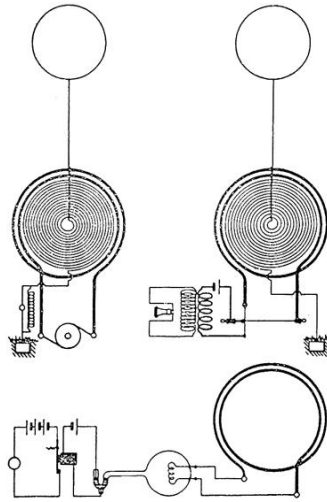


Fig. 38. Tesla Patent N. 725605 of 14.04.1903.

One of the devices (left side) creates an alternating electric field using a single capacitor (spherical or ring-shaped toroid), while the other device (right side) detects a change in the electric field at resonance to generate energy from changes in the strength of the electric field. This technology forms the basis of modern high-voltage generators by Kapanadze and other authors.

At first view at this figure, there is an analogy to the scheme of a transmitter and receiver of electromagnetic radio waves familiar to any radio engineer. This is not entirely true. Tesla explained this in his talk "On Light and Other High Frequency Phenomena" at the Franklin Institute, Philadelphia, February 1893: "The first class of effects that I will show you are those *produced by electrostatic force*. It is the force that controls the movement of atoms, causes their collisions, and creates the energy of heat and light. If our present ideas are correct, then this is the most important force in nature for us. As a term, electrostatics can mean a stable electrical state, but it should be noted that in our experiments this force is not constant, but changes at a frequency that can be described as moderate - about a million times per second. This enables me to reproduce many effects that cannot be created with a constant high force. «So, here is main effect in electrostatic induction, i.e. electrophorus effect.

The difference to the usual radio transmitters and radio receivers is obvious. The electromagnetic wave and electromagnetic transformer principle are not considered here as a method of energy transfer. The "primary source" generates an alternating electrical field, and the "energy receiver" is polarized in this field and supplies a conduction current in the load circuit. Let me remind you that the strength of the current depends on the number of free electrons, so good grounding or the effects of air ionization play an important role in this design.

Tesla considered electrical phenomena in relation to Aether dynamics and always emphasized the differences between his theory and Hertz. He wrote: "I have shown that the universal medium is a gaseous body in which only longitudinal impulses can be, which creates a variable compression and expansion, similarly those that generate sound waves in the air. So the wireless transmitter does not generate Hertz waves, which are a myth, but generates sound waves in the Aether, whose behavior is similar to that of sound waves in the air, except for the enormous elasticity and the extremely low density of a given medium makes its speed equal to the speed of light. "Pioneer Radio Engineer Gives Views on Power," New York Herald Tribune, September 11, 1932.

Tesla wrote on the nature of electricity: «Well, electricity cannot be called Aether in the broadest sense, but nothing can prevent electricity from being called Aether, which is related to matter. The rotation of molecules and their Aether causes the tension of the

Aether or electrostatic deformation, the equalization of the tension of the Aether causes the movements of the Aether or electric currents, and the orbital movements of the molecules produce the effect of electric and constant magnetism".

Here we find the answer to the most important question about the theory of electricity. Electricity is an Aether that is connected to matter! Electric currents and magnetic fields are the movements of the Aether! It is quite simple for school understanding.

Speaking of mass we have already established that the inertial effects of body movement can also be considered as manifestations of the Aether that is associated with this moving matter.

So Tesla did not make difference between matter and Aether because he believed that these concepts are interrelated. In this edition we find analogies with Faraday's views. Faraday wrote in his letter "Reflections on Electrical Conductivity on the Nature of Matter" to Richard Taylor, Esq., Royal Institution, June 25, 1844, that matter is continuous everywhere: "This means the matter is continuous throughout and, because of its mass, we should not assume any difference between its atoms and the space between them. The forces around the centers give these centers the properties of atoms of matter".

These important analogies of Faraday and Tesla's views on the nature of matter, electricity, and Aether will help us to understand the functioning of many free energy devices.

Let's consider the question of the speed of propagation of longitudinal waves. In his Patent No. 787,412, "The Art of Transferring Energy Through Natural Media" (dated April 18, 1905), Tesla stated that the average speed of the waves propagated by his device was 471,240 km/s. The speed of light is about 300,000 km/s, so we can conclude that Tesla's method of transferring energy over a distance is somewhat more interesting than ordinary electromagnetic radiation. Only longitudinal waves in an elastic medium can have such properties.

I allow myself an excursus and tell the reader about the works of the famous Russian scientist Alexander Mikhailovich Mishin. In his book "Principles of Higher Physics", St. Petersburg, 2009, he proved theoretically and experimentally that Aether has several different physical states. One of the states of the Aether is an absolutely rigid incompressible body. Aether behaves in this way only with some "fast impulse" influences. In this case it is possible to justify the superluminal speeds of the propagation of longitudinal waves in the Aether.

When generating a longitudinal wave in a real environment (air, water ...), the propagation speed of the wave front depends on the properties of the medium. The propagation speed of the front of the longitudinal wave is the propagation speed of the shear of the particles of the medium, which is transmitted from particle to particle with a certain delay. It is impossible to create a wave in a solid, but we can think of a longitudinal shear as a variant of the front of a longitudinal wave. Take a solid body, for example - a pencil and push it, in this case the displacement takes place almost simultaneously for all of its particles of the matter of the pencil. The same shift, i.e. the front of a longitudinal wave in the solid Aether, is created immediately with a quick "shock" impact on the Aether. In the case of a less rapid "impact" the Aether reacts differently. The propagation speed of the disturbance of the medium will be finite, but it can be greater than the speed of light, as Tesla has shown.

Alexander Mikhailovich Mishin experimentally proved the existence of several discrete levels of Aether existence, its "phase states", for which the wave propagation speed is different. We are interested in "absolutely solid Aether", in which there can be no

compression and no wave, but an instantaneous longitudinal displacement of the particles of the medium in a certain direction. This area belongs to gravitational research. From the experimental data from Tesla and other researchers, in particular Evgeny Podkletnov and Giovanni Modanese, 2001, we can justify the development of technologies for generating gravitational waves. More details you can read in my book "New Aerospace Technologies".

The speed of the shift in a solid body is infinitely high (instantaneous momentum transfer), and there is no convergence (angular divergence) of the gravitational beam in contrast to a laser beam (a beam of coherent photons). This gives us great advantages for developing communication technologies. Convergence changes the energy density in the beam with distance so that the beam of any, even the most powerful electromagnetic (photon) laser, cannot maintain its initial energy density with distance from the source. The generator of longitudinal shift in the Aether medium does not show such disadvantages, since the Aether particles presumably have the property of "mutual attraction", therefore the beam of such particles is self-focused when moving away from the source.

The condition of the Aether (its temperature and other physical properties) is a question that needs to be considered separately. As already mentioned, it was shown in Mishin's experiments that the Aether medium reacts differently to physical impacts, depending on the impact energy, in particular the impact velocity (pulse front steepness), and the reaction effects are very similar to the reaction of an incompressible liquid. Later we will look at the toroidal generator circuit (TPU) by Steve Mark, where this factor is very important to provide work of the generator.

Tesla looked closely for "rapid effects on the Aether" and found out after hundreds of experiments that the longitudinal waves he generated are able to penetrate all material objects and trigger an "electronic response" in metals. In his patents he describes the isotropic force rays he generates as "continuous streams of Aether that move in a straight line and instantaneously from his transformers, since this is an incompressible movement through space".

We have already noticed some interesting effects, for example the mutual attraction of particles moving in a beam of Aether particles, which creates the effect of "self-compression" of the beam. In contrast to an electron beam or a light beam, such a particle beam is not scattered (expanded) when it spreads over great distances. On the contrary, it is compressed into the thinnest beam, which preserves the energy of the particles. In this case, when a beam of such mutually attractive particles is self-focused, the energy density increases sharply because the beam cross-section decreases while the amount of energy is maintained. Such a stream of Aether particles can be used as the weapon that Tesla wrote "the rays of the peace" about. The well-known term "death rays" referring to ray weapons suggested Tesla to understand from the other side. In article named "Tesla Invents Peace Ray", New York Sun, July 10, 1934, the reporter writes: Tesla offers a new type of weapon so powerful that no attacker would dare start a war. Tesla described this weapon as thin beams of particles that concentrate in a beam thinner than a hair, capable of hundreds of thousands of kilowatts... traveling at tremendous speeds over a distance of more than 200 miles. Provided that all countries have such weapons, any country, even the smallest, will be able to repel the aggressor. According to Tesla, this weapon could become the guarantee for peace on the planet".

To come back to Tesla's experiments, it is necessary to once again point out the resonant operating conditions of the circles in which the vibrations of the Aether medium are organized. The electrical theory of the time was based on the work of Faraday, Galvani and Volta. Tesla worked with alternating currents of high frequency, and since the vibrations of the Aether medium resemble sound vibrations (that is, longitudinal waves),

he applied the theory of acoustic vibrations and Hemholtz resonances to find optimal solutions.

He generated an electrical standing longitudinal wave, simulated it similar to waves in air, and selected the wavelength so that the receiving device was at the point of the maximum change in amplitude of the electrical field (wave crest). First, a resonant electrical standing longitudinal wave was generated, which alone cannot transmit any energy because it is stationary. The "receiver" must be placed on the wave crest to get maximum power output. Thus, changes in the magnitude of the electrical potential are provided at the point of "maximum amplitude changes" of the standing wave, which makes it possible to extract the maximum power at the output of the energy conversion receiver.

The concept of "standing waves of an electric field" was discovered by Tesla while working in a laboratory in Colorado Springs during a thunderstorm. These were studies from 1898 that he later described in *The Electrical World and Engineer*, March 5, 1904. An interesting quote from this publication: "It was July 3rd... a date I will never forget, the day I received the first indisputable experimental evidence of a truth of paramount importance to the advancement of mankind. There was no doubt that I was watching standing waves. After eliminating the source of interference, the receiving circuit sequentially passed the nodes and maxima of the electric field. It has already become very clear to me how important this phenomenon is for the transfer of energy through my system. It was not only possible to transmit telegraph messages wirelessly over any distance, but also to transmit unlimited energy to any distance on earth with almost no loss." Here is a very important idea. Tesla wrote here about electric standing waves, not electromagnetic processes.

A resonant tuning of the device is necessary so that the "receiver" is at the point of maximum change in amplitude of the standing longitudinal wave generated by the "transmitter". I've put these words in quotation marks because in this case nothing is being sent and nothing is being received. The source of a standing longitudinal wave causes a change in the density of the Aether, which leads to a change in the size of the electrical potential at the point where the transducer of this oscillatory process is located.

Let me give you a simple analogy. There is a mechanical device as an example of the functioning of a receiving energy converter based on this principle. The *Göttingen Journal of Scientists*, 1775, describes the "barometric clock of the Englishman Cox". For example, it can be a corrugated cylinder, the volume of which changes depending on the atmospheric pressure. The modern version of similar clock is manufactured today by the Swiss company Atmos.

Suppose that a certain source of longitudinal sound waves in air operates in a resonance chamber and produces an alternation of stationary sections of more compressed and less compressed air as well as changes in their amplitude with a certain modulation frequency. In this case, the position of nodes and maxima in space does not change, but their amplitude fluctuates. Obviously, a "barometric clock" will gain energy from the process of changing air density very well if it is placed in the place where the amplitude of the standing wave changes have the maximum value (maximum amplitude modulation). In fact, at a certain point in space the observer will notice the maximum periodic change in the volume of the corrugated cylinder of the barometric clock, and in other points he will notice less change in the volume of the corrugated cylinder.

This mechanical analogy let us understanding of the Tesla's technology. It is possible to extract energy in the "receiving" equipment if it is placed in point of maximum periodic changes in the Aether energy density (electric field strength) that is generated by the "sending" equipment. In this case the "transmitter" does not give any electrons to the "receiver" and it does not matter at all whether the "receiver" is switched on or not. Power

consumption is always the same. "Transmitter" and "receiver" are not connected to one another as in a transformer energy conversion (electromagnetic transformer). This method does not use the effect of electromagnetic induction. Several "receiving devices" around the generator of a standing longitudinal wave does not affect the power consumed by the primary source.

Consider another interesting question about "positive electricity". I used to believe that I knew the current carriers. Electrons have a negative charge, and the positive charge on bodies is in most cases explained by the lack of these electrons. Exotic charge carriers with a positive charge, such as a proton or a positron, do exist, but they are rarely found in an ordinary electronics laboratory. After learning about the work on free energy, it became clear that electrical phenomena are much more interesting. In particular, there are easily accessible positive charge carriers for experiments and we can generate self-sufficient energy sources with these "cosmic rays of positive charges".

In 1933, Tesla wrote a New York American article, "Device to Harness Cosmic Energy Claimed by Tesla". He says: "This is a new type of energy that will keep all machines running on earth. This is the cosmic energy that the universe works with. The central source of this energy for the earth is the sun, and this energy exists everywhere. "

Two of Tesla's patents relate directly to this subject of (solar) energy sources in space. Look at US Patent No. 685,957 "Apparatus for the Utilization of Radiant Energy" and US Patent No. 685,958 "Method of using radiant energy". Both patents were filed on March 21, 1901 and granted on November 5, 1901.

Let us analyze the essence of the patent. Tesla begins its description by stating that X-rays and ultraviolet radiation create a discharge on electrically charged metal surfaces. The discharge effect is stronger with negatively charged plates. Usually these rays and ultraviolet rays are considered as some "high frequency Aether vibrations". Tesla believes this is a stream of real tiny particles that can positively charge metal surfaces or reduce their negative charge.

By sending these rays, for example from an X-ray tube, to a conductive body carefully insulated on all sides and connected to an electrical capacitor, Tesla received a current flow into the capacitor and strong discharges of the usual electron current. Many authors have written about such "cosmic particles" and the corpuscular theory of Aether. It is assumed that there was initially a place for aether particles in the Mendeleev periodic table of the chemical elements, but that they were later "edited" by scientific censors.

An interesting phrase from Tesla in this patent attracts attention: "The particles in the radiation flux have a very small radius of curvature, so they can charge a capacitor to very high potential values." The curvature of matter particles, i.e. their geometric dimensions, and the value of their electrical potential are related according to Tesla.

Tesla considered the Sun as a huge positively charged ball with a potential of around 200 billion volts in relation to the negatively charged Earth. Radiant energy, he wrote, is the radiation of the Sun and other sources of "cosmic radiation" that constantly emit positively charged small particles of matter that move at a speed much higher than the speed of light. Note: This speed can only be taken into account for longitudinal waves in "harder" Aether or for shift in an absolutely solid medium. So it is rather not about matter particles, but about longitudinal waves in the Aether medium.

These positively charged "radiation energy particles" can interact with a metal plate that must be painted to isolate them from the air. The plate has to be raised to a certain height above the surface of the earth, and then these "positive particles" ensure a constant accumulation of positive electrical charges on it. In Tesla's method, the plate is

connected to the capacitor via a grounding pin. Since the Earth is an accumulator of negatively charged particles, an electric current is created that constantly flows from the capacitor into the Earth by ground wire.

Fig. 39 shows a diagram from Tesla's patent. This Tesla invention was very similar to modern solar panels, but worked any time of the day. Tesla's plate was shiny and covered on all sides with a thin layer of sprayed-on transparent insulating material, possibly ordinary lacquer.

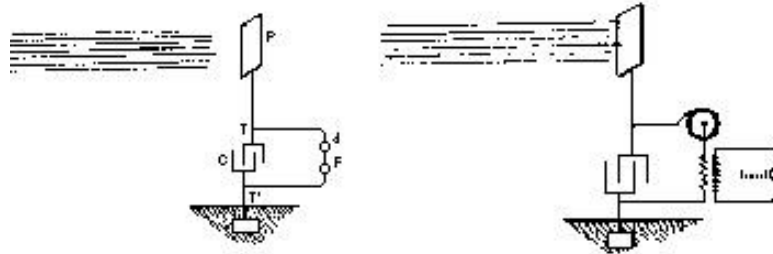


Fig. 39. Tesla cosmic energy receiver.

Polishing metal apparently reduces the leakage currents of positively charged particles into the air. Radiation energy for such a "receiver" can be supplied not only from a "natural source", i.e. from the Sun, but also from an arc lamp, an electrical discharge or an X-ray tube. In Tesla's time, the "Crookes pipe" was well known. In the modern version (for example the circuit of the Donald Smith generator) the end of the high voltage Tesla coil is directed towards the metal plate to get free energy.

Devices that emit a "radiant stream of matter" in one direction were later called "open vacuum tubes". This is not a TV picture tube that emits electrons, but a source of a directed "stream of Aether particles". Tesla came up with his design while experimenting with X-ray machines.

The practical application of this method, shown in Fig. 39, requires some kind of conversion of direct current from charges to ground to create the alternating current for transformation in practical voltage and frequency. Tesla achieved this by installing an electrical spark gap (Fig. 39 left) or using a rotating high-voltage spark gap (right in Fig. 39). Variations in current allow a conventional electromagnetic step-down transformer to be used to obtain the required current frequency and voltage in the payload.

About a hundred years earlier, the well-known experiments of 1753 in Russia, made by Lomonosov and Richman with lightning rods and ground connection, marked the beginning of research into the practical use of "atmospheric electricity". For modern generators, the source of excitation for the flow of positive particles can be a modern, compact electronic high-voltage generator that "excites the Aether" to get the same effect like the Sun "cosmic rays". In addition, it is necessary to connect the ground to the "accumulator of positive electricity" so that charges can be derived from it, and via a high-voltage transistor switch, for example at a frequency of 50 Hz, to "interrupt" the unidirectional flow of ordinary electrons. This "interruptions" allow using electromagnetic induction in the step-down transformer.

There are also a number of patents on ionization of the charge storage device by a source of radioactive radiation. They cannot be called environmentally friendly, so we do not consider them.

Consider other Tesla experiments like the high voltage coil experiments. Typical parameters in such experiments are as follows: The primary source has a voltage of 10 kilovolts, it charges the capacitor with direct current to the breakdown voltage of the spark gap, which periodically generates spark shock discharges in the primary circuit (thick wire) of the high-voltage transformer. The output voltage of the high voltage coil typically reached 200-240 kilovolts in Nikola Tesla's designs. In larger experiments it generated voltages in the million-volt range. The circuit used in modern experiments is shown in Fig. 40.

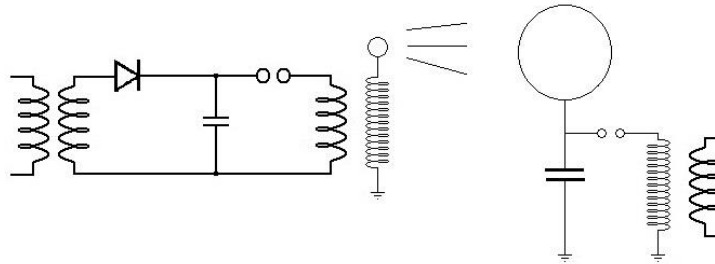


Fig. 40. Modern scheme of Tesla's energy system.

The first AC transformer should deliver approximately 10 kilovolts. A high voltage diode is needed to rectify the current, which allows the high voltage capacitor to be charged.

The discharge frequency depends on the distance between the ends of the spark gap. One end of the high voltage coil can be connected to ground or it can be free, and the other end is connected to a "solitary capacitor", that is some electrical capacitance of spherical or ring shape (toroid). In the right part, the conventional "receiving device" with step-down transformer is shown.

The aim of Tesla's experiments was to generate "radiating shock waves" (longitudinal waves) at the output of a coil, which increase the voltage to hundreds of kilovolts. A hundred years ago the electric field was considered to be the "tension" or "deformation" of the elastic Aether medium. The source of a high-frequency electrical high-voltage field creates areas of "variable deformation of the medium" in the surrounding Aether, i.e. longitudinal waves, as alternating areas of compression and discharge of the Aether.

The ionization or some other currents at the output of the Tesla coil is not the purpose of this experiment. This is the mistake of many researchers who allow "sparks" from the coil's exit to grounded objects or turn the Tesla coil into an air ionizer. On the contrary, ionization is seen here as unnecessary waste. The end of a high voltage Tesla coil is usually connected to spherical or toroidal polished metal capacitor that creates an *alternating electric field around it*.

We have made it our task to generate electricity in the real load of the receiving part of the circuit, for example in light bulbs or in motors. The ignition of gas discharge lamps in the area of a high-frequency electric field speaks indirectly of power. Tesla not only showed "tricks" with gas discharge lamps that glowed in the area of an alternating electric field, but also he received real powerful currents in the area of an alternating electric field. It was hundreds and thousands of amperes. In his experiments, Tesla can power large electric motors without connecting cables to a generator, but only by generating energy from the vibrations of an electrical high-voltage field.

There are many ways to implement this idea. One of the authors who successfully developed this topic is Roman Karnoukhov (Roman Akula in Internet publications). Roman Karnoukhov's generators are based on modern semiconductor electronics.

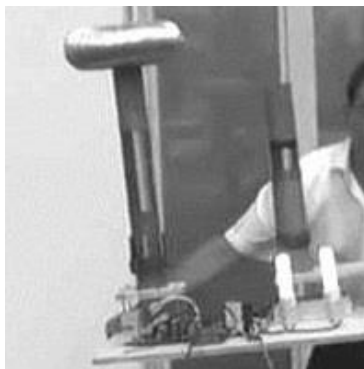


Fig. 41. Karnoukhov's generator.

Fig. 41 shows a generator that works in stand-alone mode and it can provide 400 watts of power to the payload. On the left side of the photo we can obviously see a "high voltage coil - inductor" with toroidal capacitor at the top of the high voltage coil. It creates an electric field around itself. On the right side of the photo you can see the "receiving" coil that generates a current in the load circuit. There is no toroidal capacitor at the end of the "receiving" coil. Perhaps the electric field in the area of this "receiving" coil is strong enough to induce charges directly in the wires of the winding of this coil. Here is effect of electrical induction, not an electromagnetic induction.

Another photo, Fig. 42, shows a horizontal version. Both coils, i.e. the source and the receiver, are on the same axis. For free energy followers, this design will instantly remind the famous Tarel Kapanadze generator.

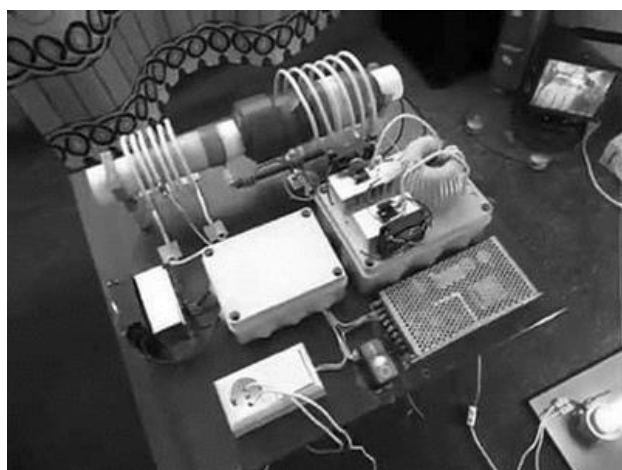


Fig. 42. One of the high voltage generators.

These experimental designs look simple, but understanding them requires a basic understanding of Aether dynamics. In his experiments, Tesla found out that with high-frequency oscillations of the electric field, even the space around the coil begins to glow with a special "white light". This was not due to the ionization of the air, since the electrons "did not leave" the wires of the high-voltage coil.

Longitudinal energy waves or "radiation impulses", which moved from bottom to top along the Tesla high voltage coil with each discharge of the high voltage capacitor, were non-electronic in nature. Tesla concluded that his transformers were affecting the Aether, causing the light effect in empty space to appear.

We have already suggested that every particle of matter, including an electron, is surrounded by its associated Aether particles, and if the electrons are "conventionally negatively" charged, then their associated Aether particles are "conventionally positively" charged. We will call this type of Aether to be "electronic" to distinguish it from the

Aether that is associated with other particles of matter, including electrically neutral particles. Pulse discharges from a capacitor in Tesla's circuit generate a "shock current pulse" of electrons in the coil and their subsequent dampened high-frequency sinusoidal harmonic oscillations. At the same time, the Aether which is connected to the electrons is set in motion, which causes its glow light. Note that by adjusting the duration of the excitation pulse of its transformer, *Tesla could heat the air in the room or create its cooling by changing the thermodynamic equilibrium in the Aether*. We wrote about this in the chapter on process theory when we considered the Thomas Bearden's concept.

Let's draw some conclusions: Tesla showed us that electric current is a really complex combination of Aether and electrons. He considered the particles of Aether to be "extremely mobile, with an insignificant mass compared to electrons and an insignificant cross-section". They are incompressible, have a positive charge, and "can easily move through space and matter at a speed much faster than the speed of light". *It was cold electricity, a form of free energy*. This type of energy is also known as "positive electricity," which Tesla wrote about in Patent No. 685,957. We will look at the work of Edwin Gray and Thomas Morey on the subject later.

Let us consider now the reasons for the effectiveness of the method of "shock" excitation of vibrations in the Tesla scheme. Tesla wrote: "The advantage of this device was that it could provide energy in short periods of time, so the performance could be increased. Energy was accumulated in the capacitor and discharged in the shortest possible time. With a 1 kilowatt generator, I could achieve an output of 2000, 3000, 4000 or 5000 kilowatts. If you have a continuous or undamped wave, 1 kilowatt gives you the option of receiving a 1 kilowatt wave and no more. This is why the spark gap circuit has become popular. "

Tesla showed the importance of "shock excitation" of natural oscillations in the circuit in order to obtain excess power at the output. Let me explain the reasons for this phenomenon. Tesla wrote: "... if the speed of discharge (time period) of the capacitors is greater than the time of charging, then a current surge occurs." The key word here is "speed". As you know, speed is a characteristic of kinetic energy. So you can make the conclusion.

In this situation we consider the propagation speed of the front of the current impulse, i.e. the real shift of real particles of matter. Sure, they have some inert rest mass and react to the impact according to the laws of mechanics. Kinetic energy is known to be expressed as the quadratic function of speed. Assuming the discharge rate is ten times higher than the charge rate, and then the kinetic energy of the electrons in the discharge pulse is a hundred times higher than the kinetic energy of the electron flow that charged the capacitor. We use little energy to charge a capacitor, and a short and fast discharge gives us much more energy.

There are no logical contradictions here, because the situation is similar to the "Archimedes lever". We lose time in one part of the cycle, but save on the work that has been done and in the other part of the cycle we have a short time, but can with the same number of electrons do a great deal of work.

Next, the most interesting thing happens: there is an interaction of electrons with a large kinetic energy with other electrons that are in the wires of the coil and receive this energy from them. It is obvious that the "cold" electrons receive the kinetic momentum of the "excited" electrons according to the law of conservation of momentum and no more. The rest of the energy will "go into the Aether" and set it in motion. Aether is much lighter than the electrons, so its "power" is much higher. It "dampens" the shock of a short current pulse, takes over and absorbs most of its energy, which manifests itself in the form of its damped harmonic oscillations. These vibrations of the Aether will set the associated matter particles in motion for the second time, including the free electrons in

the wire of the coil. A damped alternating current is generated in the oscillating circuit, which can be used for useful purposes. Every experimenter observes this process on an oscilloscope when he excites any inductance coil with a short pulse. The pulse itself is visible on the oscilloscope screen, followed by sinusoidal damped oscillations.

Assuming that this explanation adequately describes the mechanism of free energy generation of the "shock" excitation method, our modern solutions can be implemented technically without spark discharge with powerful, fast-acting high-voltage semiconductor elements. It is no coincidence that the efforts of modern designers are aimed at making highly efficient semiconductor elements that can operate with short pulses.

How much excess energy can be obtained with this method and how can it be separated from the spectrum of the Aether vibrations? From an energetic point of view, it is advantageous to work with a high frequency. A coil tuned to 10 kilohertz gives us 100 times more energy than a coil tuned to 1 kilohertz in the same circuit and with the same energy that is used in the excitation pulse. However, this only applies to "fast" discharge pulses or, more correctly, to pulses with a steep edge. With such fast current impulses we get, so to speak, the reaction of the "harder" Aether.

From the theory of wireless telecommunication technology there is the term "delta pulse" in modern textbooks. It is a pulse of infinitely short duration that generates an infinitely broad spectrum of vibrations from low to ultra-high frequencies. By creating a delta pulse we can get a "response" at very high frequencies. A coil (resonant circuit) that responds to such a broadband signal only vibrates at its own frequency. The rest of the energy of the Aether vibrations will "heat" the environment. It is energetically advantageous for us to use the high-frequency part of the spectrum.

In such a vibration excitation scheme, high-frequency coils that absorb the vibrations of the Aether, which are excited by the "shock" discharge of a capacitor for the decimeter and centimeter wavelength range, consist of several turns of wire. At high frequencies there is no need to add a separate capacitor to create a resonant circuit, as the coil wires always have their own capacitance. In addition, such resonance circuits can be much more compact and powerful than low-frequency circuits.

The design of powerful energy sources of this kind requires professional knowledge of the fundamentals of microwave technology (ultra-high frequencies), i.e. the design of waveguides, resonators and other features of the excitation and propagation of the high frequency microwaves. This gives us the opportunity to create compact energy sources with enormous power in this frequency range.

Tesla did not disclose these principles. However, he wrote on similar subjects in an article that seems strange, if not allegorical. This is his article, "The Problem of Increasing the Energy of Mankind," The Century Illustrated Monthly Magazine, June 1900. At the beginning of this article, find a reminder that kinetic energy is defined as the product of "half the mass divided by the square of the Speed." Note the similarity of the formula for the kinetic energy with the formula for the energy of a charged capacitor, in which instead of the mass of the body the size of the electrical charge and instead of the speed the amount of the voltage, also squared. In order to increase the "driving energy of mankind", as Tesla writes, it is necessary either to increase their "mass" or to accelerate their "body". The body always accelerates against the "frictional force" of braking and overcomes the resistance of the medium. It is necessary either to reduce the friction or to increase the driving force. We have three methods: increase the mass, decrease the resistance of the medium and increase the driving force. "

To understand this text allegorically, an increase in mass is an increase in the strength of the current (grounding or ionization according to the Yablochkov method). Tesla writes

again about "speed" in the same article: "I created electrical movements that happened at a speed of about a hundred thousand horsepower, but you can easily get speeds of one, five or even ten million horsepower." In this case we would say "power is one hundred thousand hp", but Tesla uses the word "speed" as a concept that refers to the operating principle of its energy generator, which uses the principle of "shock excitation" of Aether vibrations: the greater the speed of action (the fast front), the more hard and "incompressible" the Aether behaves and the stronger are the consequences of the "shock" excitation.

Let's take a look at other interesting technical solutions from Tesla. See his Colorado Spring Notes for ways to improve the performance of energy conversion devices. For example in Fig. 43 shows a Tesla diagram for one of his experiments.

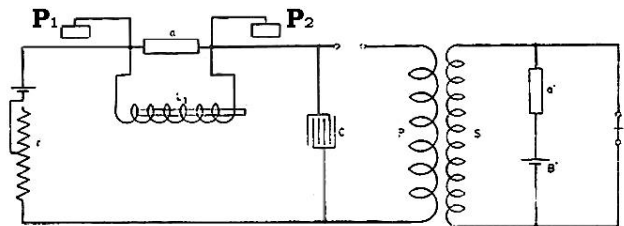


Fig. 43. Tesla Diagramm of 1900.

Plates P1 and P2 are single capacitors that play the role of accumulators of free electrons involved in generating a conduction current in an electrical circuit. Let me remind you once again that Yablochkov used both flat and "needle capacitors" to "amplify atmospheric currents".

In addition to the connection of metal plates, which we saw in the works of Yablochkov (patent of 1877), Tesla used other methods: "... to increase the airflow, I have two large traps on each side of the trap, very close to it pieces of mica laid." Please remember in the case of high voltage fields the mica sheets can be polarized. So, this way also can be used to increase current in the circuit.

On picture Fig. 44, there are also P-connection points of the "plates" to the inductance coils. There are four ways of including the «consumers» in the circuit of the incoming power line. In the case of the latter on the right "consumer" of the energy, such "plates" are shown.

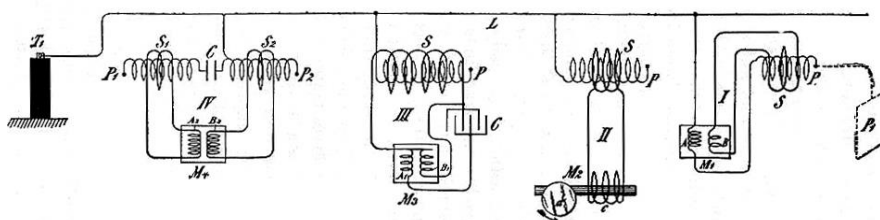


Fig. 44. Example of single-wire circuit by Tesla.

Analogies between Yablochkov and Tesla are obvious. The time difference between the two inventors is more than 25 years! Both authors found ways to increase the current and power in an electrical circuit using "atmospheric electricity". Both authors used a scheme consisting of a coil and a capacitor, where we considered the resonance conditions of the oscillating LC circuit.

In order to optimize the power consumption of AC electric motors, Tesla suggested adding capacitors with a corresponding capacity parallel to its windings, Fig. 45. In this case, there are conditions of “parallel resonance”, where the current consumed by the primary source is many times smaller than the currents in the LC circuit of the coil and capacitor. Similar principles are currently used to increase the efficiency of energy conversion by reducing the reactive currents in any electric circuits, for this purpose capacitor systems for reactive power compensation (UKRM) are used.

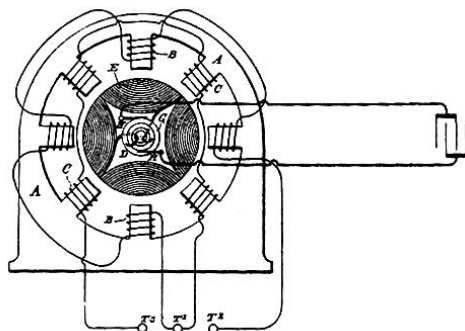


Fig. 45. Tesla's scheme on application of the capacitor to the motor.

Modern reactive power compensation devices can be high-voltage, for installation in industrial companies and on-site distribution networks, before the step-down transformer, or it can be low-voltage version, for conventional loads at 380 volts. Indeed, modern UKRMs are automatically adjustable blocks of powerful capacitors that Tesla has been talking about using. You can reduce power consumption by 30-50%, and in factories and businesses, it is about hundreds or thousands of kilowatts.

There is real story I know about using the resonance method in Russia in the 1990s. Now it seems to be humor or anecdote. Some genius electrician man set in resonance the transformer of the factory. So, the total electricity consumption from the electrical grid was decreased by 50%, and the factory began to pay twice less bill for the electricity. After several months staff engineers of the electric power provider called the management of the factory to ask about the reasons. They supposed the factory just downsize the production facilities. The staff of the factory happily replies “all is fine”, but informed about some modernization of the electrical equipment. The team of power provider urgently came to the factory, and then they broke all "resonance electrical equipment" and prepare the financial penalty to the factory. "Too smart" electrician man was missed from here.

We can understand the importance of working in resonance by studying the work of modern innovators. Saving electricity bill is a way to lower production costs. For example, the "Stepanov Electrical Laboratory" group from Orenburg showed in 2010 the possibility of providing electricity consumers (motors, heating, lighting ...) with an output of 12 kW if the power consumption is about 1 kW. Today Stepanov and his partners work in the Russian-Singapore company “Steho”, look at www.steholab.com

Tesla made it clear: Industrial electrical engineering without resonance is an illiterate waste of energy. The future of all power engineering are resonance transformers. We will cover this topic separately in another chapter dealing with resonance energy converters. Another important invention by Tesla is a unipolar dynamo. Here it is possible to have an autonomous rotation mode without any external drive. In The Electrical Engineer magazine, 1891, Tesla presented an article on Faraday's drive, "Notes on a Unipolar Dynamo." Tesla criticized the effectiveness of Faraday technology and suggested significant improvements.

Tesla wrote: "You can design and build a unipolar generator that generates electricity so that the dynamo can operate continuously and even increase its output after the first start." Tesla in 1889 made several such self-rotating machines by this technology. Let us consider the features of the design of a unipolar dynamo machine that he described in his patent. First, a unipolar Tesla dynamo does not use permanent magnets, but it use electromagnets, and their size is larger than the diameter of the disk (winding S in Fig. 46). The magnetic field of the electromagnet runs through the entire rotor.

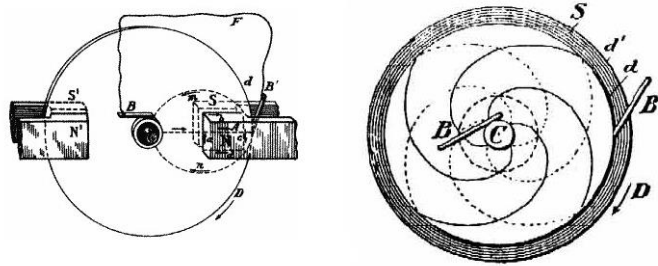


Fig. 46. Tesla's unipolar self-running generator.

Second, Tesla divided the disk into spiral sectors (this is not a solid metal, but dielectric-based metal sectors isolated from one another). He points out in his patent that the currents induced in the rotor have a magnetic field that increases the current in the windings of the electromagnet when sector along the lines that show solid lines on his figure shows an arrow for the direction of rotation of the rotor. If the direction of rotation is different, the rotor is broken. The current must flow through the rotor, through the brushes B and B', into the load circuit, so that the magnetic field of the current induced in the rotor can strengthen the field of the electromagnet. Such a generator, with a closed external circuit (connected load), would be self-rotating machine.

Another interesting example of Tesla's engineering solution can be applied for the systems of high frequency currents. In his "Lecture on light and other high frequency phenomena", Franklin Institute, Philadelphia, February 1893, Tesla wrote: "I made some amazing observations. In particular, I have shown that when a current or sharp rapid discharges pass through a thick metal rod, there may be points on the rod that are only a few centimeters apart, the potential difference between them is sufficient to produce the bright glow of a conventional incandescent lamp. "

This statement is very interesting for us. Usually, Tesla showed vacuum (gas discharge) lamps glowing in a high frequency electric field. Here he is talking about incandescent lamps, and that is 97% heat, not just a lighting lamp.

How can you get real heat power if the load is connected to two adjacent points on the surface of a "thick metal rod" !?

On picture Fig. 47 shows a diagram of this experiment. The control circuit is already short-circuited with a U-shaped circuit made of a "thick copper rod" so that the connection of the lamps in the circuit does not change anything in the energy consumption of the primary source. How is the real power generated in the lamps?!

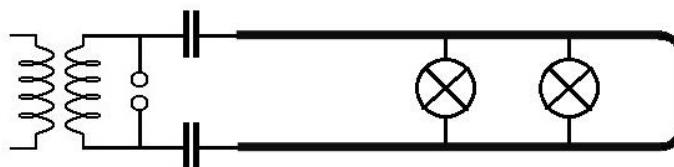


Fig. 47. Scheme of Tesla's experiment with U-shape closed loop.

Tesla points out that "very thick copper rods" are connected to the capacitors and the capacitors are connected to sparking gap of the generator. Moving the lamps along the bars, it is possible to find a position when they glow at full power, despite the fact that the bars are simple U-shape loop. It is possible to find a position where one lamp is lighting and the other lamp remains "dark".

The main process here takes place in "thick copper rods", at the ends of which power diverter capacitors are connected. For the modern high-frequency engineer it is clear that similar phenomena can be observed in the circuits of ultra-high frequency oscillations, it is like standing waves in the resonator. The ultra-high frequency generator in this Tesla scheme is a spark gap that generates the longitudinal waves of the electronic gas in the "copper rods." The spectrum of the discharge also includes very high-frequency vibrations of energy, the standing wave of which can have the points of maximum and minimum changes in amplitude. These points can be separated by a few inches.

In this case, the lamps in this experiment are connected at the points of maximum potential difference of the standing electronic wave, which creates a source of the alternating electric field in the copper rods. These two connection points of the lamp must be in *opposite phase* to alternately pass electrons through the filament of the lamp from the area of excess electrons to the area of electrons deficiency and back, when the phase of the current is changed. The strength of the current in the payload depends on the number of free electrons involved in this standing wave oscillation process, that is, on the thickness of the rods, and the output power can be increased when using high frequencies.

Electrons are not consumed here and their movement is caused by "changes in electrical pressure," as has been said in the last century. Another analogy to the "barometric clock" we have discussed before in this book. This scheme is an excellent example of the technical implementation of useful work through a changing potential field, i.e. the pressure gradient of the Aether. The electrons «flow» from the area of high pressure to the area of low pressure, and came back when there is new change in the "atmospheric situation in the Aether". They will move in the opposite direction, but again from the area of high pressure to the area of low pressure. It is a very promising device for modern free energy projects, it is compact and powerful. Modern semiconductor circuits can be used as the primary oscillator of microwave oscillations instead of the spark gap.

Some of Tesla projects were not documented properly. I hope the reader is already familiar with the story about the Tesla car that was shown in Buffalo. A source of information is Morning Dallas News. It was reported: "Sponsored by Pierce-Arrow Co. and General Electric In 1931, Tesla took the gasoline engine off the Pierce-Arrow company's new car and replaced it with a standard AC electric motor with output of 80 hp (1800 rpm), without the traditionally known external power sources. In a local radio shop, he bought 12 electronic lamps, a few wires, several different resistors and gathered the entire circuit into box of 60 cm long, 30 cm wide and 15 cm high, with a pair of 7,5 cm long rods (rods were sticking out of the box). After fixing the box behind the driver's seat, he adjusted the position of these rods and said, "Now we have the energy." Then he drove a car for a week and accelerated it up to to 150 km/h."

There is a question: where does the energy come from? Tesla replied: "From the Aether around us all." He planned to use this device on ships, trains and cars, negotiated with a large shipbuilding company to build a ship with his energy source.

The records of the nephew Tesla who participated in this experiment have been made public. After he set the "box" in the kitchen of the house, Tesla said that such a device could be used to light an entire house. When asked about the physical nature of this free

energy, Tesla said that in any case, since it exists, then "humanity should be grateful for its presence."

I totally agree with Tesla on this matter. Assuming that the world was created by some clever plan, the Creator should put in it the technical possibility of using free energy without any fuel.

It should be noted that the battery was not excluded from the standard equipment of the Tesla car. All electron vacuum lamps require power to heat the filament, so we should suppose presence of a primary starting battery source in the circuit. In this case, the motor installed on the vehicle could be operated by a resonance energy converter with primary battery power. Similar constructive ideas have been popular and remain under consideration in our time (we'll see it in another chapter of the book).

In 2011 Filipino author Aviso (Ismael Aviso) built his car with DC motor of 11 kW output. The motor was connected to the battery via a high-frequency switch and an "antenna system". Perhaps this technical solution also is related to Tesla's car experiment.

Many Tesla plans are known to us only through his statements, for example about energy sources he said: "My power generators will be of the simplest type. It is just a large mass of steel, copper and aluminum, including the stationary and rotating parts ..." Perhaps he was referring to the simple mechanical inertial gravitational drives that we previously considered. However, there is another assumption regarding the Tesla understanding of the Aether wind and its practical applications. For example, in the Tesla Museum in Belgrade there is one of his amazing motors, with a tin motor and a stator made of glass that does not need any energy but only works once a year on a certain position on the planets. To understand how this engine works is only possible from the point of view of the Aether theory.

Tesla is also worked with nitrogen in the air as fuel. He wrote: "Our atmosphere contains inexhaustible amounts of nitrogen, and if we could oxidize it and make these compounds it would be of immeasurable benefit to mankind. It's true that I did before recently could not get any discharges that would effectively excite atmospheric nitrogen". Modern technical solutions (autothermal energy of the air) in this area already exist, for example, the theory and experiments by Professor Andreev, St. Petersburg. In his theory and experiments, he demonstrated real possibility of converting air nitrogen into carbon. In this case, nitrogen is used as fuel for a conventional internal combustion engine. The consumption of gasoline in such an engine is reduced tenfold. Carbon microcrystals appear in the exhaust gases of such an engine. Now it is possible to find online the last book from Prof. Andreev "The Natural Energetics" ISBN 5-88345-061-X.

An interesting and important novelty was described in the article "Tesla's New Discovery" Sun, New York, January 30, 1901. It was experimental report about the capacitance of the electric conductor is not constant. It is important to understand what is the relationship between electrical and Aether processes. The electric capacity, as Tesla has shown, varies based on the height of the conductor above sea level and depends on daily and seasonal processes. We can assume that these capacity changes are due to changes in the Aether density. Similar processes have been described by N.A. Kozyrev and Alexander Mishin in their research work. Here one can repeat the conclusion about the nature of electricity: It is an "Aether that is related to electrons", as Tesla wrote. Accordingly, changes in the density of the Aether with altitude, the daily or seasonal processes in the Aether influence the amount and change the properties of electricity and thereby change the electrical capacity. This Tesla's discovery must be taken into account when creating various Aether dynamic devices.

Tesla's genius lies in his deep understanding of the nature of electricity. His work should be studied by all inventors of fuel less power generators.

Chapter 7

Work of an electric potential field

We come to the consideration of energy conversion devices that use an electric potential field by some way. Old school theorists argue that it is impossible to get power and work with a potential field because "the integral over the closed loop is equal to zero". We consider real-world examples of technologies where an electric field does useful work, creates excess power, or creates propulsive power for aerospace drives.

Let's start with electrostatic motors. For example the Franklin motor, Fig. 48, rotates well, although it creates air ionization and uses up the potential difference of the Leiden capacitors. However, no one has yet analyzed the efficiency of Franklin's electrostatic motor in detail.

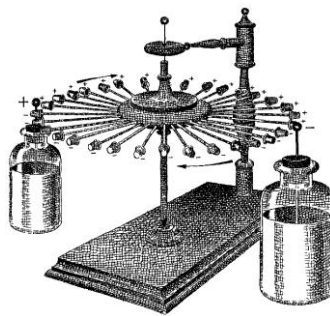


Fig. 48. Franklins Motor.

An ideal electrostatic motor theoretically does not reduce the potential difference of the primary source and works without power consumption. The engines of Professor Oleg Efimenko, University of West Virginia in the USA run on atmospheric electricity. The power of these motors is low, but they work without batteries and can be used for useful purposes. In Fig. 49 shows a diagram of the Efimenko motor, the rotor of which is made of electret.

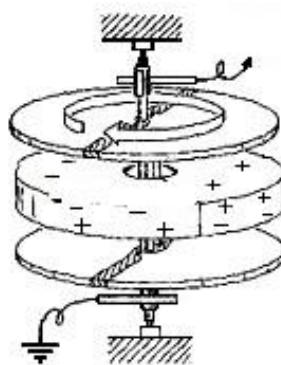


Fig. 49. Efimenko motor.

Here electrets play a role that is similar to permanent magnets in electromagnetic drives, here they generate torque through electrical forces. Since polarized electrets can hold their charge for a long time during production, such motors appear to be promising solutions for consumers with low energy consumption.

There are no windings or cores in such machines. The advantages of electrostatic electric motors are that there is no need to use copper and iron in the device, so the motors can be very light and inexpensive.

The electrostatic generator developed by Walter Owens, an American aerospace engineer, inventor and author of 27 patents, could be put to practical use. This generator has a primary drive (a small electric motor) that is powered by a battery. It turns the rotor while friction creates an electrical charge on the wool or synthetic fabric. We are all familiar with the principle of electrification through friction, but few people have thought that less energy is used to separate charges through friction than when discharging a capacitor in which these charges accumulate. In this circuit there is a charge accumulator as well as a high-voltage DC/AC 220V converter. The output of the generator is sufficient to cover the needs of a residential building. The author demonstrated his invention to investors in 2007, Owens and Company LLC was founded. Unfortunately, nothing is known about the development of this technology in 2021.

You can find other designs of electrostatic motors on the Internet.

A classic example from the free energy real effects is the Hertz-Quincke-Sumoto effect, which is based on the self-rotation of a dielectric rotor (cylinder or sphere) immersed in a dielectric liquid or a dielectric gas in which a constant electrical field is created. The effect was discovered by Hertz in 1881, the diagram is shown in Fig. 50.

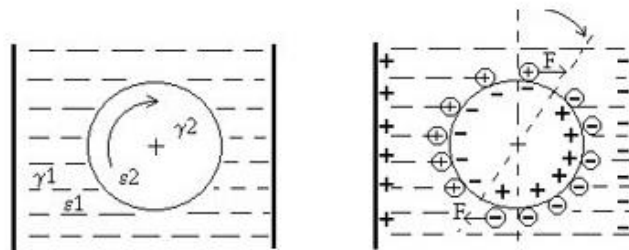


Fig. 50. Hertz-Quincke-Sumoto-Effect.

Here ε_1 is the dielectric constant of the liquid, ε_2 the dielectric constant of the rotor, γ_1 the conductivity of the liquid and γ_2 the conductivity of the rotor. The ratio of these values is important for the conditions of self-rotation (these are the “Polivanov conditions”). The effect was rediscovered by the German scientist G. Quincke. The Japanese scientist I. Sumoto studied it in detail in 1955. Modern research in this direction was carried out by K.M. Polivanov, Moscow. Polivanov's condition, which is necessary to provide rotation of the rotor, is the ratio of the permeability of the rotor and the medium, as well as the conductivity of the rotor and the medium: $\varepsilon_2/\varepsilon_1 > \gamma_2/\gamma_1$

So, in this case, the rotation of the rotor can do a useful job, but we don't consume fuel or electricity. This is recognized as a fact by academic science. So, the potential field can do useful work!

Let me make some assumptions about the reasons for this phenomenon. The rotation takes place through the forces of the potential field, whereby no power consumption from the source is required. Due to the different dielectric constant and conductivity, there are some conditions for the polarization of the rotor and the molecules in its environment.

Important note: The molecules of the medium (where the rotor is immersed) are polarized both by the field of the electrodes and by the field of the rotor. The rotor is surrounded by the entire field of molecules and electrodes. The medium is connected to the rotor in the boundary layer. I assume that the delay in polarization of the surface layer is responsible for the self-rotation effect.

Let's take a closer look at the effect. Assuming that some molecules of the medium in the immediate vicinity of the rotor surface do not immediately change the sign of the charge after the initial rotation of the rotor and are in a state of attraction to the electrode, they accelerate the rotor. When the molecules of the medium on the surface of the rotor pass a certain angle and approach the electrode, they change sign, they begin to repel from the electrode, but new particles of the medium are involved in the process of attraction, as a result of which the rotor accelerates constantly. These assumptions are shown on the right in Figure 50.

In other projects with magnets we will show a similar delay effect, but not with a change in polarization, but with a change in magnetization. It works in over-unity magnet generators.

One of the possibilities for generating energy through electrostatic interactions is the Faraday-Sumoto effect, discovered by Michael Faraday in 1836. The effect diagram is in Fig. 51. The effect is essentially to increase the level of dielectric fluid between the capacitor plates when a large potential difference is applied to them. These forces depend on the square of the stress exerted on the plates. Of course there are leakage currents in this circuit, but with a good dielectric, the losses for these line currents are minimal, that is, the effect requires almost no energy consumption from the primary source.

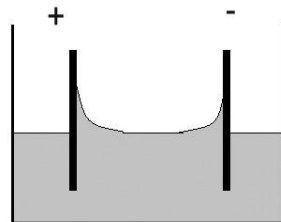


Fig. 51. Faraday-Sumoto effect.

In 1955 this phenomenon was studied in detail by the Japanese physicist Sumoto. Although no conduction currents flow through the dielectric at high voltages and the power consumption is minimal, the dielectric heats up, swells and boils. These methods are well known and it can be used in high efficiency heaters or boilers. Much more heat is obtained than electricity is used, i.e. it is over-unity heater technology.

An interesting use of the potential electric field for useful work was suggested in 1927 by T. T. Brown who studied electrogravity. He discovered an active (non-reactive) force that acts in every pair of negatively and positively charged bodies (capacitor electrodes) and is directed towards the positive electrode of the capacitor. The generation of this force has been found in capacitors or in a pair of oppositely charged identical spheres.

Brown believed that the electrical interaction is not symmetrical. He supposed a negatively charged body is more attracted to a positively charged body than a positive to a negative one. A force difference arises, i.e. an uncompensated, acting (driving) force. Brown showed that it is possible to increase the overall force on the device by virtue of the asymmetry in the shape and surface of the electrodes and by creating a gradient in the dielectric properties.

Brown's asymmetrical capacitors were developed to create a new type of power plant for aircraft, but in English patent no. 300,311 August 1927 "Device for generating force or movement with electrodes" describes Brown the idea of the installation as "Mover - Capacitors" on the rotor of an electrical generator in order to generate a torque on the shaft. Of course, the leakage currents have to be replenished, but according to Brown, the efficiency of such a generator will be more than a thousand percent, Fig. 52.

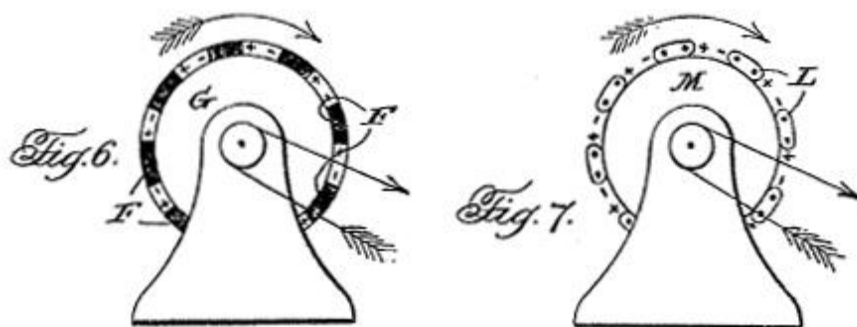


Fig. 52. UK Patent Nr. 300,311 by T. T. Brown.

Before I got to know Brown's work, I suggested similar devices to create an active driving force by means of electric potential field. The first experiments were made in my home laboratory in 1991-1992. In Fig. 53 shows different designs of the Frolov's capacitor. The top left diagram is the oldest, of May 1994 published by Dr. Hal Fox in his New Energy News magazine, Salt Lake City, Utah, USA.

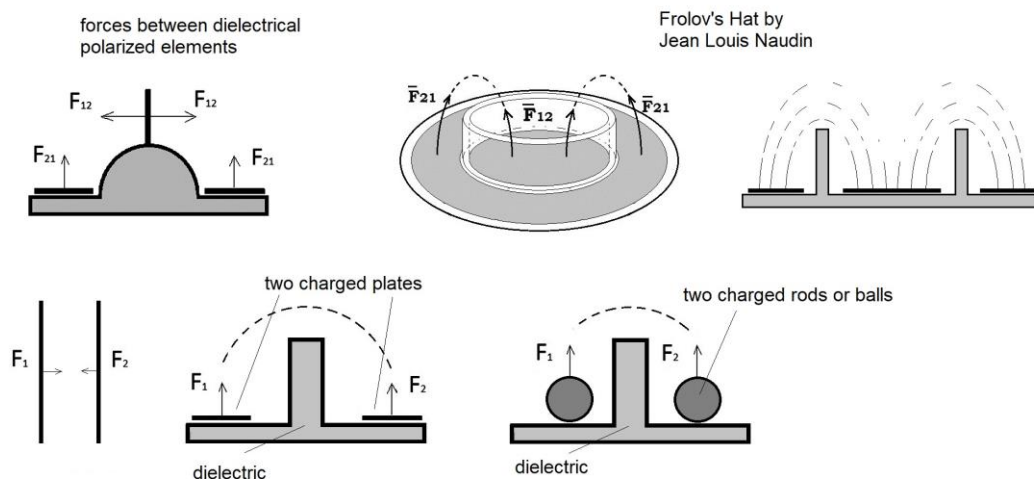


Fig. 53. Frolov's asymmetrical capacitors.

The version with cylindrical dielectric was tested by Jean Louis Naudin, it is known in the English literature as the "Frolov hat".

My initial idea was to use forces between polarized charged dielectrics, not metal electrodes (left up scheme). Assume that the structural elements (electrodes) are charged with opposite charges. Electrostatic attractive forces are generated. The sum of the forces F_{12} acting on the vertical element is zero when the vector is added. The sum of the forces F_{21} acting on the plate is not zero. This creates the active (non-reactive) driving force. When designing such devices, it should be noted that these forces are always perpendicular to the charged surface (nonmetal surface).

It is a mistake to believe that the structural elements are metal electrodes, like Brown's. Plates and other elements in the design I propose are not metal, but rather charged dielectrics or electrets. Metal elements in this design also give some force effects, but the charges escape quickly. Electret in this design allows you to receive electricity without consuming electricity and power from the primary source, as long as they keep their charge. In primitive experiments this performance is low. In theory, it is not limited by anything, nor does it require any currents or power draw from the primary power supply.

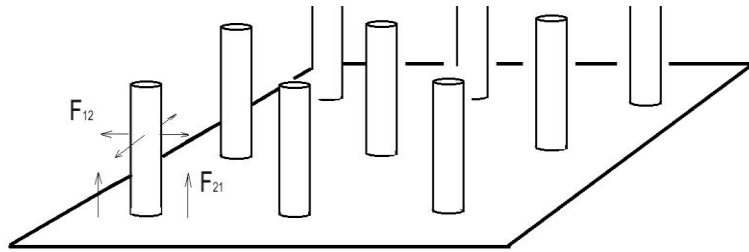


Fig. 54. Forces vectors.

Fig. 54 shows one arrangement of a plurality of vertical dielectric or electret elements. By reducing the size, the same interaction forces can be obtained with a smaller potential difference. This improves efficiency as leakage current losses are reduced. Note that the devices shown in Fig. 53 and Fig. 54 generate driving forces with oppositely charged elements as well as with similarly charged elements. Of course, the direction of the total acting force is different for two different cases (up or down).

In nature there is a combination of static electricity and amazing aerodynamic properties, for example in butterflies, bees, bumblebees, etc. The material of their bodies has no metal elements, but is a dielectrics and it has electret properties. The electrical charge on the surface of a "living dielectric" is created in this case by the friction of the moving parts (wings) and the air movement generated by the wings.

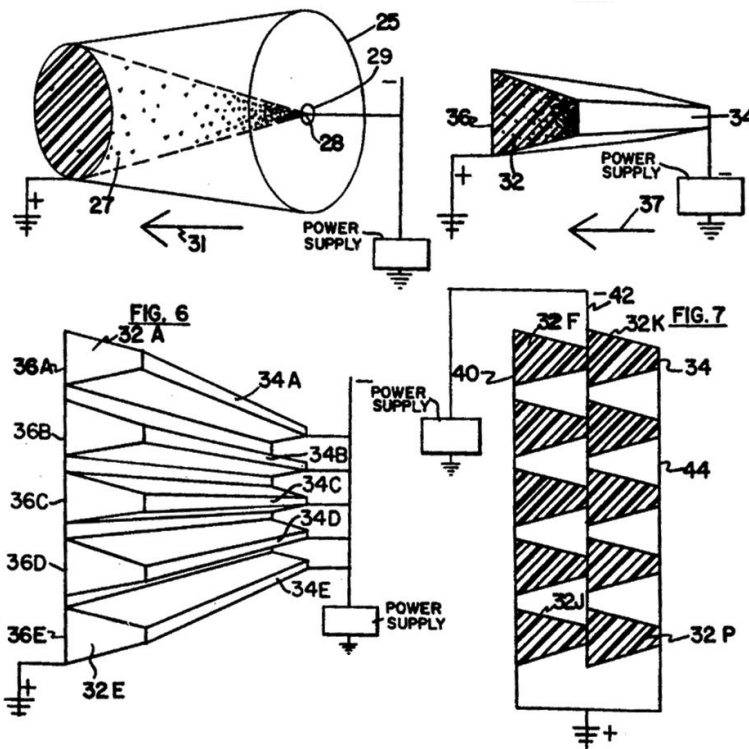


Fig. 55. Browns Patent N 3187206.

Let us return to Brown's idea, Fig. 55. The problem is not solved simply because of the geometric asymmetry of the structural elements. The force, as Brown wrote, acts "in the direction of the greater intensity of the lines of force of the electric field". In his later patents, US Patent No. 3187206, 1965, the fact is mentioned that the driving force can be obtained due to the asymmetry of the electrodes and also, as Brown wrote, "due to the progressively changing dielectric constants" of the material that is between the electrodes. "

The method based on the gradient of the dielectric properties seems to me more promising than the geometrical asymmetry of the capacitor electrodes. Let's look at this problem in more detail. In textbooks on the theory of dielectrics there is an interesting remark about the force that acts on particles of a substance that are located at the interface of two dielectrics with different dielectric constants.

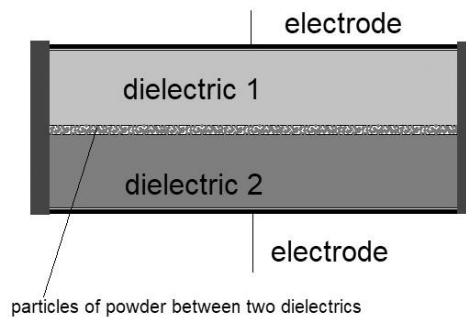


Fig. 56. Two different dielectrics.

A particle that is located in the area of the electrical field gradient is subjected to a force which is directed at a dielectric with a lower dielectric constant. This force is always "directed along the normal to the interface between dielectrics", as B. M. Tareev wrote in his "Physics of Dielectric Materials", p. 196, Textbook for High Schools, Moscow, Energoizdat, 1982. Taking this important note into account (the normal direction of the force vector), it is possible to develop a new type of *propulsion system for aerospace and power generators that do not require fuel if provided with high voltage electric field*.

In 1998 I reported on this subject at an international conference in St. Petersburg. Fig. 57 shows a variant of the proposed design of aerospace propulsion drive as a surface of that is covered with many-layers gradient dielectric.

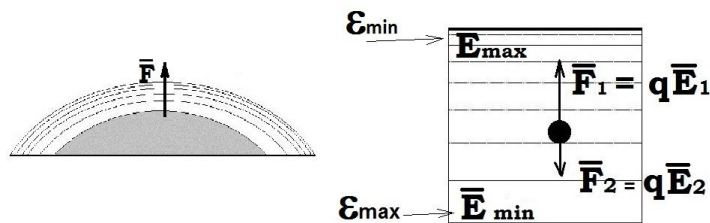


Fig. 57. Many-layers dielectric as propulsion drive.

The technological task of creating a multilayer dielectric or material with a gradient of the dielectric constant is quite complicated, but it is very promising to be applied in power engineering and aerospace propulsion drives. According to my calculations, such materials can provide active forces about one ton per square meter at electrical field strength of 10 kilovolts. So, it can be a very effective method to compare with reactive rockets and other aerospace technologies.

Also let me note about geometry asymmetry in these capacitors. By reducing the size of the elements, the operating voltage can be reduced to directly use the primary 12 volt source, producing the same force as high voltage structures. It is technically possible to achieve such small dimensions of elements in which the operating voltage is sufficient for operation at the level of 1-2 volts, since the required voltage depends on the dimensions of the components. When used with nanotechnology, these dimensions can be very small, but they provide a strong force at low voltage.

I repeat that these designs do not require strong currents to create an active force. With such materials it will be possible not only to rotate an electric generator (without using the primary source's energy), but also to fly it into space, and the cost of transport some payload into planet orbit will be ten times less.

Imagine a fuel-free passenger aircraft that is powered by some small battery and with unlimited range. You can assume that the airlines can be more profitable even with reduced airfares. The prospect is very exciting!

These technologies are discussed in more detail in my book, *New Aerospace Technologies*.

For the critics who argue that "statics cannot create movement", I will clarify an important nuance. Please, do not forget the possibility of a pulsed mode of operation and elastic forces. In the construction of asymmetrical capacitors, as with the mechanical drives (Schauburger) considered above, an elastic interaction must be ensured. The elasticity ensures a pressure gradient in the medium, as in aerodynamics. The environment in this case is a substance, but every substance is "connected to Aether" and elasticity is an electromagnetic Aether-dynamic phenomenon. Atoms repel each other in the elastic interaction of their electric fields. A gradient elastic dielectric is one way to implement the Aether pressure gradient that does not require any cost to maintain it. The setting of the size of the total force is easily achieved with this method by means of the pulse mode.

Let's consider other interesting technologies that use an electric field to get power. In the chapter on gravitational mechanical machines, we talked about "screens for gravitation". Tesla wrote about device in which half of the rotor is shielded from gravity. This method is still impossible for a gravitational field, but it is technically easy to implement in systems with an electrical potential field. Some devices can be thought of as a combination of electrostatic and gravitational forces that add up in half a cycle and decrease in the second half of the cycle.

There is a way to separate the acceleration and deceleration cycles as we discussed at the beginning of the book. Let us consider this method from the point of view of the acceleration of electrons by an electric field.

Fig. 58 is a schematic diagram of a conventional electron vacuum tube (diode). Here we can use the potential field between the cathode and anode to accelerate electrons. This happens in every lamp or cathode ray monitor of TV set. The periodic application of a positive potential to the anode makes it possible to accelerate the movement of electrons from the cathode to the anode.

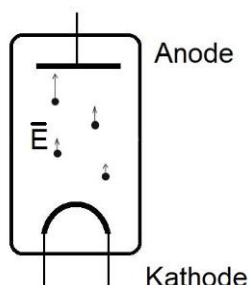


Fig. 58. Acceleration of electrons in E-field of the lamp.

In 1994 (New Energy News, USA) I suggested this method to gain excess energy. It is only necessary to use the cycle of free flight of electrons from the cathode to the anode, Fig. 58, to switch off the potential at the anode and connect the load at the right time. Electrons accelerated by the field hit the anode with kinetic energy that exceeds the

initial energy. If the acceleration field is not switched off in time, the electrons reach the anode and reduce the potential difference of the primary source. So, we have to provide correct timing here. These are losses that must be avoided by switching off the "acceleration field" at the right time. Modern electronics make it possible to determine the presence of current in the anode-cathode circuit almost immediately and to disconnect the primary power source from the anode and to connect the payload circuit to it.

Thomas Bearden described similar ideas in his article "The final secret of free energy", the possibility to use the potential field only in the "positive part of the cycle" to accelerate electrons, while energy of the primary source is not consumed.

The core of the principle proposed by Bearden for all similar systems is to subdivide the cycle into the time of "activation" of the working fluid and the time of "extraction" of energy into the payload circuit, Fig. 59. Details can be found in New Energy Technologies magazine No. 23, 2005 www.faraday.ru or in Burden's original article "The Final Secret of Free Energy".

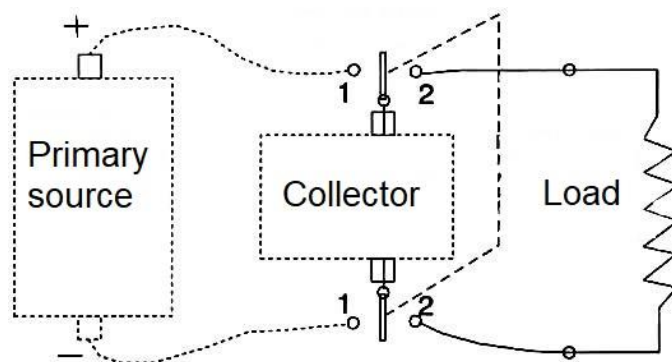


Fig. 59. Thomas Bearden principle.

The primary source can be a time-varying or rotating electric field. This primary source needs some energy expenses, but we can get significantly more power to the payload than it does the cost.

The main part of this circuit is a "collector" that can be "activated" without consuming power from the primary source and that creates a large amount of current in the payload circuit after switching to the load.

An analogy to these ideas is shown by Nelson in US Patent No. 6,465,965 dated October 15, 2002 for "Method and Device for Energy Conversion Using a Shielded Source of Free Electrons". It describes how the flow of free electrons created by the "cathode tube" aimed at the "storage metal surface" can help you conserve excess energy by periodically turning the source of negative potential on or off at the right time.

Note that a circuit using an electronic vacuum lamp is also proposed by other authors, for example Professor Dudyshev is considering a design in which the lamp cathode is supplied with a high potential (approximately minus 30 kilovolts) and the lamp anode is grounded. When such a potential is applied, an electron emission pulse naturally occurs from the cathode. Note that this cathode emission current has to be provided in some way, that is, one has to have some kind of free electron source, and Dudyshev's scheme does not address this problem. The solution is simple! You need to add a second ground to the cathode, apply a high alternating or pulsed negative potential to the cathode, but put a diode in the cathode ground circuit. The diode in the cathode ground circuit is switched off for half a period and the cathode emits electrons until it is positively

charged. For the second half of the period, the diode in the ground circuit is open and the electrons from "ground" compensate for the lack of electrons at the cathode. In addition, the cycle repeats itself...

Let's consider another high voltage technology that has long been known. It is famous Swiss high voltage machine Testatika (Thesta-Distatica or M-L converter).

I learned about this amazing technology in 1991 through post correspondence with people about alternative energy sources. After sending a letter to the address given in the magazine asking about the technical aspects of this amazing machine, I hardly hoped for an answer. A letter came from Switzerland with the invitation to visit them and to inspect these power plants. During this difficult time (1993-1994) I was engineer in a telecommunications company, and then I had no finance to travel abroad.

The publication now, in the year 2021, about this retro technology of the TESTATIKA converter makes sense, since the technology undoubtedly works; it is a simple basic knowledge. This technology is used in many modern free energy generators, although today we see very small information about the machines in Methernitha. In general, this is due to the people in the Methernitha community who have restricted access to the technology, believing that they have already provided enough information for anyone to reproduce the technology.

In the community, Switzerland Methernitha, Linden power generation systems have been in operation since the 1980s. You can visit their website at www.methernitha.com. The total output of the systems is over 750 kilowatts. The inventor is the German engineer Paul Suisse Baumann, Fig. 60.

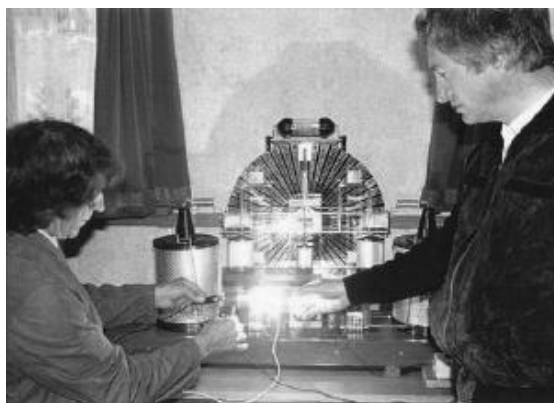


Fig. 60. Paul Bauman (left on Foto).

In January 2011, I received a letter from Methernitha authorizing the publication of photographs in my book on new technologies. They also reported that Baumann was alive, he was 94 years old. He no longer builds new generators. He had followers, students and he transfers his knowledge to them.

From a technical point of view, the device is a modernized Wilmshurst electrophore generator, the discs of which can rotate continuously due to the electrostatic interaction forces. The design also includes permanent magnets, but I believe it is possible to make this device without magnets. The machine with a disc diameter of 20 centimeters generates about 200 watts of power, the large machine has discs with a diameter of 2 meters and delivers 30 kW output power.

Many enthusiasts who wanted to make this generator were disappointed, since its secrets are not clear to everyone. The current of a conventional high voltage electric machine is so small that it is impossible to obtain the power in the load by the

conventional transformer method. I think it is not electrical machine only. We have to consider here some manipulations with Aether. As we discussed in the chapter on Tesla, the Aether medium transfer energy, the vibrations of which are caused by changes in the electric field. With this medium it is also necessary to provide the current in the load circuit, i.e. to set a considerable amount of free electrons in motion through the flow of Aether. This problem is solved by grounding, using large-area plates or by ionizing the air. It is the strong ionization that is observed during the operation of the TESTATIKA generator.

Important notes on the working principles were made by the author. Paul Baumann says he found these principles in nature. He compares the operation of a machine with the formation of a thundercloud, which is not allowed to discharge. He said that when there is an electrical discharge, there are no charges on the cloud. Electrons must not be withdrawn from the disks! Never!

Conclusion: The TESTATIKA generator works by electrical induction and generates changes in the electrical field, but here are no electrical discharges. In the area of a changing electric field it is possible to obtain the effects of electrifying the plates and to charge the capacitors without reducing the primary electric potential on the plates.



Fig. 61. 30 kW generators in progress of building.



Fig. 62. Large Testatika.

So when the machine is running, its disks are always charged, they rotate and generate a pulsating electric field, but the charges themselves are not spending. There is no corona discharge, but the changes in the Aether energy density (changes in the field strength) provide useful "work". The analogy to the Tesla principle is obvious.

Cylindrical Leiden capacitors (jars) are required for operation. Ring magnets are built into large machines. Horseshoe-shaped magnets are used in every machine, around them a wire is wound that is connected to the load (lamp). Note that there are multiple layers of

dielectric material sandwiched between the ends of the magnet's horseshoe. The role of magnets is not well understood. It is believed that they concentrate the currents of the Aether particles. A simplified understanding of magnetic fields is that they are Aether currents.

There is an interesting sentence from Baumann about the principles of work: "You must order the random particles of the current according to the method of straightening." Apparently Baumann spoke about these Aether currents.

Another design feature of the Testatika machines is perforation. It is unusual elements in form of perforated cylinders with high-voltage wires. During the operation of the machine, as eyewitnesses have established, the air is highly ionized. It can be assumed that it is the ionization processes in the perforated elements that create a strong current in the load circuit. I see here the analogy with Yablochkov's method to get more free electrons from atmosphere. He used special capacitors for it, it was not perforated but it was made as hedgehogs with needles.

Also note the presence of permanent magnets in combination with a changing electric field. The method of generating a line current is known to us with the phenomenon of electromagnetic induction. There is an assumption about other ways of creating an electromotive force in the generator winding, such as potential pulsations in the region of a constant magnetic field. A change in the electrical potential is not a charge movement, but can also produce an inductive effect, i.e. induce strong line currents, as in a conventional generator or transformer.

So, we believe that in this electrophoretic machine, a pulsating high voltage potential is generated, which somehow causes the phenomenon of current induction in the payload circuit where the voltage is 220 volts level and a sufficiently large current.

There is no data on the sinusoidal shape of the current in the load circuit; some authors of articles on the Baumann machine reported about DC current in the load.

Testatika machines do not have a drive, the disks rotate independently due to electrostatic forces. The speed of rotation is very important, in Bauman's design there are elements for adjusting the speed of rotation of the rotor.

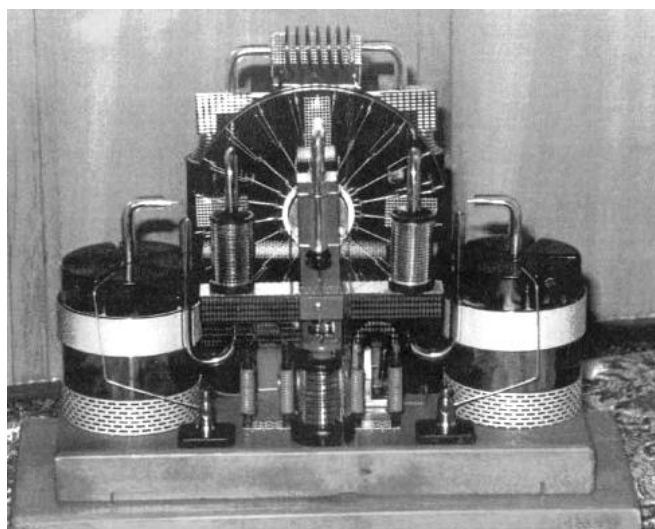


Fig. 63. Small Testatika generator.

There is important design note: Baumann said that each metal lamella on the disc is connected to other neighboring lamellae via a 1K resistor. This creates a circular circuit.

The way the machine works is explained by the author very simply, he said: "Machines can generate electricity from the air."

On the other hand, the Testatika machine is similar to Tesla's high-voltage circuit breaker. Electric charge storage devices (Leiden Jars) provide a permanent electric field with no corona discharges or currents, but with some natural losses of charges. In addition, the polarization process makes it possible to receive direct or alternating current in the load circuit. A simplified representation of the machine in Fig. 64.

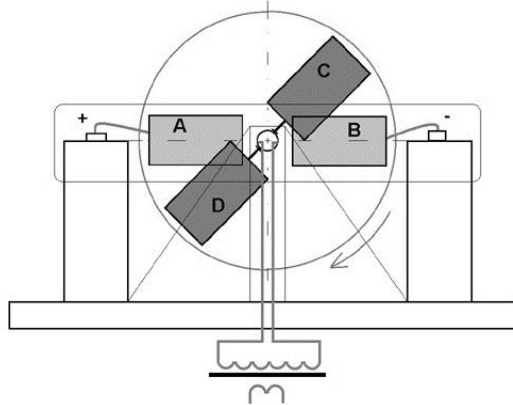


Fig. 64. Simplified scheme of the TESTATIKA generator.

There is an electrical induction work (electrophoric effect). On the stator there are metal plates A and B, which is connected to cylindrical electrical charge, stores (Leiden jars). The reader is familiar with this electric charge storage system from school physics lessons. The center electrode is an inductor. In the field of the inductor the outer electrodes are polarized. Rotating plates D and C, polarized when moving around plates A and B. The polarization is pulsing since the charges can be removed by the brushes. A current is generated through the primary winding of the step-down transformer. It is important that the polarization of the plates D and C does not lead to a decrease in the charges in the storage jars. They only create an electric field sufficient to generate electricity in the payload circuit.

In the photo Fig. 65 shows the details of the machine well.

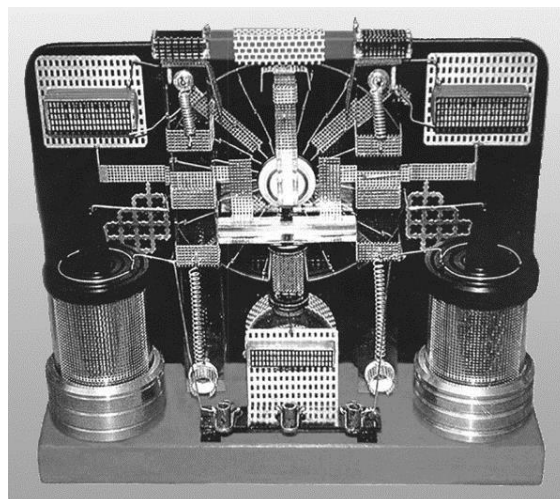


Fig. 65 Testatika.

Please note: The high potential is applied to the center electrode of the Leiden capacitor. The current output comes from an external cylinder. Important aspects here are about

asymmetry of the cylinder type capacitors. Leyden jars are asymmetrical capacitors. The inner electrode causes the external cylinder electrode to be polarized, but not the other way. Therefore, by accepting electrons from the outer electrode to the load circuit, we do not reduce the number of electrons on the inner electrode of the Leyden Jar. It is necessary to collect electrons from the outer cylinder of the Leyden capacitor periodically, then renew them by the air ionization air and collect electrons again to power the load.

Considering the Testatika generators, I remember the researcher and inventor Stefan Marinov. In 1994 we saw him at a scientific conference in St. Petersburg. He showed his model of a small magnetic motor made according to the famous Nikolaev's scheme (Siberian motor). Marinov has worked on a variety of subjects including gravitational motors and he also published a magazine about new technologies in free energy topic. In 1997 Stefan received a small 100 W Testatika generators and he invited Professor Sapogin from Moscow to study the principles of the machine together. The meeting did not take place because Marinov died in the Austrian city of Graaz (he was thrown out of the library window). So, this technology is dangerous to play with it. Only serious investors can get real results for commercialization to provide TESTATIKA generators for millions of private homes in the World.

Another type of electrostatic machine was built and patented by William W. Hyde, U.S. Patent No. 4,897,592 January 30, 1990, Fig. 66.

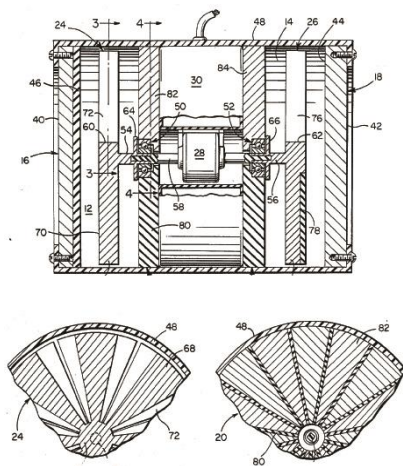


Fig. 66. Hyde-Machine.

In contrast to Testatika, the discs are rotated by a small electric motor (in the middle of the structure). The entire machine is housed in a closed case. According to the test results, the primary power consumed by the machine drive is no more than 10% of the power that the machine delivers to the payload. In 1992-1994 we have discussed the price of license for this technology. The author estimations were about \$ 4-5 million (for the non-exclusive license). I hope he has sold his invention successfully, even we do not see his technology on the modern energy market.

High voltage rotor machines are a good example of a fuel-free power generation technology, but they also have some disadvantages. For commercialization, it is better to use the principles of energy conversion of a potential electric field, which do not use mechanical rotation. Let's consider the design of another energy converter known as a "Kapanadze generator". It also uses a high voltage electric field, although the effects of air ionization are negligible in this case.

Chapter 8

Kapanadze's Generator

Tariel Kapanadze is famous inventor from Georgia, he has a long history of developing new energy sources with a team of skilled scientists, engineers and technicians. In the 1990s Georgian television was preparing a program about their invention, and this video movie tape was sent to me in St. Petersburg. The video showed Kapanadze and his colleagues with their mechanical self-rotating generator of low power, a photo from this film is in Fig. 67. The inventor started the generator from the battery, and then this motor began to rotate independently.

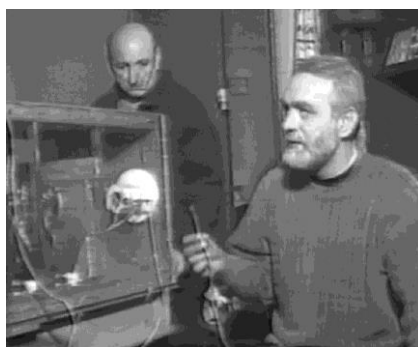


Fig. 67. Kapanadze and his mechanical self-running generator.

In 2006-2009, Kapanadze became famous with other version of free energy generator, it is his high voltage generator. The video of his 5 kilowatt generator you can see here <http://www.youtube.com/watch?v=uxQ99R4gOWY>

Kapanadze explains the principles of work simply: it is evolution of Tesla's works. We can suppose a connection between this concept and Tesla's patents on wireless energy transmission as well as with the principles of the Testatika discussed above. The Kapanadze circuit contains a high voltage source; initially it is powered by an external 9 volt battery. After self-running mode is stimulated, the device supplies the consumer (incandescent lamps with a total output of 5 kW) and maintains its operation without an external power source.

The photo in Fig. 68 and Fig. 69 shows a picture of the author and his generator. The main structural elements are block of powerful transistors cooled by a fan, a coils and spark gap. The transistors generate 50 Hz alternating current in the load circuit. Note that this technology need a very good earth ground. It is source of free electrons that provides the current in the circuit and power in the payload. This is similar to the Tesla principle shown earlier. According to the operating theory of this device, there are many assumptions and possibilities for solving the problem.



Fig. 68. Kapanadze and his generator. Fig. 69. Kapanadze and his generator.



Fig.70. 100 kW three phase generator in Turkey.

The Turkish company helped Kapanadze to obtain patents WO2008103129A1 and WO2008103130A1. The success of Turkish engineers is impressive, for example, it is claimed that they built a 100 kW three-phase generator. It takes 2 kW to start and maintain operation, with 100 kW in the load, look at the photo Fig. 70. For more information, please visit [www.youtube.com/user / MrFreeenergy](http://www.youtube.com/user/MrFreeenergy)

However, the practical cooperation between the Turkish company and the Georgian author did not work out after the patent was granted. Kapanadze wrote in 2010 following mail: "I signed a contract with the Turks to build a 10 megawatt power plant, but when we started work, some person Mindeli showed up who said he knew this secret also... Money and nerves went to fight him and then I returned to Georgia. The Turks have started contacting me again, but I don't want to look there anymore. "

I can assume that the Turkish developers were successful. I communicated with them by email in the summer of 2010 and I remember the sentence from the correspondence with the Turkish development team: "The results we have received are such great that you cannot believe your eyes. We'll invite you soon". For example, they were preparing generators with an output of 3 kW for mass production. These generators are about the size of a small laptop. However, our communications were not sufficiently developed to organize a trip to them; we receive no more messages from this Turkish group. You can see video about this 3 kW generator of the TMZ company at my YouTube channel <https://www.youtube.com/user/AlexanderFrolov2509>

There is serious scientific discussion about the principles of operation of these devices. The famous Russian inventor Vladimir Akimovich Atsukovsky, the author of many articles and books on Aether dynamics, already received patent No. 2262521, Fig. 71 in 2003. It describes a similar principle in detail, although currently no practical implementation is known.

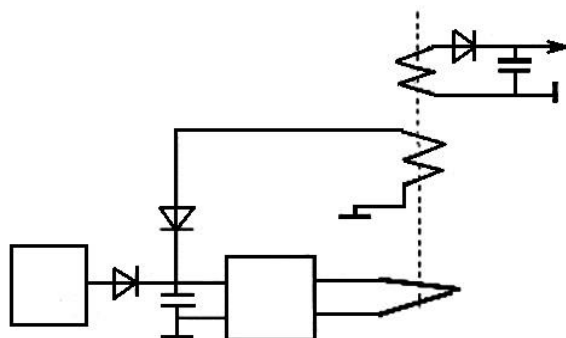


Fig. 71. Russian Patent Nr. 2262521 by Vladimir Atsukovsky.

We can draw an analogy between mechanical systems that use changes in atmospheric pressure to do useful work and the Kapanadze. In mechanical systems, changes in the atmospheric pressure lead to changes in the volume of the working medium (corrugated element in ATMOS watches). Over a hundred years ago the strength of the electric field was called “electric pressure in the Aether medium” or “stress”. These "pressure changes in the Aether medium" lead to the electrification and polarization of the "working bodies", and as a result of this process we can get power in the payload. So to get powerful electric current, the "working bodies" must be connected to a source of free electrons (e.g. to the ground). In another case, it is possible to connect two working bodies whose electrification takes place in antiphase. With two synchronous sources it is possible to create two spatial areas in which the electric field is generated in antiphase. Free electrons are "pumped" between them. Grounding is not required here.

Donald Smith and Tesla's schemes are similar. Fig. 72 shows the possibilities for implementing the principles outlined above in the chapter on Tesla's work. The current in the load circuit is provided here due to the polarization of the plate, which is connected to the ground via a DC/AC converter. The spark gap in the Tesla circuit is included in the primary coil circuit.

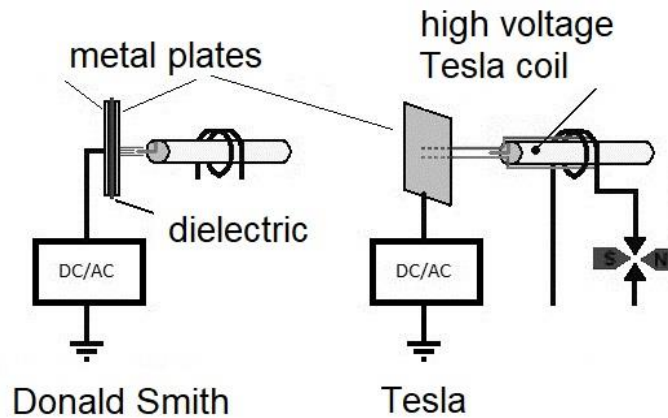


Fig. 72. Analogies between Tesla's and Donald Smith's generators

One more example of high voltage free energy technology. It is also have some analogies with Kapanadze device. The solution to this problem has clear analogies to Tesla's works as well as to technologies of single-wire energy transmission systems. For example, the circuit shown in Fig. 73 is from RU2161850 for a single-core power transmission line.

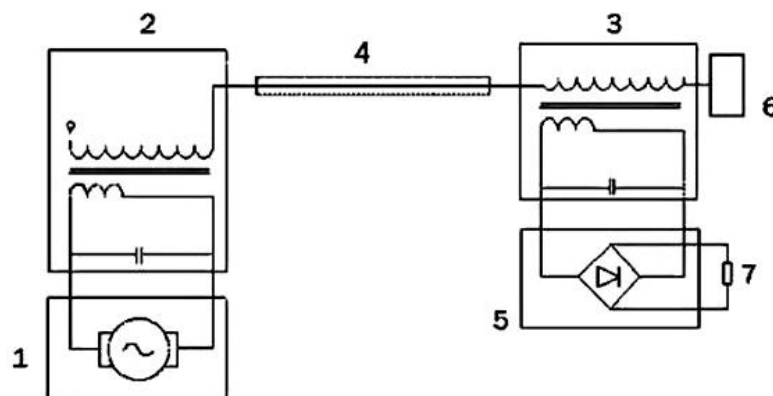


Fig. 73. Scheme of single-wire power system.

We have already mentioned the advantages of single-wire transmission line technologies in the chapter on Yablochkov and Tesla. They have the ability to provide conversion of the displacement current into conduction current. The bias (displacement) current is

obtained by changing the size of the electrical potential at the end of the wire. We don't spend a lot of energy on this process.

Here we come back to a topic that has often been discussed: An electric field that changes over time can do useful work in a load. The conduction current in the circuit arises in the presence of an "electromotive force", i.e. a potential difference, and the amperage and power depend on the presence of a free electron source and the resonance mode.

Element 6 is used for this purposes, look at Fig. 73. Some massive metal plate can be the source of free electrons. The presence of this source of free electrons makes it possible to work without grounding. This approach allows us to understand the operation of Kapanadze generators and other high voltage equipment.

Projects on this topic were led by a group of scientists with Professor Strebkov from the Russian Institute of Agricultural Electrification in Moscow. In the photo in Fig. 74 shows one of their devices. The practical results of this group were 10 kW at a distance of 20 km with a thin wire.

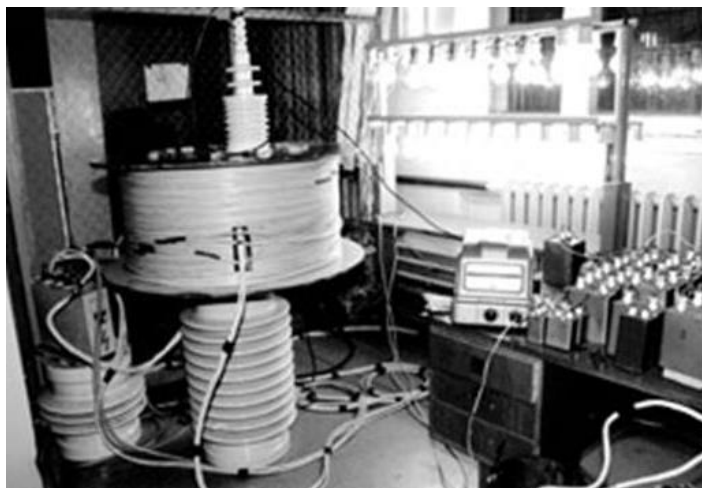


Fig. 74. Professor Strebkov's laboratory in Moscow.

On the subject of single-wire power transmission lines we have to note Stanislav Viktorovich Avramenko, he is the author of the well-known circuit made up of two diodes; it is the so-called "Avramenko diode plug", Fig. 75. Avramenko worked in this research group with Professor Strebkov.

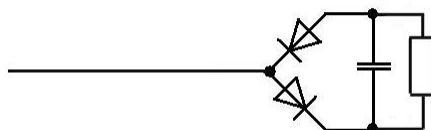


Fig. 75. Avramenko diode plug.

The circuit with two diodes stimulates thought about the energy conversion mechanism and its optimization up to the autonomous mode of operation, i.e. more energy is received in the "receiver" than the "transmitter" consumes.

Here is important analogy with wireless energy transmission according to the Tesla method. It is necessary to get in the single-wire line resonance standing wave mode. In this case we can find correct position of the receiving part at the point of maximum change of the electrical potential. That said, you need to tune the line to a quarter wave

resonance mode. In this case the upper end of the Tesla coil and the connection point of the two diodes plug must be in the point of the maximum change of electrical potential. I believe this method is also related to Kapanadze scheme.

Thus, the change in potential at the junction of the diodes, Fig. 75, work like a mechanical ratchet, periodically "pushes" free electrons to one direction, and this provides an Electro Motive Force for charging the capacitor. The principle is similar to operation of a pump and valves. It allows you to transform displacement "cold current" to real currents that can work in the payload. As with other similar devices, the power is determined by the number of free electrons, the size of the potential and the frequency of the displacement current pulses. It is preferable to increase the operating frequency as it reduces the size of the device.

Note that this approach changes our understanding of the term "potential difference". Usually we are talking about the potential difference at two different points of space, in this case we are talking about the potential difference at two different points of time. The work is done by changing of potential value at one point of space, this is the so-called "temporal potential difference". You can read more about this in my book "New AeroSpace Technologies".

Experiments carried out in my home laboratory in 1991 confirm that the power in the load obtained from the "Avramenko diode plug" is not the result of air currents. Important to note that connection of some active electrical load, for example, some lightbulb to the "Avramenko diode plug" does not affect the primary source. Consumed income power is the same with load or without load. So, it is free energy technology.

Many years ago the World knew about Tariel Kapanadze technology but we still have not sales on his generators on the market. Who prevent wide innovations of this useful and simple technology? I think you know them.

Well... We have already considered some aspects of the resonant operation of power generators, so it is suggested that a new chapter be devoted to this topic.

Chapter 9

Resonance processes

The phenomenon of resonance plays an essential role in all natural processes, so we will take a closer look at it. Let's start with the resonance phenomena in the Aether, which were investigated by John Ernst Worrell Keely, the founder of Sympathetic Vibratory Physics www.svpvril.com. He lived in Philadelphia, USA from 1827 to 1898.

The Keely Motors Company, founded in New York in 1874, demonstrated the Keely Motor. This device provide power by using "water and air" to create pressure in a complex hydraulic system. He called the motor a "hydropneumatic pulsating vacuum machine".

Later Keely built an amazing "gravity control" device that looked like a 30 cm diameter copper ball surrounded by tubes and rods (tuning forks) of various lengths. Keely touched the tuning fork with his fingers, causing vibrations of different tones, the combination of which created the levitation effect on objects. His contemporaries argued that by simply playing a small organ, Keely could make a heavy steel ball fly.

John Keely believed that every material formation, i.e. any "molecular aggregate" as he said, no matter how small it may be, is in a state of continuous internal vibrations and

excites something similar to sound vibrations in the surrounding space. Obviously he was talking about longitudinal waves in the Aether. In addition, each such formation can react to external vibrations, and indeed in different ways, depending on whether this external vibration of the medium coincides with its natural frequency.

When the vibrations of two bodies are in tune with each other, the bodies are attracted, but when there is dissonance in their sound, they avoid (repel) each other. All physical forces arise due to a certain correspondence (or mismatch) of the wave properties of oscillation fields. Vibrations do not transmit energy, only a stimulus to absorb or release it, that is, to convert it from latent forms to explicit forms.

John Keely believed that energy is everywhere in space around us and in the space that permeates us, and energy here is in unlimited quantities. The movement of the Aether particles takes place everywhere and always, similar to the movement of the air particles. The energy reserves in nature are endless. We do not generate this energy and we do not consume it, but we can, after recognizing its laws, transform it into forms that are convenient for us. To do this, it is necessary to coordinate the actions of individual "molecular aggregates", and this can be achieved by reaching their consonance.

An interesting analogy in reading the description of Keely's experiments comes from the design of the "wonderful flying boat" featured in the science fiction novel "The Shining World" by Russian writer Alexander Green. This novel is about a man who can fly. In the end of this novel you can find description of "flying boat". Small bells of various sizes hung on the edges of this "boat". By touching these bells by hand it was possible to create vibrations of different frequencies and lift the boat into the air. It is very similar to real devices by Keely.

We can say that all of nature is based on Aether vibrations of different frequencies that create a multitude of combinations. At the same time, "consonant" harmonic combinations cause attraction and discordant ones cause repulsion. By making the Aether vibrate, Keely was able to push things into the ground under the increased gravity. This was not a strong effect of the ultrasound on objects, but a real example for the stimulation of the Aether by sound vibrations of the air (air molecules are also connected with Aether, like all other substances). This resonance phenomenon is now called acoustic levitation and is actively studied for applied purposes.

One of Keely's inventions was called a "matter disintegrator" and was designed to break water down into gas, although it could cause any matter to break down. Keely found that the resonance frequency of the "sound" for water decay is 42,712.2 Hertz (about 43 KHz). For experiments on this topic in modern laboratory we can use ultrasonic piezoceramics or magnetostrictive vibrators. Also it can be useful to note that American inventor Henry Puharich, whose work we will consider later, found the resonance frequencies of water decay, and one of the resonance frequencies is about 42,800 Hz, that is near of the Keely frequency about 43 KHz.

Keely's hydropneumatic machine most likely worked by generating high pressure gas from water with the resonance effect of its decomposition. The energy required to generate vibrations using the Keely method was small and the high pressure machine had big mechanical power.

A similar method of water decomposition with the results of 9 cubic meters of gas per second was proposed by Oleg Alekseevich Kazakov, Almaty, Kazakhstan. The difference between Kazakov's method and Keely's work is that Kazakov breaks water into gas with low-frequency vibrations by infrasound. The messages in internet about this invention are very interesting, but we don't have reliable experimental data or the scheme of Kazakov's experiment.

In 1888 Richard Hart, a contemporary of Keely, wrote his book "The Disintegration of Stone". In this book he described the case of the practical application of Keely's "disintegrator" for the extraction of gold from a rock quartz rock. Vibration technology at this level is a simple and beautiful way to develop technologies for mining and tunneling, but at the same time this technology gives people a weapon of immense power.

Note that similar modern studies on resonant methods of influencing matter and Aether have been successfully made by American inventor John Hutchison in his home laboratory. He uses electromagnetic methods to excite longitudinal waves from the Aether, but the effects of floating objects in his experiments are very reminiscent of Keely's "miracle". The Hutchison-Effect is based on the interference of longitudinal Aether waves.

Now I offer to stop amazing stories of resonant Aether dynamics and moves on to the study of electrical resonance conditions in electrical circuits with inductance and capacitance. We can apply this knowledge for significant savings in energy consumption and to design high efficient energy converters.

Resonance (Latin "resono" means "I answer") is the phenomenon of a sharp increase in the amplitude of forced vibrations in any vibrational system that occurs when the frequency of a periodic external influence approaches certain values determined by the properties of the system itself.

About a hundred years ago, this phenomenon was so amazing that it gave me a lot of joy. Jean-Claude Van Ostwald described the process of resonance tuning very emotionally in the book "Electricity and its Applications in a Public Presentation", Kushnerev Printing House, Moscow, 1914.

There is diagram of this experiment at Fig. 76. The inductor L has a tuning metal core. By changing the position of the core you can change the value of the inductance and tune the circuit to resonate. In the resonant state, the consumption currents of the generator drop to almost zero.

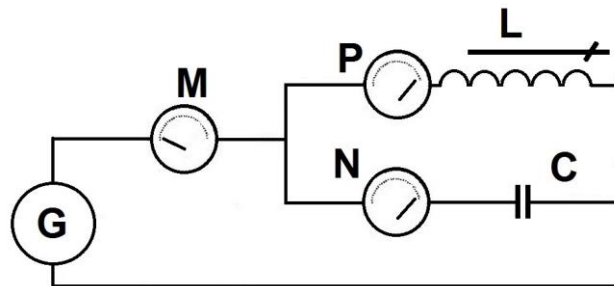


Fig. 76. Experiment of 1914 by Jean-Claude Van Ostwald

In this system, the total current flowing through that AC circuit is not equal to the sum, but rather the difference between the currents flowing through the two specified branches. For example, if the ampermeter P shows 100 Amper and the ampermeter N shows 80 Amper, then the ampermeter M will determines that the total current is not 180 Amper, but only 20 Amper.

By introducing the capacitance, the self-induction effect is compensated to a certain extent. You can adjust the inductance by inserting an iron core into the coil to the desired depth. Fine-tuning allows you to set the current through the coil to exactly 80 Amper, i.e. it is the same value that we observe in capacitor circuit. The total current is equal to the difference of the currents flowing through the branches, now it is equal to zero. We can see absolutely unbelievable picture! The generator generates a current equal to zero, but is divided into two branches of 80 Amper each.

The idea, in a more general form, is very simple. It is necessary to create two sections of the circuit in antiphase from one primary alternating current circuit. The required phase shift of 180 degrees can be achieved using various methods. In the case discussed above, the capacitive nature of one part of the circuit and the inductive nature of the other part of the fine-tuned circuit provide two antiphase parts of the circuit. In this case, only real ohmic (heat) losses have to be compensated for by the primary source. Other power is free energy.

By this way we can reduce the current in the "common" circuit and to reduce bill payments for it. Effect depends on the specific inductive-capacitive parameters of real load circuit, on the "quality factor of the oscillating circuit".

Note that there is no difference in how electrons are called. Active currents and reactive currents consist of real movements of electrons that generate a real magnetic field when they move. Reactive currents can create rotating magnetic field in electric motors that allows the rotor to do real work.

The maximum effect of resonance can be created in LC circuits with maximum "quality factor". The word "Q-factor" does not only mean a "well-made" resonant circuit. The quality factor of the circuit is the ratio of the energy stored in the circuit to the heat losses during an oscillation. The quality factor of a loop electric circuit is the ratio of the currents flowing through the reactive element to the current flowing through the active element of the loop.

In a professionally manufactured oscillating circuit, you can achieve a Q-factor of 30 to 200. In this case, currents flow through the inductance and capacitance are much more than the current of the primary source. These large "reactive currents" remain in the circuit because they are phase-shifted and self-compensating, but they generate a strong magnetic field and can "work" in electrical drives, for example.

In 2010 I did simple practical demonstrations of effects at JSC Resonance in St. Petersburg. For example, in the photo in Fig. 77 shows a simple fan experiment. When the capacitor is connected to the fan winding circuit, resonance conditions are created so that the voltage on the fan winding increases from 100 volts to 120 volts and increases its speed by 20%. In this case, the power consumption from the battery does not increase.

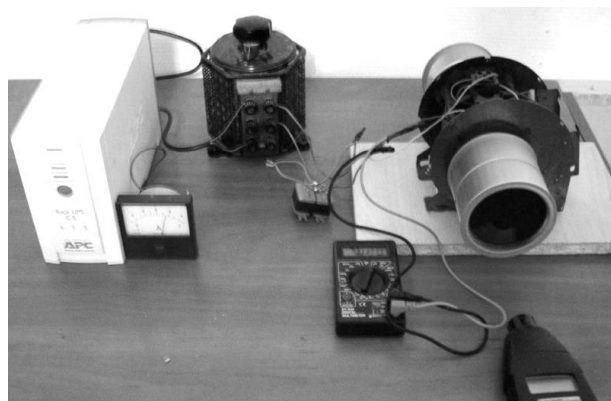


Fig. 77. Frolov's Experiment on resonance, 2010.

The experiment is quite accurate because we have measured DC input power. Alternating current with a frequency of 50 Hz was made by means of DC/AC inverter. Disputes about phase shift and reactive power are irrelevant in this case. The resonant

method increases the active power in the load. We measured power output changes by taximeter to detect increase of RPM.

Any LC circuit or electromotor can be configured to achieve energy-saving effects. Unfortunately, conventional electric drives do not have a good quality factor, as resonances in them are suppressed by designers of these electromotors. This phenomenon can cause power surges and damage to the motor. In order to obtain an electric drive that, for example, consumes 1 kW at resonance, but works like 10 kW, it must be designed for operation under resonance conditions. It is possible to recommend experimenting with standard high-performance induction drives (more than 10 kW), especially with a crane motors.

Methods for achieving autonomous operation in induction motor designs are discussed in detail in Partick Keely's book, Practical Guide to Free-Energy Devices, which is about 2500 pages of different free energy technologies. It is source on website www.free-energy-info.com

The motor-generator resonance circuit with the name "RotoVerter", which is composed of two three-phase electric motors, has undergone extensive development among enthusiasts of alternative energies. According to the authors, the system produces 10 times more electricity than it consumes. This system has been replicated by several independent researchers. The output device is an alternator driven by a three-phase electric motor with an output of 3 hp or more, up to 7.5 hp. Input voltage for this motor must always be lower than its nominal operating voltage, 110 volts per phase instead of 220 volts. The increase in voltage leads to resonance. A virtual third phase is created by a capacitor that creates a 90 degree phase shift between the applied voltage and the current. Let me note, the capacitors must be heavy-duty and oil-insulated. The power is great, so tuning is not done without a certain amount of danger. This method can produce the effect of autonomous energy generation, but this is dangerous in the case of fine tuning, a rapid increase in voltage and power up to the failure of the motor winding.

The motor (alternating current) which, according to the American authors of the project, is considered to be the best for this device is the "Baldor EM3770T" 7.5 HP. Motor type 07H002X790, switching voltage 230V or 460V, six independent windings are available to select the operating voltage. They can be connected in series in pairs or in parallel in pairs.

The authors of the ROTOVERTER design state: "This device uses a 110-volt, low-power input, but produces higher electrical power that can be used to power larger loads. The output power is much higher than the input power. That is free energy no matter what name you use. "

The ROTOVERTER authors did not show how they closed the primary excitation and power generation circuits so their device could be called a "power amplifier" but not a stand-alone power generator. The advantage to be emphasized is that prefabricated motors are used in the ROTOVERTER project. Additionally, no electronics knowledge is required, making this project one of the easiest to assemble free energy devices available today. One small drawback is that the resonance mode works well under constant load.

So, there are two different ways. The Ostwald's simple example of the resonance circuit is the parallel resonance that can be used to reduce power consumption. The series resonance allows the voltage in the resonant circuit, as with the ROTOVERTER.

Let's look at some other examples of high voltage resonance designs.

Name of Rimily Fedorovich Avramenko's is familiar to anyone who read the famous "Inventor and Rationalizator" magazine in 1994 and remembers an article about Avramenko's "Blaster" which could produce a powerful plasma jet or ball lightning when powered by a conventional small battery. This "plasma generator", according to the author, provides "a certain combination of ionization and movement of the medium... Then a channel is formed, a kind of conductor through which energy begins to flow". Simple resonance method is applied in this device.

Rimily F. Avramenko dreamed about serious changes in power industry. He wrote: "We will gradually replace thermal, hydro and nuclear power plants with them... and in fact we will connect to the energy reserves of the universe that is inexhaustible and environmentally friendly". His book "The Future Opens with a Quantum Key" can be downloaded from internet (in Russian).

Another well-known developer in the field of resonance energy generators is Andrey Anatolyevich Melnichenko. The first articles about him appeared in 1996 in the magazine "Technika Molodezhi". He described a situation on his village house. He had to connect a 220 volt device to a 110 volt network. Melnichenko connected a capacitor, increased the voltage by means of resonance, and then he received current in the load, and in the future began to develop this direction of experimental work. There is one of his patent applications dated April 22, 1996 about a "resonance transformer with power amplification". Melnichenko describes his invention as follows: "A resonance transformer has inductance and capacitance (resonance of currents or voltages) in the primary circuit that is tuned to resonance. The power in the primary circuit is Q times (quality factor) higher than the total power that is fed to the primary circuit. "

Later Melnichenko had developed other schemes, including those that added electromagnetic waves from different sources in the same region of space where the receiving coil is located. Melnichenko showed that the energy of the waves does not add up, but multiplies. We shall consider a similar method later when analyzing Hubbard's construction. This is a very important effect. The energy of the magnetic field depends on the square of the current strength. The kinetic energy of a moving body depends on the square of the speed. So, the transformer systems that use multiple primary coils can be very efficient. In the area of a common magnetic field between two coils, the energy increases by a factor of four. With three coils, the energy increases by a factor of 9 and so on. This does not apply to resonance phenomena, but it is an interesting aspect of the addition of magnetic fields from several power sources.

In 2010-2011 we discussed with him new successful tests of his generators, which were organized at the Moscow Technical University. At this point in time, an efficiency of 150-200% had been achieved, which made it possible to develop "advanced" power supplies with a battery that did not require charging from the electric grid. One of Melnichenko's schemes is shown in Fig. 78.

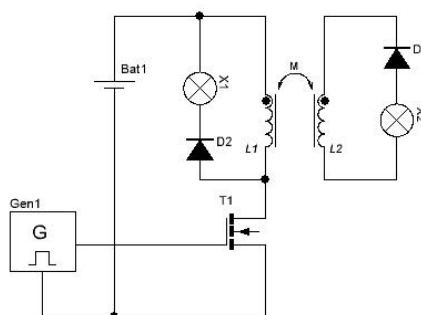


Fig. 78. Melnichenko Generator scheme.

Another interesting circuit by Melnichenko is just the resonance of the two coils. Coil core adjustment is required here. Generally it is a common resonant mutual induction. However, the flux coupling is weak in this case, so the influence of the second electromagnet on the primary source is weak. The primary source creates a changing field and the secondary source converts the fluctuations in field energy. We can say that the second electromagnet resembles a detector circuit or "resonant receiver of Aether vibrations" rather than a secondary circuit of a transformer. In this case it is possible to receive more energy in the "receiver" than the transmitter expends to "stimulate the Aether".

Note that several such "receiving devices" can be installed in the area of the alternating magnetic field of the primary source, but they do not affect the primary source. When doing research on the subject, it is advisable to work at higher frequencies, although as the frequency increases, the losses increase and the circuit becomes more complicated.

In discussions with Melnichenko in 2021, we received the information about possible mass production of autonomous energy sources. It is planned with one of the factories in the Moscow region. However, we have not yet been able to visit this production facility.

In this topic it can be useful to consider the Norman Wooten magnetic resonance amplifier (MRA, Norman Wooten), Fig. 79. This device has a low output (milliwatts), but its efficiency is about 8 to 1, as stated by the author. It consists of a low-power high-voltage sinusoidal signal generator, about 20-40 kHz, also here is a piezoelectric vibrator and a primary coil of a 1:1 transformer (about 150 turns of wire on a barium permanent magnet).

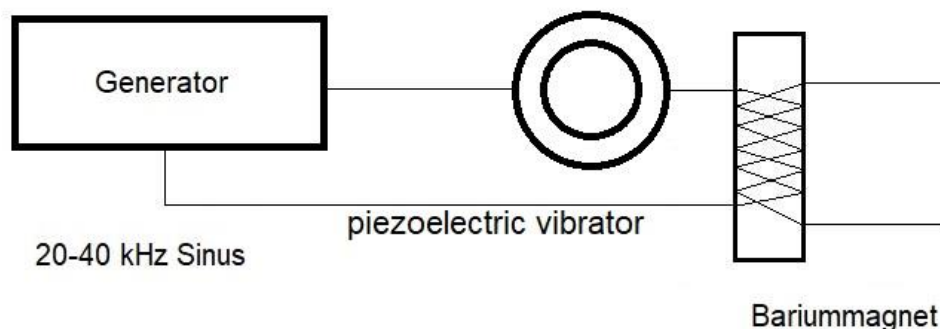


Fig. 79. Device by Norman Wooten.

A piezoelectric vibrator with barium titanate can act as a capacitor in an oscillating circuit, but its main task is to generate mechanical vibrations. In this diagram we find indications of the Barkhausen effect. When the core vibrates, especially with hard magnetic materials, a sudden change in magnetization can be observed. A similar effect was first observed by N. G. Barkhausen, 1919.

There is another area of research in connection with resonances. It is the "parametric resonances". The classical approach to this topic was worked out in detail in the 1950s by the Russian Academician Nikolai Dmitrievich Papaleksi. He investigated the effect in resonance circuits (capacitor and inductance) without electrical power source. In fact, it is one of the few formal academic free energy projects.

Parametric resonance is the phenomenon of the appearance and increase of the amplitude of electrical oscillations as a result of a change in the parameters of an element of a physical system. There is a special rule. External influence frequency should be twice the natural resonance frequency of the system. In an electrical oscillating circuit there are two elements in which energy can be stored and whose parameters can be changed, it is capacitance and inductance.

Let's consider an example with an *inductive parametric resonance*. Why do electrons start moving in the wires of a coil when its inductance changes? If the inductance of the coil is changed by periodically inserting a metal core (not a magnet core), this movement of the core will not create the phenomenon of electromagnetic induction. During this movement, only the conditions for the stored energy are changing, i.e. the value of the inductance is changing. Similarly, in the case of *capacitive resonance*, by means of some mechanical drive or another method, the value of the electrical capacitance of the capacitor will be changes periodically and this process create current in the circuit (if the frequency of external influence is twice own frequency of the system).

The mechanical analogy to this process is a periodic change in the volume of some container for water or air. The conclusion is simple and very important. The changed of the volume of any energy storage device will set in motion Aether environment. Energy is always available in space and it is the reason of parametrical resonances. The energy consumption for mechanical changes in the "storage volume" can be much less than the energy output from these vibrations of the Aether medium.

Academician Papaleksi wrote that it is necessary to stimulate electrical oscillations in oscillatory systems (where is no special power source) by periodically changing the mechanically generated parameters. This method apparently makes it possible to implement a new type of free energy generators.

Academician Papaleksi writes in 1948: "With parametric excitation, as long as the system remains linear, there are basically no limits to the growth of vibrations. In addition to a new way of converting mechanical energy into oscillating electrical energy, a new method for generating high voltages is outlined here".

In the initial phase of the project, Papaleksi's experiments gave results in the range of 600-700 watts in load lamps with a power consumption of 2 kW for the motor. It should be noted, however, that the power spending for the rotation is just a design problem, since these parametrical resonance generators have no braking of the rotor when the power in the load circuit is connected.

Figure 80 shows a schematic of a parametric oscillator with a periodically variable inductance. The axis shows a rotor that fits into the gap in the coils. In this case, there is a periodic change in inductance and current in the coils.

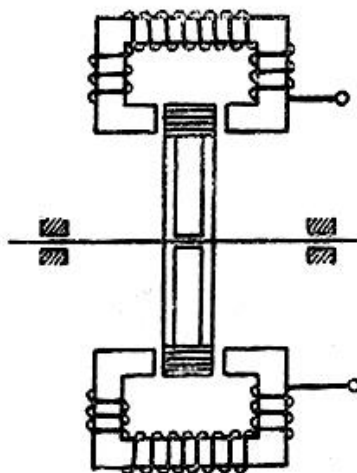


Fig. 80. Scheme of the inductance parametrical resonance generator.

With a capacitive excitation method, everything happens the same way, but the motor rotates the capacitor plates and changes its capacitance. At the corresponding frequency, periodic current fluctuations occur in the coil connected to this capacitor.

There is also a possibility to excite parametric resonances not mechanical but by means of external electrical oscillations, Fig. 81. The frequency of the external oscillations of the current must be twice the frequency of the natural oscillations of the circuit. Analogies with this scheme we can find in many other free energy generators. Also some types of high efficient electrolyser technologies use this secret.

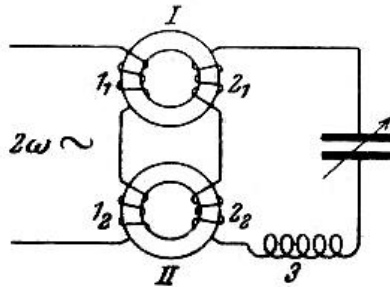


Fig. 81. Parametrical resonance circuit.

From the experience of Academician Papaleksi, it was founded that the most interesting prospects open up for capacitive parametric resonators. The rotation of the rotor, which periodically changes the dielectric constant between the capacitor plates, creates conditions for parametric resonance. During this part of the rotation cycle, when the dielectric is between the plates, the capacitance of the capacitor is at its maximum. Without a dielectric the capacity is minimal.

To increase performance and reduce losses, Papaleksi created a rotation in a vacuum and placed the entire device in a sealed housing. Fig. 82 shows the circuit and the stator of a capacitive parametric resonator.

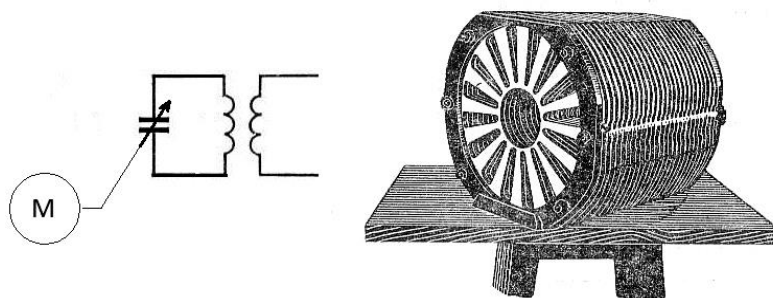


Fig. 82. Schema and Stator of capacitance parametrical resonance generator.

Modern technologies make it possible to change the value of the electrical capacitance of a capacitor not only mechanically, but also by applying a "control potential difference" to it. With this in mind, we get a device in which changes in the potential electric field, which cause a change in the electrical capacitance, when the conditions of parametric resonance (double frequency) are met, allow us to get real power in the payload. We can say that "a variable potential field work here".

Academician Papaleksi expressed himself optimistically but carefully about the efficiency of these parametrical converters. He wrote: "The efficiency can be very high here at higher frequencies... because the power is proportional to the frequency. A very advantageous aspect of the capacitive generator is the possibility of achieving an almost extremely high degree of efficiency, so to speak more than 99%". Obviously, Academician

Papaleksi could not openly say that the efficiency of systems with parametric resonance can be more than 100%.

In 2021 there is no open information about modern developments in this area of technologies. Perhaps, all academic projects on the topic of 1950 have been stopped or classified for some reason.

So, we come to the next chapter, in which we consider various devices with permanent magnets. It is great practical area of research with fantastic results of megawatt level.

Chapter 10

Permanent magnets in power generators

Let's start this wide topic with the history of the development of the electromagnetic generator by John Roy Robert Searl. John became an apprentice electrician in a factory in Birmingham, England, at the age of 14. While working with permanent magnets for electricity meters in 1946, he discovered a new effect of electromechanics that is not discussed in school. A radial electromotive force with a vertical vector occurred in the fast rotating disk. To increase the effect, John first magnetized the discs and then started using permanent magnets. *It turns out that John found a way to create an electric field when the magnets are rotating.*

John once tested a model that consists of several magnetic rings connected to one another. At low speeds, a large radial potential difference occurred in the rings, which was show itself as an electrical discharges and the smell of ozone. Then something very unusual happened: the ring block became separated from the motor that was rotating it and hung at a height of 1.5 meters, the speed of rotation kept increasing. A pink glow appeared around the rotating object that is an indicator of air activation when the pressure dropped. The object began to rise. Eventually the rotation reached such a speed that the object quickly disappeared from the field of view above.

John designed and tested many devices in 1950 - 1952. He invited the royal family and senior ministerial officials to see his 1963 model of the flying saucer. But no one answered the invitations. The inventor's fame came from abroad. First by the Japanese, then by scientists from other countries. In 1968 an event occurred that delayed the development of this scientific study. On July 30, 1968, John tested 500 kg device. During the demonstration, the device lost control and disappeared at a great height in the sky. The government "reacted" to this event. Local electricians suddenly billed John a huge sum over the past 30 years, even though John had his own power plant. He was unable to pay the large amount, so he was arrested, tried and detained for 15 months.

All equipment and appliances in John's laboratory were destroyed and his house burned down. In the 1980s there was a lot of talk about him in the press, for example about the "father of the flying saucers".

There is important aspect here about magnets. John Searle made a fundamental discovery in the nature of magnetism, which consists in adding a small component of a weak alternating current (about 100 milliamps) of high frequency (about 10 MHz) in the manufacture of permanent magnets which gives them new and unexpected properties. Based on these magnets, John created his generators of energy. I believe that the essence of this technology is to create a *magnetic material that has a precession of magnetic moments*. This concept is discussed in detail in my book "New Space Technologies". In short, we can say that magnetic domains with precession are similar to microgyroscopes. Therefore, their rotation creates a lifting force.

The main interest of John Searle was the creation of "flying disks", and he did this with great success, since in his generators, in addition to the effect of self-rotation, the effect of axial force is also produced. For the sale of the generators of energy, Searl and his colleagues also had some plans, but the development of their power engineering projects did not reach serial production.

The photo in Fig. 83 shows a photograph of a small experimental set-up in the modern laboratory of John Searl. The technical details of this invention are similar to those of other projects. The roller, which is installed in its place "in orbit", after a small push to the left or right in the orbit, begins to rotate around its axis and with a constant increase in speed. On the left in the photo the rollers are not rotating and on the right in the photo you can see rotating rollers. Photo courtesy John Searl. In January 2011 he sent me a letter wishing me every success in my research.



Fig. 83. Modern Searl Generators.

There are many films on the Internet with his presentations and explanations on the subject of "How it works". Officially, the projects are run by the DISC Direct International Science Consortium Inc. They provide work for commercial space exploration.

On this topic, we can remind the experiment of Russian authors Roshchin and Godin, who in 1992 at the Institute of High Temperatures in Moscow built and successfully tested a similar generator. The project was named "Astra". The experimental setup is shown in Fig. 84.

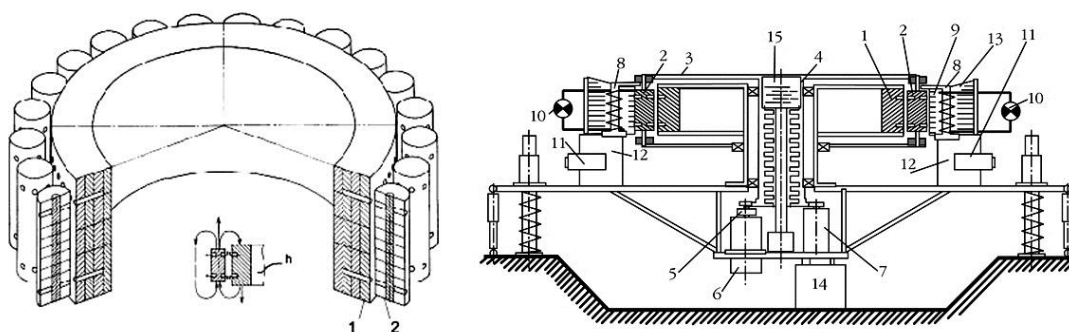


Fig. 84. "Astra" generator by Godin and Roschin, Moscow, 1992.

In this version, there are orbital magnets (rollers with axial magnetization), they are rotating around a central stationary ring magnet of axial magnetization. The rotation is generated by an external electric motor. Some differences to Searl's device are that in this case the magnets are not free rollers, but they are mounted on a common rotor (item 3 in Fig. 84), although the rollers can also be rotated around their axis. The diameter of the magnetic system was about 1 meter.

There are interesting results. For rotation speed over 500 rpm, the self-rotation began and the machine switched from the primary drive to a generator. So, it can provide electric power about 7 kilowatts. Interesting fact here is about lifting force. During rotation there is axial vertical force and a radial electric field. In a darkened room, around a working generator, there is a corona discharge in the form of a bluish-pink shimmer and a characteristic ozone smell. At the same time, the ionization cloud covers the stator and the rotor and this cloud has a toroidal shape. Concentric "magnetic walls" were found around the system, i.e. areas of space in which the strength of the magnetic field and the temperature of the air was changed. The distance between these "magnetic walls" was about 50-60 cm, the thickness of the "walls" was about 5-8 cm. The temperature inside the "walls" was about 6-8 degrees below the ambient temperature. The concentric "magnetic walls" and the associated heat effects were detected for rotation above 200 rpm and increase linearly with increasing speed of rotation.

For more details on this project, you can see the article by V. Godin and S. Roshchin "Experimental Study of Nonlinear Effects in a Dynamic Magnetic System", New Energy Technologies magazine, www.faraday.ru. The method is patented in Russia by Roshchin V.V., Godin S.M. Russian Federation Patent 2155435 dated October 27, 1999

Let's consider another technology of magnet generator. For example, it is possible to create dynamic displacement of the rotor magnetic poles and the magnetic poles of the generator coils. This displacement is a simple way to get operation of a magnetic generator under load without braking or even with acceleration. This concept of self-accelerating permanent magnet generators has been tested by me in several versions and is named as "reaction delay in electromagnetic induction phenomena".

What is the essence of the proposed method? Usually, when the rotor magnet approaches the pole of the generator coil, the rotor magnet is decelerated by the field of the induced current. Then, in the phase of removing the magnet of the rotor from the coil, the secondary induced magnetic field of the coil will attracts the magnet and this attraction also slows it down. After we have created a phase shift of some right duration, we get a "delay of reaction". This effect can be generated in different ways, for example due to the hysteresis properties of the generator coil core material. As a result, the approach of the magnetic pole with the coil does not cause a repulsive response (due to hysteresis delay), and the phase of removal the magnet from the coil it will create an induced repulsive field. So, the magnets of the rotor will get acceleration from induced magnetic field of the generator coil, instead of usual deceleration.

Figure 85 shows a scheme on this principle by Professor Eric Laithwaite of Queens College, London.

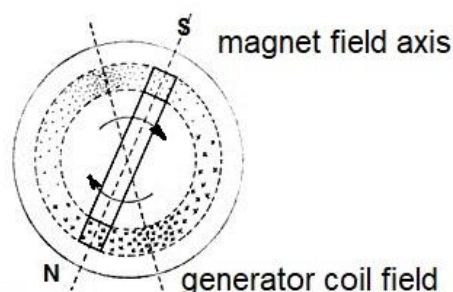


Fig. 85. Delay on reaction.

In the simplest case, a high inductance of the coil causes a delay in the response of the generator coil to the approach of the rotor magnets. Many authors of high-efficiency generators have noted this feature, so the coils in such generators have many turns.

The idea of the phenomenon of “self-rotation” is also used by Professor V. Etkin in the book “Energodynamics. Synthesis of theories of energy transfer and transformation” St.-Petersburg, Publ. house “Nauka”, 2008. Therefore, we have to choose a core material with a *low speed of the magnetization* for such generators.

The next example of the magnetic motor was demonstrated for 2010 Shanghai World Exhibition and seen by about 70 million people. It is Wang's invention. The project has been developing for over 40 years. In the photo Fig. 86 shows a small drive device with a rotating rotor and the rotor separately. The author in the photo Fig.86 shown "in his youth", he holds a 1 kW motor in his hands. A ferrofluid, i.e. a magnetic fluid, is used inside the motor.

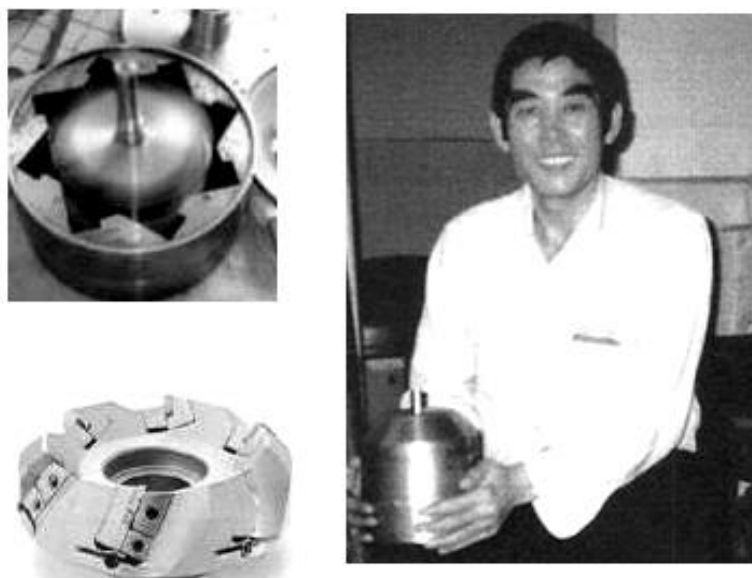


Fig 86. Wang and his magnet motor.

At the end of 2010, I started direct contacts with this inventor and he clarified that a company with great financial potential was created in China for the development of his project. It was charged to introducing this technology in power plants of total capacity about 10 thousand megawatts. In China, according to press reports, the reconstruction of obsolete coal-fired power plants has begun. The author was ready to consider a deal to sell his technology to Russia and start serial production, but he wanted to organize serious negotiating level with the participation of political party and military.

Unfortunately, in 2011 we were unable to organize business with the Chinese properly, and contact with the author was cut off. Perhaps the situation has also changed with the introduction of this technology in China. There is currently no information about Wang's work in 2021. This is an example of technology "disappearing" that speaks for the reality and value of this invention.

The project PERENDEV for another motor with magnets was known to us as a "marketable motor" that was to be mass-produced in Europe. The patent was obtained WO / 2006/045333 dated 05/04/2006, although this scheme is very similar to the Brazilian patent BR 8900294 (A) by Malafaya Mauro Caldeira. Please note that the

Brazilian patent was granted after the author demonstrated his working prototype of the motor to the patent office. Hence, we have no doubt that this idea will work.

Author Mike Brady has widely advertised the capabilities of his PERENDEV engine, but we haven't seen positive feedback from customers for many years. In 2009 we tried to arrange a visit with him to check out and buy 100 kW motors. The demonstration of the engine under load has been postponed again and again. The 2010 news added pessimism to us. Michael Brady was sent to Germany for trial because he failed to ensure delivery of paid goods and his customers were "disappointed". The patent WO2006045333A1 by Michael Brady and its motor circuit are known, Fig. 87.

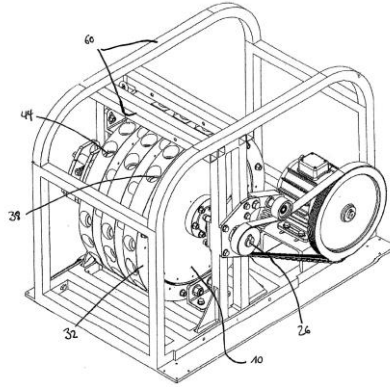


Fig. 87. PERENDEV scheme.

The stator and rotor magnets are angled, in a position of mutual repulsion. Many attempts by various enthusiasts to repeat the design were successful, but it should be noted that mass production never began. It can therefore be assumed that the PERENDEV version of the "purely magnetic motor" was not entirely successful. The author informed me in 2005 that 16 generators of low power (5-6 kW) were sold in Europe for beta testing but all motors had some operational problems (magnets were demagnetized during long operation under load). Powerful machines of 100 kW and 300 kW were therefore intended for production with electromagnets that is not magnets only design.

Michael Brady's behavior towards customers was clearly flawed. Instead of organizing a wide demonstration of his motors, he preferred to work in secret. In such cases there is speculation about the increased demand. Investors and buyers of such devices, who have the opportunity to make good money when launching a new product, are ready to believe and pay an advance. I believe that the normal route of new technology development is through the academic environment, including electrical and fire protection, as well as medical certificates. I think you are agreeing that any new product, even if it works, could be dangerous due to possible unknown biomedical effects. Magnetic motors, for example, generate low-frequency electromagnetic fields that are difficult to shield.

One more interesting aspect of this magnet motor design. Some authors use a dielectric rotor where the magnets are installed, but the magnets are covered by some cover that is made of a special material. This provides the desired configuration of the magnetic field near the pole of the magnet.

Consider an example of similar technology. In 2015, the Pakistani engineer Wasif Kahloon built a motor that rotates by interaction of neodymium magnets, Figs. 88 - 89.

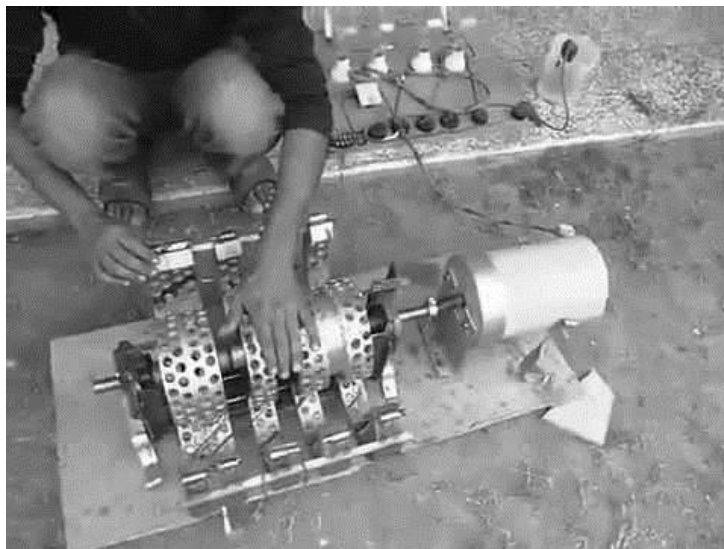


Fig. 88. Magnetmotor in Pakistan

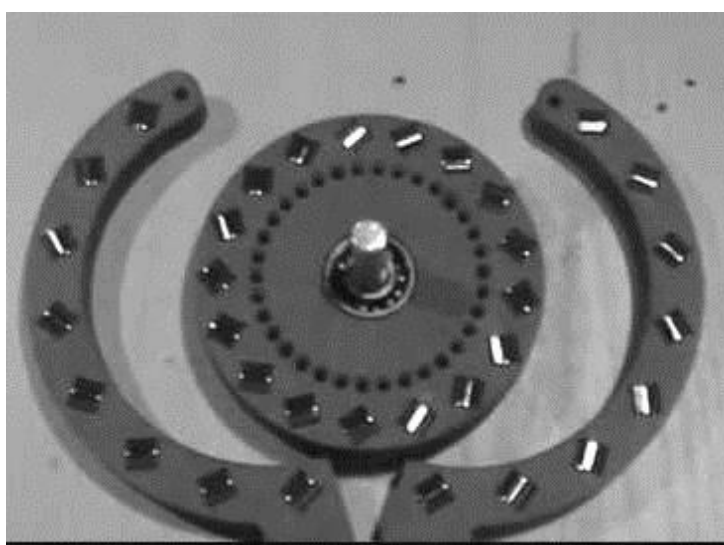


Fig. 89. Motor design by Wasif Kahloon

The design of the Pakistani engine is very similar to the famous PERENDEV, but the author claims that its engines are more similar to the Muammer Yildiz engines. The operation of the motor on magnets was tested by connecting a conventional electric generator of 3 kW power output. At an open press conference, the engine was shown running for 10 minutes, and then the device was completely dismantled to reveal the lack of hidden batteries. The author posted a video about his engine on the Internet and described it as a "challenge for all engineers".

The controversy surrounding this statement continues. Many try to reproduce this design with plastic rotor and stator. It should be noted that this approach does not always work. In some cases a metal stator is required to properly organize the magnetic flux paths in the device.

Next step... We come to the well-known design of 2010 that is the Steorn engine. The power of the Steorn generator does not exceed a few watts, but this example is interesting as a business project. Steorn's company worked in Ireland, the level of specialists was very serious academic level. Expensive equipment was used to measure the parameters of their experimental equipment. In the six years of operation, the company has attracted 8 million Euros in investments. In 2010 this company already

earned more than 4.5 million Euros from the sale of licenses, i.e. they sold the know-how to interested customers.

It should be noted that their original plan was to create a prototype of a permanent magnet motor by PERENDEV motor scheme. Fig. 90 shows a variant of the "magnetic motor" ORBO, which, however, was not developed to be commercial prototype.

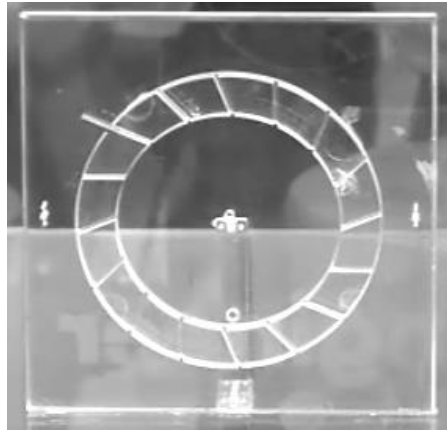


Fig. 90. Motor ORBO, Steorn 2007.

Later their concept was changed. Steorn demonstrated a prototype with a battery, toroidal coils and impulse power supply, whereby the battery is continuously recharged while the generator is running. The company took a serious approach to investigating the problem. They demonstrated to the experts novelty of their technology. In their experiments it was proved the interaction of magnets, if partially shielded, can lead to an excess of the output power compared to the power consumed. Experts who have queued to visit the laboratory (over 300 visits per year).

This version of the 2010 Steorn motor - generator is shown in Fig. 91. Two rotors are mounted on the axle. The lower rotor with magnets acts as a motor and the stator coils are toroidal coils. The upper rotor with magnets and the coils in the stator are standard generator.

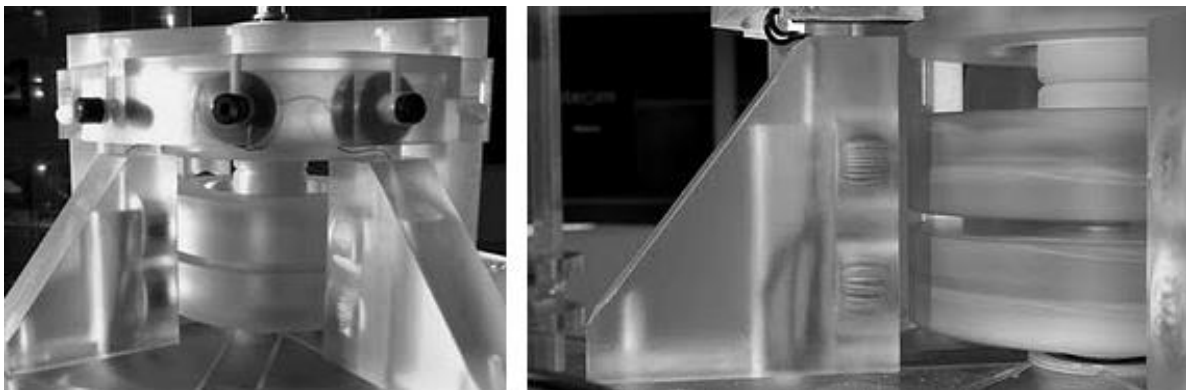


Fig. 91. 2010 Steorn Motor Generator.

According to the functional principle of this motor, I have no official information from the developers, so we can assume the following explanation. In the phase of approaching the toroidal core, the magnet is attracted by the magnetic attraction forces between magnet and core of the coil, and then the control sends a current pulse to the toroidal coil whose core is *converted to saturation* so that it "ceases to be magnetic material". In this situation, after the point of closest approach, the rotating permanent magnet "easily" leaves the "temporarily non-magnetic" core. The cycle is also repeated.

As a promising technology, Steorn is developing a non-rotating generator. In it, the toroidal core, which changes the magnetic state periodically up to the saturation level, causes a change in the magnetic flux in the area of the generator coil, which generates an electromotive force and power in the load. We'll look at similar designs later in the solid-state current generator chapter when we examine the MEG (magnetic transistor) circuit.

In 2015, it was announced that Steorn was launching cell phone chargers. In November 2016, alarming news came. Steorn's employees were laid off and the company was preparing for liquidation. There will be no news from the company in 2021.

Another famous example in the field of high efficiency permanent magnet motors is the Robert Adams motor. The diagram is shown in Fig. 92.

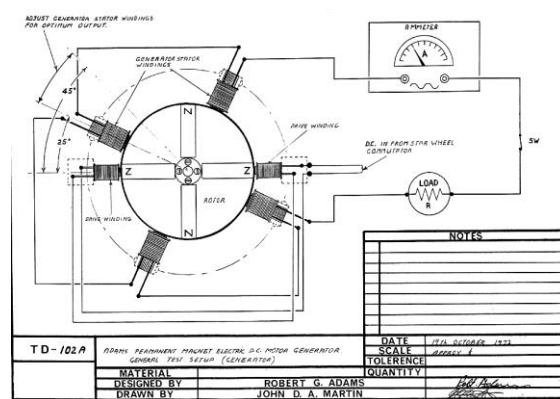


Fig. 92. Scheme from Robert Adams patent.

Permanent magnets are used in the Adams motor rotor. Acceleration of the rotor occurs in the stage of approaching the metal cores of the coils. Note that the magnets and the cores of the generator coils have a large pole surface, so that they experience great mutual attractive forces in the approach phase. At the point of their closest approach, a mechanical contactor is triggered (in modern circuits an electronic Hall sensor), a current pulse is supplied to the coils, repelling magnets and the rotor continues to turn.

Generator coils can be installed on the same rotor or separately from the motor. Many of Adams' followers did not achieve the expected efficiency even though their engines were spinning at high speed. When designing the motor-generator, the limits of the technical possibilities of drawing power from the magnetization-demagnetization process of the coil cores must be taken into account. Low power is extracted with high efficiency at low speed, but it has its limits. No needs in high rotation speed here.

Considering Adams's scheme in frames of traditional magnet motors engineering, the Adams motor-generator does not have a closed magnetic circuit and cannot be effective because the field is "scattered" in environmental. Nevertheless, it is the open magnetic circuit that makes it possible to work with a certain power output practically without deceleration of the rotor. In a certain mode with low power consumption that does not exceed the critical current, the factor of magnetization and demagnetization of the stator core in the area of a permanent magnet of the rotor plays the main role in the processes.

It is important to understand that the main torque on the rotor shaft is created by the attractive forces of the magnet and core during the approach phase. The current from the primary source is only consumed to overcome the attraction force in the phase of removing the magnet and the core. For such a motor, the large poles of the magnet and the core (the poles of the large surface) are important.

We corresponded with Robert Adams in 1994. In 1996 I assembled my first version of the Adams motor; it was small low power device, Fig. 93. The impulses are controlled by a transistor switch and a Hall sensor.

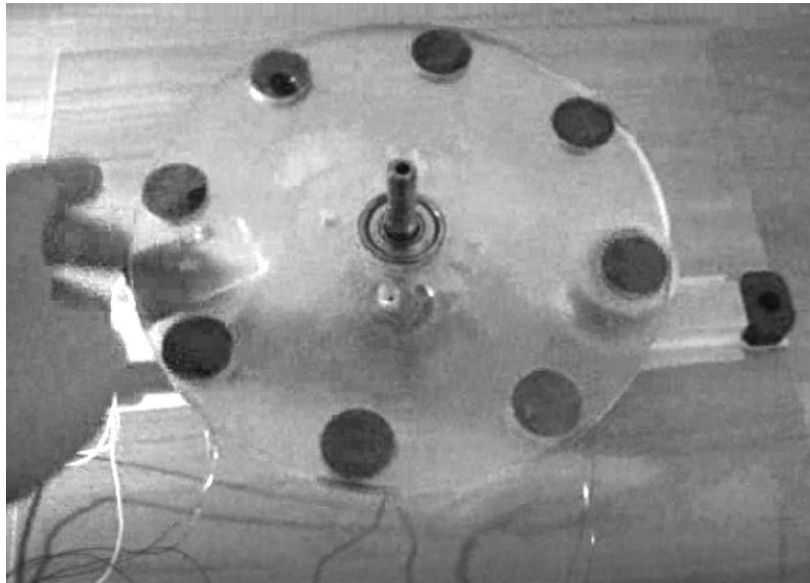


Fig. 93 Adams Motor by Alexander Frolov, 1995

In Australia there is a well-known company that has been developing a similar LUTEC magnetic motor for many years. The efficiency of such generators is more than 400%; they can be operated in stand-alone mode. The development of the company "LUTEC" is well protected by patents, licenses have already been sold in almost every country in the world, and preparations for the series production of autonomous power sources have begun. The initial start of this motor-generator, as in the Adams scheme, requires power from batteries. Then the batteries are recharged during operation.

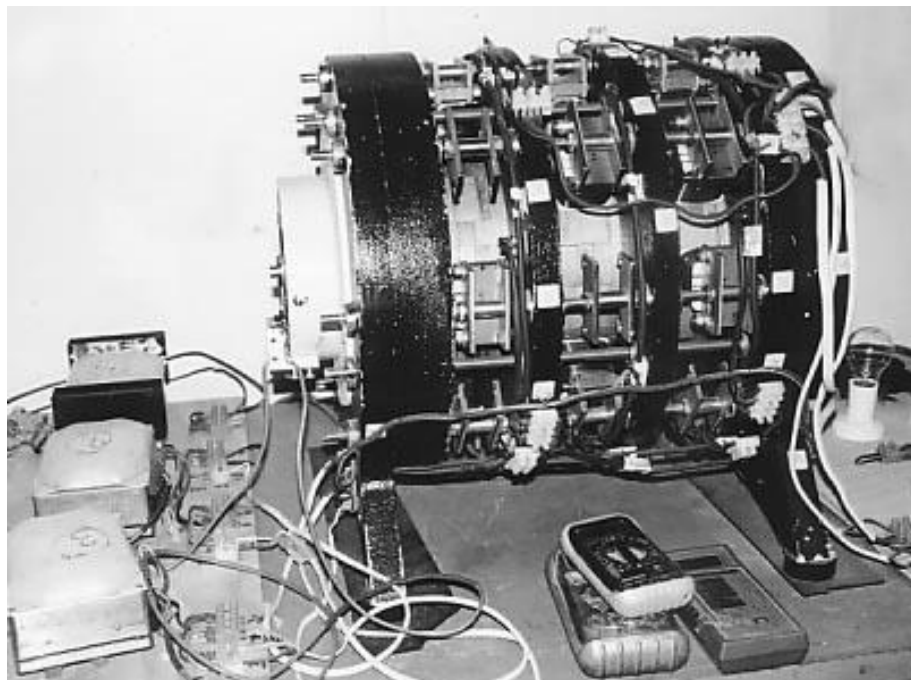


Fig. 94. Generator LUTEC.

There is information about permanent magnet motors by the Ukrainian company DRVERANO, Odessa. The authors of this design team call their engines "Vertical Adams Generator". In 2011 they claimed autonomous mode of 2 kW power level.

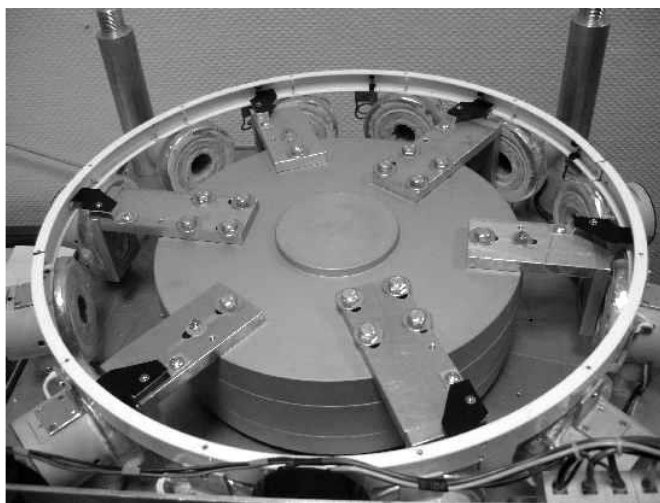


Fig. 95. Generator Adams - VEGA. DRVERANO.

There is interesting technical detail of this design. The generator coils have a hollow core, not a massive one. May be the coil are toroidal coils?

In 2010, the management of DPVERANO was open to communication, their website www.dpverno.com contained technical information and an invitation to present their products. Since November 2011, this company has also been offering new products in addition to motors. They offered "power multipliers" to reduce consumption from electric grid by ten times, for example to include a 10 kW load at the output of the multiplier with 1 kW consumption from the grid. I have to note that we have not had any positive feedback from buyers of these type generators. In 2021 there will be no more information about this company.

Next example. The Bedini generators are known all over the world. Details on his projects and new versions of generators are discussed at <http://johnbedini.net>. Unfortunately, John Bedini died suddenly on November 5, 2016.

The diagram from US Pat. No. 6,392,370 to Bedini shows that the rotor magnets create changes in the induction magnetic flux "indirectly" through the area of the transmitter coils, since permanent magnets are always on the other side of the core. In my opinion, "proportions" are important, that is, the ratio of the amount of magnetic induction in the stator and the amount of changes in magnetic induction introduced by the rotor magnets. The rotor magnet increases the induction flux through the area of the generator coils, but the reaction of the induced current in the form of a magnetic field may no longer influence the braking of the rotor. The core saturation point appears to be critical.

The working scheme of the Bedini generators includes a battery that is charged during the rotation of the rotor magnets. In 2003, John Bedini spread the word that a 10-year-old school girl from Idaho had built a regenerative motor according to his scheme and won a school award! This fact enables John to convince skeptics with a simple argument: a 10 year old school girl made it, why not?

In 2010 Bedini showed a machine with a rotor of more than 4 meters at an exhibition in the USA.

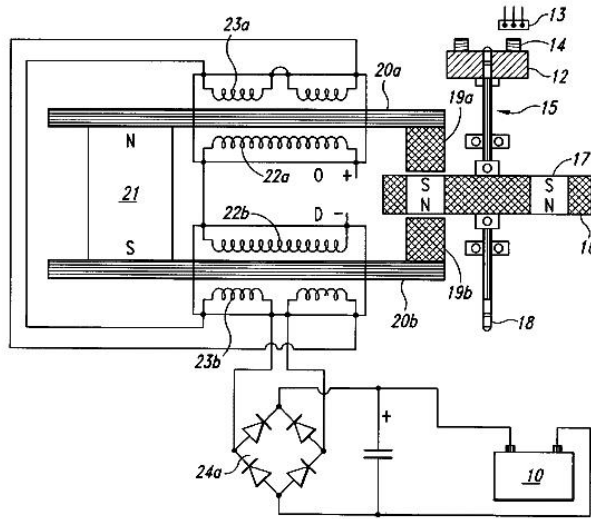


Fig. 96. Bedini Patent scheme.

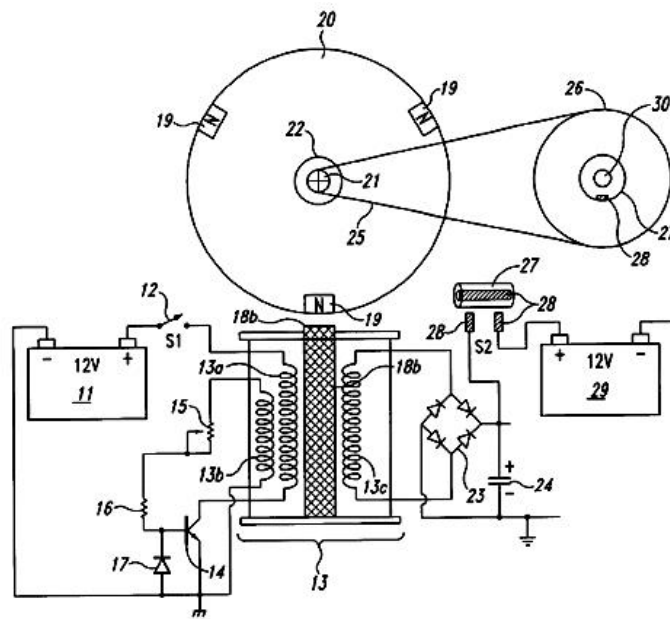


Fig. 97. Bedini Generator scheme.



Fig. 98. Laboratory of John Bedini.

The essence of the method proposed by Bedini in 1984 is that a magnetic flux from a stationary permanent magnet constantly flows in the area of the generator coils. The rotor magnets, as they rotate, create changes in the total magnetic flux in the core. By this arrangement, the secondary induction causes almost no rotor braking and the power of the primary drive can be relatively small compared to the power generated by the coils.

This method of "subtracting" two fields is used by many authors, besides magnet motor design. In other embodiments, this principle is used in transformer devices with magnetic flux path control. We'll consider it later in this book.

Another variant of the permanent magnet motor, which is presented to the public as a self-rotating motor without accumulators, is known as the Bedini-Cole or "window motor". The word "window" means shape of the wire frame. Fig. 99 shows the circuit and Fig. 100 shows photos of this magnetic motor. The mechanical contactor, on the left of the axis, consists of a strip of film glued to the axis and closes two contacts at the right moment when the rotor turns.

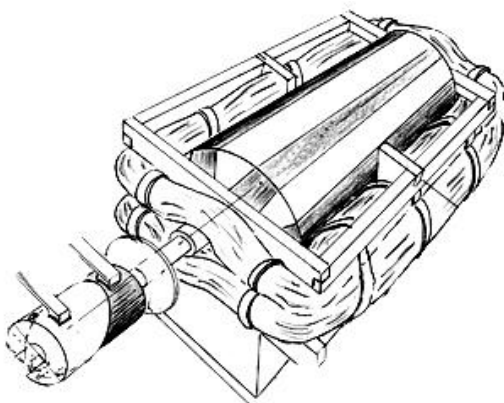


Fig. 99. Bedini-Cole Motor

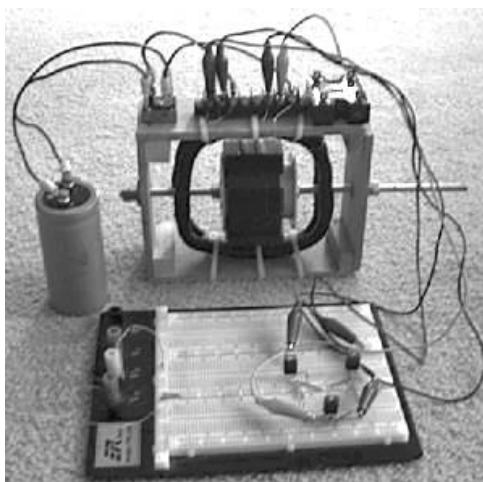


Fig. 100. Real variant of Bedini-Cole-Motor

In the variant shown in the photo, Fig. According to 100, the motor has an energy store i.e. standard capacitor. There is no battery in the circuit. Admittedly, such a small motor that turns by hand accelerates and then runs independently, makes a bigger impression than other, even more powerful, battery-operated devices. There is no doubt about the presence of some hidden external power source for the circuit.

Designing small workable devices of this type, while not practical in practice, is exciting and useful process for popularizing the idea of a self-rotating power generator.

Well-known motor-generators from Joseph W. Newman, USA, are popular no less than the Bedini motors. One of Newman's patents was obtained in South Africa, patent application # 831,296. There is scheme of the principle of power generation in this magnet motor, Fig. 101

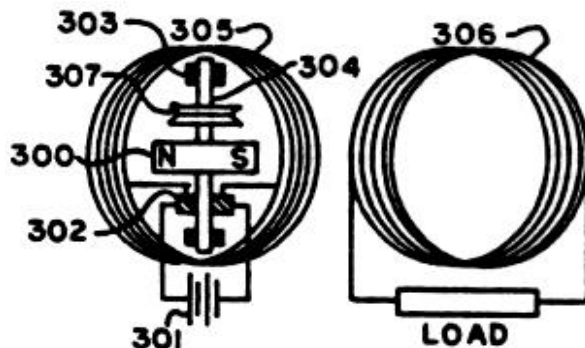


Fig. 101. Newman Motor scheme.

At first view, Newman and Bedini's design uses the same combination of a magnet and a coil, and they are no different from Michael Faraday's first magnet motor "toys". This is what Faraday said at the first demonstration of his electric motor at the Royal Academy of Sciences of Great Britain. In response to the question: "What is the application of this invention?" Michael Faraday replied, "I'm not sure... probably it can be some toys." The era of all electric motors began with these toys.

So what's the difference between Newman engines and other similar designs? Usually Newman has two areas of winding on the spool: above and below the axis of rotation. One of the coils serves as a rotor drive, the second coil is a generator winding. Fig. 102 shows one of the variants of such a construction and a large Newman motor-generator with a diameter of more than a meter, the author stands next to it.



Fig. 102. Newman's Motor-generator.

Newman points out in his books that his motor needs a special mode to function successfully, and that the coils of the motor and generator *must have a large number of turns of wire*. It can be assumed that the reason for such a generator to operate effectively may be the *effect of delaying the response* of the induced field on the movement of the rotor, which we considered earlier. Without this nuance, the rotor has to be braked by the induced current field and there is no high degree of efficiency.

Newman's results are impressive. In 2004, his engine was operated continuously under load and delivered 10 kW of power for 8 hours without an external power source.

Another well-known generator using magnets is known as the Ecklin-Brown generator. John W. Ecklin described his scheme in U.S. Patent No. 3,879,622, Fig. 103.

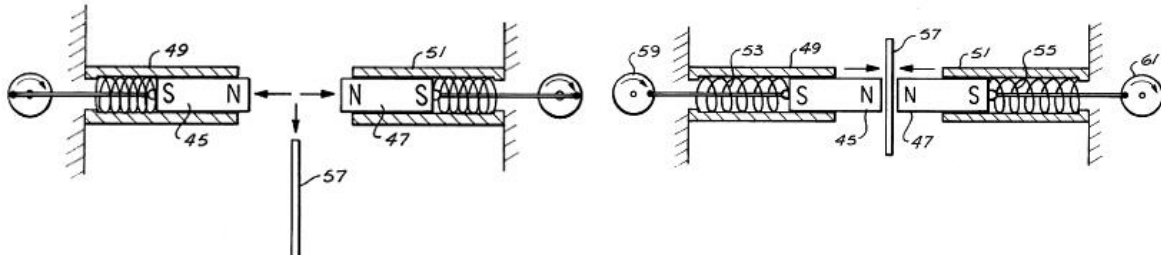


Fig. 103. Ecklin Generator.

The Ecklin generator can make mechanical work with periodic shielding of the repulsive force of the magnets (movable element 57 in Fig. 103. The rotating shunt is shown in Fig. 104.

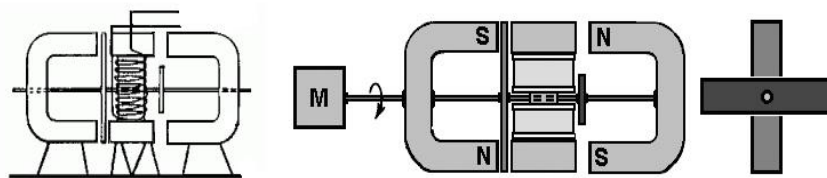


Fig. 104. Scheme of Ecklin's Generators.

The main feature of the Ecklin-Brown generator is possibility to reduce the primary drive power that is required to rotate the rotor. Typically, the drive has to overcome the point of maximum attraction between magnet and rotor. The Ecklin-Brown generator uses two shielding elements, right and left on the axis. They are shifted at 90 degrees from each other, and when one plate enters the gap between the magnets, the other plate comes out of the gap. This eliminates the problem of the rotor braking at the point of closest approach between the magnet and the plate.

The development of this idea to a new level takes place in the works of Dan Qualle, the scheme of his generator is in Fig. 105. In this scheme, the connection of an electrical load in the generator coil circuit has almost no effect on the primary drive and the drive's current consumption does not increase.

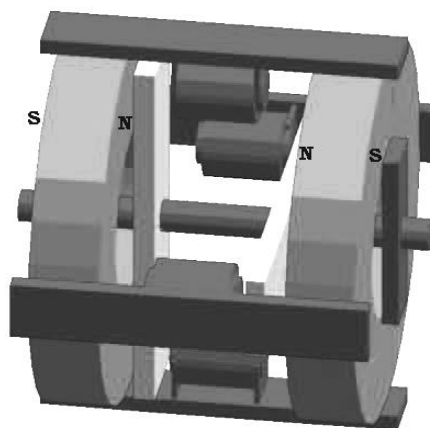


Fig. 105. 3-D model of Daniel Qualle's magnet generator.

Looking at the magnetic flux diagram, Fig. 106, we can see the peculiarity of the magnetic fields. The rotor periodically changes the conditions for the summation of the magnetic fields of the opposing stator magnets.

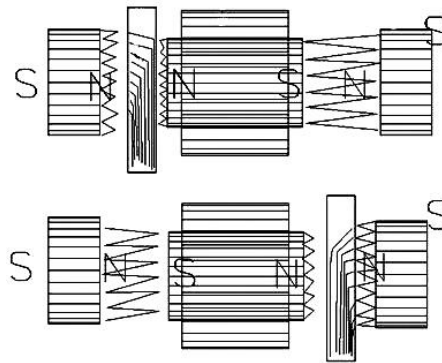


Fig. 106. Magnetic fields in Daniel Qualle's motor.

When entering the gap between the magnet and the pole of the coil, the rotor does not increase the magnetic induction flux in the area of the coil; the rotor changes the direction of the magnetic flux. The magnetic field of the induced current does not decelerate the rotor. The induction effect is organized by some wise way that it does not interfere with the generation of field changes. For example, a "shunt" enters the gap to the left of the coil, the induction magnetic flux from the right magnet increases therein and accordingly an induction current is generated in response to this change. In another rotational phase, the "shunt" penetrates the gap to the right of the coil; the field of the left magnet penetrates the coil core and reacts accordingly to this change of the magnetic flux in area of the coil.

Similar alternator circuits were developed by me in 1992. An attempt to obtain the acceleration of the rotor when interacting with the field of the induced current then failed. A positive effect was the possibility to get some load, for example a small light bulb into the load circuit without deceleration of the rotor.

In the photo Fig. 107 shows a variant of the implementation of the generator according to the Qualle scheme, this was made and tested by me in 2010, in St. Petersburg, JSC «Resonance». The drive (electric motor) is not shown in this photo. The ring magnets have the same poles to each other. Tests have shown that the load in the generator coil circuit has a very small influence on the rotor speed. The "shunt" in the rotor was made entirely of metal, so considerable losses were generated by Foucault currents during the rotation.

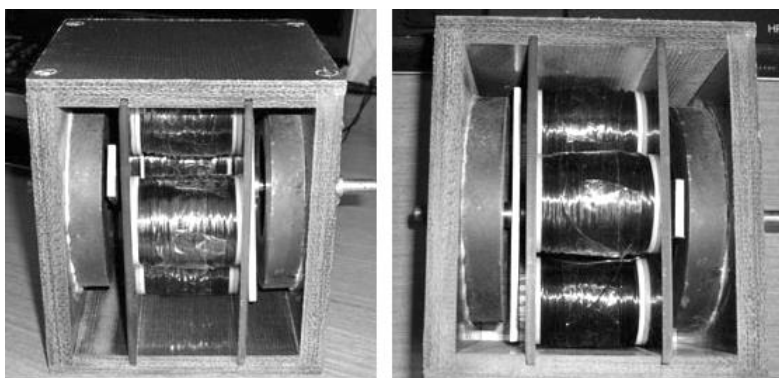


Fig. 107. Frolov's Generator by Qualle's-Scheme, made in 2010.

Dan Qualle and other authors name this technical solution "No-Lenz-Effect", i.e. "a generator without the Lenz-Effect". Lenz's rule, which we know as Faraday's law of induction, can be circumvented constructively in order to obtain the possibility of rotating the generator rotor under load without braking. In addition, it is proposed in a number of designs to obtain the *acceleration of the rotor by the field of the induced current*. These tasks are solved with different methods.

In 1998, for example, I worked under a contract with a private company from Novosibirsk. I built a model of a low power device that includes an electric motor, rotor, two magnets, and a generator coil. The connection of the load in the generator coil circuit led to an acceleration of the rotor with a reduction in power consumption on 10%. As far as I can remember, it was not patented; the customer left Novosibirsk for the USA. Later I submitted a Russian patent application on this subject with the number 2003118321 dated June 23, 2003, but patent was not received.

The essence of the invention is that acceleration of the rotor can be made by the magnetic field of the induced current. To do this, in the phase of approaching the rotor with the pole of the generator coil, conditions must be created to reduce the magnetic flux of induction through the turns of the coil, and when the magnet of the rotor are moving away from the coil, the magnetic field must be increasing value. In this device we use standard laws of induction: the induced magnetic field attracts the rotor in the approach phase and this induced field repels it in the retreat phase. Both parts of the cycle cause the rotor to accelerate.

Since my patent was rejected, I am interested in continuing this direction of research with a customer who has a technical base for developing projects of "self-rotating" magnet generators.

My circuit, in Fig. 108, is a conventional alternator circuit that uses a ferrite material for a "shunt" that breaks the flow.

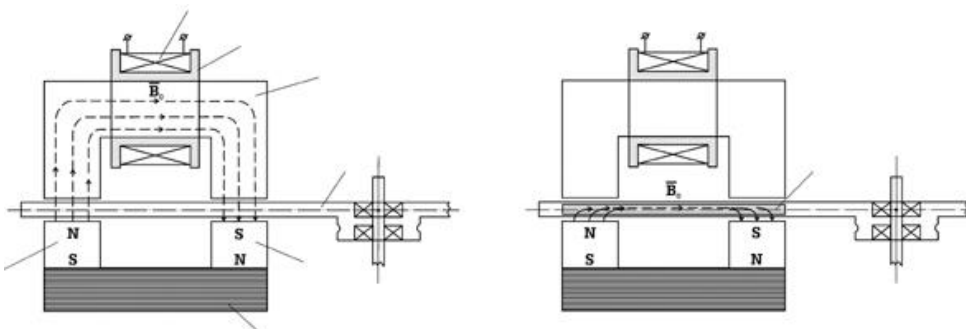


Fig. 108. Frolov's scheme of the generator.

The disk rotor is made of dielectric; it has segments to work as a "shunts of the magnetic field". On the right side of the picture, the "shunt" in the rotor closes the magnetic flux of the magnet, the flux passes through the "shunt" without getting into the area of the generator core.

The design feature is in the "shunt" material. I used flat laminated cores made from many thin transformer iron sheets, with each layer separated by a layer of tissue paper. This material makes the magnetic flux to change its trajectory in the desired direction. A solid iron "shunt" coming into the gap will decrease its magnetic reluctance and therefore increases the amount of magnetic flux flowing through the core of the generator coil and in this case we get the usual braking of the rotor. My special layered "shunt" just change trajectory of the magnetic flux as it enters the gap, thereby reducing the magnitude of the magnetic flux that passes through the core of the generator coil.

Of course, shunt laminate isn't the only solution. There are materials with a magnetic permeability of less than one, for example bismuth. More interesting, but more difficult to implement, are the ideas of some authors about using plasma in the rotor, since plasma also has a magnetic permeability less than unity. With all the variety of technical solutions, the goal is to achieve such a force interaction between the rotor and the magnetic field of the induced current that the rotor is accelerated by this field.

It is important to choose the correct position of the "shunt" and the plane of the rotor in the air gap. Based on my experimental data, I can recommend placing the rotor plane closer to the magnet, about 2/3 the total distance between magnet pole and coil pole.

In Fig. 109 shows a general diagram of the design and a photo of a model of the generator made in my laboratory, 2003.

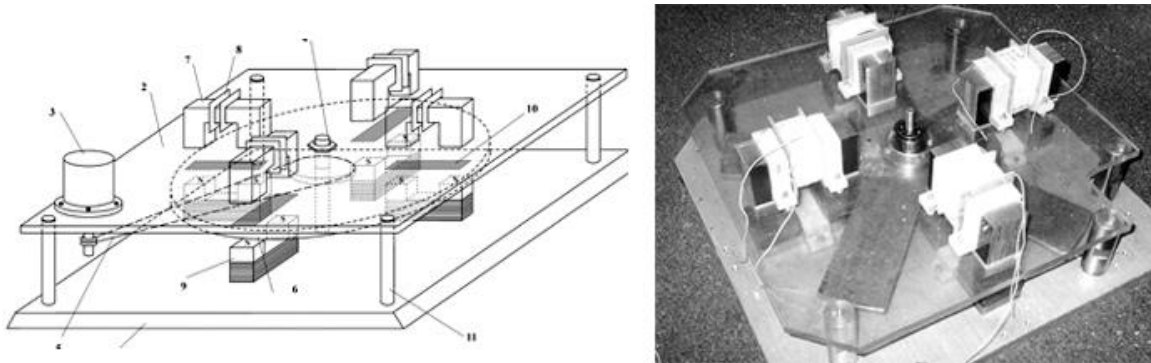


Fig. 109. Frolov's Generator in Faraday Laboratory Ltd., 2003.

This topic is actively developing in the USA, for example, by Alan Frankuer. There is his generator "The Interference Disk Electric Generator". The word "interference" in this case means "interruption". Allan built the first self-sufficient generator in 2001.

Photo Fig. 110 shows a diagram of this device, and Fig. 111 shows photos of one of the Frankuer's generators. Note that the "shunt" is made entirely of metal, so we have difference in the concept of the motor and the principles of operation of this generator. The coils in the Frankuer generator are located between two "shunt stars" that break the magnetic flux of the permanent magnets. Allan offers 10-ends "stars" and 12 magnets, with the left and right shunt being out of phase, as in the Ecklin-Brown scheme. This design provides smooth rotation of the rotor without braking at the point of closest approach to the magnetic pole.

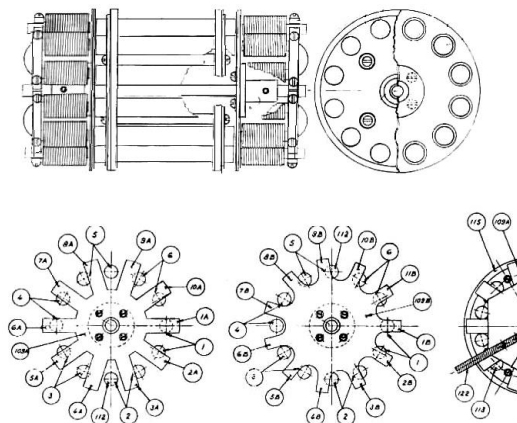


Fig. 110. Frankuer's scheme.

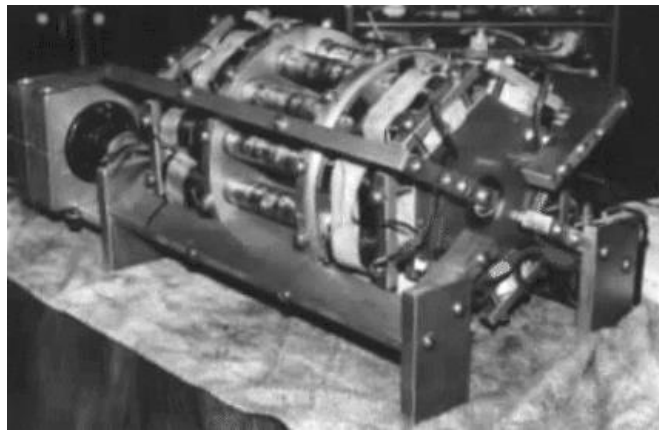


Fig. 111. Frankuer's Generator.

Let's consider another interesting invention, in this case a Japanese one. Look at the U.S. Patent No. 5,594,289, Jan. 14, 1997 author is Kohei Minato, Japan. Several permanent magnets are attached to the rotor, with the same poles in the direction of rotation of the rotor. Fig. 112.

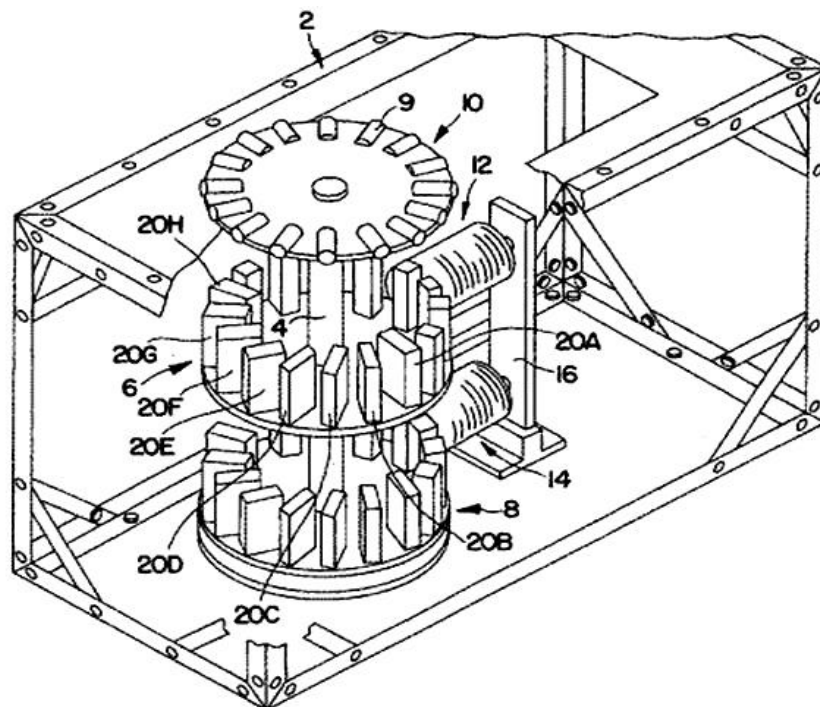


Fig. 112. Minato motor, Japan.

Each of the permanent magnets in this device is attached to the rotor by some angle relative to the radial direction of the rotor. There are electromagnets around the rotor. Strong field pulse is periodically generated here by electromagnets. The practical innovation of this invention already brings great profit to the author and his business partners, as they began to produce air fans that use three times less energy than conventional fans of the same power, Fig. 113.

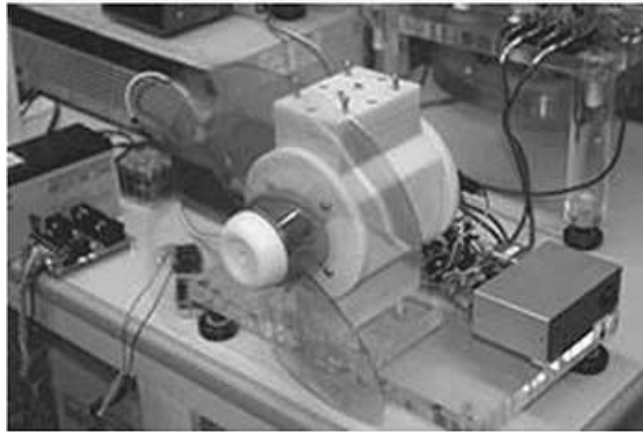


Fig. 113. Foto of air fan by Minato technology, Japan.

It is interesting to say how we tried to collaborate with authors of this technology and we planned to develop the production of highly efficient air fans in Russia. Negotiations were under way in 2006, documents for my trip to Japan to demonstrate the technology had already been prepared, but Minato and his business partners made special conditions for the purchase of a large amount of standard air fans from them. They also found that the motor technology with "Enhanced Efficiency" is in area of "strategic interest of their country" so it cannot be marketed for us. In general, the negotiations were postponed indefinitely and not resumed...

Look at another invention that has found practical application and there is a hope that it will be implemented in the World market. It is Flynn's magnetic motor; please visit www.flynnresearch.net for more details

The essence of the principle of switching the magnetic flux according to the Flynn method is presented at Fig. 114. By giving a control signal to the coils, the magnetic flux from the permanent magnets is switching from one branch of the magnetic circuit to the other branch, which creates useful mechanical work in the motor.

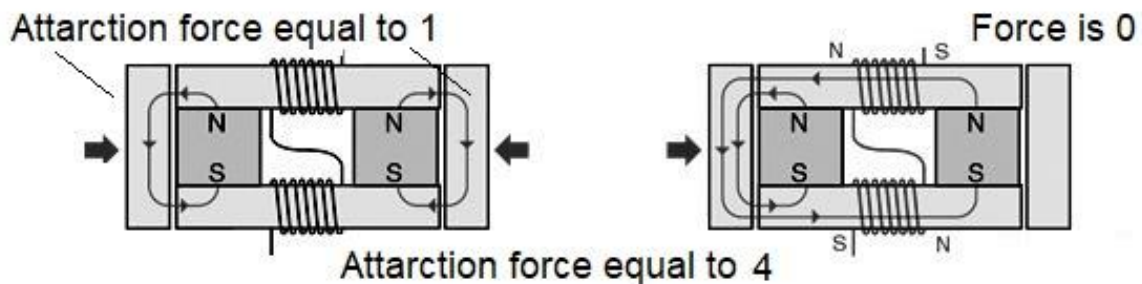


Fig. 114. The principle of "parallel path" in Flynn's device.

In the left figure Fig. 114 shows the situation when there is no current flowing in the winding. Both left and right movable members are attracted in the same way with a force conventionally equal to one. In the right figure Fig. 114 shows the situation with current in the winding. On the left side of the structure, the field of the winding current and the field of the permanent magnet are summarized and this effect will attract the movable element with a force that is conventionally equal to four. On the right side of the structure, no force is applied to the moving element. When the direction of the current changes, the situation for the left and right movable element changes.

The authors claim that their motors working this way are twice more efficient to compare with other motors. Fig. 115 shows a general diagram of a running Flynn motors.

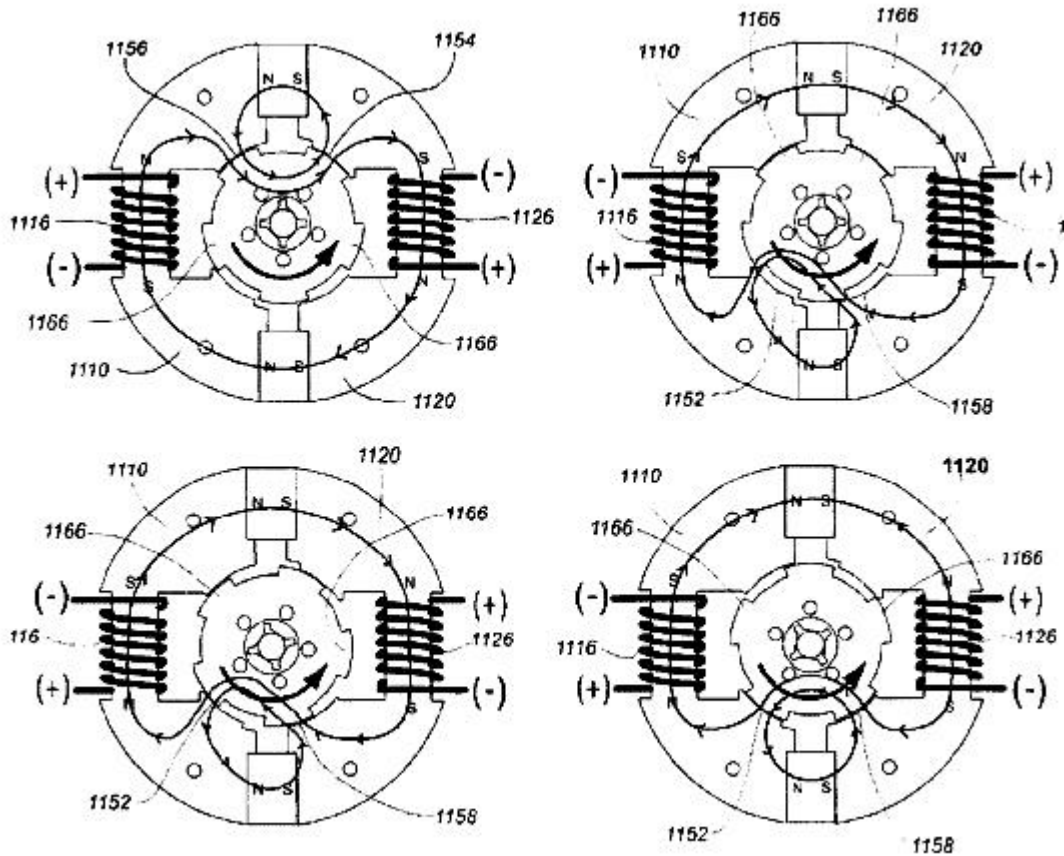


Fig. 115. Flynn's Motor in four stages of rotation.

Flynn Research company has received orders from many customers for motors, in power range from 5 watts to 10 kW. Flynn's "parallel magnetic path" technology is being developed by other researchers. The author Jack Hilden Brand built the engine according to Flynn's scheme. The input power is about 180 watts, the output power is about 380 watts. American company Millennial Motors, Inc. and Australian company Cyclone Inc., supplied a magnetic motor for automobiles. In 2003 they had serious plans to innovate Flynn magnetic motors into automobile transportation. It is sad to say but in 2021 there are no new messages from these companies.

The actual efficiency of Flynn's motors can be determined after their tests, although the authors plan to obtain a mechanical power on the shaft that is many times higher than that used in the control coils to get rotation. This motor, in combination with traditional electric power generators, can become the most important way to develop fuel less power plants.

Let's move on to another topic that is also related to permanent magnets. In the simplest case, a linear gradient can create constant acceleration of some rotor. In my experiment in 2009, for example, a 12 gram ball was accelerated up a 14 mm high by inclined surface and then fell back to its original level. So, it was practically tested the method to use gradient magnetic field and gravity field to do some work.

A schematic representation of my simple experiment is shown in Fig. 117. The video is available here <https://www.youtube.com/channel/UCYrsqWHCvyirwJfNxyD9QA>

The design feature of the Frolov's linear magnetic accelerator is that the metal ball cannot move to the point of maximum approach to the magnets. The raised part of the guide profile has a "window" at the bottom through which it can fall. This "window" is placed before the point of maximum attraction force.

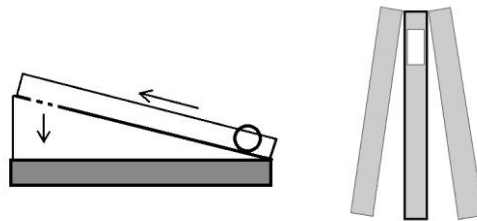


Fig. 117. Frolov's linear accelerator.

The point of the "end of acceleration cycle" depends on a combination of the distance between the magnets, the weight of the ball and its speed at the end of the cycle. The cycle can be repeated endlessly, this is a good school experiment to understand that a magnetic gradient can do useful work.

American experiments in this area were made by Greg Watson since 1997, the devices are named SMOT (Small Magnet Overunity Toy). There are experimental sets on the market, including a room-sized "large walkway" and a metal ball that moves by the ring way and it jump up and down on "rails" from cycle to cycle. The acceleration of the metal ball is made here to get sufficient energy to go "one step up", to fall down and then to get new starting point of the next step. It is interesting experiment, but it is impractical.

A well-known example of a very practical magnetic field gradient circuit is the Tekko motor (Kure Tekkosho Co. "Permanent Magnet Prime Mover", Japan Patent No. 55144783), Fig. 118.

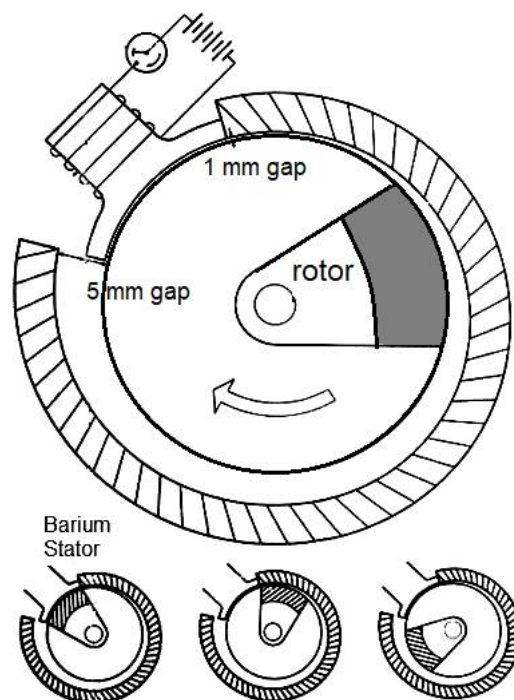


Fig. 118. Scheme of the Tekko motor.

This scheme was first published in 1979 in Popular Science magazine. There is a permanent magnet in the rotor and the distance from the pole of the magnet to the stator varies. The rotor and stator magnets are repelled. The rotor uses a strong cobalt magnet

and the stator uses less strong non-conductive ferrite magnets. Because of this gradient, here is some part of accelerated rotor movement, when the distance from the pole of the rotor to the stator magnets is decreasing. The torque in this motor is generated at no power from an external power source. At the point of minimal gap there is an electromagnet to be used in pulsed mode; this electromagnet helps the rotor to pass the "dead point" of maximum attraction force and to start the acceleration cycle of motion again.

Design features, i.e. the rotor mass, the magnetic force, pulse control of the electromagnet and other nuances are very important in the design. For example, the rotor must have some big mass to fully accumulate the kinetic energy that is generated during the acceleration of the rotor in a gradient magnetic field. The rotor must have some flywheel properties.

The story of this invention is interesting. The author could not find support in his country and went to the United States. His patent and demonstrations of the engine in real operation had attracted attention of business community. After some events in USA, the author was brought back to Japan. Really I cannot say it was good solution, since we still have not this type of magnet motors for sale on World market.

Another magnet gradient rotor, is known as the George Soukup Magnetic Motor (Germany) or V-Gate in the USA (Calloway V-Gate). It is presented in various designs by many authors. Fig. 119 shows a photo of the rotor by the German inventor Soukup. The stator consists of several magnets connected in series in a column. In Soukup's design, the stator has several "pillars" made of magnets. It is interesting that in 2021 there is almost no information about this project by this German author.

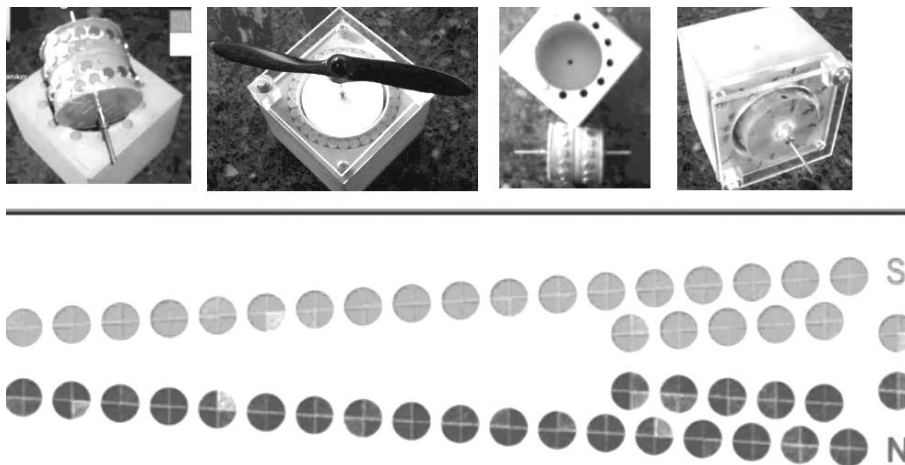


Fig. 119. Soukup Magnet motor.

Fig. 120 shows the construction of a similar V-gate gradient magnet motor with a single "stator magnet" which is special "movable" stator. Here is L-shaped crossbar, where the stator magnet is mounted at the top. This L-bar can move along the vertical guide axis, every time the rotor passes the "dead point" of maximum attraction. The white crescent-shaped piece of this device, which is fixed in the desired position on the axis, provides lifting of the rod with the stator magnet when it passes the "dead point". Then the acceleration cycle starts again due to the magnetic field gradient. The transparent disc has rubber discs that act as shock absorbers of the vertical jumps of the magnet.

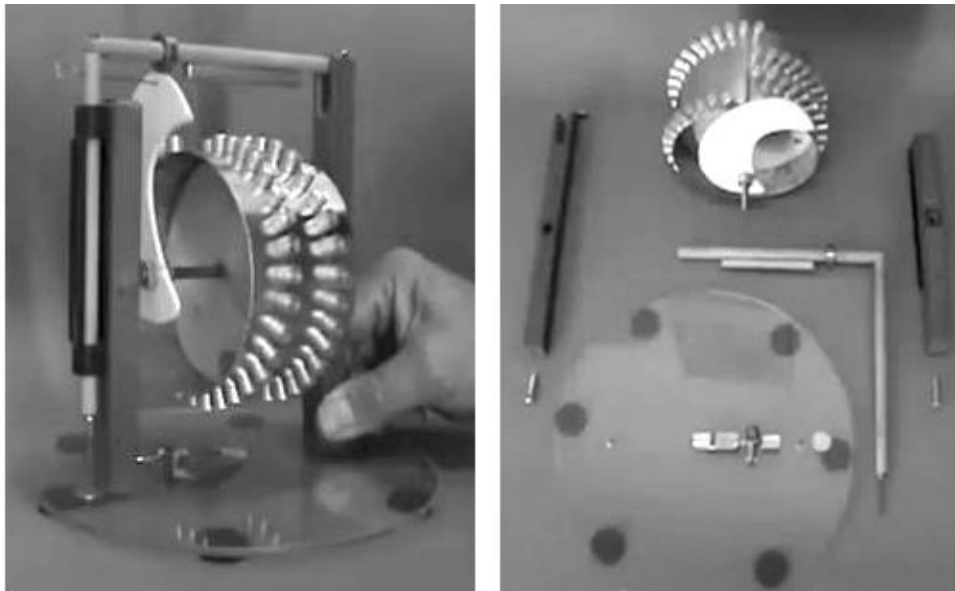


Fig. 120. V-Gate motor.

An excellent example of a simple and efficient design is the Walter Torbay motor, patented in Argentina, No. P040103029, Walter Torbay, 2004. Look at Fig. 121.

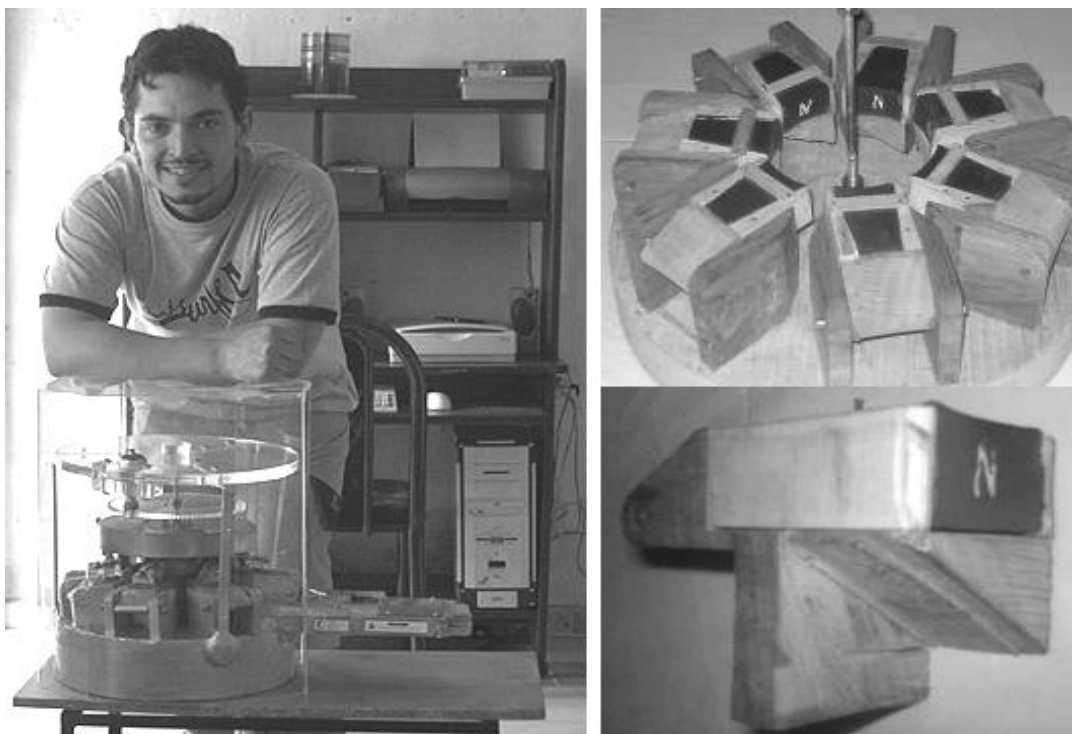


Fig. 121. Magnet motor by Walter Torbay.

The author made a wooden model and his magnets are not very strong. Fig. 121 shows the main components of his engine. The motor is described in detail in the patent. Note that the stator magnets are alternately raised and lowered so that the rotor can pass the points of maximum attraction without braking. This technology is similar to the V-Gate engine and the Soukup engine.

Another well-known invention in the area of magnetic motor was described by Howard Johnson in his USA Patent No. 4,151,431, 1979.

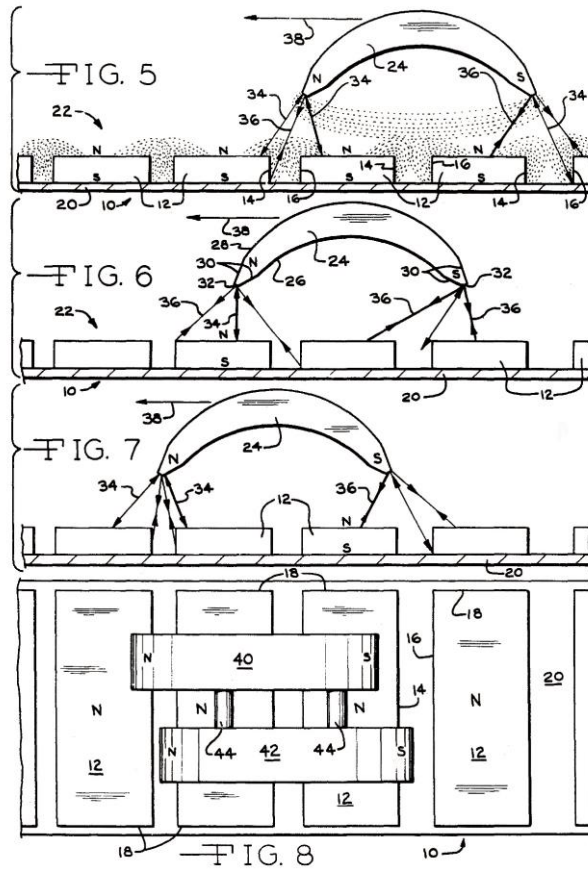


Fig. 122. Scheme of Johnson motor.

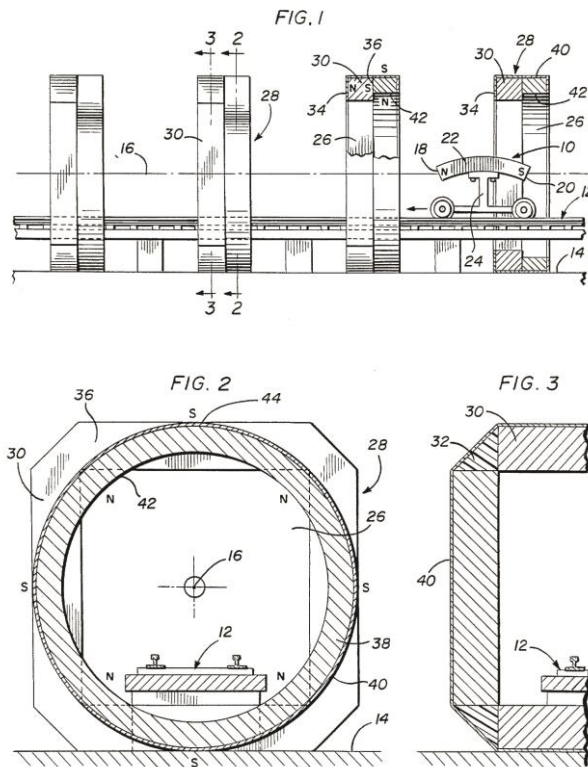


Fig. 123. Linear accelerator by Johnsons Patent.

The essence of Johnson's invention is a special curved magnet that, under certain conditions, receives a constant unidirectional thrust pulse from the stator magnets. Fig.123 shows another Johnson invention. With this concept, a magnet on a carriage is accelerated within the stationary magnets and this circuit can be closed in a ring way. His designs were promoted by the press, there were 1980s projects to create a 5 kW prototype, but production plans in the United States for the production of Johnson generators were not completed by some reasons.

The diagram in Figure 124 shows one of Johnson's rotor designs with curved magnets (element 68) and stator magnets. My understanding of this technology can be wrong but let me say about special method of magnetizing o the curved magnets for this device. Usually a magnetic material is placed in a linear field of a strong solenoid so that its magnetization is linear regardless of the shape of the workpiece. Johnson's curved magnets must be magnetized in the curved area of the magnetic field.

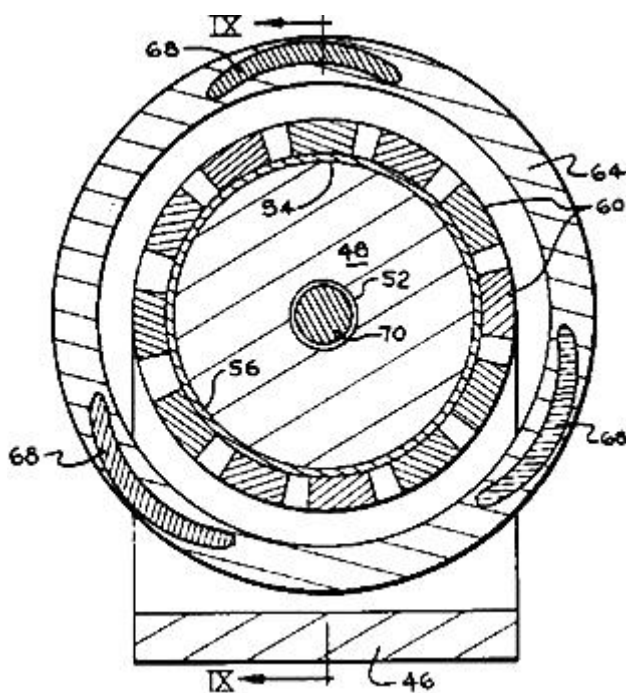


Fig. 124. Scheme of the Johnson Magnet Motors.

The magnet motor of the author Troy Reed is to be distinguished example of the modern known free energy projects. Photo Fig. 125 shows the author and his engine.



Fig. 125. Troy Reed in his laboratory.

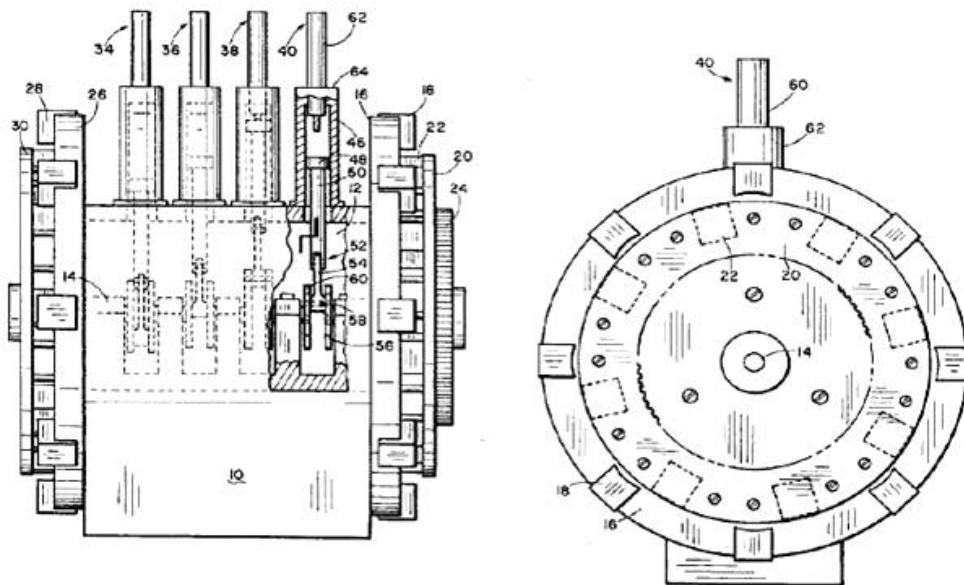


Fig. 126. Scheme by Patent WO 9010337 (A1).

Troy Reed has built various magnet motors from 7 kW to 70 kW and his ideas are described in detail in WO 9010337 (A1) of September 7, 1990. Fig.126 shows the main parts of the engine.

The rotor magnets (element 22) and the stator magnets (element 18) repel each other, causing the crankshaft to rotate. The author explained that in his design the magnets work together in such a way that there is no "braking". The motor shaft turns easily by hand, does not "jam". The principle of operation of its generators is not known in detail. They have proven their worth and even found practical applications. In 1994-1995, Troy Reed demonstrated a magnetic drive car. Fig. 127.



Fig. 127. Car with magnet motor by Troy Reed.

Another very interesting invention was made by the Turkish author Muammer Yildiz, patent WO 2009019001 (A2), it was presented at the Technical University of Delft, the Netherlands. As a payload, the author installed an air fan on the axis of the magnet motor. Together with Moscow investors, I visited the inventor in Turkey in January 2013. We looked at one of his magnet motors and saw how it was working. I tried to stop the motor from rotating by hand but it was impossible. There was really 1-2 kW power and a little ripple.

Our plans on collaboration with Muammer Yildiz did not result in serious testing. We did not measure the output power with different loads. The author said that in 34 years of work he has built 44 working prototypes. The power of the engines reaches hundreds of kilowatts, and in the plans of this team we see 1 – 2 megawatt power plants.



Fig. 128 Magnet motor by Muammer Yildiz



Fig. 129. Alexander Frolov and Muammer Yildiz.



Fig. 130. Foto in laboratory of Muammer Yildiz.



Fig. 131. Drawing of future 2 Megawatt magnet motor.

According to information of 2015 Muammer Yildiz and his team were preparing electric generators with magnetic drive for series production. The generators are planned in several versions, from 5 kW to 2 MW level of output electrical power. The inventor's website is <http://hmsbturk.com>.

A powerful version of another magnetic motor, around 300 hp, was developed by the South Korean company Shinean Corp. Fig. 132.



Fig. 132. Magnetmotor by Shinean Corp.

The schematic of this Korean engine is still unknown, but we can see that the design includes crankshafts and permanent magnets.

There are many other interesting results in Korea, for example Andrei Slobodyan's magnet generators. This author demonstrated a 10 kW generator in 2016. In the photo Fig. 133 he demonstrates the operation of his generator under load (lighting lamps).

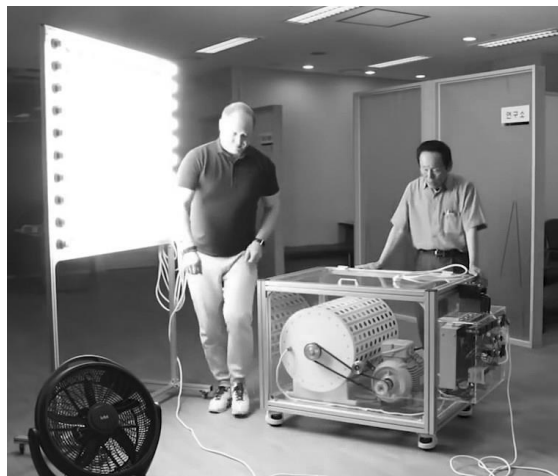


Fig. 133. Andrei Slobodyan and his magnet generator

During several years in his laboratory, various generator designs were actively developed. The last video was made by Andrew in 2019, it was video about magnet generator that can charge an electric vehicle battery. Later his laboratory was burned and Andrei Slobodyan died in a fire. Also there is information about other events. Perhaps, Andrew still alive but he works in hidden mode.

Today there is a lot of negative information about his work. Critics claim Slobodyan used secret batteries in the device. There's a photo from his lab showing different types of batteries, including battery packs for an electric vehicle. I believe these were accumulators to test the possibility of charging from Andrei Slobodyan's generators. His work inspires me with respect and I do not allow the thought of deception.

A well-known example that played an important role in popularizing magnetic motors is the Reidar Finsrud demonstration machine installed in a Norwegian museum, photo in Fig. 134. The functional principle is shown in Fig. 135. To my mind, the device works as follows: A metal ball moves along a ring-shaped guide and accelerates near the magnet. At the right moment, the metal ball presses its weight on the lever and this force pushes the magnet out of its path, so that the metal ball can pass the point of closest approach to the magnet without braking. Further, the metal ball moves by inertia forces and repeats the cycle of acceleration.

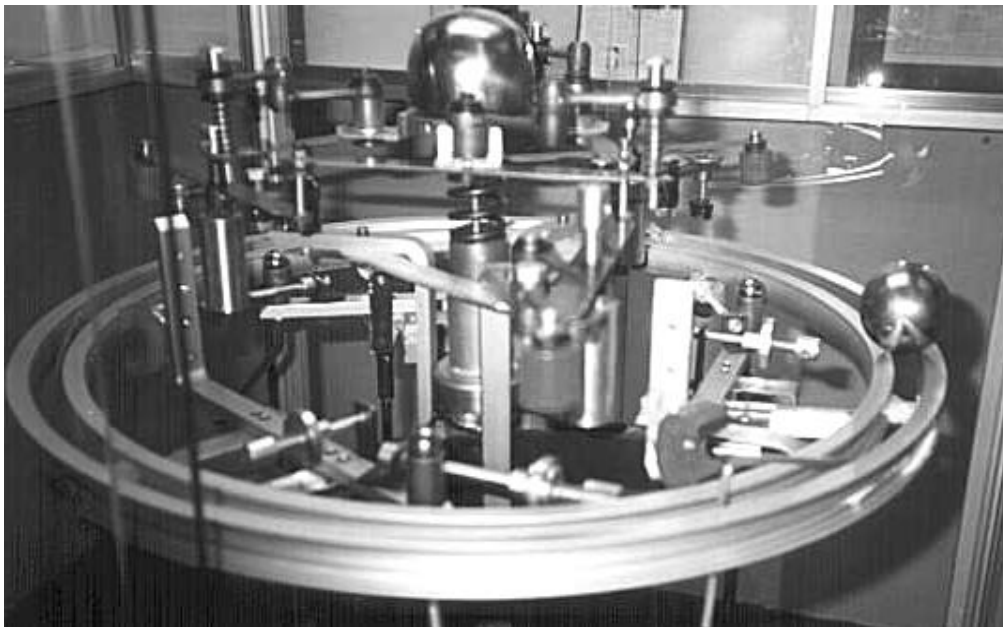


Fig. 134. Finsruds device.

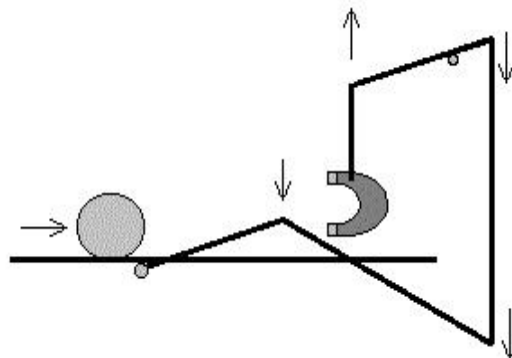


Fig. 135. Schema of the Finsrud principle.

In modern designs of such engines, a rotor is used, Fig. 136



Fig. 136. Finsrud principle in self-rotating version.

Photo Fig. 137 shows part of another magnetic motor, its planned power is about 5 kW. This is one of the projects of our Faraday Laboratory Ltd company in 2003, but it was not completed for a number of objective reasons. Note here is the spiral arrangement of the magnets in the rotor.

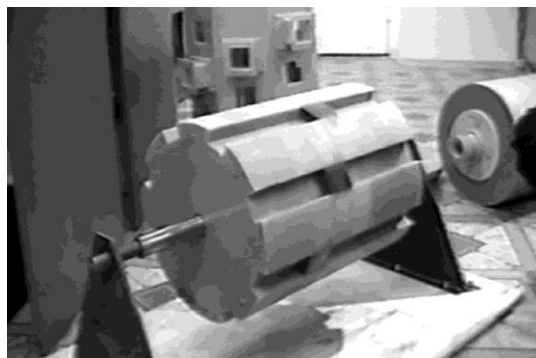


Fig. 137. Rotor in the Faraday Laboratory ltd company, 2003.

Another very interesting invention was made for 200 kW level of output power. It was reported by Alan Sterling www.peswiki.com and it is described in U.S. Patent No. 5,710,731 issued January 20, 1998 to author Andrew Abolafia. Fig. 138 shows a schematic diagram of this design with a magnet and a coil.

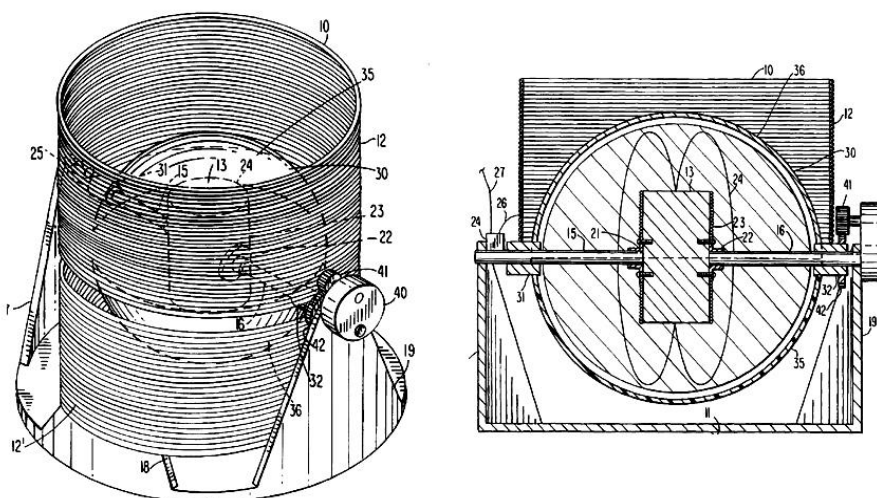


Abb. 138. Generator Abolafia.

The design feature of this generator is that the magnet is placed in the center of the coil and a hemisphere of superconducting material rotates around it, which causes a change in the magnetic field and an induction effect in the coil. In general the principle is the same as with any generator, but here is a hemispherical superconducting "shunt".

I liked the humor of the author of this invention, who wrote in the text of the patent that "we all know Faraday's laws of induction ... but usually they are used ineffectively and a lot of energy is used to create changes in the magnetic field. The proposed method is much better as there is almost no cost to create changes in the magnetic field". It is great invention! The superconductive materials today are not a problem.

You can see that there is a lot of information about magnetic motors. It has long been ripe for the need to understand it and build a reliable theory for the development of practical directions, including for energy supply. A well-known Russian author in this area of science is Mikhail Fedorovich Ostrikov, St. Petersburg. He worked at the Mozhaisky Military Space Academy; in 2001 he published the book "The General Theory of a Single World". In his experiments with magnetic field rotation, as well as other experiments, Mikhail Fedorovich found many useful technical solutions, which are described in his patents, for example, "Linear generator for electrical energy", Russian patent No. 2051462.

We know special manifestations of "longitudinal magnetism" by the work of the Russian scientist G. V. Nikolaev, Tomsk. His books describe theory and experiments in detail and show useful effects of energy converters that use these new properties of magnetic fields.

Today you can find many advertisements about sales of "workable" schemes and drawings of magnetic generators that supposedly "can provide your home with independent power". The offers are tempting, but purchasing circuits does not guarantee the successful operation of the experimental setup, which you can assemble yourself. I've looked at these projects; they require experience and a professional "home laboratory". It is questionable whether you can make these generators yourself.

Separately, we indicate the presence of websites with photographs of some real magnetic motors on the Internet and a proposal to make advance payment for a generator. Requiring prepayment with no testing of the goods is an attempt to mislead the buyer. Take a close look at the photos on such pages; usually they are fakes or copies of photos by other authors. It is not uncommon for there to be photos of Muammer Yildiz motors. I spoke to him in 2015 and Yildiz has confirmed that he has not yet transferred the rights to his motors to anyone, so any attempts to sell his magnet motors "on his behalf" are fraudulent. From the other hand, sales from Yildiz company are not easy deal. They work only with serious partners.

The development of this free energy direction continues worldwide. In general, magnet motors cannot be considered to be the optimal solution when it compared to other types of free energy generators.

There are serious disadvantages in magnet motors. First, some of them generate a low-frequency magnetic field when in operation, which is practically cannot be shielded. Second, all types of rotors are inferior to "stationary" energy converters in many consumer qualities. Third, many years of experimental work with strong magnets lead to a change in the composition of the blood, to the formation of blood trombs and to an increase in arterial pressure. So, I suggest move your attention to the next chapter and have a look at other types of power generators that do not consume any fuel.

Electromagnetic generators with high efficiency

The creation of autonomous power generation without any fuel requires an understanding of the laws of causality and their constructive implementation. We cannot get a certain power in the load without affecting the primary circuit of the transformer unless we use special design solutions. As one of these methods, the formation of two (or more) mutually compensating secondary consequences can be recommended.

This concept was proposed in 1964 by academician Gustav Naan. The Φ -transformer and the Φ -machine proposed by me in 1994 work according to this principle, which was first published in the magazine New Energy News, USA. Later this principle for two secondary coils according to this scheme was used by other authors. The well-known Markov transformer, Zatsarinin and Kanarev's motor-generator, are also variants of this design. Fig. 139 shows a series connection of two generator coils in a Frolov's transformer.

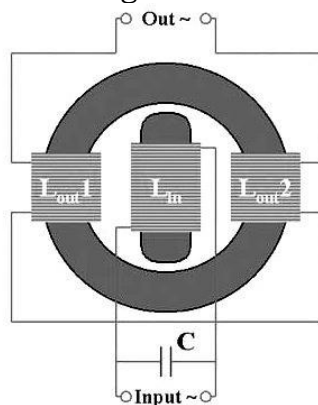


Fig. 139. Frolov's transformer of 1994.

It is obvious that the currents of the two generator coils, in response to changes in the primary field, generate opposite secondary fields in the toroidal core and mutually reinforce the effect of the primary field. In the area of the coil L_1 , for example, there are two in-phase field components: it is alternating magnetic field from the primary coil L_{in} and an alternating magnetic field from the second generator coil L_2 . A similar situation arises for the L_2 generator coil. As a result, the power in each of them is doubled. For example, if we get 4 watts in the payload circuit of each of the coils, 2 watts will be provided in response to changes in the magnetic field generated by the primary coil L_{in} , and another 2 watts will be provided in response to changes in the magnetic field of the induced current from the other generator coil.

Tests on a rotary machine of this type were also made at Faraday Lab Ltd., www.faraday.ru, Fig. 140.

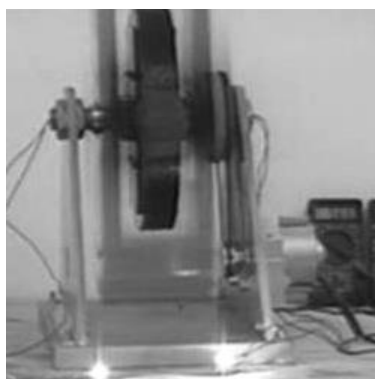


Fig. 140. Experimental Φ -Machine, 2003.

The photo Fig. 140 shows a stator with diametrically arranged coils, a rotor with magnets, and two small light bulbs. The essence of the effect in this generator is that adding only one load (light bulb) to the coil circuit does not generate any current because the magnetic flux flows into the toroidal core. There is voltage at the terminals of the coil, but the current is weak. When the second load (second lamp) is connected to the second coil circuit, both have current and the power at the generator output is doubled.

So, in this design each of the generator coils perceives the second as the primary coil, even though the real primary source is completely different. As a result, the influence of the processes of drawing power at the output of the generator on the processes in the primary excitation circuit, i.e. on the power consumption, can be reduced or completely eliminated. This is the implementation of the principle "two mutually compensating effects from one cause" or the law of maintaining the energy balance.

There can be many options, including those with three, four, or more secondary circuits that are spatially separated but have a common primary source. This scheme is the implementation of the principle "Achieving two mutually compensating effects from one cause", in accordance with the theory of the "Symmetric Universe" of Academician Gustav Naan, 1964.

In 1996 I reported on this topic at the conference "New Ideas in Natural Science", St.-Petersburg. The photo in Fig. 141 shows an experimental set-up based on the principle of "two parallel paths" of the magnetic flux.

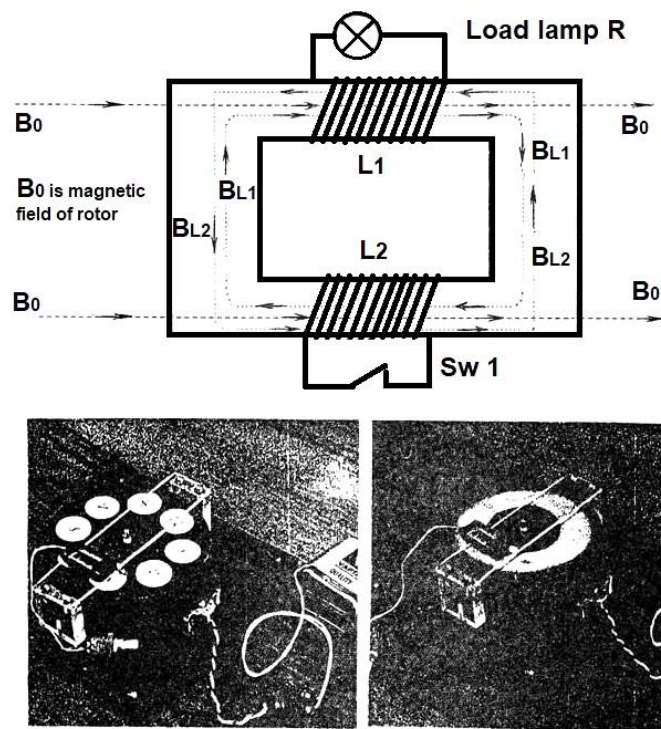


Fig. 141. Picture from Frolov's report of 1996.

Later in 1998 a similar principle was patented as a "Markov transformer", this circuit is shown in Fig. 142

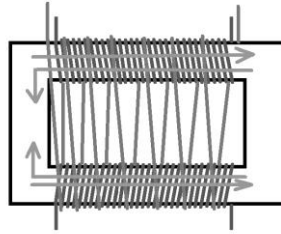


Fig. 142. Scheme from Markov's patent.

To my mind, the external arrangement of the primary coils is more efficient, Fig. 143. With an external arrangement, the mutual influence of the primary coil and secondary coils is significantly reduced.

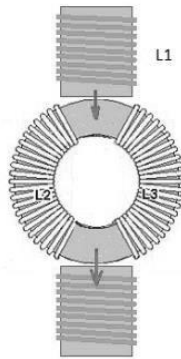


Fig. 143. Frolov's Transformer with external primary coils.

The efficiency of Φ -machines and Φ -generators depends on the correct choice of dimensions and material of the core, the number of turns and the size of the gap between the toroidal core and the primary coil (or rotating magnet). The power in the generator coils has no influence on the power consumption, but only up to some level of output power, i.e. here is some critical value of output power. With a large current in the load circuit, a secondary field starts to saturate the core up to a critical value and then begins to influence the primary source. Up to this critical value, the efficiency of the Φ -generator and Φ -machine is over 100%.

Successful replication of the Φ -machine effect has been reported by Olaf Behrens, Germany, and others. To implement this invention, I am happy to develop projects with partners who have a technical basis for the design of electromagnetic machines of this type.

There are known successful analogs of such transformers, for example Bitoroidal designs by Thane C. Heins. At low power, it achieved an efficiency of 40 to 1. His US Patent No. 9230730 dated January 5, 2016.

The development of new principles of electromagnetic rotating energy generators in the last 15 years was demonstrated by GAMMAMANAGER company, a manufacturer of generators by EBM technology. EBM technology means "Energy by Motion". The efficiency of these generators is only 120%, but this is sufficient for autonomous operation. The company operated in Europe and Canada. The author lives in Budapest, and there was a demonstration prototype of a 1.5 megawatt power generator that did not require fuel, as shown in the photo Fig. 144.

In combination with a conventional electrical generator, the EBM drive work as self-running fuel less power plant, as the power generated by the generator exceeds the consumption power of the primary drive. Since the generator windings have to be cooled during operation, power plants with EBM technology can also generate heat for the

consumer (hot water of 60 degrees Celsius). The purpose of EBM machines is to drive powerful (1 MW - 225 MW) power generators. The area of application is the electrical energy management of large objects.

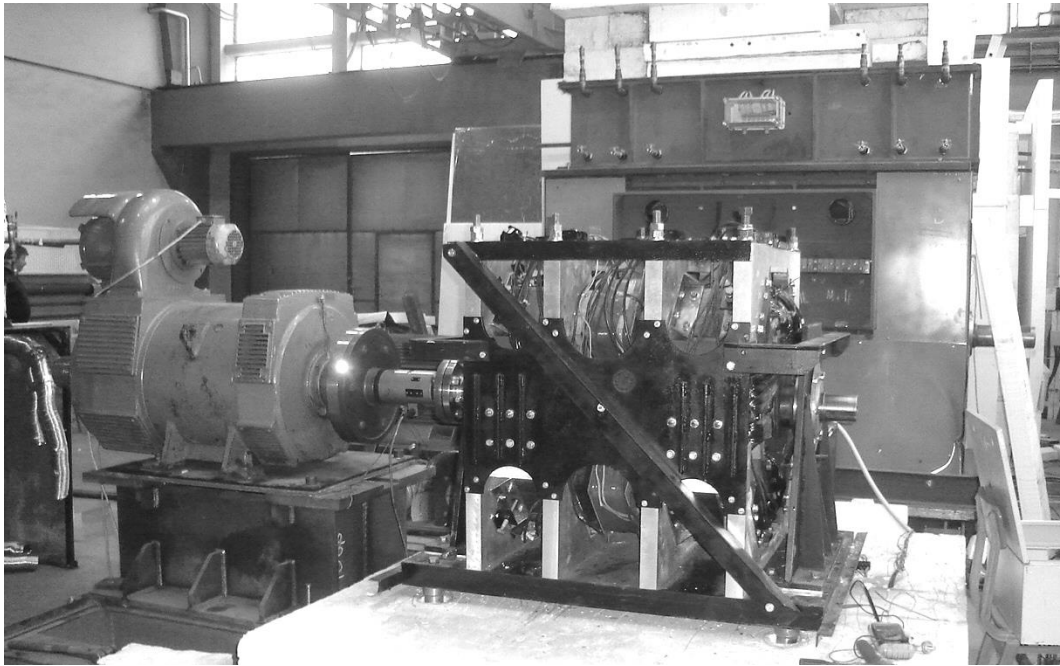


Fig.144. EBM motor.

The manufacturer stated that it provide 30-year guarantee but the bearing should be replaced every 5 years. The company has received orders for drives up to 300 megawatts. Unfortunately we will not be able to find any contacts to this company in 2021.

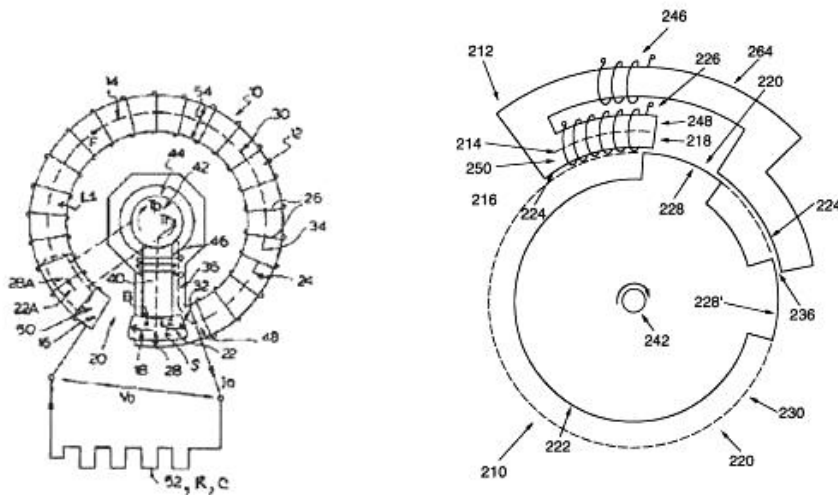


Fig. 145. Scheme of the EBM Generators.

In 2009, Professor Leslie Szabo reported at one of the conferences in the USA on the prospects for the design and production of small EBM generators of 50 kilowatts output power level. The smart choice! This level of power is very much in demand in the market, both from companies, especially builders, and from individuals to supply their houses with electricity. However, after the conference, we were informed that plans to produce small generators had been postponed. Apparently not everything can be sold in this market that can already be produced. Again here is a question: who prevent this simple and useful innovation? Who suppress technologies of free energy?

In 2010 our company Faraday LLC discussed with manufacturers ways to develop the sales of EBM self-rotating drives in Russia, but their prices are too high even without the cost of electric generators. For example, the company asked 5 million Euros for a 1,500 kW drive. They estimated the production cost of 40 MW drive about 80 million Euro. These costs are about ten times higher than the price of gas turbine drives of the same power. Time period to get profit here is about 5 - 8 years.

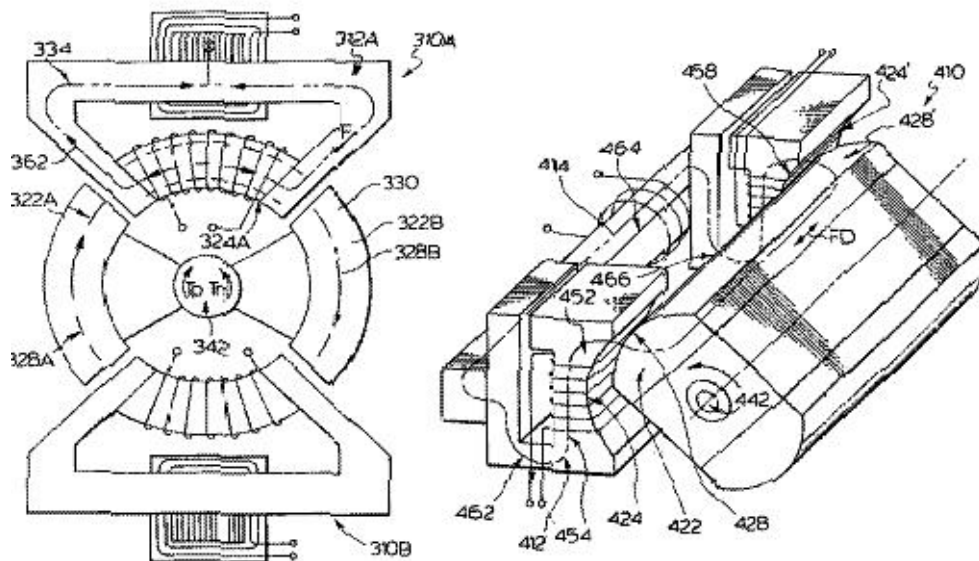


Fig. 146. Main aspects of EBM Generators.

We also note that, according to reports from the company's management in Budapest in 2011, it was planned to build new 10 MW generator in area of the Canary Islands. This must be an open demo object. In December 2015, the project was not yet ready for the public. It can be assumed that the project will no longer be relevant in 2021.

One more big power level is project by Alperen Group from Turkey. In 2010 they announced the existence of inquiries (contracts) for the delivery of its autonomous generators with a total capacity of 85 gigawatts. Little is known about the technology itself, although the authors have been developing it since 2002. This is a mechanical motor generator called the TurXator. Of course, the demand for non-fuel technologies is enormous but I cannot find any information about Alperen Group now. So, their plans were stopped I think.

Considering problems with large fuel less power plants I can suppose more easy way to market is in area of small 5 – 50 kW power generators. This way can be more reliable to get commercial results.

Chapter 12

Unipolar machines

The first unipolar generator was invented by Michael Faraday. The effect discovered by Faraday essentially consists in the fact that when the disk rotates in a cross magnetic field, the Lorentz force acts on the electrons in the disk to shifts them to the center or to the periphery depending on the direction of the field and rotation direction, Fig. 147. This potential difference creates the electromotive force, and through the abrasive brushes contacting the axis and circumference of the wheel this EMF provide current in some load. In these generators it is possible to get significant current and power even though the voltage is small (usually a fraction of a volt).

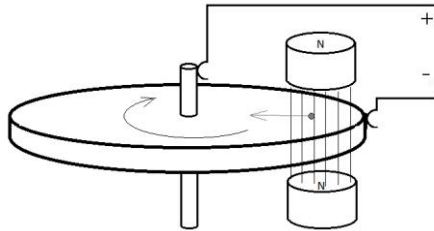


Fig. 147. The unipolar induction principle.

Later it was found that the relative rotation of the disk and magnet was not necessary. Two magnets and a conductive disk rotating between them also show the presence of the unipolar induction effect. A magnet made of an electrically conductive material can also work as a unipolar generator when it rotates. This magnet is itself a disk from which electrons are removed by brushing, and it is also a source of a magnetic field. In this context, the principles of unipolar induction are developed within the framework of the concept of the movement of freely charged particles relative to a magnetic field but not relative to magnets. The magnetic field is considered stationary in this case.

The dispute over such machines lasted a long time. Physicists who denied the existence of Aether could not understand that the field is a property of "empty" space. This is correct because "space is not empty", there is Aether in it and provides the environment for the existence of a magnetic field relative to which both the magnets and the disk rotate. The magnetic field can be understood as a closed flow of Aether. Therefore the relative rotation of the disk and magnet is not required.

In Tesla's works, as mentioned earlier, improvements have been made to the electromagnets are used instead of magnets, the area of the electromagnets is increased, and the disc is segmented so that you can create self-rotating unipolar Tesla machines. It is strange that there is no information about modern developers of these type generators. I suppose it is due to real workable technology on this way. So, if it works then it will be suppressed.

A group of researchers from India, led by Paramahansa Tewari, the website <http://tewari.org> achieves an efficiency of 250% when a unipolar generator is operated with a conventional electrically conductive disc. In Fig. 148 shows her unipolar generator with a step-up transformer. The output voltage is a low voltage, but the current in such a machine reaches hundreds of amps.

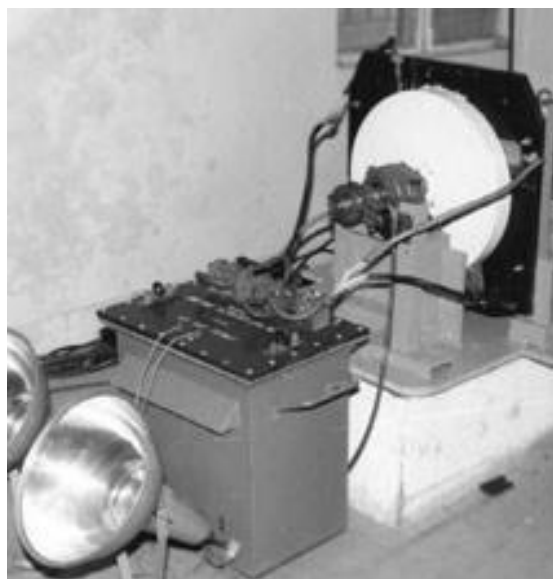


Fig. 148. Unipolar Tewari's Generator.

Another author of similar developments, Bruce De Palma, called his project an N-machine. Bruce was a professional engineer, graduated from Harvard, and worked in area of the unipolar generator technology for 15 years. Figure 150 shows a schematic representation of his device; here both the magnets and the conductive disk are rotating together.

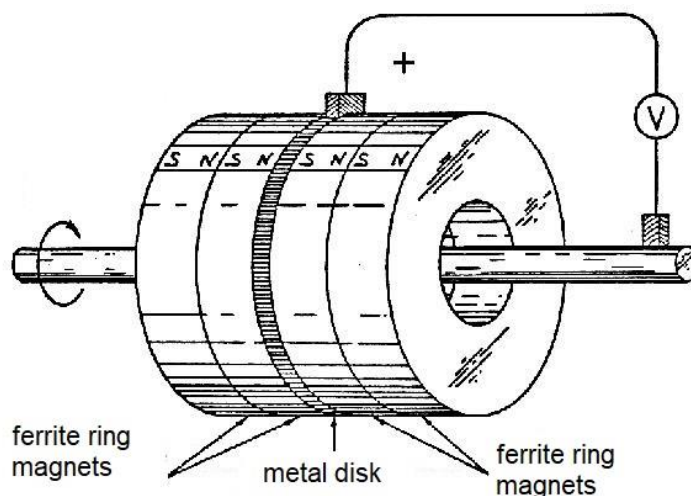


Fig. 149. Bruce de Palma's unipolar generator.

Various versions of the N machine have been tested by professionals for many years. The process is very promising; the efficiency is ensured as the ratio of the drive power used and the electrical power generated of at least 200%. Bruce built a 100 kW generator in his garage in the 1980s. In November 1980 Bruce attended Hans Nieper's Gravity Field Energy Conference in Germany.

However, astronaut Edgar Mitchell called him warning that he would not return alive if Bruce went to the conference and advised him to "keep quiet".

Bruce was silent for several years and later left the United States for New Zealand. Bruce died suddenly a few weeks before a planned public demonstration of his generator in New Zealand, and his work was suspended.

As with other unipolar generators, the disadvantages of the N-machine are that the output power is in the form of low-voltage direct current. However, their use in low-voltage electrolysis systems was planned as early as 20 years ago to obtain cheap hydrogen from water, including seawater. In addition, when making a disc of a unipolar machine from metal and non-metal segments, it is possible to get by rotation of this disk a sinusoidal or pulsed current at the output. This makes it possible to convert it into a voltage of the required magnitude.

Among the works of other authors we mention the articles and experiments of Nikolayev G.V., Guala-Valverde and Pedro Mazzoni.

A constructive solution that makes it possible to increase the output voltage of the unipolar generator was proposed by me in 2001. In the years 2002-2003 we made a series of experiments and successfully demonstrated the possibility of applying the principle of unipolar induction in the case of a conductive rotor made of cathode of a GU-74 vacuum tube. The essence of the experiment was as follows. The radiator was removed from the vacuum tube GU-74 and a ring magnet with axial magnetization is attached in its place, as in Fig. 150. The magnet and the vacuum tube rotate together while the normal filament voltage is applied to the cathode. The thermal emission of electrons does not normally lead to the occurrence of a current between the anode and cathode. To do this, a high voltage must also be applied between them. As I have shown experimentally, however, there are other ways to generate a cathode-anode current.

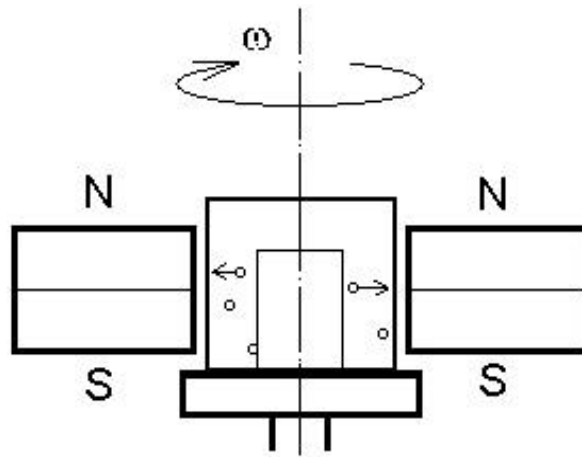


Fig. 150. Frolov's unipolar Generator.

In this unipolar generator, the Lorentz force causes electrons to move from the cathode to the anode when they rotate in a magnetic field. The output power is taken from the anode and cathode connections. The output voltage is stable if we keep the speed constant. Measurements have shown that, unlike conventional unipolar generators, this is not a low voltage. It was measured voltage up to several tens of volts.

Since in principle there is no rotor braking in this device when the load is connected, the output power is theoretically independent of the power consumption. Heating up the cathode and maintaining its rotation requires little power income from some primary source. The efficiency of this electric generator can be more than thousands of percent, that is, for 1 kW of consumption power, you can get more than 10 kW output power!

In 2004 we did design work with a manufacturer of electronic vacuum equipment to develop a powerful generator to commercialize this concept, but the project was stopped at the documentation stage. I am interested to get investor for this project.

Also it can be noted here about special area of modern vacuum tube equipment. There are special cold cathodes with big emission properties. It can provide big output power and low expenses of the consumed power.

We've looked at many designs that have different advantages, but each with one disadvantage, which is that they use rotating parts and mechanisms. The use of rotating power generators can be limited in a number of cases, so other type generators that do not have moving or rotating parts can be considered promising developments. Let's move on to the next chapter.

Chapter 13

Solid-state energy converters

Let's consider some examples of specially designed power generators that have no rotating parts and that are claimed to be highly efficient. They are usually referred to as "solid state" free energy generators.

On July 29, 1920, The Post-Intelligencer (Seattle) published an article on Alfred M. Hubbard's invention. The article reported on the successful test of a power generator invented by Hubbard. The generator components cost no more than \$ 90. The power of the generator was sufficient for a boat with an electric motor to reach a speed of 8-10 knots. The boat's electric motor ran at 3500 rpm with output of 25 kW. The dimensions of the electric motor were approximately 12 inches in diameter and 18 inches long.

Hubbard said the electric motor was slightly modified to work with his generator. The boat's generator was about 11 inches in diameter and 14 inches in length. The generator could deliver 280 Amperes and 125 Volts. After successful testing, Hubbard announced that his engine could be built into a car or an airplane.

Note please that the current value here is 280 amps! It is a very big value that requires some source of free electrons.

The scheme of this Hubbard invention is not known, the drawing is in Fig. 151. This is a drawing from a 1920 publication, the quality is poor.



Fig. 151. Hubbard's coils.

In his publication of 1920s, the inventor briefly pointed out that there are eight "electromagnets" in the generator, each with primary and secondary windings, mounted around a ninth "central" electromagnet, which has a steel core and a winding. According to the author, after the first pulse the device can "deliver electricity for an infinite period of time". Size of 8 outer coils was 30 mm in diameter, one inner coil was 49 mm in diameter, and all coils were 146 mm in length. Hubbard found that in his 9-coil circuit the output power was three times the input power.

Unfortunately, interest in Hubbard's work is waning, as he argues that the reason the generator is so efficient has to do with the radioactive material in the cores of the coils. It is known that in 1929 Hubbard received US Patent No. 1,723,422 for "Radioactive Spark Plug for an Automobile". The addition of polonium-210, a radioactive isotope with a half-life of 138 days, to the candle body ionized the gases in the combustion chamber and increased the performance of the internal combustion engine.

We will not go into the subject of "isotope" or "atom" batteries (betavoltaic battery), although there are examples of modern projects, in particular such an energy source was developed by Widetronix. The battery is designed for 25 years and consists of layers of silicon carbide and a metal foil that contains an isotope (tritium). The decay of tritium creates an emission of electrons, that is, the current at the output of the battery. The performance is low, but constant throughout the life of the battery.

Perhaps Hubbard did indeed have "isotope technology," although this could all be an attempt to hide the true secrets of the invention. Other statements by Hubbard also suggest this idea. He wrote that he first made a similar device at the age of 16 years old. It seems unlikely that he was able to use radioactive material at this age. In addition, the current strength of 280 Amperes is very difficult to provide with beta voltaic.

According to the theory of this device, we can draw analogies with the work of Andrey Anatolyevich Melnichenko, who experimentally showed that the power of in-phase electromagnetic fields from several sources occupying the same place in space do not add, but multiply. We noticed this earlier and showed that the strength of the magnetic

field depends on the square of the current strength. In this case, we can explain the highly efficient operation of many similar electromagnetic devices.

When adding waves, the power of the total wave is proportional to the square of the amplitudes. In kinetic theory this is also clear since the energy is proportional to the square of the speed. When we view magnetic fields as Aether currents, we understand why their energy is kinetic in nature. Here is an analogy: The speed of water flow in a pipe depends on its mass (volume). By increasing the water supply with a constant cross-section, we increase the flow rate. A doubling of the speed leads to a quadrupling of the kinetic energy, a tripling of the flow energy by a factor of 9 and so on. The merging of the magnetic fields from Hubbard's 8 coils around his center coil may be responsible for the high efficiency of his generator.

Consider another invention. In 1921 the Denver Post published (Monday, August 8, 1921) an article entitled "A Denver Man, K. Earl Ammann, Invents a Generator That Draws Electricity from the Air and Powers a Car". This article described the work of the inventor Ammann, who demonstrated a car with an electric motor. The power supply came from a compact power pack that was connected to two small copper balls on the hood of the car. It is believed that Hubbard and Ammann is one person.

Around the same time, 1922-1924, Lester J. Hendershot was known as the author of the "fuel-free engine". The New York Times (Sunday, February 26, 1928) describes his invention in great detail. He built the first generator "powered by the power of the planet" for his 4-year-old son because he was playing with a model airplane, the batteries of which had to be changed frequently. Lester built an airplane model for his son with a motor whose propeller turned without a power source. After a while he found a partner at Ford Motors and built a large engine for a real airplane.

Hendershot later said he had ideas to use "energy currents of the planet" that "create the northern lights in the sky". The principle, according to Hendershot, is similar to that of a compass in that some of its motors worked when turned properly to the North or South, but not when turned West or East. In this case, it is clear the reason of it. The invention use Aether flows of the planet. The same principle works in pyramids since it is important to set the pyramid according to the North-South directions.

Another contribution to this invention was published by New York Times (February 27, 1928) in article "The Hendershot Fuelless Motor Is a Generator". In the article, the inventor reports that his machine draws energy from the earth's magnetic field. The first model has a ring magnet about three inches in diameter. There are coils around the magnet and several coils run through the center of the ring. This generator could deliver a 6 watt electric lamp at all times and was continuously tested for 26 hours. The large model used a magnet that was seven inches outside diameter and six inches inside diameter. Two 110 watt lamps were the load.

The New York Times article "Motor Patent Possible" (November 12, 1928) in Hendershot's patent states that "after the magnet receives an initial pulse from a precharged magnetic core, the magnet generates a stronger secondary pulse". According to Hendershot, the generator gets its initial pulse from a precharged magnetic core and its secondary and largest force pulse from the planet's magnetic induction. One can only guess what the author had in mind when he spoke of the "precharged magnetic core".

This article also speaks of a 60 hp motor he built. This motor can "ran for two weeks without charging the magnetic core". Obviously, such a mode of operation of the magnet was used in which it was gradually demagnetized in about 2000 hours of operation and therefore periodic "recharging" was required, i.e. it is necessary to restore the magnetization of the magnet.

Other inventors have tried to reproduce Hendershot's invention many times, but the author has not patented it, so there is no description of the device. Hendershot writes that "by creating interruptions in the planet's magnetic field," he could turn the motor at any speed. Maybe the terminology needs clarification. The planet's magnetic field is too weak to generate hundreds of watts of energy from its "interruptions", but the Aether currents along the magnetic field lines are very strong.

Apparently, the theory of its devices is a little more complicated and requires an understanding of the conditions of interaction with the Aether currents of our rotating planet. Perhaps Hendershot created "breaks" in the Aether currents, modulating the magnetic field of the permanent magnet and creating an electromotive force in the generator winding.

Let's consider the inventions of another famous free energy researcher, Thomas Henry Morey. He worked like Tesla in the early 20th century and applied the theory of "radiant" energy around us. This approach is consistent with the theory of the all-pervasive streams of Aether particles. Morey considered theory of vortex Aether nature for all particles of matter, including electrons.

In 1911 Moray wrote: "During Christmas 1911 I began to fully understand that the energy with which I was working was not static but fluctuating ... Then I realized that the energy does not come from the earth but from an outside source. These electrical oscillations in the form of waves were not simple oscillations, they were like "ocean waves", a process that continuously sinks to the earth, but more during the day than at night ... At that moment I was able to generate enough electricity to be enough for an old one Lamp with carbon electrodes ..."

Moray and Tesla didn't work with transistors or microcircuits; they just had vacuum tubes and some primitive semiconductor materials like germanium-based alloys. These materials can be used as a diode (rectifier element) in a detector-receiver circuit with antenna and ground.

In the years 1946-1956, when my father was still in school, he was busy building radio amateur detector receivers. Back then there were "diode plugs", a small box with two cables and an adjusting screw. The screw was connected to an ordinary spring, the pointed end of which "touched" a drop of a semiconductor compound, similar to that of Moray. By turning the screw, it was necessary to find the point of the maximum volume of the radio station, that is, the maximum signal power at the output of the circuit. Note that this is a simple detector receiver with no batteries.

Originally, Morey's generators were similar powerful detector receivers that were tuned to the frequencies of natural electromagnetic (noise) processes. A semiconductor alloy, or a mixture of different materials, as the author says, "gives certain unique results by acting as a valve (diode) and an amplifier. This element of the circuit was a "gas discharge tube" with a gap of 1-5 mm. The cathode of the spark gap had a porous structure and consisted of a mixture of bismuth, iron sulfide, pure metallic germanium ... mounted on tinplate. In publication "Pseudoparticle Synthesis", Infinite Energy magazine #107, 2013, author George Egeli compares this method of increasing the cathode surface with several micropores with modern nanotechnology. The porous materials have a very large total surface that make this material to be very efficient for many applications.

In the process of making special radio vacuum tubes, Moray received another new method of energy conversion, which is disclosed in his US Patent No. 2,460,707. In the design of the so-called "Moreya tubes" there is an internal X-ray source that ionizes the electrode plates. Moray wrote that the electrical capacity of his lamps reaches 1 Farad and that capacity is very powerful. Here I have a question about the frequency of the

vibrations. The large capacitance of the circuit leads to low frequencies of oscillations. Perhaps it is a frequency of 7 Hz and other harmonics of the natural vibrations of the Aether in the global resonator Earth - ionosphere? The frequency 7 Hz is main oscillation process of the plant.

In 1925, Moray demonstrated stand-alone 50 kW power generators. It was quite a complex device, which consisted of 29 levels of power amplification on homemade lamps name as "Morey vacuum tubes".

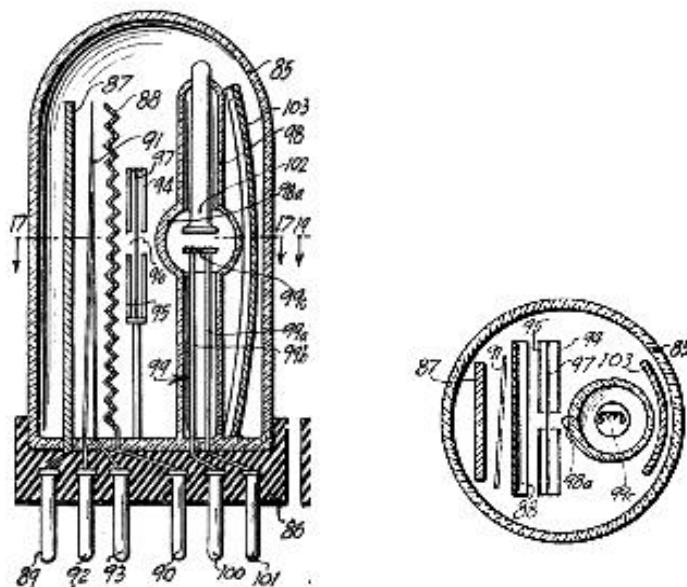


Fig. 152. Morey vacuum tube.

Let me make some note about antigravity effects in relation with this technology. Moray wrote that there are working frequencies in his energy generators at which the force of gravity is compensated. He wrote: "Perhaps frequencies will be developed that compensate for the force of gravity up to a neutralization point". It is a very interesting note to get understanding of the technology. It is clear the Aether flow create gravity, so the free energy generators may create gravity effects at certain frequencies.

Moray wrote the book "The Sea of Energy in which the planet floats". Moray worked about 100 years ago. His generators provided dozens of kilowatts of power. We still have to use fuel for energy, so the energy technologies progress is very slow.

Next innovation is device by author Edwin Gray, USA. The prototypes of this invention were ready for commercialization in 1977.

There is "Gray motor" but we are not looking at the motor itself, but rather its high voltage source, which ensures that the motor is highly efficient. From Gray's US Patent 4,595,975 Edwin Gray "Efficient Power Supply for Inductive Loads" we see that the key to his invention is a highly efficient power supply for the motor. Structurally, the source and the motor are interconnected. Spark processes play an important role in the energy source and the patent states that they are intended for inductive loads (motor windings).

Fig. 153 is a drawing of the construction of the Gray "conversion tube".

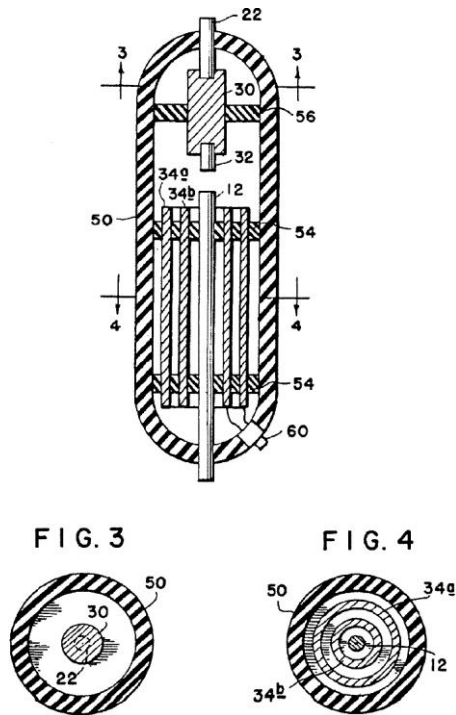


Fig. 153. Gray conversion tube.

This technical solution use air ionization, which increases the current in the circuit. Do you remember that this innovation was made by Yablochkov? Perforated cylinders, which are used by the designers of the Testatika machines, can also give reason to think about some analogies with Gray technology. All these ideas are necessary to get free electrons from air ionization.

Take the advice of Gary Magratten, a state-of-the-art engineer who achieves 200% power conversion efficiency on his motors. He writes that first you need to get about 3 kilovolts with a current of about 500 mA, that is, you need to output about 1500 watts. This can be done with a battery and a normal DC / AC converter, get 220V 50Hz and then put in a step-up transformer. The high voltage diode bridge then converts the alternating current into direct current pulses. Magratten recommends the use of 8 kV 0.5 A diodes. In addition, the unipolar pulses charge the powerful capacitor. The positive pole of the capacitor is connected to the high voltage anode of the "conversion tube". The high-voltage anode consists of a galvanized steel rod with a diameter of 5 mm (normal bolt). The capacitor discharges through the gap, an arc is created inside the "conversion tube", the atmosphere is ionized, positive and negative air ions are formed, which make free electrons available in the circuit to amplify the current. Through this ionization, the perforated copper cylinders of the "conversion tube" are electrically charged.

The construction of the "conversion tube" is quite simple. The body can be made of organic glass; air holes are required for the spark gap. High voltage electrodes consist of 5 mm galvanized steel rods (bolts). The collector plates are coaxially built-in copper tubes with a diameter of 20, 40 and 60 mm. Holes are drilled in them to allow air to circulate.

In the photo Fig. 154 shows one of the modern versions of the "conversion tube" with perforated cylinders.

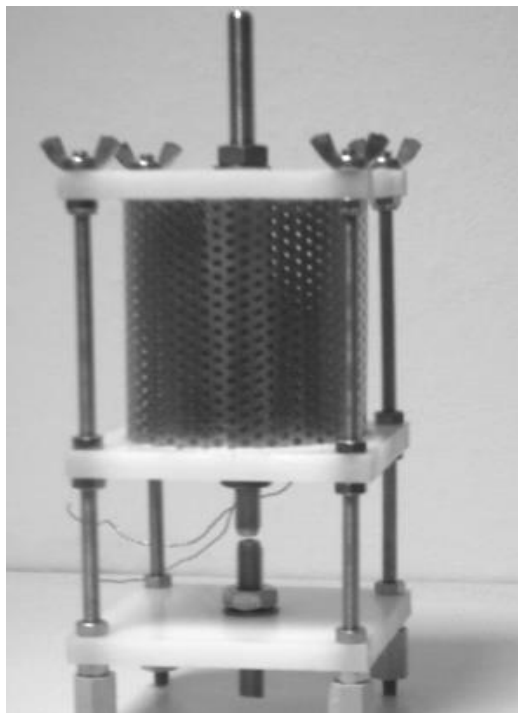


Fig. 154. Conversion tube with perforated cylinder.

Let's take a look at another interesting invention that was considered a war trophy by the British. The information is based on the travel report of the British Intelligence Objectives Sub-Committee No. 2394 BIOS Target Number C31/4799, entitled The Invention of Hans Coler, relating to an alleged new source of energy. Report #1043, Paragraph #31, published by the UK Department of Scientific and Industrial Research, National Lending Library for Science and Technology Report by R. Hurst, Department of Utilities.

Coler invented two different devices while working for the German Admiralty. A generator was named "Magnetstromapparat". This device has been tested by experts. Coler assembled it in the presence of the experts. The device consisted only of permanent magnets, copper wires (windings) and capacitors. The output voltage was small, 450 millivolts, but it was generated continuously and indefinitely.

Coler's other device was name a "power generator" and this device use battery to get initial power of several watts and delivering 6 kilowatts of power to a load. It hasn't been reviewed, although the author said he could assemble it in 3 weeks, subject to materials availability.

Other devices were also built. Fig. 155 shows the Coler diagram. Six magnets with windings on them form a hexagon in one plane. When adjusting, the position of the coils and magnets is chosen continuously (the distance between their ends is 5-10 mm). Some coils are wound clockwise, others counter-clockwise. Note that in this case the magnets are conductive and the coils are in contact (soldering) with the magnet, so that the currents generated in the coils partially flow through the magnet itself and create field changes. It turns out "positive feedback". The maximum voltage that could be obtained in this circuit was about 12 volts.

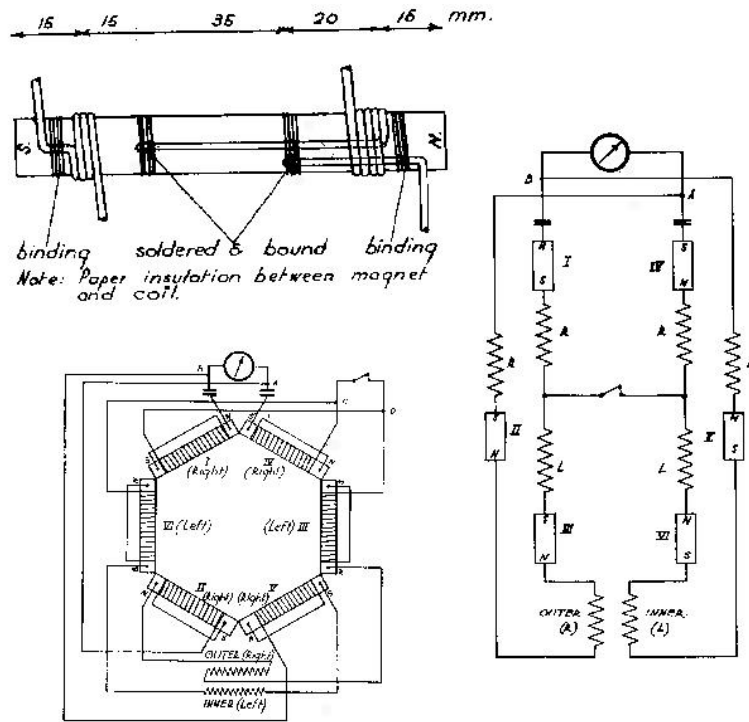


Fig. 155. Hans Coler generator with 6 magnets.

The beginning of this project can be traced back to 1925, when Coler showed a small generator with an output of 10 watts for Professor Kloss Berlin and reported it to the German government. Funding for the Coler project was refused since experts said "impossible to get some perpetual motion machines". The Coler demonstrated his 10 watt generator to Prof. Schumann, Munich, and other scientists.

A more powerful 70W generator was developed by Coler in 1933. It was tested by representatives from Siemens company and experts of Berlin scientific community. One of the devices was locked in a separate room for 3 months and remained functional even though it had no batteries. To manufacture such generators, the author founded a production company Coler GmbH. One of the 5 kW generators supplied his house and laboratory with electricity for 3 years.

About the working principles, Coler said that the magnetism in this case have some oscillatory nature with frequencies of around 180 KHz. Modern research on this subject continues, but with a little commercialization success. In the photo Fig. 156 shows a version of one of the modern "magnetic current apparatus".

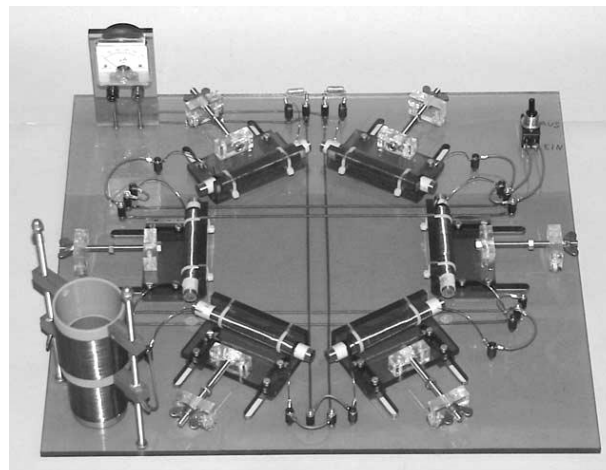


Fig. 156. Modern Version of Coler Generator.

Next technology waits for your attention. Thomas Bearden's scheme has become widely used in the solid-state energy source field, although his patents refer to the work of previous authors. The circuit is called MEG (motionless electromagnetic generator, i.e. an electromagnetic generator with no moving parts). We can say it is analogy of the transformer with magnetic field inside the core is provided by permanent magnets. The control coils switch the magnetic flux path, so a change in the magnetic field is generated in the area of the generator coils and an electromotive force is induced in them.

Figure 157 shows an example of a MEG by Thomas Bearden. There are his claims about efficiency over 1000%. Other authors confirmed the effectiveness of this technology, but their data were a little more modest, the efficiency was measured to be from 120% to 800%.

The principle of operation of MEG is described in U.S. Patent No. 6,362,618. A diagram of this construction is shown in Fig. 158. Unfortunately, this invention has not yet been introduced into the power industry.

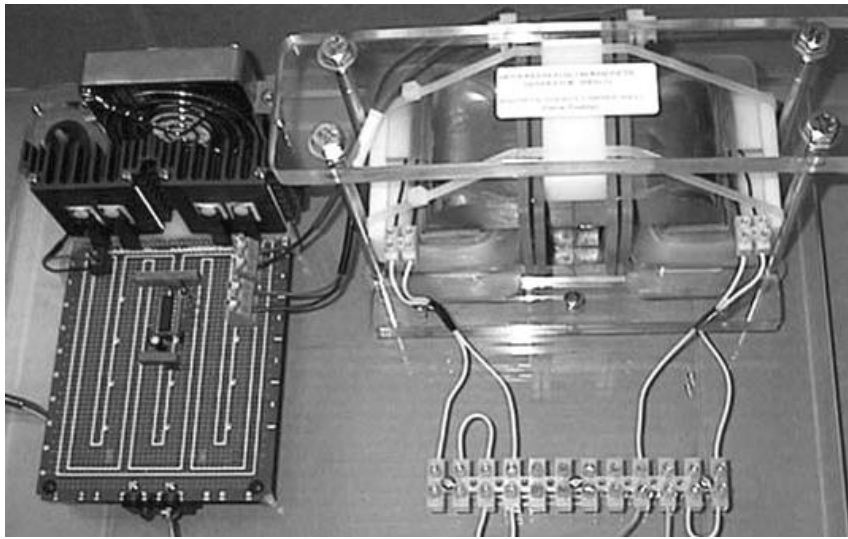


Fig. 157 MEG by Thomas Bearden.

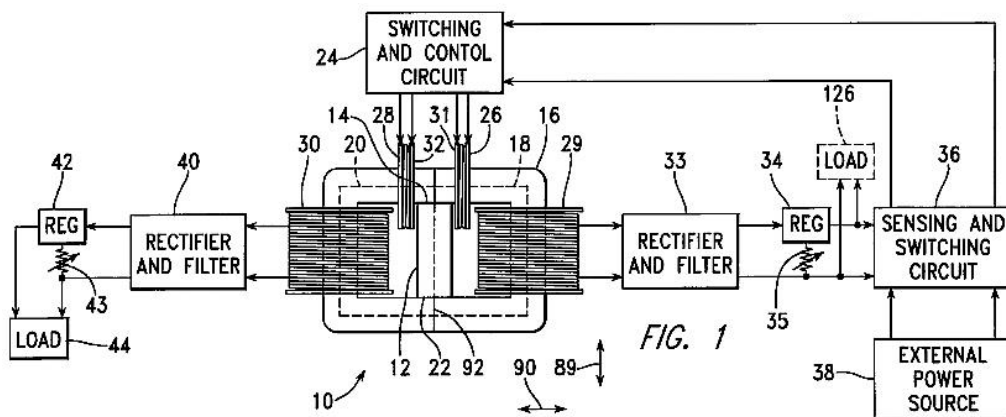


Fig. 158. MEG Generator scheme.

The signals of the control coils (activator coils) must be in anti-phase, but also have a longer pause duration than the pulse duration (Appendix 1, US Pat. No. 6,362,718, Fig. 202). With this control scheme, the reverse self-induction pulse from one control coil does not interfere with the operation of the second control coil. The control circuit can be implemented on modern microcircuits with low power consumption.

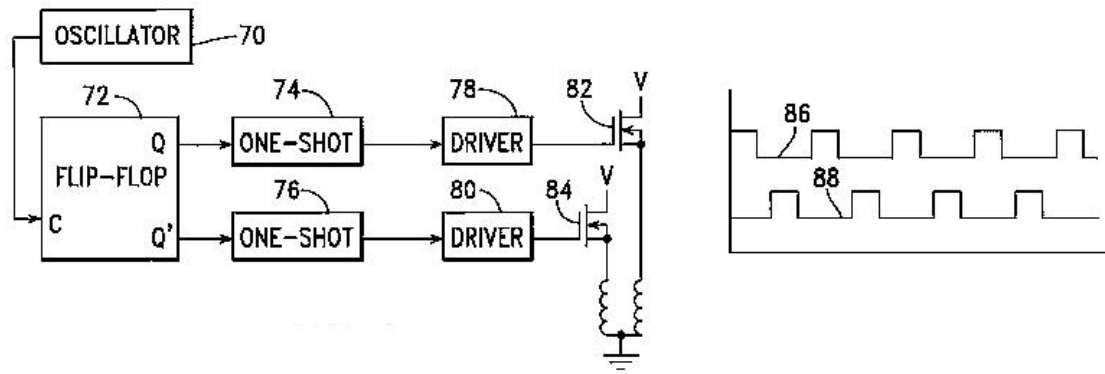


Fig. 159. Currents in control coils by Bearden MEG.

The control coils must provide magnetic field that reduces the field of the permanent magnet in the area of the generator coils. It is necessary to check the correctness of the connection of the ends of the coils to see the field of the coil is set to be opposite to the field of the permanent magnet. The strength of the magnetic field of the permanent magnet must be less than the degree of saturation of the core; otherwise flux control is not possible.

The power loss in the control coils and in the control circuit can be minimized with proper operation. Patent No. 6,362,718 states that "in this device, the magnetic flux path of the permanent magnet is switched in such a way that the force of the magnetic fields does not have to be overcome. The control coils consume little electricity to generate a self-initiated switching process for the flux path of the permanent magnet. "

Such a self-initiated mode is achieved by alternately turning on the control coils and the minimum current in them, which should be enough to create oscillating processes in the domains of the ferromagnet, but the control field should not be so large that the entire magnetic field changes direction. In other words, the control coils generate a field in the "narrow area" of the core without much power consumption, but in such a way that the reluctance changes strongly in the entire branch of the magnetic circuit. So, the magnetic flux of the permanent magnet selects one of two directions of the core where the magnetic resistance is less than in other direction.

Amorphous ferro alloys (nanocrystalline) are recommended as the core material for this type of operation.

The duration of the control pulse must be long enough to cause a change in the overall magnetic field, but as indicated in US 6,362,718, the excessive "duration of the current in the control coil" causes unnecessary energy losses.

Recommendations for winding coils of the Bearden MEG: for frequencies about 100 kHz, the coils can have tens of turns, for example in U.S. Patent 6,362,718 the control coils are 40 turns each and the output windings are 126 turns. At the same time, input current here is about 0.12 A for 100V voltage, and the output is 106V at a current of 0.5A. Determining the number of resonant turns in a given design is critical.

Bearden in U.S. Patent No. 6,362,718 suggested the designs shown in Figure 160, although the principles of flow control remain the same.

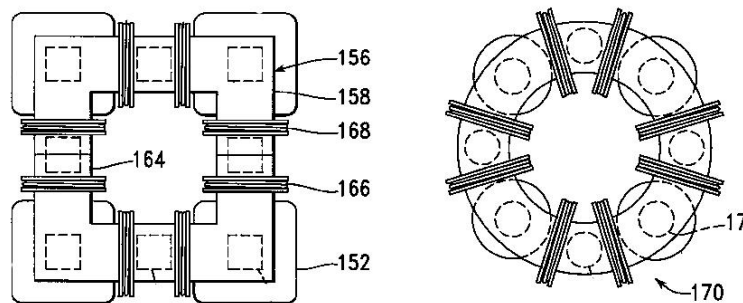


Fig. 160. Variant if MEG.

There is very interesting project made by a group of Bulgarian researchers, it is presented on the website teosfera.narod.ru/indexbgmeg.html. A special feature of this MEG solution is the organization of the magnetic bypass circuit of a permanent magnet, Fig. 161 and Fig. 162. Without this “bypass” for the propagation of the magnetic flux, the control requires significantly higher power consumption. With two possibilities of propagation, the magnetic flux is switched simply and easily by generating a suitable control signal.

In the Bulgarian MEG, the control coils are located in the middle part of the core next to the magnet. The section of the bypass magnetic circuit is smaller than the section of the main magnetic circuit; therefore the magnetic flux of the permanent magnet is essentially closed by the main magnetic circuit when there is no current in the control coils area of the generator coils.

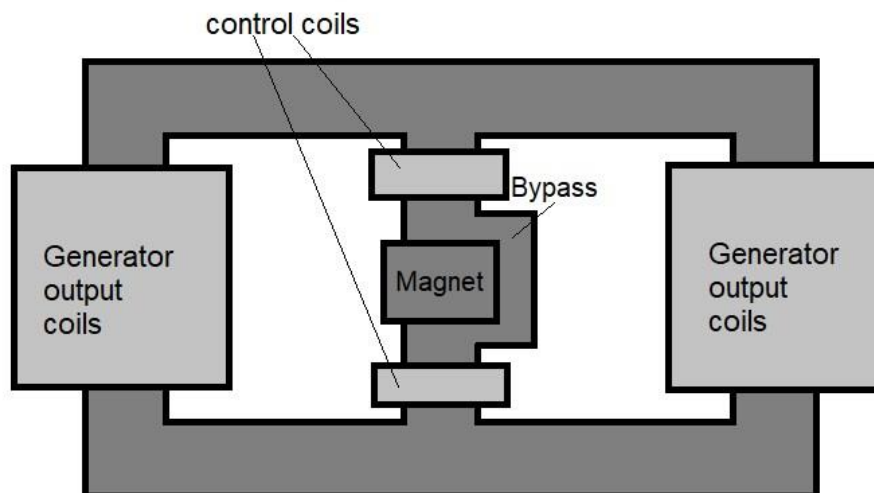


Fig. 161. Bulgarian MEG.

When a current appears in the control coils, magnetic saturation is created in the central part of the magnetic circuit, forcing the magnetic flux to move through the bypass way. There is an interesting feature here. The operating frequency in this version is about 10-20 Hertz. This low pulse frequency is understandable, since after switching the magnetic flux the material of the iron core is rather slowly demagnetized.

The change in magnetization when switching the direction of the magnetic flux occurs fast and the demagnetization occurs slowly. This slow change allows induction effect, since here are not sinusoidal currents in the coils. This period of slow weakening of the magnetization of the core material is necessary for the induction effect and creates an electromotive force in the coils at the output of the generator. If this factor is not taken

into account, a sharp change in direction of the magnetic field can cause jumps of the flux in the MEG core, but there is no induction effect and no power in the load circuit.

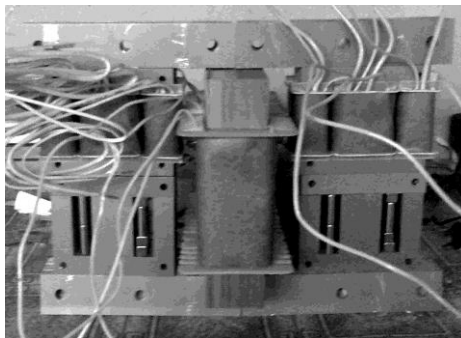


Fig. 162. Foto of some real MEG.

Let's take a look at some of the features of MEG generators besides the “slow demagnetization”. Most authors did not achieve the expected effect because they did not solve the problem of reducing energy minimization in the control coils. The core material plays an important role in the area of the magnetic circuit in which the control coils are located. This material should easily reach magnetic saturation with minimal energy consumption.

Let me remind you again that the idea of controlling a strong magnetic flux with a weak control signal has been known since the beginning of the 20th century and the "magnetic transistor" was reinvented in the late 1940s. The operating modes of these devices have been selected very carefully. From the other hand, these devices do not require any adjustment for their electric load changes and also they are inexpensive.

Fig. 163 shows variant of the MEG generator by my design.

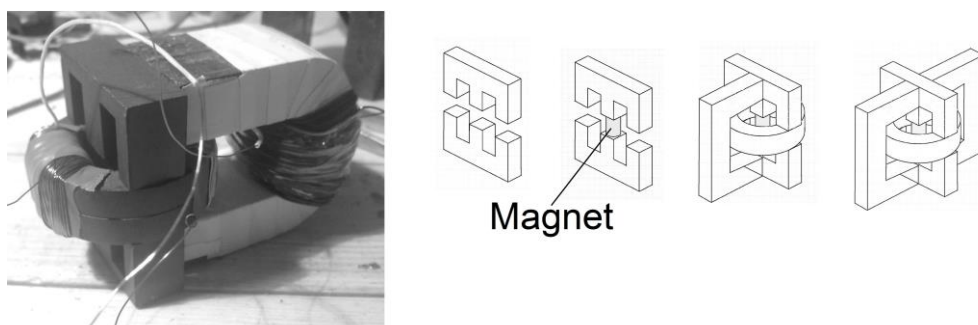


Fig. 163. MEG by Frolov's scheme.

The magnet is located in the middle of the ring between the two W-shaped cores. The ferrite ring coil is a control coil and the generator output coils are wound on two U-shaped cores. The diagram shows four pictures of the assembly process, but the coils are not shown there. At first, you need to put a minimal direct current to the control coil, to find a current value when some attraction force of the U-shaped core to the W-shaped core should change noticeably. After you have determined the required current in the control coil, then you can connect a sine wave primary source to it. It is recommended to arrange the two U-cores of the output coil symmetrically. Also it can be recommended to use ring core with low magnetic saturation parameter. In this case the control coil current can be small. It is necessary to note the output power limits for this device. It is depend on size of ferrite cores. The MEG principle works only before saturation of the core so the output power is limited here.

Let's consider another power generator project that named Floyd Sweet VTA (Vacuum Triode Amplifier). The details of the project are so fantastic that I have to ask the reader to use this information constructively but carefully.

Inventor Floyd Sweet was graduated from the Massachusetts Institute of Technology in 1969 with a degree in magnetic domain dynamics. In 1990 he demonstrated his invention, the "Vacuum Triode Amplifier". Barium magnets manufactured in a special way were used by him in "trigger mode", i.e. the magnets can change the direction of magnetization by some external influence. The bistable state of the magnetic material offered the possibility of transition from one field direction N-S to another direction S-N when a weak signal from an external generator was applied to the control winding. If the material has also been "processed" by repeated magnetization reversals at a frequency of 60 Hertz, then its control signal must have the same frequency during operation.

The principle of controlling a strong electric current by means of a weak control signal is used with triodes, hence the Floyd's device was called "vacuum triode amplifier". In general, the principle is similar to the work of MEG and all "magnetic transistors".

Some of the power output from Floyd's device was fed back to stimulate a process that created significant power in the output coil.

Prototypes of the Floyd generators in 1990 - 1995 generated significant output power up to 50 kW. Floyd noted a strong anti-gravity effect when he measured a weight loss of a working system; the effect was about 90% of its normal weight.

The working material (magnets) was cooled down considerably during the generation of electricity (that is some anti-entropy process). The source of energy is believed to be intense incoherent radiation of energy that exists throughout the universe. This is a very important clarification about incoherent heat radiation. Usually simple addition of many incoherent signals does not result in a some process of output power, since the "process" implies an ordering of many signals. So, we can say the Floyd's device make anti-entropy effect to order incoherent energy to coherent energy.

Technically, the question of using the free energy of space to generate energy in a load can be described as the conversion of incoherent and thus undetectable radiation, which is present at every point in space, into coherent, i.e. into a directed flow of Aether (magnetic field). Some mechanical vortex converters of the kinetic energy of air molecules, i.e. the concentrators of dissipated heat energy, work by a similar way. In Floyd Sweet's magnetic generator, the cooling effect corresponded to the converted heat energy of the Aether, not the air. This also changes the temperature of the magnetic material.

The VTU permanent magnets and coils were cooled during operation and showed a temperature difference of 20 degrees from the ambient temperature.

Tom Bearden, who studied this technology with Floyd Sweet claimed that VTA was demonstrating "negative energy" work, in the sense that work involves the use of "negative time" and anti-gravity. Floyd sometimes called his device a "time machine" rather than an energy generator, even though the purpose of this technology was just generator of electrical energy.

Note that the issue of utilizing space energy can be viewed not only as transforming the energy of the Aether medium, but also as an anti-gravity technology. We have already noticed that gravitation effects in the Aether medium are caused by the Aether pressure gradient. On the other hand, the gravitational potential field is characterized by a certain speed of time, which is why Bearden correctly introduces the term "negative time" for these cases.

In my book "New Aerospace Technologies" I have shown that the speed of time depends on the energy density in space, i.e. on the density of the Aether medium. This also explains how the Floyd generator works.

We note briefly that the work of the Russian scientist Nikolai Alexandrovich Kozyrev on theory and experiments of "causal mechanics" also shows the possibility of "using the flow of time for work". Kozyrev introduced the term "time density", which corresponds to the concept of "Aether density", to my mind. It was showed experimentally by Nikolay Kozyrev the possibility of changing the "time density" depending on the intensity of natural or artificial irreversible entropic processes (phase transitions of the state of aggregation).

A powerful "generator" of such processes is in particular the planet's biosphere, which generates daily and seasonal fluctuations in the temporal density. It was the seasonal changes that Floyd Sweet noticed as his device worked any time of the day but the magnitude of the output power varied. Thus the concept of the active properties of time established by N. A. Kozyrev receives further experimental confirmation.

On the other hand, we get real confirmation of the connection between the Aether concept of gravity and we can develop technologies to control the density of the Aether to create an active (non-reactive) driving force, including a four-dimensional force that acts not in Space, but acts in time.

Let me saw several words about real design of Floyd Sweet's generators. One of the devices consists of two sets of 4 x 6 x 1 inch magnets positioned on two sides of the case, in position of attraction between them. Between the magnets there are the output and control coils. The axis of the generator coils is parallel to the lines of force of the magnet and the axes of the controller coils are placed at 90 degrees to the lines of force of the magnet. It should be noted separately that the coils in which the current is generated in the load circuit *have a bifilar winding*. As you know, in bifilar coils the magnetic component of the field is compensated, but they affect the Aether. We'll talk about the same bifilar coils in the control circuit later when we look at Steve Mark's toroidal generator design. Perhaps *this is the main secret behind free energy generators*. You do not have to control a magnetic field but the Aether currents by means of the bifilar coils.

Fig. 164 shows the change in the domain structure of a magnet during its operation under the influence of a "control signal".

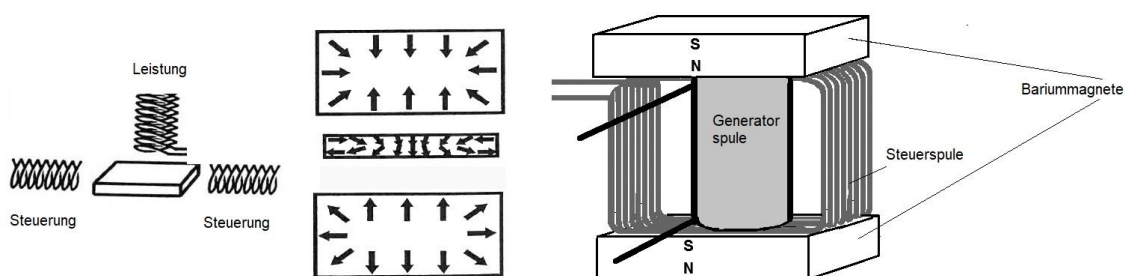


Fig. 164. Floyd Sweet Generator.

It is interesting to consider technology of the "preparation process" that brings the magnets into the appropriate "bistable state". A permanent ceramic magnet should be placed in a special coil where a strong current pulse is created.

Typically a 6500 uF 450 volt capacitor is used for these purposes. Then the polarity of the pulse is reversed and a current pulse is passed through the coil again. The process is

repeated many times until many microcracks are formed in the magnetic structure of the magnet due to multiple reorientations of domains. As a result, the poles of a magnet look like a combination of one pole and the other, roughly in a ratio of 70% and 30%. At the edges, for example, 70% of the area of the pole is taken up by the N-pole and 30% of the area in the center is taken up by the S-pole. A weak external influence from the control field is sufficient for the situation to change with the poles (trigger effect).

In this structure we not only see magnetic domains in the usual sense of the word, but also the so-called "acoustic domains", which are much larger areas of the magnet that are separated from one another by microcracks. You can redirect these "acoustic domains" by applying a weak external field that has the required acoustic resonance frequency.

Many researchers have replicated Floyd's work, and from their experience we find that the best results of "conditioning" a magnetic substance is to pass a strong AC arc discharge directly through a barium magnetic ceramic. A coil for "cracking" the barium magnet is not required in this case. The AC frequency must match the frequency at which the control signal is applied.

Floyd Sweet created a bistable solid body in which acoustic resonance occurs at the oscillation frequency of a weak control magnetic field.

It should be noted again that the Floyd Sweet generator, like some other free energy devices, did not produce ordinary electricity. The properties of this energy, which is outwardly similar to ordinary electricity, are unique and significantly different, so it must be described to a completely new type of energy. Extensive study to describe its properties should be made by the same way that scientists have done for ordinary electricity. We can say that this electricity contains ordinary electrons, but there are also most other particles that do not behave according to Ohm's laws and ordinary electrical engineering.

There is an interesting detail from the Floyd Sweet story. Once the generator stopped working during a local earthquake. The physical impact of the earthquake wasn't strong enough to change positions of the magnets or coil, but the damage to the power generator was like a hammer impact. Floyd suspected that his generator was affected by an electromagnetic pulse caused by the earthquake. However, to my mind, this is impossible because in an electromagnetic component of earthquake was not strong enough to affect the device.

The assumption about the influence of the gravitational impulse, i.e. Aether longitudinal wave, can be more meaningful. Since the earthquake generates gravitational wave with changed energy density in the Aether, there was a strong current surge in the Floyd-Sweet generator, which led to its damage. This suggests that the functional principle of the Floyd generator consists in converting the dissipated heat energy of the Aether medium, the amount of which depends on the density of the Aether.

There are also other strange facts about measurements of current and voltage in VTA device. Voltage, current or power in a load only were correctly measured up to about 1 kW. In addition, they could display zero or any other value that does not correspond in any way to the actual power drawn in the payload. Floyd's attempts to use classic formulas for the number of turns of the coils, amperage and voltage, or other parameters to predict power output but he resulted in big errors.

Empirical formulas were written based on real measurements. Monitoring the output voltage with a sharp increase in load from 100 watts to 1000 watts showed no significant change, indicating an extremely low internal resistance of the circuit to that "strange electricity" we were talking about.

The output coil had several hundred turns and a considerable resistance, which in the classical sense does not correspond to the fact that the output voltage is constant when the load changes. This suggests that Ohm's laws do not apply in this case and the energy does not move along the copper wire, but rather spreads "along" it.

After comparing the experimental facts from Tesla and Floyd Sweet, we can see that in devices of this type, in addition to the usual electron flow, there is a flows of Aether particles, which cannot be measured by ordinary devices, also play an essential role. Of course, to get the usual flow of electrons, they have to be "attracted" by ionizing or grounding the air.

Floyd noticed another strange phenomenon. The output power sometimes dropped to zero after a few seconds or minutes after starting VTA work. However, there have been cases of arbitrary voltage increases above 120 volts, which were observed as an increase in the brightness of the connected lamps. The readings from the ammeter, voltmeter, and wattmeter were not related to the brightness of the lamps, except in cases where the generator did not work at all.

Floyd Sweet died of a heart attack on July 5, 1995 at the age of 83. It is known that the inventor's widow Floyds gave archives to a large automobile company. This technology is great example of real possibility to use free energy by simple method.

Next story is more available for practical applications. A few years ago, an inventor Steve Mark developed Toroid Power Unit (TPU). Another name of this device is Steven Mark Solid State Generator, that means "no rotating and mechanically moving parts in the device".

This generator at first was demonstrated in 1997 and it can supply power to a wide variety of electrical loads, from light bulbs to TV set and electric drills. Once started, the generator does not require any external energy and runs indefinitely. When you hold the "toroidal core" of this generator during operation, you will feel a slight gyroscopic effect and the device will heat up.

There's a video of Stephen Mark's original TPU generators, as well as diagrams for creating similar devices by other authors. Many authors have been able to replicate this device. The principle of operation is based on the generation of a "moving wave of electrons" in metal toroidal core. The control circuit of the device is based on three driving *bifilar coils* working in series in three-phase mode, creating an effect on the ring conductor. The diagram is in Fig. 165.

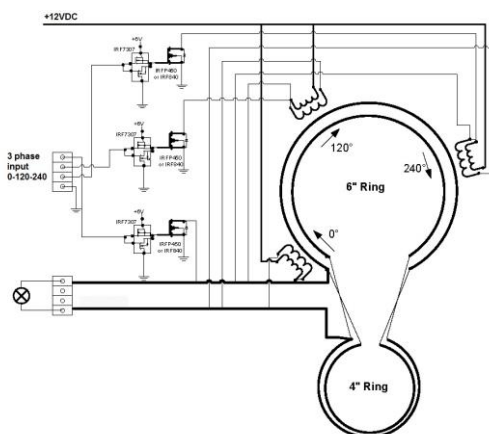


Fig. 165. Scheme of TPU by Otto.

This is the scheme by Otto, one of Steve Mark's followers. The originals of Mark's schemes cannot be found in the open publication. There is a video on the Internet that shows how Steve Mark, after demonstrating his invention to a commission of experts, sawed up the generator coil to show that there was nothing in it, including a ferrite core. There is no core here. The ring, on which three bifilar coils are wound, is just an electron conductor, a metallic "collector" of electrons. It can be a hollow metal ring (tor) with an incision (gap).

The first version of the generator had a "collector" in the form of a coil made of 3 turns of thick wire. A load circuit is connected to the ends of this "collector" is the gap. Coils of a three-phase excitation circuit, which were connected to switches on tube triodes, were wound on this "collector". Each excitation coil consists of two parts that have a reverse winding (bifilar coils). At the same time, the three-phase circuit generates a "rotating field", which does not explain how it works. There is no rotating electromagnetic field at work here, but an Aether wave that drives electrons from one end of the collector to the other end of the collector.

A potential difference, an electromotive force, is formed at the ends of the "collector", and a current occurred in the load circuit. The author created the first versions of his generator on electronic vacuum tubes. When the author tried to use a solid-state electronics (transistors), he was unable to achieve the required operating mode. It turned out that the reason was the rate of rise of the leading edge of the pulse; the front must be very fast steep. With vacuum lamps it is possible without any problems; with transistors at that time of 1970 there were problems with fast operation.



Fig. 166. Small Steve Mark Generator.

The author of the invention wrote: "The frequency on the coils should be about 5 KHz with a collector diameter of 20 cm. This creates a circular rotation frequency of 75,000 rpm. This device works like a medical pump for a blood artificial circulatory system. The nodes of the magnetic field work like rollers to push electrons in a circle in a collector ring". The rollers are three bifilar coils. It is possible to demonstrate the general principle of such an "Aether" pump using an example of a similar, simplified construction. Fig. 167 shows a so-called "linear generator" with three pairs of coils, which are connected to a three-phase pulse source.

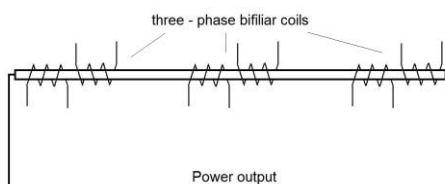


Fig. 167. Frolov's Linear version of Steve Mark generator.

Fig. 168 shows a method to generate the three-phase "traveling wave of Aether density" in a linear conductor. Here are no magnetic or electric forces. This wave "drives" electrons in one direction, because they are connected to the Aether. The output current is constant in direction but pulsed in amplitude.

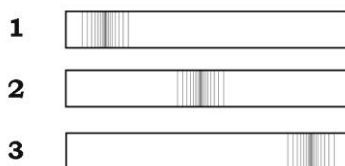


Fig. 168. Three phase method.

Excitation coils, which are wound on a linear "collector" wire, have to work in three-phase mode, whereby an Aether wave is generated along the "collector" that pushes electrons along the "store", from whose ends energy in the form of electrons reaches the payload. "Collector" can be made in the form of a metal tube.

Some of Steve Mark's followers are trying to introduce ferrite rings into the design. This makes little sense, because the "pumping" of electrons through the "store" is not done by electromagnetic induction, but by the gradient of the Aether moving along the "collector", which appears in the form of a wave. The design here requires a material that is a good source of free electrons. It is recommended to use a hollow metal ring as the skeleton for the structure, as in the case of Steve Mark.

The steep front of the pulse in the control coils is also very important. In the chapter on Tesla's work it was mentioned that the Aether reacts differently depending on the impact rate. Tesla demonstrated that the speed, i.e. the front side of the impulse, is important condition to get the excess power that arises during the "shock excitation of the Aether".

The 5 KHz clock frequency given in the articles about Steve Mark's TPU is not the only information about the processes in this device. Sometimes referred to as 35 KHz which can be one of the harmonics in Stephen Mark's device. I suppose it is depend on size of the collector ring.

While reviewing Steve Mark's three phase coil design, I came up with the idea of a similar circuit using three high voltage capacitors. I believe that such an idea will work by means of three phase electrical induction. The serial activation of three electrodes attached to a metal collector over the insulation creates a "traveling wave" of electrical potential on the surface of the "collector". So, the electromotive force is generated at the ends of the ring linear "collector". There is no need to speak about the Aether theory here. This idea can works by means of simple electrical induction (polarization). This idea also can be workable in mechanical version for rotating electrically charged "inductor". Simple dipole with "positive - negative" ends or some rotor with several charged segments (like a Wilmshurst machine) will polarize ring of "collector" to move electrons.

Steve Mark was a sincere free energy enthusiast who posted everything on the internet and emailed everything to his friends without hiding anything. So, the author got into trouble with the FBI. The agents destroyed almost all of the author's original files on the Internet, but now there is enough detailed information on TPU generator. The technology was acquired and developed by UEC Company, so there is a prospect for this invention to be commercialized. We might see Steve Mark generators on sale sometime.

Look at another example of solid state power generator, this time it is quite modern story and it is Russian story. The discovery was published in July 2001; a group of Russian scientists led by the director of the Volgograd Institute of Materials Science Professor

Valerian Sobolev discovered a new physical process. By passing an electric current through a glass melt with some impurities, a new material was obtained. This new material generates a changing magnetic field around itself for a long time. Obviously, using this material as a core of some coil, it would be possible to get the induction effect and electromotive force, so it is possible to get electric current and some power in the payload. The electrolysis process of molten glass or quartz took place in a device was named “the Sobolev’s Column”. It was planned to create energy sources for consumers based on Sobolev's discovery, initially a 3 kW prototype. Financing was discussed at the level of the Russian government, then reports of foreign investors appeared in the press, and now, in 2021, the discovery is forgotten. This is one of the typical examples of new technology suppression. Perhaps it is developing on some laboratory but we don’t see this innovation on the World energy market.

Let us return to the flat coils discussed in the Tesla projects chapter to show another technical solution in area of solid-state power converters. Tesla used pancake flat coils to create large turn-to-turn capacitance and by this way Tesla can reduce the inductance of the bifilar winding. Consider another practically valuable aspect of this design. Conventional coils are solenoids and these coils have an axial field. The flat coil has a radial field, Fig. 169.

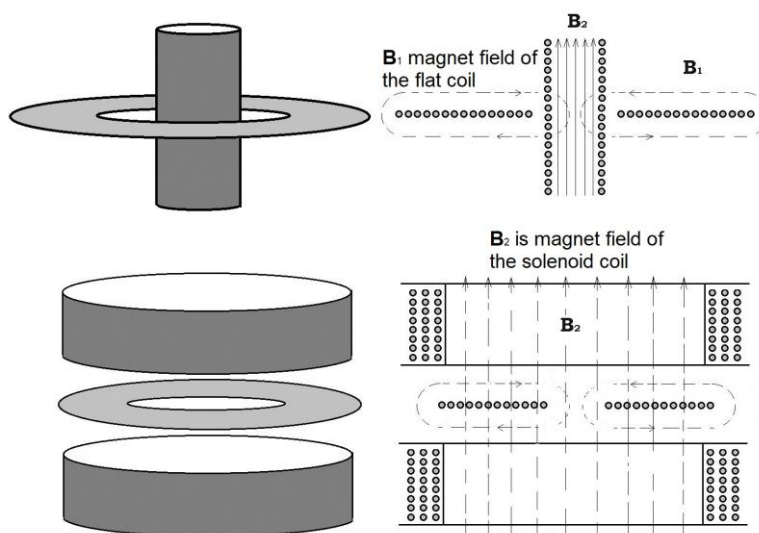


Fig. 169. Frolov’s Experiment with flat coils.

By arranging a flat coil transversely to the solenoid axis, we obtain an asymmetry of the mutual induction between these coils, i.e. we create the possibility of drawing power in the secondary circuit of the transformer without affecting the primary source. The experiments were carried out by me in 1991-1994, described in the article "Free Energy", Journal of Russian Physical Thought, 1997.

It is not a 100% asymmetry. In this circuit there is some small mutual induction between flat coil and solenoid due to the edge effect of the inner turns of the flat coil. Other part the flat coil, however, adjacent turns cancel out the axial component of its magnetic fields, so in flat coil there is the radial component only.

Since the radial component of the flat coil does not produce any inductive effect for the electromagnet of solenoid, this pair of coils has an asymmetrical mutual induction. The magnetic field of the electromagnet influences the flat coil and causes induction effects in it, but there is almost no reverse influence. Structurally, it is advisable to make a flat coil by etching a foil dielectric. This works well at high frequencies of MHz level.

Several flat coils can be stacked on top of each other in a package and their lines can be connected in series or in parallel, Fig. 170.

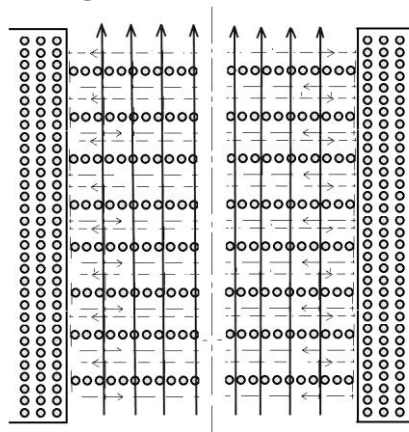


Fig. 170. Several flat coils in the solenoid.

In this case, you can use the classical theory for currents in flat conductors for calculations. The asymmetry effect of mutual induction can also be used in the design of magnetic motors. Flat coil in the role of motor-generator coils are useful since they minimize the braking effect of the rotor when the load is connected to the coils.

Consider another interesting device but there is a very little information about. I have got their product catalog with nice pictures and prices. This energy source was planned for mass production in Japan in 2002 with output power range from 300 watts up to 5 kW. The author of the technology is James B. Schwartz. We do not have a scheme and principle of operation, the appearance of this generator is Fig. 171.

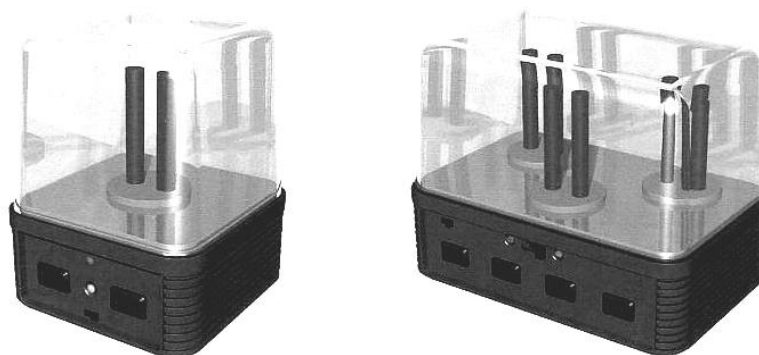


Fig. 171. Schwartz Generator.

The solid state technology is based on "converting the energy of neutrino flows," as the author explained. He says it works "the same way as solar panels, but in a different part of the wave spectrum". The rods, he explains, are made of different composite materials; they are almost the same, mostly made of tantalum and tungsten, with 73 and 74 different chemical elements. While demonstrating the technology, the author connected the leads of the incandescent lamp directly to a pair of such rods, and it was enough to generate electricity for the lamp. Since these products are not yet on the market, it can be assumed that the plans of the Japanese company were suppressed.

Schwartz's other invention looks simpler. You can find video on YouTube about Schwartz free energy generator. It is usually shown in the form of a small suitcase containing elements of an electronic circuit. There are two conventional transformers, a powerful "open" electromagnet (with an open magnetic circuit), and a circuit for converting the

energy of an alternating current magnetic field. In the demonstration, Schwartz emphasizes that the housing cover is coated with bismuth in order to "concentrate the magnetic field inside the housing". The author is currently working on the commercialization of his technologies. His company is called The Noah's Arch Foundation, an ERR flux generator technology.

There is one more interesting technology of the Ukrainian invention, Russian patent No. 2419951, authors are Henrik Shuminsky and Alexander Ivanovich Getman. This invention is an excellent example of a solid state power generator. The "static generator of electrical energy" proposed by Ukrainian authors includes a case with a package of metal plates separated by a layer of stabilized monocrystalline ferroelectric, and in the case all the layers are close to each other. It is similar to usual chemical battery but it works different.

The plates consist of different conductors with different concentrations of free electrons. They are two different metals, for example antimony-bismuth, iron-nickel, titanium-aluminum and other various alloys such as Chromel-Alumel, Chromel-Copel. Also it can be combinations of metal and alloy, for example iron-copel, antimony-alumel, bismuth-chromium. A plate pack contains a unit cell consisting of one ferroelectric and two dissimilar conductors arranged in the following order: conductor - ferroelectric - conductor. If there are several unit cells in the package, they are connected in series, in parallel or in combination with the source of electrical energy consumption.

The authors are ready to work with investors interested in producing this type of energy generators. To test the efficiency of the technology, the authors have workable samples (prototypes) with an output of 10 watts. The authors tested the experimental models under load for several months. The patent states that the electrets have a lifespan of 8,000 hours, i.e. about 11 months. Presumably, with the development of technology, this time of operation can be improved many times over. The industrial production of electrets can provide a much longer life than the "home" production of electrets by the inventors of the present invention.

Let's consider another project; it was made by my company Faraday Lab ltd., in 2002. We tried to get efficient heating of the working medium (water). The project was proposed by Vladimir Ivanovich Korobeinikov. The technical problem here is to obtain a special "current-less" mode of operation of the magnetron in which the cost of the primary energy source is minimal or zero. The different modes of magnetron operation are shown in the graphics in Fig. 172.

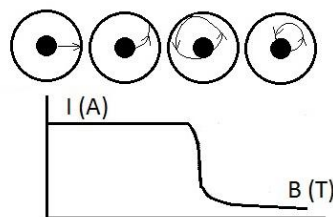


Fig. 172. Four modes of magnetron operation.

The upper part shows the trajectory of the electrons in the cathode-anode section. The first operating mode (left) corresponds to the case without a magnetic field, in which electrons fly out of the cathode and migrate directly to the anode. The second operating mode corresponds to the usual magnetron operating mode, in which the trajectory of the emission electrons is non-linear, but the electrons hits the anode at the end of the path. The third operating mode is critical, if the magnetic field increases further, the electrons no longer reach the anode, the anode-cathode consumption current become zero,

although a high voltage is still applied to the anode and cathode. Note that in this mode, the cathode will heat itself due to the influence of the returning electrons on it and their secondary emission. The aim of our experimental work is not only the generation of microwave radiation without high power consumption, but also we tried to get self-heating of the cathode. This mode of magnetron operation was planned to be used as high efficient heater, for boilers, for example. In this mode we can use a water cooled magnetron heater as an efficient heat source.

The reason for the appearance of additional energy is, in my opinion, the Lorentz force, which bends the trajectory of the electron motion. The nature of this force has been described in my publications as the gradient of the Aether pressure during the movement of a charged particle in the Aether medium. The excess energy is the result of the conversion of the energy of the Aether particles (first time it was reported in 1996 for the conference "New Ideas in Science" in St. Petersburg).

To test the theory, magnetrons of the types 2M18, 2M19 and OM75P were investigated experimentally in my laboratory. I used standard ring barium magnets. The increase in the magnetic field in these experiments was achieved by doubling and tripling the magnets. In addition, stronger magnets were examined for this experiment. A cycle of measurements of heat output from magnetrons was made by different methods. The magnetron was immersed in a container with water volume about 10 liters, then the amount of heat energy was calculated from the temperature change of the water for some period of time.

Measurements of the magnetic field were not carried out, an increase in the number of magnets by a factor of two or three led to an increase in the value of the magnetic induction in the anode-cathode gap. It is necessary to be aware of the danger of these experiments from the presence of scattered microwave radiation falling into the experimenter's field of view.

Test results are following: Test of March 1, 2006. Magnetron 2M218, standard magnets. Input power is 234 W, heat power is 178 W. The efficiency is 76%. Test of March 6, 2006. Magnetron 2M218, the magnetic field is twice as the standard field. Input power is 841 W, heat power is 689 W. Efficiency is 82%. Test of March 20, 2006. Magnetron OM75R with standard magnets. Input power is 721 W, heat power is 556 W. The efficiency is 78%. Test of March 22, 2006. Magnetron OM75R, the magnetic field is approximately tripled. Input power is 478 W, heat power is 433 W. Efficiency is 91%

Conclusions from these measurements are very interesting. Experiments demonstrate the possibility of extracting excess heat power from the magnetron in the mode of minimum power consumption in the presence of a sufficiently strong constant magnetic field in the anode-cathode gap. Under certain conditions, the heat output in this device can be generated in the self-heating mode of the cathode with no current consumption (current-less mode). So, this idea can lead us to self-running power plants. In any case it is necessary provide high voltage electric field between the anode and the cathode of the magnetron. This input power can be less that output heat power. The use of this technology is recommended in systems for generating heat energy with minimal electric power consumption.

It is possible to integrate a magnetron water heater and a conventional gas turbine electric generator into an autonomous power generation complex. This complex will be able to work without fuel. For example, it can use 10-15% of electric output power to provide a high voltage field in the magnetron, and all other power can be used by customer. Important note is here. Standard magnetrons are not very suitable for this mode of operation. It is necessary to develop design of a special magnetron.

Briefly note another interesting invention in area of solid state free energy converters. More than 10 years ago, Florida scientist Wingate Lambertson created a power generator made of cermet. Cermet is special material which was invented by NASA scientists in 1948 to protect rockets and turbine blades from high temperatures. The Lambertson device was made of many thin layers of cermet material. By applying a high potential to this "puff cake", the author lets electrons quickly migrate through the layers, figuratively speaking as "through several waterfalls", which increases the kinetic energy from one "jump" to another. The invention is interesting, it is very efficient, but the author has not reached the level of its commercialization. In 2021 we cannot see open information about this technology.

There are many other developments in area of solid-state energy converters. This is the most promising direction of free energy technologies, which is positively different from rotary generators.

In modern society, understanding of the threat posed by global warming has already matured. Therefore, it will be very interesting for us to consider the technologies of free energy generators that work by absorbing heat energy from the environment. Let's move on to the next chapter.

Chapter 14

Heat energy converter

The heat energy of the environmental air is one of the variants of the dissipated (potential) heat from the environment. In addition to air, this form of energy can be found both in water and in the earth (geothermal sources). The conversion of this type of dissipated energy into useful work is most clearly idea for the fuel-free energy generators, as we can see and understand the primary source of this energy. There are both mechanical and electronic devices that can convert the environment heat.

In Russia the research on the conversion of heat environment energy was previously made by P. K. Oshchepkov, A. F. Okhatrin, E. G. Oparin and other researchers. Pavel Kondratyevich Oshchepkov is considered to be the founder of the Russian radar systems. In 1967 Oshchepkov founded the Public Institute for the Problem of Energy Inversion in Moscow, which is subordinate to the Russian Committee for the Rational Use of Material Resources.

Oshchepkov wrote: "Perhaps the wildest dream of mankind is to master the processes of the natural energy cycle in nature. The use of the process of natural energy circulation in nature for the benefit of mankind does not involve the risk of overheating of the earth's surface, as it cannot change the heat balance of our planet. It is also free from radioactive hazards, from air pollution from combustion products. It contains an incomparable wealth of energy, which is the main basis of life ... The need to solve the problem of using the processes of the natural energy cycle in nature is the imperative of our time. "

Oshchepkov coined the term "Kessor", which means the energy concentrator of the environment. In the literature on this subject there is a combination of "C-Kessor", which means a capacitor (capacitive) converter of environmental heat energy into electricity.

The tasks set by Oshchepkov go beyond conventional heat pumps. Heat pumps require a temperature gradient. We consider monothermal converters of environmental heat energy. Many theorists will argue it is impossible to use monotherm.

As early as the 1970s, employees of the Oshchepkov's Public Institute created a theory and performed calculations for the design of electronic systems for generating electricity by converting environmental energy. Several experimental electronic devices have been created that convert environmental energy directly into electrical power.

Oshchepkov pointed out the inappropriateness of the consumption of coal, oil and gas as fuel. This is the most valuable raw material for the chemical industry. In addition, he pointed out the irrationality of modern energy. Huge energy is only produced in one place, which is then transported to the consumer via expensive and not always reliable power lines, often on thousands of kilometers away.

Oshchepkov wrote: "Everything can be organized differently, easier, cheaper, more reliable, and more efficient. Let powerful energy systems power large factories and industries. The mass consumer, especially in the rural areas of Northern Russia and Siberia, can be equipped with mini-systems that convert the energy of the environment into electricity of one - two kilowatts output. This is enough to supply an apartment with energy for lighting, heating and other needs. The size of these converters will be no more than a table lamp. "

The question arises. This happened in the 1970s, over 50 years ago. Why do we still not have autonomous free energy generators in every apartment and every house that convert the heat from the environment to electricity? Today, in 2021, who try to stop the development of this advanced technology? I think you know the answer.

First, consider mechanical converters of environmental heat. One of the methods of mechanically converting the environment heat was proposed by B.M. Kondrashov (kbm@land.ru), in the article "Jet Energy Technologies", magazine "New Energy Technologies" at www.faraday.ru. The author writes about the "parallel connection" of additional air masses to the stationary jet stream of a gas turbine engine, which without additional fuel energy expenditure due to the "unbalanced force of the external pressure on the inlet bell (inlet) of the ejector." These developments relate to technologies for the "controlled use of atmospheric energy to do work," as the authors of this invention write.

Methods of using the atmospheric air are simple. The pulsations of the active jet generate a periodic negative pressure of the medium (low pressure) at the inlet of the ejector nozzle. This area of technologies also includes the discovery of O. I. Kudrin, the name is «The phenomenon of an unusually high increase in thrust in a gas ejection process with a pulsating active jet."

In his article, Kondrashov writes: "We take the energy from the atmosphere, which is converted by the "air heat pump". The conditions for the conversion of the energy of the atmosphere are created by the expansion of compressed air which is compressed by part of the power gained in previous periods. Therefore, devices that implement this method using open thermodynamic circuits are referred to as "atmospheric fuel-free jet engines". The work of BM Kondrashov can be studied in detail under his patents No. 2188960 RU "Process for energy conversion in a blasting system (options), jet-adaptive engine and gas generator". and an international patent application PCT/RU2002/000338 F02C3/32 "Method for energy conversion in jet engines" PCT WO2004 / 008180A1.

The theoretical foundations of these processes are developed by the authors as work on the "laminarization" of turbulent flows of air, gases and other media. In other words, the kinetic energy of the medium in a turbulent flow can only be fully used by us if we ensure an at least partial alignment of the motion vectors of the flow particles, i.e. the "flow laminarization". Let's explain the terms. The laminar flow of the medium (the Latin word "lamina" means "plate" or "strip") is a flow in which the medium moves in layers without mixing and pulsation, i.e. without accidental rapid changes in speed and pressure, as shown in Fig 173.

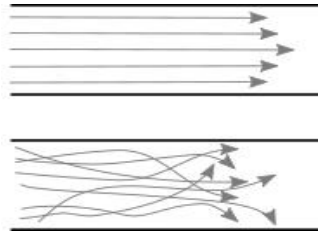


Fig. 173. Laminar und turbulent flows of some gas.

Obviously, usual airflow is not a laminar environment. A similar situation is observed with liquid flows. The easiest way to get “Laminar flow” is to balance the movement of the air molecules and get a straightened momentum of the molecules that can be used by directing the flow to the turbine. For this effect it is necessary to generate a rotation at a speed of more than 500 meters per second since it is average velocity of the air molecules for 1 Atm pressure and 22 degrees Celsius temperature.

Let us assume that we are building an energy converter with a radius of 160 centimeters. The circumference around which the airflow rotates is about one meter. The speed of 500 meters per second is 30,000 rpm, which is not a technical problem for modern electric drives. Hence the conclusion: all centrifugal fans and pumps partially laminarize the flow of the medium, which increases their efficiency. We have already discussed such a process of air laminarization in the chapter of the book about vortex and centrifugal energy converters, through our project with Yu.S. Potapov.

We come to the electronic conversion of heat energy. In this research area P. K. Oshchepkov studied semiconductor converters of heat to electricity. There are other methods as well. Russian developments in this field were patented by Nikolai Emelyanovich ZaeV, who showed the possibility of practical use of the nonlinearity of ferrites and some dielectrics. Ferrites work by absorbing heat energy from the environment in a magnetization-demagnetization cycles. Special dielectrics used in non-linear capacitors (named as “varicond”) to provide excess energy in charge-discharge cycles and also it absorbs heat from the environment.

In Journal of the Russian Physical Society, No. 1, 1991, ZaeV writes: "Another possibility to use the "concentration" of the dissipated heat energy can be based on the property of non-linear capacitors to change their capacitance depending on the electric field. Although the additive is usually extremely small, there are dielectrics that offer an additive of up to 20% in this capacitor, so their efficiency is already 120%, and this is not the limit. The discharge process of a non-linear capacitor does not equal to its charge process. If we now assemble an oscillating circuit with such a capacitor and a power of 1000 W, it is not only self-sufficient, but can also transfer 200 W of power to the payload side. Also this condenser cools down and heat flows to it from the surroundings (its exergy becomes negative)".

The application of this method requires the development of the technology of nonlinear dielectrics based on ferroelectrics, at first time it was developed at the Research Institute "Girikond", St. Petersburg, by Tatiana Nikolaevna Verbitskaya. We discussed the prospects for the development of this technology with her. Her textbook about new type of nonlinear capacitors named “varicond” was published in 1958. Variconds were previously mass-produced at the Vitebsk radio plant.

The method of nonlinear capacitors has its own subtleties, which are easier to understand through the method of mechanical analogy. Imagine the process of charging an ordinary capacitor without a dielectric with two plates and an air gap between them. When such a capacitor is charged, its plates are attracted to each other, and the

stronger, the greater the charge on them. If the capacitor plates are allowed to move, the distance between them will decrease as the capacitor charges.

This change of the gap between the plates corresponds to an increase in the capacitance of the capacitor, since the capacitance depends on the distance between the plates. So if you "give out" the same number of electrons you can get more stored energy as the capacity has increased. Imagine pouring water into a 10 liter bucket. Suppose the bucket is made of rubber and when it is filled, for example, its volume increases by 20%. As a result, when the water is drained, we get 12 liters of water, although the bucket becomes smaller and, when empty, has a volume of 10 liters. Another 2 liters were somehow "drawn from the environment" when "pouring water", so to speak "joined" the stream.

For an electrical capacitor, this means that with increasing capacity during charging, energy is absorbed from the medium and converted into excess stored potential electrical energy. The situation for a simple flat air dielectric capacitor is natural (the plates are attracted to each other when charging). This means that we can develop simple mechanical analogues of the varicond in which excess energy is accumulated in the form of potentially elastic compression energy from the stored energy. This could be a spring between the plates of the capacitor.

This cycle is slow to compare with electronic devices but significant charge can build up on the large capacitor plates and the device can produce high output even with low frequency vibration. When discharging, the plates diverge back to their original spacing, which reduces the initial capacitance of the capacitor (the spring is released). In this case we will probably also be able to see the effects of self-cooling.

The form of the dependence of the dielectric constant of the ferroelectric on the strength of the applied field is shown in the diagram in Fig. 174.

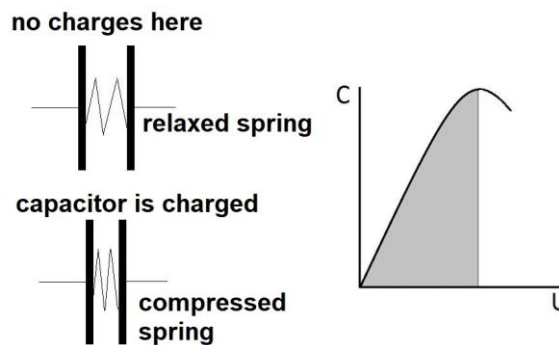


Fig. 174. Mechanical analogy with non-linear capacitor.

This technology has some nuances. In non-linear capacitors, the capacitance of a capacitor increases with increasing voltage and then decrease again. The capacitor should be charged up to the maximum value (peak in the diagram), otherwise the effect will be lost. The working range of the curve is in the graphic in Fig. 174 if voltage changes occur in this section of the curve in the charge-discharge cycle. Simple "charge-discharge" without taking into account this maximum working point of the permeability-field strength curve will not produce the expected effect.

Experiments with "non-linear" capacitors appear to be very promising for research, especially since the dependence of the dielectric constant of a ferroelectric on the applied voltage makes it possible to obtain 50-fold changes in capacitance rather than 20%.

The use of ferrite materials according to a similar concept also requires the presence of corresponding properties, namely a characteristic hysteresis loop during magnetization and demagnetization, Fig. 175.

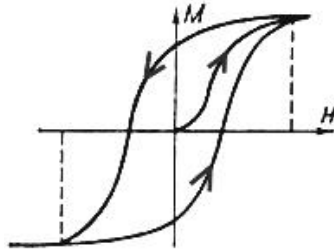


Fig. 175. Ferromagnetic hysteresis loop.

Almost all ferromagnets have these properties, so converters of heat energy using this technology can be investigated experimentally in a simple and detailed manner. Without hysteresis, the lower and upper curves on Fig. 175 should go together. The excess energy in such a process is greater, the greater the area of the hysteresis loop. N. E. Zhev experimentally showed that the specific energy density for such this type of heat energy converters by demagnetization cycles is about 3 kW per 1 kg of a simple ferrite material.

Priorities on this topic are N.E. Zhev patent for a "Method of Cooling Some Condensed Dielectrics with a Changing Electric Field to Generate Energy" No. 32-OT-10159; November 14, 1979, application for the invention "Process for converting thermal energy from dielectrics into electrical energy", No. 3601725/07 (084905), June 4, 1983 and "Process for converting thermal energy from ferrites into electrical energy", No. 3601726/25 (084904), patent RU2227947, September 11, 2002

Let us consider another direction of research in the field of conversion of heat energy of the environment. There is an American patent for a low-power, but quite real, way of generating free energy from heat noises. In 1973 John Wiegand patented a system based on the Barkhausen effect in the USA, patent no.3757754, the diagram is in Fig. 176.

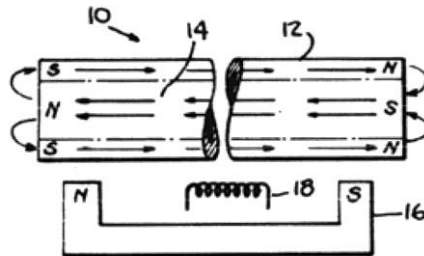


Fig. 176. Wiegand Patent, US Nr. 3,757,754.

Heat noises in a magnetostrictive material enable low power to be generated by absorbing heat from the air. Wiegand Electronics manufactures power sources with 12 volts and low power, with this power source a consumers can be supplied with an output of several milliwatts. In device shown at Fig. 176, the magnetic core 14 is made of a soft magnetic material and its cylindrical shell 12 is made of a high-coercive magnetic material. Magnet 16 and coil 18 supply power to the load. The Wiegand generator works by following technology: heat noise in the core 14 suddenly changes its magnetic properties, including magnetic permeability. As a result of these changes, the conditions for the propagation of the magnetic flux generated by the permanent magnet 12 in space change, and part of its field passing through the air also changes its value. This change affects the field of the magnet 16 and deflects it away from the coil. This creates a current in the coil due to electromagnetic induction effect.

Everything works here and it is real device, although the device only generates a few milliwatts! Nevertheless, the device is used, for example an electronic door lock was developed with this perpetual power source that constantly provide charging of the battery. The same principle can be made for several watts level or more.

Let us note another Russian project on development of semiconductor heat converters. A well-known project by a team of authors from St. Petersburg under the direction of V.V. Kaminski. "Thermoelectric generator (options) and a method for producing a thermoelectric generator", application for invention no. 2005120519/28 from June 22, 2005, authors V.V. Kaminsky, A. V. Golubkov, M. M. Kazanin, I. V. Pavlov, S. M. Solowjew, N. V. Sharenkova. The working element of this energy converter consists of samarium sulfide SmS. The power output of this experimental setup is very small, a few milliwatts.

There is another example of the same research area. In the USA there are projects at MIT (Massachusetts Institute of Technology) that can be described as "modern thermionics". More than a hundred years ago, thermionics researchers were concerned with the generation of electricity between the hot cathode and the cold anode in an electron vacuum tube. Modern scientists create microstructures in semiconductor materials for the same purposes, but for operation at relatively low temperatures. These multilayer semiconductor structures are called "thermal diodes". So far they have reached operating temperatures of 200 to 400 degrees Celsius, but that is already better than the 1000 degrees that were necessary in vacuum tubes of the last century to achieve the effect.

A similar converter, called a Thermo Chip, was developed by ENECO, USA. The company is currently being taken over by MicroPower Global in cooperation with the University of Texas, USA. The working medium of the converter is lead telluride. The efficiency is no worse than that of crystalline solar panels, reaching 20%, and sunlight is not required to convert dissipated heat energy to electricity.

The California Institute also is researching the direct conversion of heat into electricity; their converters achieve efficiency about 40%. The device is named AMTEC "The alkali-metal-thermo-to-electrical converter".

The American company Fellows Research Group, Inc. developed and patented a technology for converting the heat by means of acoustic waves into a high-pressure gas. The sound wave source requires little primary energy, but the energy generated by the waves is much more than the power of the primary source. The system works with a heat exchanger that absorbs the heat given off from the environment. The description is contained in U.S. Patent No. 6,385,972.

Professor Symko from the University of Utah, USA, heads the Thermal Acoustic Piezo Energy Conversion (TAPEC) project, and to my mind these effects may be one of the previously described variants of ZaeV's effects associated with nonlinear dielectrics, an analogy to his patent. In TAPEC technology there are many piezoelectric emitters and it using ferroelectrics.

Let us also remember one more simple direction of research on heat energy converters. There are technologies of concentration of dissipated heat energy by mirrors. Calculations and experiments show that the power of dissipated heat radiation is about 400 W per square meter even without sunlight, in complete darkness, but at room temperature of the air. By means of mirrors, reflectors and other heat radiation concentrators, this heat energy can be concentrated on the heat exchanger and the some working medium can be heated to any temperature. This means that a conventional steam engine, for example the Stirling engine or other drive, can be used to generate electricity in any time, during a day and night.

Another example on the device with external heat supply. By modernizing the conventional Stirling engine, Kenneth M. Rauen has created a converter of the environmental heat into mechanical energy that can turn the drive of an electric generator without consuming fuel. The diagram is Fig. 177.

In short, the Rauen's machine works in two cycles: at first, the gas compression causes it to be heated, creating an "internal heat source" for the next part of the cycle. Then the "internal heat source" is cooled down when the piston starts moving in the other direction. A test model was built that demonstrates the possibility of generating additional electricity by absorbing environmental heat. Details can be found in U.S. Patent No. 6,698,200, issued March 2, 2004.

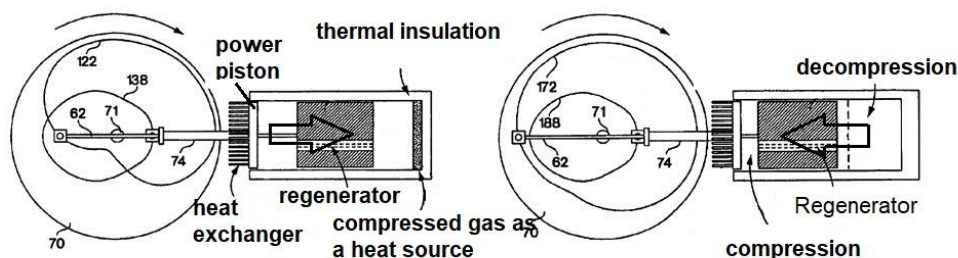


Fig. 177. Rauen generator.

A very promising Russian development in the field of isothermal energy converters was made by Yuri Evgenievich Vinogradov. It is named "Nyquistor". Nyquist's heat noises are considered to be a source of energy. According to the author's calculations, this energy sources can deliver around 100 watts per square centimeter of work surface at a room temperature.

This topic was experimental tested by me, since in any electronics and any radio technology some noise generator is used. It consists of an amplifier and a "noise source", in the role of which an ordinary semiconductor diode can be used. The method seems to be easy for practical innovation and many researchers have projects on it. Power can be gained by combining signals from thousands and millions of "noisy" resistors or semiconductor junctions. The production of a "matrix" with millions of nanoelements and connecting conductors is not a problem on the current level of the electronics industry.

The difficulty with implementing this idea is that the noise pulses are out of phase so that simple adding them together does not result in an increase in the current in the load. An analogy arises with the attempt to use the thermally chaotic movement of air molecules. The signal of each "noisy" element must be "straightened" or rectified to receive an electrical current of one direction for all "noisy" microelements. The solution proposed by Vinogradov is to use "varicaps", it is a semiconductor element that combines the necessary properties of a "noisy element", a property of rectifying diode and also it is electrical storage capacitor. The author made many experiments and he received confirmation of the principle.

An interesting calculation of the cost of this method, by Yu.E. Vinogradov. In the article "About the open possibilities of building isothermal converters" he wrote about these calculations. A plate with an area of 1 square meter can theoretically generate an output of more than 260 kW (depending on the ambient temperature up to 1 MW). For comparison we can say about the solar panels. In central Russia area 1 sq. meter of the solar panels produce only 200 watts when the weather is good. At the same time, the "Nyquistor" panel can cost about 50 Euros per 1 kW of installation power.

Let us briefly mention the "method of direct conversion of thermal energy into electrical energy", by authors Danielian M.I. and others the essence of the method is that electric capacitors with aluminum electrodes are charged with sawtooth pulses and there is a pause between the pulses, the duration of the pause is 2 - 5 pulses. The authors show that the capacitor is additionally charged during the "break", although the primary source is switched off. The discharge gives more energy than is consumed. The authors

see the penetration of charge carriers into the micro-relief of the electrodes as the cause of this “self-charging”. In my opinion, the effect is also due to the inertia of the charge carriers, which continue to move after the charge pulse has ended and the “pause” has begun. With this technology, too, the production of excess energy is explained by the absorption of heat from the environment. The inertia of the electrons in pulsed mode can also explain the additional power in my experiment "pulsed photoelectric effect" (there will be a chapter on the photoelectric effect later in this book).

The question of the conversion of the environment heat can be formulated also as a technology of the effective cooling of the working medium. By creating a low temperature zone without consuming the energy of the primary source, it is possible to provide a temperature difference with the ambient temperature. This temperature gradient creates conditions for the operation of standard thermoelectric converters (Peltier effect).

One of the most promising directions in this area is magnetic cooling. Let's consider the design of a magnetic refrigerator, Astronautics Corp. www.astronautics.com and Ames Laboratory www.ameslab.gov, Fig. 178.

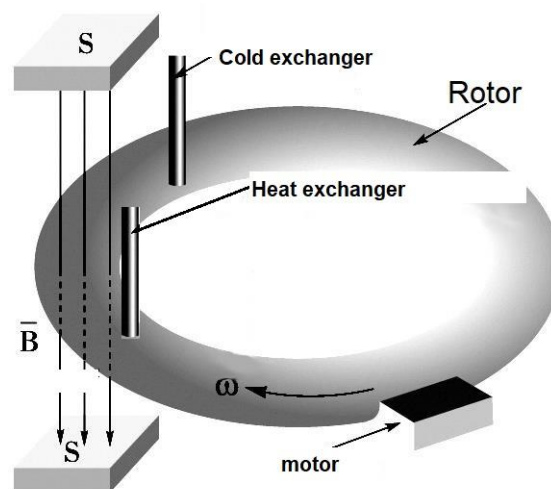


Fig. 178. Magnetic refrigerator.

The refrigerator is a rotating structure consisting of a wheel containing segments with gadolinium powder and a strong permanent magnet. The wheel rotates through the working gap of the magnet. When a segment with gadolinium enters a magnetic field, a magnetocaloric effect occurs, causing the segment to heat up. This heat is dissipated through a water-cooled heat exchanger. After the gadolinium leaves the magnetic field, the magnetocaloric effect occurs with the opposite sign and the ring material cools down.

This gadolinium refrigerator is a very small compact device that works practically noiselessly and vibration-free, which is cheap compared to the steam-gas-cycle refrigerators. "The permanent magnet and the working medium gadolinium do not require an energy supply," says Professor Karl Gschneidner from the Ames Laboratory. Small amount of energy is necessary to rotate it and keep the water pumps running.

This device can be autonomous, as the temperature difference generated in them can easily be converted into electricity and the output power is many times higher than the power consumed by the rotor drive.

The magnetocaloric effect (MCE), that is the basis of the operation of a magnetic refrigerator, was discovered as early as 1881. Its essence lies in the ability of some special substances to warm up and cool down under the influence of a magnetic field. A change in temperature is the result of a redistribution of the internal energy of a substance between the system of magnetic moments of the atoms and the system of

magnetic moments of the crystal lattice. Magnetization and demagnetization are analogous to the cycles of compression and expansion of freon in conventional refrigerators and heat pumps. Since a solid has a higher heat capacity, the change in entropy per unit volume in solid magnetic materials is seven times higher than in a gas. In theory, magnetic refrigerators should be seven times more compact than gas refrigerators.

In Russia this effect is being investigated by the company "Perspective Magnetic Technologies and Consulting" and you can look at their www.ndfeb.ru. It is headed by Alexander Tishin, doctor of physics and mathematics, head of the laboratory of the Faculty of Physics of Moscow State University. The setup diagram is in Fig. 179.

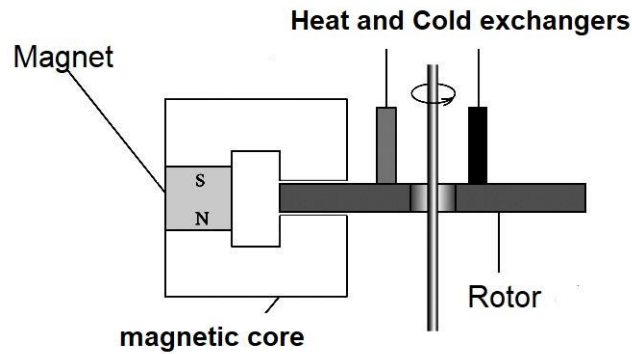


Fig. 179. Magneto-caloric effect in refrigerator.

In particular, at the Faculty of Physics at Moscow State University, a lot of work has been done to analyze the properties of numerous combinations of rare earth elements and magnetic metals and other materials. The rhodium-iron alloy Fe49Rh51 has been found to have a maximum specific power of the known effect that is many times higher than the efficiency of materials commonly used in magnet cooling research.

Now I offer to look at some research of 2003-2021 in my Faraday Lab ltd and my home laboratory. It is also area of heat energy conversion.

An important invention in the field of mechanical inversion of heat energy was made by t. Petersburg author Mikhail Profirievich Beshok (beshok@rambler.ru). His article "Energy of Air" was published in New Energy magazine No. 1, 2003. The essence of his invention is simple. On the surface of the plate, a relief with dimensions on the order of 1-10 free path lengths of an air molecule should be created. These dimensions are about elements of modern microcircuits, it is about 100-50 nanometers. The other side of the plate must be a simple flat surface, Fig. 180.

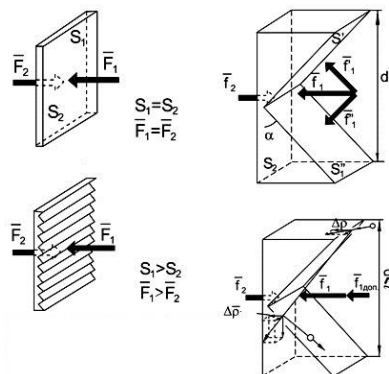


Fig. 180. Ideas by Michael Beshok about "energy from air".

It is known that under normal conditions of atmospheric pressure and room temperature, air molecules move randomly at a speed of 500 meters per second. The mass of one cubic meter of air is more than 1 kg. It is easy to calculate that the atmosphere contains a huge amount of energy, it could "work in a turbine", but the movement of air molecules is chaotic. Meanwhile, the movement of the molecule in the "free path" section is linear in interval between collisions. For air under normal conditions, this length is about 100 nm. So, we can design some relief of the surface to get non-compensated propulsion force here, since air pressure on different sides of this plate should be different. So, this simple technology allows getting unidirectional propulsion force by means of redirecting of environmental air molecules. It is also heat energy conversion technology.

It should be noted that the author M. P. Beshok does not take into account that the reflection of gas molecules is not a mirror reflection. Molecules are mainly reflected diffusely. Their direction of movement after the reflection is mostly unpredictable. This must be taken into account when designing a nano-relief by means of computer simulation.

Note that nanotechnologies that have emerged in recent years make it possible to design the required elements of an energy converter with a microrelief, for example using nanotubes or other nanostructures. A micro-relief of 100 nm is a simple technical task for any microcircuit manufacturer. Today, in the year 2021, they are producing microcircuit elements with dimensions of several nanometers. So, for small size nanostructures we can work on this technology with high gas pressure, about 10 Atm or more. It will increase the effect in times.

So, let me explain how it works. It is clear that when both sides of the plate are flat, the same air pressure force is acting on them. Let's suppose one side of the plate is made with some regular nanorelief, for example, with relief on Fig. 180. If the dimensions of the surface relief are sufficiently small, the interactions of molecules with this surface will violate the equilibrium of forces and total sum force will be not equal to zero.

The normal atmospheric pressure is about 1 kg per square centimeter, and a pressure difference of one percent can provide significant force with this technology. Preliminary, very rough calculations show that with a pressure difference of 10 percent, we can estimate propulsion force about one ton per square meter of surface. By placing these plates on the rotor, we can achieve constant rotation of the rotor of a powerful electric generator. The application in aviation is obvious. By means of environmental energy, we can get enormous lifting force for some airplane without using any fuel. A package of 100 plates, each 5 mm thick and with a 5 mm gap, will take a volume of one cubic meter and this package can lift 100 tons weight.

This technology is discussed in more detail in my book *New Aerospace Technologies*. Calculations are provided for aircraft with a load capacity of 1 million tons, and this technology does not require fuel.

When developing this idea, I suggested using this effect in a closed volume (in a sealed box). We can also pump any gas with heavy molecules into this "box". We can also increase the gas pressure inside the case and amplify the effect. This technology can thus be used in space technology as fuel less propulsion drive. Of course, we cannot extract thermal energy from the environment in open space. We have to provide some flow of heat into this structure on the one side of the "box" and the heat dissipation on the other side of the "box".

The proposed material is named AFM - Active Force Material, or Power Active Nanomaterial because its functions are to create an active force that acts on the plate

due to different ambient pressures on different sides of the plate. The force is said to be "active" because it does not require reactive mass ejection. We solve the problem of creating a driving force in the opposite way. With jet propellers, the working mass receives an impulse and is thrown away from the propeller, giving it a corresponding impulse. The opposite technology is the case with an active material. In this case the plate does not repel molecules from itself; it receives a kinetic momentum that corresponds to all momentums of the neighboring molecules. Of course, the law of conservation of momentum is works here. At the same time, the environment or the gas in the "box" will cools down.

Mikhail Beshok made an important remark about the need for an elastic collision with the plate surface. This is a condition for the kinetic momentum transmission from the molecule to the plate, Fig. 181. A plate, one side of which is made of a material that has elastic properties when interacting with air molecules and the other side of the plate is covered with a material that absorbs the impact momentum of air molecules, is deformed and partially converts the momentum into heat energy.

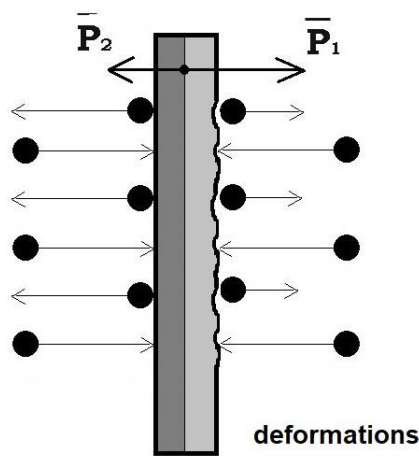


Fig. 181. Elastic and inelastic sides of the plate.

Note that this principle was also tested experimentally for me, I reported at the conference "New ideas in science", 1996, St. Petersburg, report "The concept of gravity", and later, in 1998, at the conference "Space, Time and Gravity", Petergoff, University, Collection of Reports, Part 1, 1999. My article on this topic was published in the American journal ELECTRIC SPACECRAFT, No. 27, 1997.

The simplest experiment on this topic has been known since 1935 and was first described in the journal Popular Science, No. 126, 1935, which was explained in my report in 1996. Fig. 182 shows the results of the interaction of two moving weights. The masses «run away" from the center point and they have the same kinetic momentum.

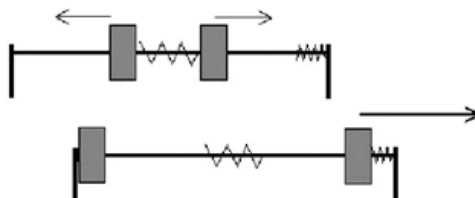


Fig. 182. Frolov's Experiment of 1996.

At the beginning of the experiment, the spring is compressed and the two masses (lead pieces) are held by the thread. After the thread is broken (burned out), they will move in different directions, their kinetic momentum is the same. On the right of the body there is elastic damper (rubber), on the left side it is hard. This creates better conditions for

the transmission of the kinetic momentum on the right side of the device than on the left side of the device. On the left side most of the kinetic momentum will be converted into heat. On the right side of this device the kinetic momentum will be transferred to the body mainly. Because of the non-zero total kinetic momentum, the entire device is shifted in the direction of the elastic interaction. The experiment can easily be repeated with the same result. It's best to test it on a floating platform or on a polished table.

Consideration of this simple experiment lead us to better understand the operating conditions of a device that creates a directional force due to the interaction of air molecules with elements of nanostructures on the surface of the plate. The commercialization of this invention requires some research work to find optimal nanomaterials for the elastic interaction with gas molecules. This can be achieved using thin elastic nano- nanowires.

It should be noted that in 2002 a patent application was filed on this subject by the author S. N. Verevkin, registration number 2002115522/06, 10.06.2002. He proposed to create a transport drive that uses a plate with one side elastic properties and the other side is not elastic. The inventor Verevkin did not discuss the methods of technical implementation of this idea.

The partial generation of energy from gas particles should be accompanied by a heating of nano-elements, for example, nanowires are heated due to their deformations. So, we need a heat exchanger here. It is important to note that there is a way to get temperature gradient with these designs. We can use it to generate electricity using the Peltier effect, for example.

In another case, a special nanorelief on surface can provide propulsion force by means of organizing the linear movement of gas molecules in the boundary area near the plate surface. This is the "laminarization effect"; we have already discussed this effect in the chapter on the molecular motor. This method of "laminarizing" the movement of gas molecules can be divided into two types. At first, it can be a circular movement of particles on the surface of the plate, or a movement, mainly perpendicular to the plate. Accordingly, the pressure of the medium on the plate either decreases or increases from the relief side. The force can be generated both along the plate and perpendicular to the plate.

Briefly about the experiments of 2011-2012 in this area. I've done some experiments with different materials. For example, one-sided aerogel coating was tested and 1 square centimeter plate with one side nanotubes was tested in my laboratory. Single-wall carbon nanotubes also are area of my research interest. The powder of nanotubes can be sprayed vertically on the surface to create one-side Active Force Material. The effects are currently being found, but at the level of the measurement error. I measure the effect with a digital scale with an accuracy of 0.01 grams. It would be interesting to organize joint experiments on this topic in some nanotechnology laboratory.

We come to the technologies of autonomous fuel less power source with water or hydrogen play the main role. I believe The World was created intelligently by wise Creator, so we have free renewable fuel on the planet. This fuel is water.

Chapter 15

Water and Hydrogen in Power Engineering

Water is therefore a liquid fuel that consists of bound gases, i.e. oxygen and hydrogen in a safe and compact package. We have already talked about using centrifugal force to efficiently produce hydrogen and oxygen from water. In this chapter we will see more examples of power generators that use water or hydrogen.

Note that the electrolysis process of production of the hydrogen in Russia was patented by Professor Lachinov in 1888. In his experiments with high-pressure electrolyzers it was shown that the consumption energy under certain conditions does not depend on the pressure of the generated gas, so this high-pressure gases can do more work than it is expended for the decomposition of water. The input power was only 11% of the received compressed gas energy. The excess energy when the gas is released is absorbed from the environment. Lachinov noticed the facts of freezing and the frost on the external walls of his electrolyzers. This can be the result of gas cooling during its rapid expansion.

We already looked at Keely's resonance method, which involves vibrating to get the gas out of water and then using high pressure gas in Keely's machine to do useful work. These and other methods have the same characteristic: the authors obtain high-pressure gas by different ways with low energy consumption from the primary source.

The main question is the efficiency of the water decomposition process. This factor is provided by understanding the structure of water molecules and their internal connections with the surrounding Aether.

An interesting approach to this subject was made by Ilya L. Gerlovin. His theory deals with the "activation" of different environments. Activation is a violation of the energy balance between the atoms of a substance and the Aether that is connected to them. This leads to a metastable state of the molecule and its spontaneous decay. This way of activation of water takes place in the presence of a catalyst in the water, which is not consumed, but creates a spatial structure around itself in the Aether, which influences the stability of the water molecules.

According to Gerlovin, in electrolysis the water can be activated without electric current through the water. It can be created by isolating one of the electrodes from the water, but creating a high voltage electric field. In this case, electrolysis occurs even though there is no conduction current flowing through the water. The theory is described in the book "Fundamentals of a Unified Theory of All Interactions in Matter", Ilya L. Gerlovin, 1990.

An important addition to the general picture of the universe created by Gerlovin is his formula for describing the density of Aether particles in an active "disturbed state" in which they can interact with particles of "rough matter". We call this value the density of the Aether particles M . The total number of Aether particles in the volume is called N . Gerlovin suggested the formula $M = (aN) / 3.14$, where a is the known constant of the fine structure, which corresponds to about $1/137$. This formula means that in our world a small part of the total amount of Aether particles is "activated", it is about $1/430$ part of the total amount of the Aether.

From the history of the development of significant inventions in the area of high-efficiency electrolysis, let's consider the project by Ivan Stepanovich Filimonenko. He was involved in the highly efficient electrolysis of heavy water in "Warm Fusion" plants, which were operated at temperatures of "only" 1150 degrees Celsius. By decree of the Council of Ministers of the USSR and the Central Committee of the CPSU No. 715/296 of July 23, 1960, he was appointed as head of the project on the new principles of energy production. This new direction of scientific research was supported by S. P. Korolev, G. K. Zhukov and I. V. Kurchatov. It was not "cold" fusion but it can be applied for industrial power plants.

Later, in 1989, there was published experimental data on "cold fusion" by Pons and Fleischmann. They also used deuterium in their electrolyser with expensive palladium electrodes. There are many explanations of it. Let me say my idea.

To my mind, the material of the electrodes is important here. Palladium, like some other metals with an affinity for hydrogen, can "absorb" hydrogen and hold it in the crystal lattice of the metal electrode. Please note the atoms of hydrogen are absorbed here. This process of absorption takes place without a very small external electric energy. It is necessary to use some small voltage between anode and cathode to attract the hydrogen into the metal. The release of hydrogen occurs with large amount of heat energy since atomic hydrogen is recombining to molecular hydrogen with great heat output.

This research was made in many laboratories around the world to find optimal methods for compact storage of hydrogen and methods for its "gentle" release.

Let us note another invention that uses heavy water. Author is A. I. Koldomasow, Volgodonsk, Russia. The scheme of his experiment is Fig. 183. Koldomasov pumped heavy water at a pressure of 50-70 atmospheres through a small hole in a dielectric material (length of the hole is 20 mm, diameter of the hole is 2 mm). This creates plasma (electrons) and a high voltage of around 500 kilovolts at the exit from the hole.

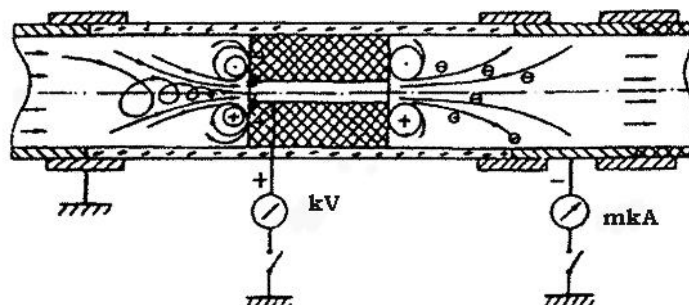


Fig. 183. Koldomasov's Experiment.

There is no radioactive radiation in this device. Koldomasov has calculated that his technology allow to use 100 liters of heavy water to provide a large city with electricity for a year. Deuterium water is not expensive but it is not free.

An interesting technology was suggested by Randall Mills (R. Mills, USA). In a Mills electrolytic cell, energy is released through a catalytic process. The electron in a hydrogen atom is "requested to move to a lower energy level". This research showed that the output power is many times higher than the input power. An experimental "Mills cell" with a power consumption of 18 watts generates 50 watts. According to Mills' theory, hydrogen atoms in a water molecule can be at different energy sub-levels. Water molecules with hydrogen atoms at a lower energy level than usual were named by Mills as a "hydrino".

Currently, many laboratories work with "heavy water" deuterium, but it is not very perspective research direction, to my mind. Deuterium water has to be specially "produced", it is a kind of fuel and not cheap. For domestic "reactors" this method is impractical, i.e. the "power industry of the deuterium water" remains a centralized system with all its disadvantages. It is advisable to develop other methods of using any "public" water as fuel.

Interesting and practical solution on resonance electrolysis was found by the American inventor Stanley Meyer. Figure 184 shows a schematic diagram of a Meyer cell as described in U.S. Patent No. 5,149,407, issued September 22, 1992.

By the way, September 22nd is the birthday of Michael Faraday, who discovered the laws of electrolysis, which are not out of date, but the laws now are evolving.

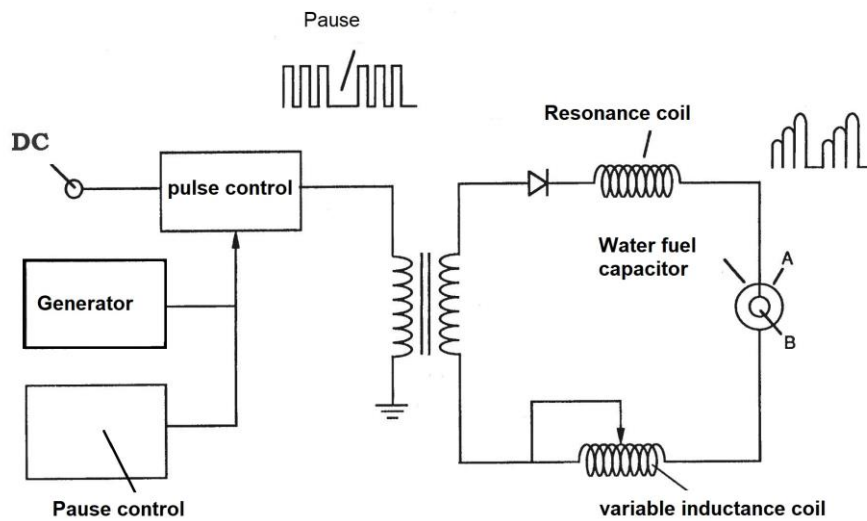


Fig. 184. Scheme of the Meyer electrolyser.

Meyer developed the classical understanding of electrolysis and added to it the pulsed resonance mode. Note that Meyer refers to a "water-fuel capacitor" in the diagram of the patent for an electrolyser. It was made of cylindrical coaxial electrodes. In fact, two cylindrical electrodes and clean pure water between them create a capacitor with a some capacity. Pure distilled water has a dielectric constant of about 81, the largest known liquid, so the capacitance of such a capacitor can be quite large. The circuit also has an adjustable resonance inductance (in the figure below right).

Fig. 185 shows a diagram from the Meyer patent to explain the process of the "stepped pulsed resonant mode of operation".

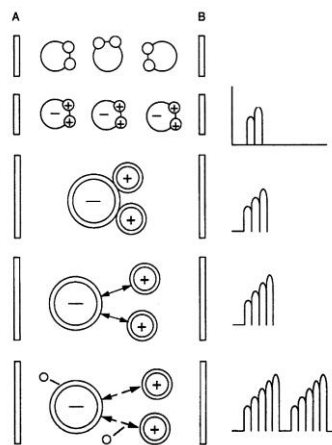


Fig. 185. Pulsed mode.

The process is as follows, points as described in the author's patent:

(A) A capacitor in which water is enclosed as a dielectric liquid between plates that are connected in a series resonant circuit with a choke.

(B) A pulsating unipolar voltage is applied to the capacitor, the polarity of which is in no way connected to external ground, so that the water molecules in the capacitor are stretched by the electrical polarization forces.

(C) Choose the frequency of the pulses entering the capacitor according to the natural resonance frequency of the molecule.

(D) Prolonged exposure to resonance pulses causes the vibrational energy of the molecules to increase with each pulse.

(E) The combination of a pulsating and constant electric field leads to the fact that at some point the strength of the electrical connection in the molecule is weakened so much that the strength of the external electrical field exceeds the binding energy and the oxygen and hydrogen atoms are released as independent gases.

(F) A ready-to-use mixture of oxygen, hydrogen and other gases dissolved in water is collected as fuel.

So, the primary source supplies voltage impulses until the water molecule dissociates. Meyer writes: "Water molecules expand under electrical polarization forces." It is important note about polarization forces! The second important factor is vibrations: The pulses "vibrate" the molecules, as the author writes, the level of the vibrational energy of the molecules increases.

The molecule of water is "stretched" by a constant field and it "vibrates" even under the pulse. Indeed, these conditions do not include big input power and power consumption from the primary source can be minimized.

When an electrical current occurs, the sensor circuit detects that surge and blocks the pulse source for several cycles, allowing the water to disintegrate without the expense of the power source. The duration of the pause can be set manually. During the break, the electrolysis takes place "by inertia" and free of charge. Then a new pulse cycle begins, charging the electrolyser capacitor in a "gradual process" that causes the molecules to "stretch and vibrate". An interesting and simple solution, so to speak, to "shake out the Aether bonds" from the water molecule, causing it to break down into atoms.

Design information can be useful: Meyer's patent wrote about spacing (gap) between the electrodes that is about 1.5 mm. The potential in the pulse for the Meyer circuit reached tens of thousands of volts (20 kilovolts and more), but since the current was small, the power consumption from the primary source was small. It is important to note that the pulses are short; in some experiments by Meyer's followers, pulse duration of 0.3 microseconds has been found. These are frequencies of exposure to water in the range of around 3 megahertz.

Meyer achieved an efficiency of 17 to 1, i.e. 1700%. Modern experiments confirm these claims, although different authors get different results about 200% - 600%. Meyer's patent has been tested and examined by experts, including US military specialists, for three years. This has raised the author's patents to the level of independent critical scientific and technical evidence that the devices actually work as described. It is a very rare case! Usually the authors of patents present their idea formally and rather vaguely.

Stanley Meyer also built an electrolytic gas generator for car, and the gas output was sufficient to run a car engine. The electrolyser was powered from a car battery. Author demonstrated this car in travels over thousands of kilometers.

There is an interesting feature of Meyer's technology. He suggested using a laser to activate additionally water in his electrolyser circuit. A similar method using a "green" laser has been investigated by Japanese scientists. Perhaps the influence of photons of a certain frequency on water creates optimal conditions for its dissociation. In combination with pulses from an electric field, this leads to an increase in the efficiency of the process.

It should be noted that Andrija Henry K. Puharich previously made similar research in the United States. He found special resonance frequencies for water splitting, in particular it is 620 Hz, 630 Hz, 12000 Hz and 42800 Hz. Incidentally, John Keely also pointed out that the frequency 42712.2 Hz is the "water breakthrough frequency". Puharich wrote: "Water molecules destroy vibrations with a frequency of around 600 Hz." He added further harmonics of the same fundamental frequency to this effect and let the proton "spin" in the hydrogen atom, which intensified the effect. The combination of "sounds of several frequencies" in harmony with one another produced the effect of water decomposition with low electrolysis costs.

Modern designers of resonance electrolysers call the frequency of 600 Hz the "Puharich frequency". At 40 kilovolts, the voltage in Puharich's electrolyser was significantly less than the "breakdown level". At a distance of 5 mm between the electrodes of the capacitor (electrolyser plate), a breakdown occurred at a voltage of 150 kilovolts. Different frequencies were examined, including short pulses with a frequency of 9.94 MHz. Puharich's conditions made it possible to obtain 20 times more hydrogen than in a conventional electrolyser. For a detailed study, I recommend finding U.S. Patent No. 4,394,230 dated July 19, 1983 by Henry K. Puharich.

It can be interesting to say here about fantastic efficiency of water electrolysis by research group led by Sergei Anatolyevich Petrov, Moscow. His research team succeeded in developing Mayer's ideas on a qualitatively new level. In this case the electrolyser is disconnected from the battery after the water has been "activated" by the electric field before the electric current through the water begins. The electrolyser becomes a source of electrons, and electrical current is transferred from its electrodes to a storage capacitor. The resulting gas is a by-product that can be burned with known fuel cells or returned to its original state with water. This transforms the electrolysis of water from an expensive gas extraction method into electricity generation without an external power source and without water consumption. A prototype was built and the efficiency was measured. Standard electrolysis process requires about 4 kWh - 7 kWh of electricity to generate one cubic meter of gas (oxygen and hydrogen). Petrov's technology makes it possible to extract this amount of gas using only 10-20 watts per hour. This technology has great prospects for commercial application. With this efficiency, the electrolyser, together with a fuel cell, becomes an autonomous power source, and no water is used here if the water is circulates in this system.

I tested this technology in my laboratory. The principle really works. This algorithm can be referred to as "push-pull". In the first cycle we activate the water while the electrodes are covered with a gas film. In the second cycle we turn off the primary voltage source and connect the electrodes to some electric load or to some electric capacitor to collect electrons. The collected electrons can be restored to primary battery. The process is slow but effective when the primary source is disconnected from the electrolyser in a timely manner.

Note another important feature of the Meyer scheme that is coaxial arrangement of the electrodes. In circuits with flat electrodes, different conditions are created for the dissociation of water. Cylindrical or hemispherical electrodes already ensure a high degree of efficiency through the optimal spatial structure of the electrical field. Such electrolysers or water heaters operate in a resonant cavity environment in which

standing waves can be generated. As Meyer wrote, a water molecule “stretches and sways” under such conditions and then breaks down into atoms (gas).

In connection with these notes on the shape of the electrodes, let us consider the resonance water heater by Peter Davy, which was invented as early as 1944. The heating efficiency reaches 2000%. The author was not an electrical engineer, but a saxophonist. In the photo Fig. 186 shows a scheme and a photo of a Davy heater. His theory is based on the author's ideas about sound resonance. Peter Davy demonstrated his invention at a conference in 2008 when he was 92 years old.

The device is pretty simple. The phase wire of the electric grid is connected to the middle electrode, zero wire (or ground wire) is connected to the external hemisphere electrode. The usual frequency of the alternating current network is 50 Hz, the electrode spacing is about 2 - 4 mm.

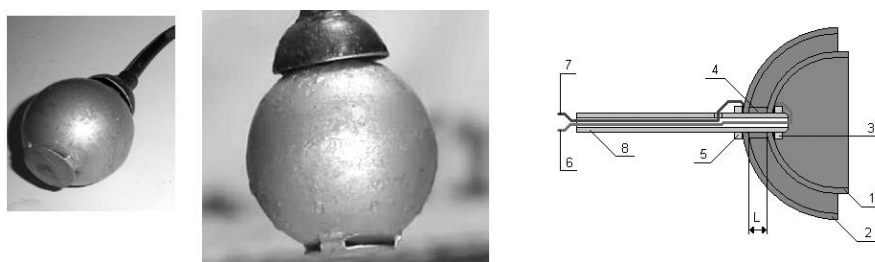


Fig. 186. Peter Davy water heater.

This Peter Davy invention does not relate to energy sources, it is a "heater". The application is possible for water heaters, but we can plan its application on an industrial scale to extract high pressure steam from water which can then turn the turbines of electric generators. With an efficiency of 20 to 1, this simple method enables autonomous operation even on a primitive steam engine with an electric generator.

Tests in my lab were done. Two hemispherical electrodes were made from old telephone bells of different sizes. Power consumption and heat dissipation were measured. Efficiency about 400% was achieved, not including gas evolution.

Consider another example: a low-current electrolyser, Patent of Russia No. 2227817, author Professor Philip Mikhailovich Kanarev, Krasnodar. Indeed, Kanarev's device uses low voltage. Note that in laboratory models of the Kanarev electrolyser, cylindrical steel electrodes are also used, as in the Meyer scheme. The cell of the Kanarev low-current electrolyser is a capacitor that charges at a low voltage of 1.5 - 2 volts. Then it gradually discharges under the influence of the processes going on in it. During this time, the device consumes very little electricity. The energy consumption for the production of hydrogen from water with Kanarev's low-ampere electrolysis drops practically by 12 times and can theoretically be reduced by 2000 times. It is fantastic value about 2 watts per hour for the production of one cubic meter of hydrogen instead of the usual 4 kWh.

With these methods for obtaining inexpensive hydrogen from water, industrial electrolysers can be created. Obviously, on the basis of efficient electrolysers, it seems possible to build power plants of any capacity, as well as water fuel transport.

Another interesting solution has been found in the case of using salt or sea water. Chemists at Pennsylvania State University in the United States have confirmed that engineer John Kanzius was actually able to develop an apparatus that can burn salt water. In the Kanzius apparatus, salt water is exposed to radio waves that weaken the bonds between its components and release hydrogen. Perhaps this effect is similar to the Puharich method, but for frequencies around 10 MHz.

The author emphasizes that the process of hydrogen evolution is not electrolysis, but another phenomenon associated with the high frequency excitation of salt water. According to the Kansius method, the water does not have to be subjected to any special treatment, any salt water is suitable, even directly from the sea. That opens up great prospects. Salt water is available in almost every region of the world in almost unlimited quantities; the device is harmless to the environment. The resulting gas is burned and the waste from this energy production is pure water. The author has applied for a patent for the use of salt water as an alternative fuel.

There is also such a promising method of dissociating water into oxygen and hydrogen as catalytic photosynthesis. An example of this technology is the work of Dan Nocera of the American University of MIT. As with organic photosynthesis in nature, the Nocker reaction uses sunlight, carbon dioxide and water, but the reaction energy is not stored in the form of sugars, as in plants, but free hydrogen is obtained here. The technology is called ARPA-E. The resulting hydrogen can be converted into electricity with a fuel cell or simply "burned in the boiler room". The Nocker pilot system has already been exhibited and produces 30 kWh with distilled water.

Finally, consider my project on efficient generation of heat energy in a closed cycles hydrogen reactor. The project was organized in my laboratory in 2003 on the initiative of Nicholas Moller, Spectrum Investments company, with 50% financial participation from the parties. The results of the work also belong equally to both parties.

The story of this project began when Moller, after studying publications on the subject of "atomic hydrogen", including the General Electric archives for the time when the famous physicist Irwin Langmuir worked there, suggested building and testing an experimental set-up. This device was planned to extract and burn (recombine) atomic hydrogen.

Irwin Langmuir in 1902 made fundamental research for the production of reliable tungsten filaments for incandescent lamps, drew attention to the effects of the self-heating of a tungsten filament in atomic hydrogen. We decided to investigate this topic more closely in order to gain excess heat energy.

In all electrolyzers, with the production of molecular hydrogen, there is some percentage of atomic hydrogen. This gas HHO became known by the name of Yuli Brown, who investigated the facts of the excessive generation of heat when this gas was used in welding machines or hydrogen cutters of metal. The gas has been called HHO or "Browns Gas" although it is a common explosive gas, H_2 and O , but with a large (up to 20%) content of atomic hydrogen H in a mixture with oxygen O .

In discussing the problem, I suggested not burning atomic hydrogen, but rather organizing a closed cycle of its dissociation and recombination. It was planned to sue effective methods of hydrogen dissociation. It can be pulsed heating, electrical discharge in gas and other methods of controlling the molecular bonds of the hydrogen. A catalyst such as a tungsten surface must be used for optimal recombination of hydrogen atoms. It is easier for hydrogen atoms to "find" each other when they are attracted to a heavy tungsten atom so that they interact better with one another near the surface. Special semiconductors are considered also to be the ideal catalysts for hydrogen recombination.

The theory of cyclic dissociation-recombination processes takes into account the participation of the free energy of the vacuum in the process, i.e. the participation of Aether particles. At the same time it is possible to understand "where the excess energy comes from". In these processes, hydrogen does not play the role of a fuel, but rather a "means of transport" that transfers energy from a high-energy vacuum level to the level of infrared (heat) radiation. When atoms recombine to form a molecule, this energy is released and can be used by us.

The efficiency of the cycle is determined by the energy consumption of the primary source, i.e. by the technical method with which gas molecules are broken down into atoms. Similar processes take place in the processes of "cold fusion" in water, in which atomic hydrogen is also formed, which recombines while giving off heat. This approach is described in detail in the book "Physics of the Occult Ether" by William Lyne, whose letters and articles were published in the journal "New Energy", No. 23, 2005.

William Line wrote: "In fact, the reaction of atomic hydrogen can only be satisfactorily explained with reference to the theory of Aether. The energy of processes involving atomic hydrogen does not depend on the combustion of hydrogen with oxygen in the air, but on the "atomic" energy released when atomic hydrogen recombines to form "ordinary" diatomic hydrogen. If Nikola Tesla was right, then I am also right that energy comes from the Aether. I've shown that the energy intake somehow "rises" from 103 calories per gram-molecule to around 109,000 calories per gram-molecule of hydrogen (multiplied more than 1058 times). I have shown that when hydrogen is used as a "mediator", 103 calories are the initial energy (called "activation energy") that sets the process in motion by which atomic hydrogen extracts 108,897 calories per gram of molecule from "Aether".

Nicholas Moller and William Line proposed an open scheme for the combustion of atomic hydrogen for experiments with a special heat exchanger to absorb excess heat energy. In fact, this scheme is a water-hydrogen metal cutter with a heat exchanger. This method is easier to implement than the closed-loop method, but it is more difficult to make accurate measurements of the heat energy absorbed, taking into account all heat losses.

The molecular reactor to work with closed hydrogen dissociation-recombination cycles was designed and manufactured by ELTEX LLC NPO SVETLANA, St. Petersburg. We have built an experimental setup, Fig. 187.

water of heat exchanger

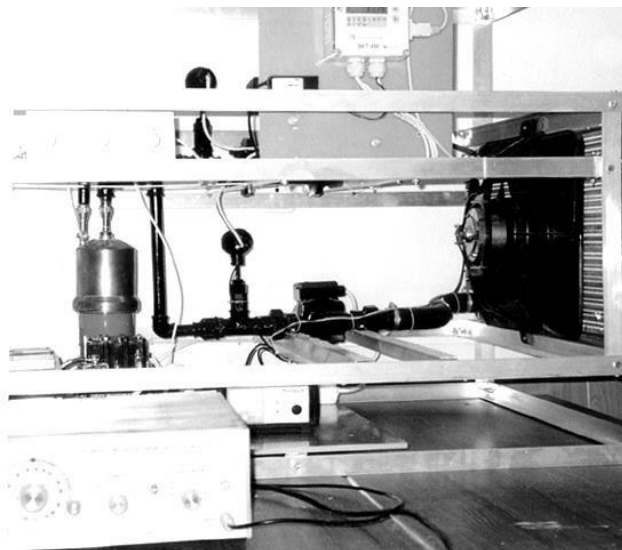
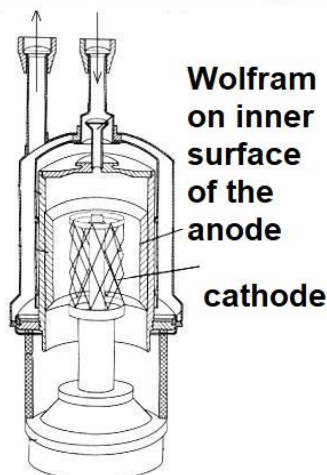


Fig. 187. Reactor and experimental setup for the hydrogen project in Faraday Lab ltd.

The main part of the experimental setup is the "molecular reactor". It is an ordinary vacuum tube in a ceramic body with a water-cooled tank. The design feature is a tungsten coating on the inner surface of the anode, which is a catalyst for the recombination reaction.

The cathode was designed for an operating voltage of 12 volts and a current of 100 amperes, i.e. for an output of around 1 kW. We did research on several modes, including the pulsed heating mode (half periods) from a 50 Hz network. The voltage was regulated by a powerful laboratory transformer. The cathode can work at 14 volts in one pulse. By

means of forced water cooling, which includes a pump, a cooler with fan and temperature sensors, we have obtained very precise values of the heat output generated. The project used a VKT type heat quantity calculator, developed and manufactured by Teplocom firm, St. Petersburg.

According to the agreement, the experimental setup was exported to France after experiments in St. Petersburg. Moller's projects on this subject was made in France, they named this project MAHG (Moller Atomic Hydrogen Generator). The project is described on the Internet, on the website of Jean Louis Naudin <http://jnaudin.free.fr/>

The fact of incorrect measurements was reported by Jean-Louis Naudin. He found that the efficiency is 23 to 1, but it is a measurement error. I believe that Jean Louis Naudin did not provide sufficient heat extraction from the reactor. A measurement error can occur if the reactor was overheated. The reactor stays hot for a long time, even if the power is not switched off from the primary source. So it can be reason to make mistake when some experimenter see big heat output without input power.

Other reactors were built and exported to Australia, for testing by Christopher Bremner in Sydney. It should be noted that the criticism of our address from experts in Australia regarding the method of measuring input power with a pulsed cathode supply has been constructive. My measurements of heat in the reactor also were not reliable.

In any case, this research stage only concerned one process for the production of atomic hydrogen; we work out only the process of pulsed heating of the cathode. It wasn't interesting stage because the theoretical efficiency is not high here. There are other more promising methods, for example pulsed discharges in the gas between anode and cathode. This method was tested in my laboratory with 180-240% efficiency, but it was not tested in Sydney or France. The behavior of a mixture of hydrogen and other gases in a molecular reactor has also not been tested.

Studies on this topic from 2003 showed that when hydrogen atoms are recombined to form a molecule, it is possible to gain excess heat even in the thermal dissociation mode, i.e. when atomic hydrogen is obtained by heating a tungsten coil. The measurements were made with fairly high accuracy, although the gas pressure of 0.1-0.2 atmospheres did not give us the opportunity to achieve high performance. For future projects it is advisable to work with hydrogen pressures of several atmospheres, which, however, requires the development of a special, reliable reactor vessel.

The dissociation of hydrogen with a high voltage electric field is the most interesting method in my opinion. This is an obvious analog of the Meyer resonance pulse method, but not with water, but with hydrogen.

Interesting results can be the process of dissociation of a hydrogen molecule in a mixture with another heavy gas. The reason for the high efficiency of this process is that the collisions of a light hydrogen molecule and a heavy molecule of another gas give the light molecule a very high speed. Speed is the level of kinetic energy. At a certain level of energy received, hydrogen molecules disintegrate.

With a view to project development, Christopher Bremner suggested using a mixture of krypton and hydrogen gases in experiments on this topic. Different gas mixture variants are possible. Everyone knows, for example, the high efficiency of xenon lamps. Due to the fact that the xenon molecule consists of 11 atoms and each has a weight equal to the weight of 54 hydrogen atoms, it is proposed to use a mixture of xenon and hydrogen in future experiments. In this case, the difference between the mass of the xenon molecule and the hydrogen molecule is 297 times, which provides the conditions for the effective dissociation of hydrogen. Xenon molecules can be excited by a pulsed electrical discharge

or by irradiation with light of a resonance wavelength. The recombination of atomic hydrogen is advisable in this scheme to be carried out in a separate reactor with a catalyst (tungsten sputtering) and a heat exchanger.

A similar situation arises in the case of mercury and hydrogen vapors and other options. It is interesting that the "mercury-hydrogen" method was used earlier for the efficient production of atomic hydrogen, for example in the work "Properties of Free Hydrogen Atoms", K.F. Bongfer, Berlin, 1927. The excitation of a gas mixture of mercury and hydrogen should be done by the light of an external mercury lamp with a wavelength of 254 nm. This light excites heavy atoms of mercury in another light bulb to vibrate, in which it comes to collisions of mercury molecules with hydrogen molecules in a gas mixture. The diagram is shown in Fig. 188.

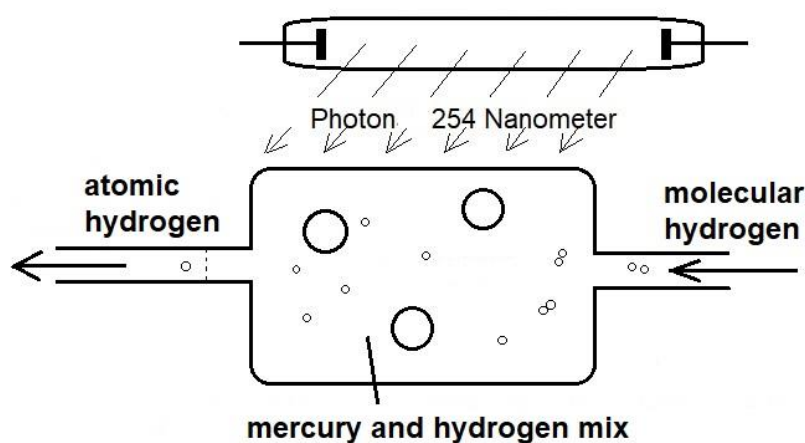


Fig. 188. Bongfer's Schema.

Let me make here some interesting note. There is experimental data about possibility of chemical transmutations in reactions with atomic hydrogen. For example, gold is created through the interaction of mercury and atomic hydrogen. Bongfer did not point out this applied aspect of his experiment, but the use of atomic hydrogen to transmute chemical elements is a very promising direction of work in a commercial sense. Really it is more easy to use mercury as electrode for these purposes. Do you know that powerful industrial electrolyzers use mercury as electrode?

Now we understand that after the collision of hydrogen with mercury vapor molecules, the hydrogen molecules reach tremendous speed and disintegrate into atoms. Note that this method has been used for a long time since 1927 without explaining the effect. Consideration of the reasons for the occurrence of "extra" energy requires an analysis of the inertial properties of the mass, i.e. the inertia phenomenon. The explanation of this phenomenon is related to the concept of Aether, since the movement of a molecule at high speed does not take place in an empty place, but in the Aether surrounding it. In addition, the matter particle itself is to be regarded as an Aether structure. The energy of this structure is equal to the kinetic energy of its Aether flow. We observe it in the form of the mass of the particle. Consequently, the excess energy that is absorbed in this process comes from the Aether medium.

Publications on this topic can be found on the author's website www.faraday.ru and in the Infinity Energy magazine, issue 99, 2011.

Chapter 16

Plasma and cold fusion

Let us consider some experiments in on plasma and nuclear fusion that make it possible to design highly efficient energy sources. The main hopes of science and strategic investors in this area were to achieve stable results in experiments on the reaction of controlled thermonuclear fusion. This reaction causes lighter atomic nuclei to become heavier atomic nuclei, while a large amount of thermal energy is released. In contrast to explosive nuclear fusion (hydrogen bomb), this process is controlled.

The idea of creating a "slow blast" has become popular and a lot of money has been invested. The main difficulty with this method lies in the technical aspects of plasma confinement in a "magnetic trap". For the first time the problem of controlled thermonuclear fusion in Russia was formulated and proposed for it by Oleg A. Lavrentiev. It is interesting that the idea was not started by an academic or professional scientist, but by a sergeant in the Russian military army. In addition, the idea of plasma confinement initially took a different form. Lavrentiev proposed an electrostatic "trap" for plasma rather than a magnetic one. The implementation of the electrostatic plasma confinement process is much simpler and cheaper, but for some reason only the direction of magnetic plasma confinement proposed by Andrei Dmitrievich Sakharov and Igor Evgenievich Tamm is currently developing. These studies can hardly be classified as "fuel-free" energy, since deuterium or other specific substances are required. The energy costs remain very high with the current state of development of controlled synthesis technologies.

The ITER reactor is known, for example. The cost of this project is estimated at \$5 billion. The design output of the system is 500 MW (with energy consumption at the system entrance only 50 MW). This means that the efficiency of the process is roughly 10 to 1 without the cost of "fuel". The cost of installation kilowatt of energy is about \$5,000 - \$10,000 per kilowatt. This cost is at the level of the cost of modern crystalline solar modules. It can be profitable only after 20 years of operation, not including the operating costs for maintaining the reactor.

There is active development in the area of low-energy nuclear reactions LENR and nuclear reactions through the crystal lattice of matter (Lattice Assisted Nuclear Reactions LANR). They are using deuterium water. Their technologies can be named "shareware" because the cost of heavy water is low. Scientists from the USA (MIT University) have calculated that 3 liters of heavy water are sufficient for one day of operation of a 6 gigawatt power plant, which corresponds to 54,000 tons of coal. These technologies do not require "forcible" plasma containment, so they can be scaled from a few watts to gigawatts. The application will be expanded to include "home use", and the cost of installing kilowatts of electricity will decrease.

To my mind, a fundamental mistake has been made in this direction in the development of a strategically important power generation technology. The project is proving to be expensive, yet radioactively dangerous, despite being 100 times less radioactive than uranium technologies. Aren't there other methods of cheap and secure energy supply? There is this method! In this context consider the projects of Boris Vasilievich Bolotov, Ukraine, for example his "Method of cold fusion", invention No. 4739016/25 of July 14, 1989.

The story of Bolotov's inventions in the field of transmutation of chemical elements began in his childhood. His father ran a radio center in Siberia in the 1940s. He found that the radio center room is very warm even in severe frost, as the tube amplifier generates much more heat than it consumes. The 100 square meter room was heated by heating

the anodes of the amplifier tubes, which only consumed 200 watts of power. However, the strong heating of the anodes of the lamps disappeared over time, they continue worked well as radio tubes, but they do not longer generate the excess heat.

Bolotov found the answer to this riddle when he was a student. He examined the chemical composition of the anodes of the used radio tubes and found contaminants from metals in them, which initially could not be present. For example, technetium, a neighboring chemical element, appeared in the molybdenum anode. This conversion of atoms is explained by the fact that new lamps contain hydrogen, as they are dried with hydrogen during manufacture. At the beginning of the work in the anode of a new lamp under the effect of the bombardment of the anode with electrons, the remaining hydrogen protons combine with the anode metal atoms and form a new chemical element that differs by one proton upwards or downwards.

All reactions of "cold nuclear fusion" are based on the interaction with hydrogen atoms. We already considered interesting idea of transmutation from mercury to gold.

Other example of the same topic is a group of Italian scientists led by Professor Rossi. They use nickel, which when reacting with hydrogen protons converts into copper, releasing heat in the process. Authors of the technology are Andrea Rossi, Professor Sergio Foccardi and the physicist Giuseppe Levi. The first results of the experimenters were interesting. With a power consumption of 700 watts, they received a heat generation of 12 kW. Efficiency 17 to 1. Raw materials are nickel powder and hydrogen, with the gas pressure in the reactor about 50 - 70 atm. Reaction products the copper, iron and nickel.

The work of this Italian group reached implementation status in 2012. Their promising developments in the 1 megawatt range have already appeared. The technical properties are convincing: with dimensions of 2.4 x 2.6 x 6 m, the system consumes a maximum of 200 kW of electricity with a heating output of 1 MW. The outlet water temperature is 85-120 degrees Celsius. The cost of such a 1 MW module is around 1.5 million euros, including maintenance (charging with nickel twice a year) for 30 years. Official website <http://ecat.com>

As for the prices of E-CAT sellers, I can say that as pioneers in this market sector, they overpriced their prices as they have no competitors. I believe that over time, the situation will change just as it does in the electronics world. For the mass production, these power generators will be ten times cheaper and the period of operation to get first profit is about 6 - 12 months. This means that electricity costs will drop five times and all power generation companies will be interested in abandoning other fuel technologies as their profits will increase many times. You can even lower the tariffs for heat and electricity.

A few words about the physics of the transmutation process. Transmutation is the transformation of one object into another. In physics, it is the conversion of atoms from one chemical element to another. This usually happens as a result of radioactive decay or nuclear reactions. Reactions that occur at low energy levels are referred to as "Low Energy Nuclear Reactions" (LENR). In this reaction, nickel is fused with hydrogen atom (with proton) and converted into copper. This exothermic (heat generating) process releases energy. In addition, the raw materials are inexpensive, which makes this process one of the cheapest energy sources. The technology is not radioactive and does not pollute the environment.

Separately, consider the commercial prospects for low energy nuclear reactions

Nickel is an inexpensive metal today, but copper obtained by transmutation has half the market value of nickel. In this case, "fuel" is much more expensive than "waste", and that sounds familiar to us. Let me show you an interesting applied aspect of transmutation

processes. Look at the periodic table. Iron and cobalt are two neighboring chemical elements. The use of cobalt is very widespread, for example transformer plates are made of an alloy of 50% iron and 50% cobalt. The average price for cobalt today is around \$25,000 per ton. Iron costs about \$200 a ton. Such "fuel" is much cheaper than "waste" in LENR process. Imagine the commercial prospects for making cobalt by transmutation of iron, if we can create the conditions for such a low-energy nuclear reaction.

One more interesting pair of metals is titanium and vanadium. A key factor in this choice is that, like nickel, titanium also has an affinity for hydrogen and can saturate titanium with hydrogen atoms. Hydrogen storage systems based on titanium are currently being manufactured. From commercial point of view, the titanium-vanadium transmutation makes sense. Titanium costs around \$1,000 per ton. Vanadium prices are around \$50,000 per ton and demand for vanadium is growing. Vanadium as the "waste" of the LENR process is much more expensive than the original titanium fuel.

Upon further investigation of the subject, we will find other variants of the reaction that are very interesting from a commercial point of view. Developing research in this direction requires a small laboratory. Interested investors should contact me to agree possible collaboration on the topic.

Let's return to the works of Bolotov, as he developed the theory of transmutation and created a new periodic table of chemical elements. In his experiments he received other fusion reactions and suggested using boron in the reactions that "tokamak builders" still dream of in the distant future.

In fact, Bolotov created second generation of the chemistry science. He shows us a simple example of understanding the new chemistry: "We used to call hydrogen dioxide water. There is also more common "water" on earth that is lithium dioxide. The compression of lithium water yields silicon, it is the planet's primary chemical element.

In March 2011, Bolotov demonstrated his liquid metal zirconium oxide reactor. The difference between Bolotov's ideas is that he initially focuses on radiation-safe technologies. He received nuclear fusion reactions in small laboratory facilities. Silicon is extracted from phosphorus and gold and platinum is made from lead according to Bolotov's new chemistry.

That idea sounds almost unbelievable! Only alchemists received gold from lead, this topic is reliably closed by the healthy part of the scientific community by thick layers of ancient lies and examples of charlatanry. But if we shovel away this layer of rubbish, we will find the grain of truth. Like lead and gold, nickel and copper are pairs of neighboring chemical elements whose nuclei differ quantitatively by only one proton. Under special conditions, changes in the number of nucleons in the nucleus can be made in the presence of a proton source (atomic hydrogen).

Here you can remember the famous writer Arthur Conan Doyle. In the story of 1891 "The Discovery of Raffles Howe", the inventor produces gold from lead, but not on an industrial scale, but on an "amateur level", only for personal needs. I quote the masters of the English classics in the name of the hero of history who describes his experiments: "I have often asked myself what effect strong electrical currents that flow through for a long time has on different materials. I do not mean these weak currents that flow through the telegraph wire, I am talking about high voltage currents. You will of course remember the famous experiment with the electrolysis of water. But I found that the effect of electrolysis on solids is different and very peculiar. I charged the batteries and ran the current through a mercury jar. For sixteen hours in a row I watched the mercury gradually thicken. The simplest analysis showed that platinum was in front of me. "

Really this novel by Conan Doyle is about love, not about gold. In this nice artistic way Arthur Conan Doyle gave us valuable information about the true method of transmutation and synthesis of chemical elements. He considered this technology to be some kind of the electrolysis of solids and melts. Bolotov obtained new chemical elements also from the molten lead.

We are currently no longer interested in the industrial production of gold or other valuable chemical elements. This is a very real task, but it is a licensed activity. Our research tasks in this direction are to find the optimal conditions for the conversion reactions of some chemical elements into others, which take place with maximum heat output with minimum energy consumption. The nickel reactors are a very perspective technology for the future power engineering.

Let's consider other project that is also related to plasma processes. In the work by Alexander V. Chernetsky, "On the physical nature of bioenergetic phenomena and their modeling", Moscow, VZPI, 1989, interesting experiments on the generation of longitudinal waves in plasma are described. Chernetsky writes: "According to our ideas, the energy source is the physical vacuum. As you know, the so-called "zero point oscillations" occur constantly when photons are absorbed and virtual particles (electron and positron) are created, which annihilate after some time, which leads to the creation of new photons. In plasma systems such as a self-generating (SG) discharge that we have investigated, charge separation occurs in the surface layer of the plasma and a strong electric field is created in which the physical vacuum is polarized. The movement of virtual particles is given a certain orientation. At the boundary of the surface layer of the plasma, a moving surface charge is generated, which leads to the expansion of the layer and consequently to an increase in the strength of the electric field of the charge separation and, accordingly, to the acceleration of plasma electrons. "

Chernetsky introduces the concept of the "plasma-vacuum" effect, the essence of which is the transfer of energy from vacuum virtual particles to plasma real particles. The energy output in the Chernetsky experiments was several times more than the energy consumption. Let us consider the characteristics of the "self-generating discharge". According to Chernetsky, this is "a special form of an arc that occurs at certain (critical) densities of discharge currents". It was known fact that the volt-ampere characteristic of the arc processes has falling and rising parts. In the falling section, when the current falls with increasing voltage, a situation arises with a "negative discharge resistance".

Chernetsky discovered the possibility of self-generated oscillations in the rising section of the volt-ampere characteristic as early as the 1960s. In this case, there is oscillatory instability of the plasma and there are conditions for the negative conductivity of the plasma. If this electric discharge is connected to some oscillating circuit (inductance and capacitor), it becomes an active element that supports electrical oscillations in the circuit even when some payload is present in the circuit. In fact, this self-generating electrical discharge built into the resonant circuit becomes a source of energy.

Chernetsky explained the plasma instability in this case by the "pinch effect" with strong currents (hundreds of amperes). This effect consists in the fact that the plasma electrons interact with their own magnetic field, a "feedback" of the process arises and the plasma discharge pulsates in a radial direction, i.e. it is periodically compressed. This creates a radial electrical field, i.e. this field is directed towards the axis of the discharge. The current density vector also receives a certain radial component. Metaphorically speaking, the diameter of the "discharge cord" changes with a high frequency and these volumetric changes of the energy density create the longitudinal wave in the Aether. By this way here is some energy exchange with the Aether.

The properties of these longitudinal waves, including their effect on biological objects, have been extensively investigated by Chernetsky, but here we limit ourselves to

considering the questions of medical aspects of the energy exchange between real plasma particles with a "physical vacuum". It is out of the book topic.

In 1980-1990 Chernetsky demonstrated the effects in devices with a power of about 500 kW. His theory of "energy exchange" is clear, but he has not been able to obtain reliable experimental facts. Unfortunately, Chernetsky's works have been criticized by many scientists. The magazine "Electricity" No. 12 wrote in 1993: "In consultation with Professor A.V. Chernetsky, his generator was connected to an alternator, which was driven by a direct current motor (on-board machine converter). The strength of the direct current drawn by the motor (from the batteries) as well as the direct voltage is measured easily. The essence of the experiment, repeated three times in the presence of Professor A.V. Chernetsky, was to measure the power of the motor in the absence of an arc and during the arc. The experiments showed the same result, which clearly give to us conclusion about the absence of the "Chernetsky Effect".

However, critics of Chernetsky's work may be wrong. To my mind, in this version of the experiment, the resonance conditions were changed so that the experiment was reproduced unsuccessfully. Chernetsky worked with the distributed capacitance and inductance of the electrical grid of the building. These capacitance and inductivity played important role in his experimental setup. They cannot be excluded from consideration, since it is source of free electrons for resonance oscillatory processes. When the experiment was reproduced with DC primary source here is not large amount of free electrons to provide powerful current and extra energy output.

On more example of similar technology was reported at the "New Ideas in Natural Science" conference, St. Petersburg, 1996. It was my report on extracting excess energy from circuit with arc. Small experimental model of a device that uses a spark discharge as part of a circuit was demonstrated. The device diagram is shown in Fig. 189. The spark gap distance is set with a screw. In this circuit, the load is connected in series with the spark gap. In fact, three states of this circuit have been shown. First state is when the distance between the electrodes is greater than the breakdown distance, there is no discharge here and there is no current in the load (in an incandescent lamp).

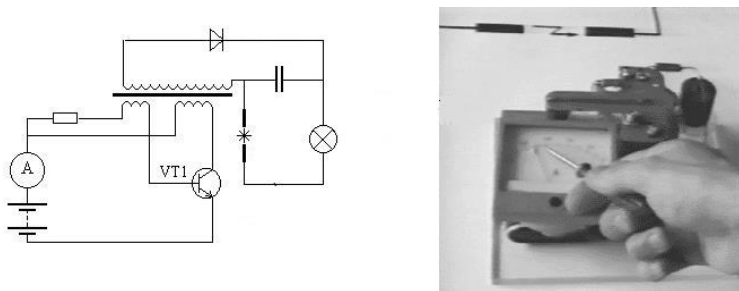


Fig. 189. Frolov's experiment with electric discharge, 1996.

Ammeter with the scale of 1A shows a current of 0.3 amps in this mode. The device is powered by battery. In this case the power consumption is about 3 watts. The second state of the device uses the arc in the spark gap. The gap distance is reduced by adjusting it, a spark discharge occurs in the gap and the 2-watt lamp in glowing. We got 2 watts into the load, but we did not see any increase in power consumption at the source. On the contrary, the ammeter shows 0.28 amps, which means a reduction in current consumption in the presence of a spark in the electric load circuit.

The third state of the device do not use spark. You can make short-circuit the spark gap between the electrodes with a screwdriver. The lamp will glow and the current consumption will increased up to 0.58 amps. It is standard situation when a load is

connected to the source. Please note that in this case the consumption power was increased by 3 watts.

There is no "pinch effect" of the current in this small spark. The pinch effect requires hundreds of Amperes. Another explanation is proposed for small currents. The charged particles can receive additional kinetic energy when they move in the area of the spark gap between the electrodes. This movement is accelerated as it occurs in an electric potential field, as shown in Fig. 190. The kinetic energy of a plasma particle W_2 "at the end of the path" is greater than its initial energy W_1 because its speed increases.

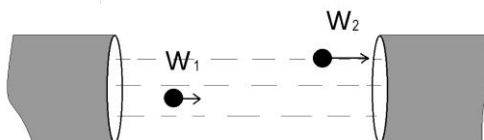


Fig. 190. Acceleration of electrons by electric field.

Here is an analogy to the scheme of the "Gray conversion tube" and other technologies of acceleration of the electrons by electric potential field. There is arc discharge and free electrons are "attracted" by ionizing the air, like in Testatika machine and in Yablochkov's devices.

There are many patents on plasma technologies today, for example U.S. Patent No. 5,416,391 and No. 5,449,989 to Paulo and Alexandra Correa (Paulo Correa). Their experiments are called Pulsed Abnormal Glow Discharges (PAGD). U.S. Patent No. 5,449,989 (Energy Conversion System) "Energy Conversion System", No. 5,502,354 (DC Excited Pulse Generator Using Autogenous Cyclic Pulsed Abnormal Glow Discharge). The topic has been developing for over 20 years and opens up perspectives for new energy technologies to enter the market. This device creates a glow discharge in low pressure gas. During operation, strong electrical impulses (several kilovolts) are generated periodically, which can be converted into power in the load circuit. In the prototype, the costs from the primary source are a maximum of 10% of the output power generated.

It can be noted the analogies between our projects in Faraday Lab ltd. on closed cycles of dissociation – recombination of hydrogen and projects by Paulo and Alexandra Correa. The "glow discharge" in hydrogen is one of the best methods to get low energy dissociation of the hydrogen.

So let's move on to the last chapter of this book to consider a new unusual use of the photo effect in standard solar panels. This new idea can change all industry of the solar power engineering.

Chapter 17

Photoelectric effect

The photoelectric effect is the emission of electrons by a substance under the influence of electromagnetic radiation. In 1839, Alexander Becquerel observed the phenomenon of the photoelectric effect in an electrolyte. In 1873, Willoughby Smith discovered that selenium was photoconductive. Then the effect was studied by Heinrich Hertz in 1887, and he is considered to be the author of this effect. In the 1890s, the photoelectric effect was systematically studied by the Russian physicist Alexander Stoletov. Also the photoelectric effect was detailed explained by Albert Einstein in 1905 and he received the Nobel Prize for it in 1921.

Despite all the advantages of photovoltaic converters, they have one major disadvantage. They need an external light source. Let's try to look at this technology in the new concept that allows us to achieve a *closed cycle of energy conversion*.

Let's suppose that a photovoltaic converter supplies its light source with electricity and can also deliver excess electricity to the consumer. The proposed concept of an autonomous closed-loop photoelectric converter is shown in Fig. 191. The principle is simple, but there are doubts whether this circuit will actually work when a conventional photovoltaic converter is 16-20% efficient and the light source also works with an efficiency of less than 100%.

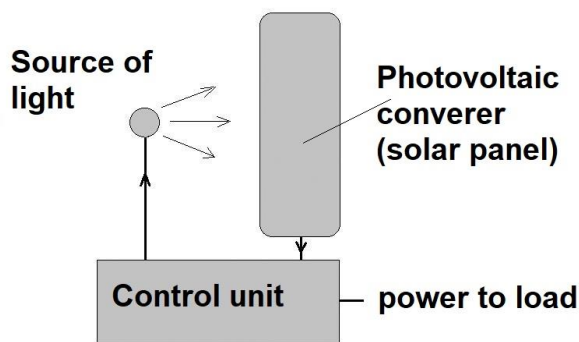


Fig. 191. Idea on closed-loop photovoltaic device.

A few years ago V.P. Davydenko, Saratov, Russia, made some experiments with a pulsed light effect on a solar panel. A pulsed flash was provided as the pulsed light source. The original idea of the author Davydenko was to test the possibility of receiving more energy at the output of the solar panel than the power source consumes in order to generate a flash, i.e. a pulse of light. At the same time, Davydenko planned to put photocell plates on all sides around the light source. He also mentioned important aspect. For an optimal conversion of photon energy into electricity, you should choose the optimal pair "lamp - photocell", which should have the same properties i.e. the same operating wavelength.

In discussing this idea, we can take into account that in fluorescent type gas discharge lamps or in stroboscopic xenon lamps, the electrical discharge plays the role of "impulsive excitation of the medium" and we have already taken this concept of excess energy into account. In addition, possible innovation light sources with a mixture of xenon and hydrogen, appears to be a very promising research topic for this purpose.

In the experiments of 2010 that I made in Tula, a flash from a photo camera and a xenon lamp in pulsed (stroboscopic) mode were used. There are some interesting results. When the lamp is pulsed with current, there is some time delay of the current in the load circuit connected to the photoelectric converter after the end of the light impulse. The phenomenon named "inertial photoelectric effect".

The peculiarity of this effect is that the front of the current pulses in the lamp or in another photon source must be steep enough and the pulse duration must be short (fast flash). Tesla wrote about the "speed" of the medium's excitation, which determines its performance. In this case the process becomes energetically efficient. Perhaps in the case of light flash we have the same effect.

The duration of the flash pulses from the light source should be minimal, but no less than some critical duration, since the current at the output of the photoelectric converter does not increase immediately, but it is increasing with some delay. When the maximum possible current value has been reached at the output of the photocell, the photon

source can be switched off and then to be de-energized. These are the pulses shown in Fig. 192, and you can see here some slow increase of the current curve and also slow decreasing after the end of the flash of the light was.

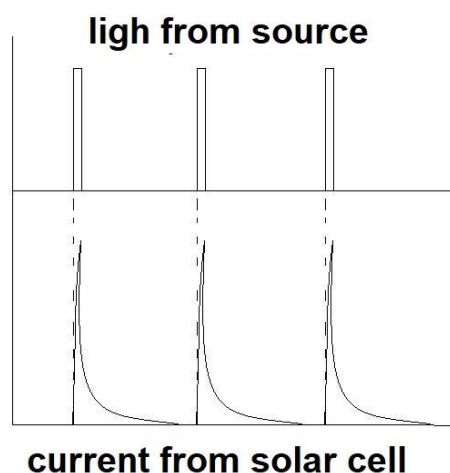


Fig. 192. Flash curve and current curve.

After a light flash, when there is no more current in the light source circuit, we see some current at the output of the photocell. It gradually decreases and the duration of the drop in current depends on a number of factors. To my mind, the reason for this phenomenon is the inertia of the electrons, which continue to move after the photons have stopped hitting the crystals of the photoelectric converter.

In addition, a photocell has a certain electrical capacity and, like any other electrical capacity, does not charge and discharge immediately. From this point of view, it is possible to consider photovoltaic cells as some kind of the electric capacitors. Here we know many interesting technologies to provide high efficient process of charging of the capacitor, for example, it is fast pulsed process. In this book we mentioned invention on self-charging capacitors. The capacitors use nanotechnologies and process of charging in these capacitors is continuing after the primary source is disconnected from them. So, there is a way to high efficient solar panels.

From this experiment I concluded that we can get from solar panel much more energy than was used to generate flash pulses of the light source.

The second effect was found in further experiments. When a pulsed gas discharge lamp and a photoelectric converter were shielded from one another, electrical current pulses were detected at the output of the photoelectric energy converter. It does not matter whether the lamp or photocell is shielded. The pulses at the output of the photocell corresponded in time to the occurrence of excitation pulses from the gas discharge lamp.

It was concluded there that the influence of the front of a light wave generated by a pulsed gas discharge lamp on a photocell should be considered as a manifestation of a longitudinal wave in the Aether.

Here it is necessary to recall Professor Lebedev's experiments on the study of "light pressure". He believed that "the forces of light pressure are directly proportional to the energy of the incident beam and are not dependent on color". Color means the frequency of electromagnetic radiation. Consequently, the light pressure does not depend on the frequency. It is determined by the fast or slow wave front.

We come to an interesting result. In the photoelectric effect, there are two different mechanisms for exciting electrons. The usual photo effect uses constant light excitation,

i.e. the wave as oscillations of photons. The higher the oscillation frequency, the higher the wave energy and the current at the output of the photocells when the light wavelength is within the frequency spectrum of the photovoltaic cell. The second physical mechanism works differently. The impact of the wave front, i.e. the "pressure" of the light, does not depend on the oscillation frequency of the photons. Experiments of 2010 demonstrated that the pressure force increases with increasing pulse rate and a rapid rise in the front (more fast front means more power output).

By using the "shock driving" effect of the photovoltaic panel, we can produce highly efficient photovoltaic converters. I have also studied other methods of generating electricity from the power of a photovoltaic converter. It has been found that a shielded solar battery "responds" to a pulsed arc discharge, a high voltage source of an alternating electric field, a rotating electric field, a pulsating gas discharge lamp and other sources of longitudinal waves. All these sources of longitudinal waves in the Aether can be generated with little energy consumption.

The inertia of the photoelectric effect and the longitudinal photoelectric effect can be used to build autonomous energy sources. These power sources consist of photocells and pulsed high-frequency sources of photons. The inertial current of the electrons exist due to the presence of the rest mass of the electrons, and the rest mass of any particle and its inertia are dynamic effects of the Aether. So, these technologies also can be compared with Tesla's understanding of the Aether dynamics.

The "shock excitement" of oscillations in the circuit through a rapid current impulse, which we discussed in the chapter on Tesla's work, has a similar effect. Fast pulses in the electrical spark gap circuit provided Tesla with high output with minimal output from the primary energy source. Hence the excess energy of these processes is the result of the conversion of the free energy of the Aether. We cannot get "something out of nowhere", so all the phenomena we consider here are different types of transformations of energy from the Aether.

Epilog

After reading this book, my parents said: "All is clear here. This book is like a textbook for inventors." Of course, this is not just a textbook to inspire clean energy researchers. This is a short story about the struggle to free mankind from fuel addiction. It is the fierce and persistent struggle for freedom.

It was not planned to summarize all information in one "encyclopedia" since "a pile of bricks is not a house." The accumulation of facts creates qualitatively new knowledge, subject to the emergence of analogies and the construction of a methodology for solving problems. I hope the book has been interesting and useful in that sense.

The time for research is over, it's time for action.





Frolov Alexander Vladimirovich

Frolov Alexander Vladimirovich was born on September 25, 1962 in the Saratov region of Russia. The military officer's family. He graduated from the school in the Tula region. Graduated in 1984 from Military University of Telecommunications, St. Petersburg, engineer on wireless telecommunication, diploma with honor. From 1984 to 1989 he was an officer in Russian Army, then he worked in telecommunications companies in St. Petersburg. In 2001 he and his business partners founded the research company Faraday Laboratory Ltd. This laboratory was active in St. Petersburg from 2001 to 2010 and in Tula from 2010 to 2016. More than 30 research projects were organized. The company published international scientific magazine "New Energy Technologies" www.faraday.ru

The main activity is innovative projects, development of new energy sources and active propulsion systems for aerospace engineering. Alexander V. Frolov is author of the books "New Sources of Energy" and "New AeroSpace Technologies". To discuss a possible collaboration, contact the author.

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