

Modern Power Engineering in the Light of the New Physical Representations and Technical Realizations. – A brief review

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Abstract - The perspective hypothesizes and elaborations represented in the special science literature and directed on the search of the new sources which are based on the physical principles of the energy extraction from the surrounding space are illuminated in the brief review. The so named "without-fuel" generators as the convertors of the different views of energy of the ether are described. Their elaboration becomes the more and more perspective business for solution of the modern energy problems. Their technical projects are passing to the state of the industrial production. According to the physical signs of the principle effectiveness, heat generators, magnetic dynamic convertors, convertors of gravitational energy and, finally, electrodynamic alternators are distinguished among them. In comparison with heat generators, the class of alternators using permanent magnets is more numerous and diverse. Convertors of gravitational energy are, as a rule, "perpetuum mobiles" containing structural components in which falling vertically downward weights or water are rotating the wheel, producing useful work. The selected group of the without-fuel generators is the electrodynamic alternators, working as convertors of the electromagnetic energy from the ether of the surrounding space. The most interesting example of electrodynamic alternators is the "transformer Tesla" known to a wide range of specialists. Its distinctive feature is an unusually high energy conversion coefficient ($k > 1000$), much higher than the transformation ratio due to the inductive coupling between its windings. In conclusion, based on a comparison of analogs, a hypothesis on resonant phenomena as "keys" of access to ether energy in the surrounding space is formulated.

Key words - Modern Power Engineering; Physical Vacuum; New Sources of Energy; Alternators; Resonance; Transformer Tesla.

I. INTRODUCTION

As it is shown in the numerous reports of the International Energy Agency in the modern development of the power engineering in the industrially advanced countries the increasingly growing necessity in heat and

electrical power engineering can lead to the catastrophic exhaustion of the traditional fuels (the oil, gas etc.). The reserves of the nuclear fuel (Uranium and Thorium) are non infinity.

For the time being only the fuel thermonuclear reserves (Hydrogen) are inexhaustible. But the thermonuclear reactions are else far from the practical implementations and the energy industrial production in a "pure view" will be solved not before than middle of XXI century.

In this connection it is quite naturally the science and engineer thoughts are directed on the new energy types search which will be able to substitute the traditional fuel or its consumption.

So called "pure" energy is necessary. But the real possibilities of the modern world industry can not provide the implementation of the demanded ecological pure energy technologies. But the current statistical analysis shows that the energy requirement and its price are growing constantly. By the predictions these data will be probably double to 2050 year what is equivalently addition of else one China and India to the energy global requirement [1].

Amongst the scientific publications about the modernity problems the works should be distinguished which are directed on the new physical conceptions formulation. It is necessary for description of the surrounding world power engineering with help of the progressive scientific representations and suggestion of the according technical devices for these representations practical realization.

It should be noted the publications list, cited in the suggested short review, is quite limited. But the more extensive quantity of the primary sources by the touched

upon subject can be found, for example, in the scientific editions by V.A. Etkin [2,11].

The aim of the present work is the illumination of the perspective fundamental hypotheses, the suggestions, the theoretical and experimental elaborations which are represented in the modern scientific publications and directed on a search of the new energy sources on principle. It should be noted these sources must not be tied with the treatment and exploitation of the natural resources in no way. These sources have to be based on the physical principles of the energy extraction from the surrounding space.

II. THE ETHER AND THE PHYSICAL VACUUM

Not applying to the proofs and details of the existing views on the Universe Structure let us illuminate briefly those sides of the fundamental conceptions which are interesting for the exclusive understanding of the physical principles of the energy extraction from the surrounding environment [2,3].

The first what should be distinguished this is the conclusion according to which the Matter can be divided on two main parts. One of them is the discrete structure occupying only separate areas of the space and having the borders. The second part this is the ether which as the continuous formation fills all the rest space and does not have the borders.

Everything above pointed out relates to the notion “the physical vacuum” as well which was introduced by physicists not desiring to use the term “the ether”. It should be noted that the term “vacuum” denies the matter presence whereas “the physical vacuum” is the material category.

These representations about the Universe accord to the representations of Albert Einstein himself. In 1924 he was forced to say: “We never can manage without the ether in the theoretic physics, the ether is continuum with the physical properties.”

In further it is necessary to know that ether is moving constantly. The motion character is the undamped oscillations. As result of these oscillations the waves in the ether are the standing waves if they are fixed between two structure elements of the matter. If such limitation is absent the waves in the ether is the running waves.

From the energetic point of view the “substance-ether” system entropy is maximal. The introduction of some external disturbance leads to a violation of the equilibrium state and the release of energy corresponding to the physical nature of the perturbation.

As it is follows from the simplest estimates the ether specific energy is determined by the light velocity square – J/kg and its full energy – is infinity. The energy capacity of ether equals to $\sim J/m^3$ (for comparison, the energy capacity of the year consumption by Humanity equals to $\sim J/m^3$).

At the same time, according to the conservation laws, such transformations as “condensation” and “rarefaction”

of the ether are possible. The first from these transformations is the result of the formation of a substance from the ether, the second, this is the reverse transformation of matter into ether. The adoption of such a concept opens the prospect of creating a unified theory of not only all interactions, but also of all kinds of matter, according to which ether, penetrating all the surrounding space, can serve as a powerful source of energy. And here there is no contradiction to the laws of conservation, because energy, as an indispensable substance of the material world, nowhere and never disappears and does not appear. It simply transforms from one species to another.

In conclusion, we note that despite the reluctance of physicists to recognize the erroneousness of the expulsion of the ether from the existing paradigm, it breaks into it under other names, no matter how they try to cover up this circumstance.

III. THE ELECTROMAGNETIC ENERGY IN THE SUBSTANCE AND IN THE PHYSICAL VACUUM

In 1998 an article was published where it was reported about the mysterious effect of the interaction of armor-piercing shells without an explosive with a steel plate.

It followed from the experiments that the amount of heat released is greater than the kinetic energy of the projectile. Understanding the nature of the effect found led to the conclusion that when a shell strikes an armor, the electrons begin to move intensely relative to the ions, their ability to “glue” ions decreases, and they disperses due to Coulomb repulsion forces. In this case, an energy equaled to the energy of their bond in the metal is released.

To confirm the theory, the authors carried out experiments on the transmission of high-density currents along a cooled conductor which showed that in order to release the binding energy in tungsten, it is necessary to perform work amounting to only \sim of the binding energy [4]. The detected phenomenon was taken as the basis of the RF Patent RU2145147 “Method of extraction of binding energy from electrically conductive materials”.

In the works [5,6] the new physical concepts providing the electromagnetic energy extraction from the physical vacuum are represented.

Briefly, the statements of the cited papers boil down to what generators and batteries do not expense their own internal energy for feeding the external circuits. They dissipate this energy to “share” their internal charges and create dipole sources as “negative resistors”. The created dipoles extract the electromagnetic energy from vacuum with big losses and input it in the elements of the external circuits. Thus, if prevent these losses the energetic indexes of the modern power supply systems can be increased.

The author of work [7] presents the immediate empirical proofs of the “invisible energy” existence in the vacuum of Universe. This fact confirms validity not only the work [5,6] conclusions. As well, this fact confirms the opinions of other scientists relatively of the

electromagnetic energy extraction possibility from the surrounding space.

From a practical point of view, the device patented by the American engineer K. Shoulders, where the conversion of electromagnetic energy from a physical vacuum is carried out with the help of super-dense electric charges, is of interest [8].

The rather original of interest is a notion “free” or “radiant” energy. A source of the latter is the ether as some physical substance filling all surrounding space and which is a source of the so named “cold” electricity [9]. The epithet of the electricity as “cold” was explained by the terminology authors what the current flowing in a conductor was not accompanied by the Lenz-Joule heat.

The practical usage of the “free” energy was laid into the basis of invention patented by American engineer Edwin Grey. His electrical engine consumed only ~ 5% of the power source energy [10].

Speaking about the technical realizations of the energy obtainment concepts it should be marked that for the time being more than two tens such inventions are known [11]. Such devices are named “the free energy generator”, “the excess capacity generator” (with efficiency more ~100%) and “perpetuum mobile” finally. The physical content of all these terms is in contradiction of the Energy Conservation Law. That is why it is more correctly speaking about the energy forms which are alternative to the organic or nuclear fuel and as well to the known renewable their views.

Therefore, such devices can be called the “alternators”, meaning this is the energy converters that have not received universal recognition because of not understanding of their action principles.

It should be noted that as a rule the term “altrnators” is related to only class of “the excess capacity generators” which are the magnetic machines and generators by essence. Nevertheless, in further we will use this term in the more wide sense (as some other authors).

Among such devices the systems can be named which consume unusual types of fuel and the usage of which does not demand the big material expenses. But the most interesting systems of this kind are so named non-fuel power installations working on the principles of the energy extraction from the surrounding space.

The suggested in the modern scientific literature alternators can be grouped by a kind of the energy transformed. These are heat generators, magnetic dynamical convertors, electrical dynamical convertors, finally, the convertors of the gravitational energy of the ether.

Passing to consideration of the alternators different kinds it should be marked that the electrical dynamical convertors are excepted from the below next description. Further these convertors will be considered separately.

The heat generators on the ether energy.

The work physical principle of the such devices main group is build on an initial creation of the “atomic hydrogen” with consequent its recombination accompanying by excessive release of a large amount of heat. As examples this can be taken a heating system of W. Lyne (1996), the heat generator of A. Frolov (foundator of “Faraday Lab. Ltd”, Russia) and, finally, not so long ago the improved system of the French engineer J.L. Naudin (1997-2010).

And if the heat generators stays on the search models level, than the systems of Yu. Potapov (Patent of RF №2045715, 1993) as sources of the excessive heat release received the quite wide recognition and reached to the industrial implementation.

On principle, the heat generator of Yu. Popov represents itself a vertical cylindrical pipe into upper part of which a water stream is introduced along tangent by a special pump. The water velocity is such that in the pipe together with intensive turbulence the cavitation phenomena are watching at. By the opinion of inventor the excessive heat release in his installation can be explained by unification of the water molecules into so named “associates” under the cavitation influence.

By the author application his heat generator gave till ~3-4 kW of heat on ~1kW the electrical power consumed. But in the comparison tests in the Science-Production Unification “Energy” (1996, Russia) the measured heat release did not exceed ~ 142% of the electrical energy consumed. Nevertheless several known industrial firms are selling already the cavitation heating equipment. For example, these are “Yusmar” (Moldova), “Yurle”, “Thermo-whirl” (Belorussia), “Fakel” (Russia) etc.

Concluding the present description it should be noted that in the modern scientific publications the problem about possibility of the self-maintained electrical energy sources creation on a base the heat generators is rising. It is necessary for this to combine the electrical generator with the heat machine transforming directly the got heat energy in the electrical one.

The magnetic dynamical convertors of the ether energy.

In comparison with heat generators, the most numerous and diverse is the class of alternators using permanent magnets. Their main property is a possibility producing the useful external work (to lift the metal objects). Just this property lays in a base of the action principle of so named the magnetic motors.

A first magnetic “perpetuum mobile” was suggested and created else in XVI by the Jesuitical priest J. Taisnerius. Further a quantity of such projects was growing and for the time being it has reached of the quite significant value.

The workability of the magnetic motor is illustrated by the well-known graphical dependence of an arbitrary cycle resembling an unspecified hysteresis loop, where it is possible to distinguish regions of magnetization and

demagnetization. There is also a certain similarity to the Carnot cycle describing the effectiveness of a heat engine.

A work and energy, as the ability to perform it, according to this cycle is determined by the area of the area, limited by the marked graphic dependence. Therefore, for the permanent magnet to work, it is necessary to make sure that this area is as large as possible. Inequalities of forces in different parts of the cycle can be achieved by temporarily shielding the magnetic field in the gap between the rotor and the stator in the region of the magnets maximum approach or by the temporary demagnetization of one of the magnets by an electric pulse in the period of their confrontation.

As it follows from the known publications just these properties are used the inventors of the acting devices on the permanent magnets.

For example, such devices these are the generator of S.T. Gramm (1869) and generator of A. Frolov (1996). Their constructive ideas became enough popular (O. Berens, Sweden; S. Khartman, USA; V. German, Germany etc.). It should be added that in 1999 the group of V. German had got power more ~1,2kW in a load.

A particular attention attract the generators of J. Searle (Berkshire, UK) based on usage of the "self-sustaining rotation" effect. In 1950 the inventor had displayed that addition of a small component of the alternating current with amplitude ~100 mA and frequency ~10 MHz in the production process of the ferrite magnets leads to appearance in them the new unexpected properties which consisted in the unusual interaction of the permanent magnet with the magnetic rollers arranged on its surface. They were moving after receiving some initial impulse without any external support.

Somewhat later in 1992 scientists of the High Energies Institute of the Russian Academy of Sciences created an installation which actuated with help of the rotor spinning from an external electric motor.

An interesting version of device with the switchable magnetic resistance, widely recognized as one of the most successful engines on "free energy of the ether," was proposed by R. Adams (New Zealand, 1977). The rotor in his motor was made of permanent magnets. In its rotation the induction currents were being excited in the stator coils located around the rotor. Here there was no phenomenon of electromagnetic induction in the full sense. Here there was only a magnetic induction, to be more exact the magnetization process and demagnetization process of the stator core in the field of permanent magnets of the rotor. So named "magnetization process by influence" differs from the electromagnetic induction process in that the secondary magnetic field produced in the winding of the generator does not retard the rotor and does not interact with the primary field.

Else more attractive engine on the rotating magnets is the wheel of K. Minamoto (Patent US 5594289, 1997). A set of the permanent magnets and as well the stabilizers designed for balancing is fixed on the rotor which represents itself a bicycle wheel rotating on the horizontal

axis. Near the wheel external circumference the electromagnet is located. In the winding of latter during the rotor rotation the harmonic electrical current is being excited.

Ending description of the distinguished alternators of the magnetic dynamical kind it should be noted that their creation has already gone to the stage of the practical elaborations. As it is known for the time being several private companies accept the orders for production of the industrial samples of the engines-generators on the permanent magnets.

Among them not so long ago the «GMC Holding Corporation» (Orlando, USA) has announced that after 12 year's successful investigations the device on the permanent magnets «LUTEC» has been created. This device can provide the fundamental solutions of the world economic problems in the power engineering field.

Else one company «Perendev» (this is in abbreviated form from «Perpetuum Energy Device») has announced that the produced magnetic motor with power ~ 30 kW has been ready for the commercial implementation. A primary cost of the first devices will be about ~ € 8500.

Other kind of the magnetic motor named as «Cyclone2» has been created not so long ago in Australia on the American company finance. The acting experimental sample of such engine for a car has been demonstrated on TV.

Everything said above allows waiting for appearance on the world market of the compact power engineering installation of the magnetic dynamical kind which will be able providing electrical energy some small offices, houses and other objects remote from the power transmission lines.

The convertors of the gravitational energy of ether.

Historically, the creation of the «perpetuum mobile» was started from the gravitational energy convertors.

Let us distinguish the most interesting and working practically proposals.

As a rule, the «perpetuum mobile» of such kind contains the constructive components in which the small weights or the water falling vertically down are rotating a wheel fulfilling a useful work (Leonardo da Vinci).

In 1438 Italian inventor M. Gakopo had built a system from eight bars radially situated in the rotation plane and bending themselves in one direction. The left part of this the system by the weight was differ of the right one what provided the system rotation.

In 1664 in Germany the «ball-like perpetuum mobile» had been developed by Ulrich von Carnach. In 1686 Bockler had designed "self-rotating mills" using various versions of Archimedes screws.

In England the first Patent on the «perpetuum mobile» in a view of the four-meter wheel with 14 weights (25 kilograms each) had been given to E. Somerset in 1635. The machine test had been occurring in London at

presence of King Carl what archive records is evidenced about.

It is known that till 1903 in England the devices like these had been defended by more 600 Patents.

So named wheel of J. Bessler was most known in the beginning of XVIII century. During several tens years he was demonstrating the different models of his wheel which came in motion with help of the inside weights. The latter were creating the forces asymmetrical moment during the wheel rotation.

The last of his constructions had six foets in diameter and rotated with velocity ~ 42 turns/min. This wheel was fulfilling a useful work and lifting an object with mass ~ 16 kg till height $\sim 1,5$ m.

One of the last proposals so named the wheel of Hugo E. Fraga (The Perpetual Motion Mystery, R.A. Ford, Lindsay Publications Inc., Bradley, IL 60915, USA, 1987) is very interesting from the practical point of view.

Nevertheless in spite of all obvious advantages as it follows from the known simplest physical considerations and the numeral estimates the power of these convertors are very small what is caused by the low density of the gravitational energy. Therefore the economic characteristics of these installations make them non-competitive.

And as the last remark, as it seemed a relation to the «perpetuum mobile» problem had to change long ago after determination of the Law of Energy Preservation. In this connection it becomes obviously that the useful work this is a transformation quantitative measure of the energy from one form in other form. Under this the energy is being preserved in the system as in whole.

It would seem that the attitude to the problem of the «perpetuum mobile» should have changed long ago after the determination of the Law of Conservation of Energy, when it became clear energy from one form to another. Under this the general energy of all system is staying permanent. that useful (ordered) work is only a quantitative measure of the process of converting With this understanding, the question of any «expenses» of energy in the performance of work should have disappeared of itself, as it became clear that the amount of «expended» energy will always be equaled to the sum of the useful work and losses accompanying this process.

This circumstance has a direct relationship to the gravitational energy generated by the uneven distribution of the substance (mass) in the ether and makes to understand the physical capabilities of the gravitational forces for creating convertors of gravitational energy.

In this case, if in the course of a cyclic process with a working body of a certain mass, the slightest change in the relative position of its surrounding bodies occurs, even if the position of the working body is restored relative to one of them (for example, with the Earth), the force of gravity will be different from zero. On this principle, by the way, tidal power stations work, where the rise of water during

the tide is caused by the interaction of the Earth with the Moon.

IV. THE ELECTRODYNAMICS ALTERNATORS

Their description can be begun with illustrations of the practical use.

The most interesting implementation in the electrical energy manufacture is the generator «Swiss ML-converter, Thesta-Distatika» invented by Pole Bauman, created and working in the Christian Community «Methernita» (Switzerland).

During more thirty years several such without-fuel generators had been supplying the electrical energy in quantity (~ 750 kW) securing all Community including the production workshops etc.

Else one historical fact is very interesting.

In 1931 Nicola Tesla together with engineers of the automobile firm «Pierce-Arrow» had demonstrated in public a new phenomenon.

The petrol engine was removed off from a usual car. Instead of it an electromotor was fixed. For its power supplying N. Tesla used a little box with dimensions $0,6 \times 0,3 \times 0,15$ m with two electrical outputs of a length $\sim 0,075$ m.

There were no electrical batteries or accumulators in the automobile. However, during a week the car drove and developed the velocity till ~ 150 km/hour. On the questions from where energy is taken, N. Tesla was answering that the energy is from the ether of surrounding space.

The first widely known device which demonstrated a possibility of the energy receiving directly from the surrounding environment and transporting it on the long distances was the «Tesla transformer». The main ideas of its action principle were described in the author's Patents «Apparatus for Producing Electrical Currents of High Frequency and Potential» (US 0568176, 1896) and «Art of Transmitting Electrical Energy through the Natural Mediums» (US 0787412, 1905) [12,13].

The main distinguished particularity of the Tesla transformer is the unusual high coefficient of the energy transformation () much more exceeding the transformation coefficient conditioned by the inductive tie between the windings. According to the inventor affirmation the present fact can be explained by extraction of the additional energy from an external substance filling all surrounding space and called by ether. Nikola Tesla believed that we «...are bathing in the sea of the ether energy...» the streams of which are the electricity streams particularly [12].

In this connection the Tesla resonant transformer can be considered as one of variants of the energy effective source with help of which it is possible receiving the energy directly from the surrounding space without any convertors [13].

Without repeating the action principle it should be marked the main technical problem in realization of the

projects like that is a creation of the devices for the immediate extraction of the power received from the ether [14,15].

What is the problem in and why the according information is absent in the known N. Tesla works can be understood having noted the quite important circumstance.

The primary goal of the inventor project was the creation of a global system for the generation and wireless transmission of electrical energy to any point on the planet Earth. As it appears at present the design of the «opened» secondary winding was conditioned by achievement of just this goal (identically to the well-known H. Hertz radiator). And this goal can explain the author's recommends absence for the systems of output to consumers the energy received from the ether.

Among the known proposals of the N. Tesla followers two main ways of output to consumers the energy generated can be marked:

1) The load connecting direct to output of the secondary circuit.

2) The load inductive connecting.

Since there is no information in the current scientific literature on the use of the Tesla transformer as an effective electrodynamic alternator the problem of the efficiently extracting energy from the ether of the surrounding space apparently still remains open and demands its solution.

In conclusion of the conducted consideration let us return to the main causal factor determining the high effectiveness of the energy convertors from the surrounding space [14,15]. As shown by the analysis of the effectiveness of alternators of all types, such causal factor is the resonance. Probably, it is that the resonance is some «key» opening the access to the ether energy. Nikola Tesla was the first who understood and used this hypothesis. The secret of his great inventions consists in exactly it.

The existence of the «key» opening the access to the energy of any kind can be seen in the well known analogues. So, the «key» to the heat energy of a fuel is a fire, the «key» to the electric energy of the galvanic elements is the chemical reactions, the «key» to transforming the mechanical energy into electrical this is the electromagnetic induction etc.

V. CONCLUSIONS

The advanced hypothesizes and elaborations represented in the modern scientific literature and directed on searches of the principle new sources of energy which

based on the physical principles of the energy extraction from the surrounding space are illuminated.

The predominating modern definitions of the ether and the physical vacuum as some material substance filling all surrounding space and possessing the huge energetic potential $\sim J/m^3$ (under the density of energy yearly consumption by the Humanity $\sim J/m^3$) are represented.

The without-fuel generators as convertors of the different kinds of the ether energy the elaboration of which becomes the more perspective for the problems solution of the modern power engineering are described.

The hypothesis about the resonant phenomena as the «keys» of access to the energy of the ether in the surrounding space is formulated.

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Сучасна енергетика в світлі нових фізичних уявлень та технічних реалізацій. - Короткий ОГЛЯД

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Анотація - в короткому огляді висвітлюються перспективні гіпотези та розробки, представлені в спеціальній науковій літературі та спрямовані на пошук нових джерел, що базуються на фізичних принципах видобутку енергії з навколишнього простору. Описані так звані генератори без палива як перетворювачі різних поглядів енергії ефіру. Їх розробка стає все більш перспективним бізнесом для вирішення сучасних енергетичних проблем. Їхні технічні проекти переходять до стану промислового виробництва. За фізичними ознаками принципової ефективності серед них виділяють генератори тепла, магнітні динамічні перетворювачі, перетворювачі гравітаційної енергії та, нарешті, електродинамічні генератори. У порівнянні з генераторами тепла клас генераторів, що використовують постійні магніти, більш численний і різноманітний. Перетворювачі гравітаційної енергії, як правило, є "вічними мобілями", що містять структурні компоненти, в яких падаючі вертикально вниз ваги або вода обертають колесо, створюючи корисну роботу. Вибрана група безпаливних генераторів - це електродинамічні генератори, що працюють як перетворювачі електромагнітної енергії з ефіру навколишнього простору. Найцікавішим прикладом електродинамічних генераторів є «трансформатор Тесла», відомий широкому колу фахівців. Його відмінною особливістю є незвичайно високий коефіцієнт перетворення енергії ($k > 1000$), набагато вищий за коефіцієнт перетворення через індуктивну зв'язок між його обмотками. На закінчення на основі порівняння аналогів сформульована гіпотеза про резонансні явища як «ключі» доступу до ефірної енергії в навколишньому просторі.

Ключові слова - Сучасна енергетика; Фізичний вакуум; Нові джерела енергії; Генератори; Резонанс; Трансформатор Тесла.