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New theory of the electricity

and  
the power transformers of the direct current

[Bestoplivnaya] energy

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**1971**

**From a series of the books “new study”.**

**Book Of i[v]:** New electrophysics and the power transformers of direct current. [Bestoplivnaya] energy.

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## BIOGRAPHICAL INFORMATION

### *Dmitriy Nikolayevich [Motovilov]*

In 1971 before the branch “plant affiliated with higher technical school” of Penza polytechnic institute with the difference protected diploma project at the point of the theme “study and the development of the new principles of optimal control”, before which it for the first time gave the concept of the general laws of development and design of living medium, nature and technosphere on the basis of the knowledge of those -[nogenov] and energy-information theory.

*(Leader OF [S].[K]. Of [naydenov], [LPI])*

It in 1989 finished the graduate study of All-Union electrotechnical institute (ВЭИ). Before the thesis on the basis of the positions of the diploma slave [ty]1971 of year are resolved questions of the theory of the united calculation of information- energy and [tekhnogenetiki] as Kron- Prigogine synergetics. Is completed the development of the principles of the classical theory of the electromagnetic field of Faraday- Maxwell remained unfinished. Is developed the theory of the power transformers of direct current - [zashchishchennogo] as far as patents on the invention of the fundamentally new class of electrical machines, opened by the method of [tekhnogenetiki]. *(Leader OF [V].[N]. Of [lisin], MEI)*

Are in 1989 in Tokyo published the theses of the report of the author on between the people symposium YRSI, before which within the framework Faraday paradigm Maxwell it communicated about the discovery of the second form of electromagnetic field and about the completion of classical principles of the theory of electricity.

*(Leader of symposium [Kh]. Kikuchi, Tokyo university)*

In 1996 before Geneva to the cycle of the practical-scientific work of the author in the nomination of electrical engineering, the independent *international judges* appropriated silver medal. Before the same nomination of bronze medal they are honored work [VEI] - head [predriyatiya] of Minelektrotekhprom (Ministry of Electrical Equipment Industry).

Down work of author mentioned above is dedicated this book.

On the native land of the author these transactions little are known because of the excessive

the influence of conservatism - monistic beginning before the science.

He worked before penza after engineer in KB of the automation of compressor plant, chief engineer of NII (Scientific Research Institute), after senior scientific worker OF [PPI], served after squad leader before the troops of connection. In the 90's it led

different by creative, social and political,  
by scientific and economic associations.

*It was occupied by archeology, history, literature,  
by people artistic creation, it worked  
before electro-energetics and machine building.*

### **APPRECIATION**

*The author expresses his gratitude*

*to the representative of firm "kind and Schwarz"  
To Casimir mountain,*

*to the head of symposium URSI - professor [Kh]. Kikuchi*

*and to the senior scientific worker  
Penza polytechnic inst. to Alexander [Shulman]*

*at the point of the shown support of past years before the advance  
the ideas of the book due to complex conditions  
internal and foreign policy situation, interdepartmental relations and  
competition.*

*Penza.*

*On December 4, 2001*

### **ANNOTATION**

Are presented principles of the [zavershennoy] theory of electricity within the framework Faraday- Maxwell paradigm, up to the level of the fundamental laws

electrical engineering and the concept of the flow of energy electro  
the magnetic field of the second form. The emission laws po- are formulated  
[slednego]. A number of the new fundamental theorems of physics proves  
[EMP].

The results of tests and possibility of the power trans- are given  
the shapers of direct current, which use specific its  
[stva] of the second form [EMP]. They are given the concept of business- plan for about  
[izvodstva] [STPT] about the program of [franchayzinga] and endurance from the reports  
the approval of the work of the author.

Are for the first time given the scientific the bases of the construction of the

[bestoplivnykh]

the generators of electrical energy.

Against the discretion of the author, are applied his autobiographical, the warrant  
[turnye] and historico- prognostic essays, photograph [STPT], [ostsil]-  
[logramm] and the published work of the author.

*Sheet of the readers.*

- 1. [Tonoevskiy] [V].[L]. Of [zheleznovodsk]*
- 2. [Rafalskiy] [R].[V]. Ruza*
- 3. zemstvo [V].[N]. Moscow*
- 4. [Mashkovtsev] [I].[I]. Kirov*

*Preamble.* “... I believe that the new knowledge will allow man to again occupy before this peace the fitting to him place, [lishennoe] violence and the sufferings of a dependant stay on the judicial bench of the outgoing civilization. It will make it possible to forego the combustion of any “fuel”, and will ensure population with the labor of the Earth suffering us for the sake of [bestoplivnoy] personal power engineering. [Uydet] beside the past the epoch of Gazprom, YeES, [chadyashchikh]

automobiles and new in the [chernobyley], urban of TETs (heat and power plant) and kerosene s, de-energized and become depopulated villages of Russia, its [perenaseleennykh] and [razvrashchennykh] cities.

Heroes Mikhail Bulgakov in this case would say:

“Good-bye, old life!”, and people of Hemingway -

“Good-bye, weapon!”

Now we can know that around the Earth circulate super-powerful the flows of the new energy, caused as far as its “[fraktalnym]” electrical by charge and by the magnetic field of the planets, supported by the entire universe.

These are **living ocean INFORMATION- ENERGIES, the place of the inhabiting**

Planetary **REASON**, functionally connected for the sake of **EACH** of us.

In the abode **THE THOUGHTS** each *moment* of multidimensional **TIME** raise, are developed and depart down other forms of existence [mirriady] the lives, which are extremely differed from our and before the same degree - *inseparably for the sake of us* connected... “

*(From the biographical essay of the author)*



## PREHISTORY OF THE THEORY

*“Education was saved before one angle,  
Beside which the large part of the people  
competent I they do not glance!” (M). [A]. Dmitriev, Moscow elegies  
“trifles from the reserve of my memory”, 1854)*

To the development in 1985 of the new conceptual base of the theory of the electricity and energy-dynamics (theory of energy flows) me impelled insoluble contradictions to the concept of the classical science, the peak of consideration of which in the press arrived at the point of the period of the instruction of the author before the external graduate study [VEI], a main enterprise in the ministry of electrical engineering industry. These were questions about the signs of stresses and emf, about the power fluxes before the electrical machines, [trebushchikh], about expression of one of the participants in the discussion, *“reconstruction of entire training and domestic literature”*. In this case classical physics paradoxically allowed the contradictory, polar-split interpretation of physical phenomena before the technology, which caused the disputes of the fundamental nature on Wednesday of the specialists of applied knowledge. They are subconscious continuously they were located before the expectation of the reform of the theory of electricity “on top”, based on the side of [metro] of electrical engineering - “immortal”, [styazhavshikh] world acknowledgment during the creation of the bases of classics. However, the failure besides the paradigm of monism and the adoption of the multipolar understanding of nature of electricity concealed ripened before the essence. It is understandable that in view of the sole structure of the life of civilization as a whole, the expectation from the top of this monolithic pyramid of the solution about “the division” of its base was vain regarding.

For me soon it in light of what has been stated above, became obvious, that above the tests

[lemoy] dual concepts before the theory of electricity is hidden completely unknown to science the physicotchnical phenomenon of promising scientific and ideological value, which can be raised to the study exclusively of [putem] **of personal** efforts. Before this convinced existence of a number of other debatable directions, which passed, before the essence, past the attention down as USSR and “high science” as a whole. Among them - the effects “of strengthening of energy flow” before the rings of Fresnel and before the heat pumps - the forerunners of the personal of [energy]-

ticks, actively developed abroad. The effect of the single-wire transfer of energy of electric current proved to be paradoxically new; by paradoxically concealed from the society - study of the unipolar generator of Faraday as preliminary [shestvennika] of the epoch of [bestoplivnykh] sources; and now already - and the generator of [ak]. of Sobolyev and power transformers of direct current [1], which finally blew up the monistic paradigm of electromagnetic energy. Sharply stood questions of electromagnetic interaction of living objects, influence of the field of electric power line down the man, the suns - down the terrestrial biosphere, with which tightly are clamped the [metaistoricheskie] ideas of electromagnetic panspermy, synergists and appearances of the field uniforms of life, tele-communications of high extraterrestrial civilizations ([VVTS]), not [vovlechennye] thus far beside the practice of moderately-priced publications, but having epochal humanitarian value. However, as a whole they all showed the sharp strengthening of the bifurcational bank of the civilization at the end of the second millenium and created sufficient prerequisites of the change of its paradigm before science, technology and power engineering by the efforts of the scientists of new wave.

The [provedennye] then studies confirmed that the basis of the study of such phenomena can be undertaken radically others, principally rejected by previously entire classical science the idea about **dual** nature of electromagnetic field and dualistic approach to understanding of its **second**, un- “nonmaxwellian” form [2]. According to **base theorem (8)** new theory [EMP], the vectors of the tension of electrical and magnetic pour on [EMP] of the second form are in no way connected together, since they are governed by **the different**, independent sources of cause-effect disturbances. The author gave to the second form [EMP] the name “composite electromagnetic field”. Within the framework old electrodynamics the emission of energy flows [EMP] beside the free space treats about **the classical theorem of Umov-Poynting**. Theorem itself implies existence only of **one** (“total”) source of electrical and magnetic pour on, that also connects for the sake of their transmutations according to Maxwell. The flows of composite [EMP], known before it as the result of addition before the space of **the independent variables** of electrical and magnetic pour on, they became simply fictitious concept - purely theoretical, “virtual” idea. Specifically, because Umov theorem Poynting is considered before the classical science as the sole source of the entire theory of the electromagnetism (Maxwell's equation they enter beside it before the implicit form), and **it is formal** at the point of this one reason alone, any inevitable manifestations before the technology of the flows of composite [EMP] extremely rigidly are qualified as “[lishennye] of **physical** sense”, and the wave form of the emission [EM] of energy beside the free space is considered as the only possible. However, the emission of nonwave form beside the same free space **along the wires** is considered as as the not entirely equivalent to emission [EM] of waves before by anything the unconfined space, and therefore - by sufficiently tolerable retreat from the general paradigm.

However, after obtaining very convincing confirmation before **the physical** of [opi]-

of [sanii] of power fluxes in [STPT] and before the transformers as a whole (since [priemle]- of May the concept of energy [EMP] before them is not thus far as far as anyone proposed), the theory of composite [EMP] led down the clearly expressed and very visual **physical** idea about the generally unknown earlier to classical science (“high physics”) the phenomena: on existence of the real energy flows of nonwave nature before the free space, about the completely specific laws of their transformation and refraction, reflection On the Border of media and slip along it. (By analogy with the Maxwellian study about the lines of force and the magnetic fluxes, the author was named this sphere of knowledge “by energy-dynamics”.) Moreover, within the framework new theory it proved to be possible to conduct the long ago ripened modernization of the classical laws of electrical engineering, established still [Kh][Kh]- m century. The law of the electromagnetic induction of Faraday-Maxwell- Lenz became a special case of the new, more general common (universal) law of the induction of the flows [EM] of energy. The classical theory of electrical chains obtained the new forms of the laws of Ohm and Kirchhoff, and it was freed based on the artificial concepts emf and “strange source”. However, classical physics, for example, in many respects is united with newest [fraktalnoy] physics and cosmogony Of [v].[Shabetnika] before the part of the use of a concept about the energy flows of composite [EMP], elementary particles circulating before the surrounding space, charged substance of macrocosmos and monopoles of Valerianus Sobolev. [Nabolee] cardinal changes - before the entire system of natural-science ideas - escape from the analysis of physical processes before its [bestoplivnykh] power generators. The development of the theory of electricity as a whole proposed did not meet what - or the objections of scientific nature, just as the preceding it cycle of author's works - theory “**value** information - energy” and [razrabortka] of the new class of converters “**the power transformers of direct current**”. By very essential natural support and confirmation besides its adequacy proved to be the primary nature of all developments: before their appearance there were no analogs whatever by them in the field of the sight of academic science, although the concepts of value and strengthening of information before the processes of its conversion already began to be manifested before the works of Charkevich and [Yu]. [Shreyder]. On the sums of the participation of the author before the conferences, exhibition of measure and before the patent activity before the flow it is more than thirty years, all closest down them scientific, technical and juridical centers of Russia expressed themselves before the support of new directions: [MONIPT], MEI, [VEI], [Goskomizobreteniy] and the branch structure [ANSSSR] in MEI, created still by academician Berg. The theory of information- energy and information- energy structures was extended through the editorial staffs of the leading scientific and scientific popular publications [3], the academic seminars [4]; its elements in the course of time entered beside the training courses of Petit and [LPI] [5, 6]. Value information- energy approach became to practice before the works of many domestic scientists [7]. **Abroad**, which proves the primacy of author's initiatives, similar developments as far as anyone were not undertaken [by 7]. The works, down which the author dedicated the

large part of his life ([STPT]), proved to be more tolerant in this respect. They were continued by individual specialists, by places without the references down the ultimate source (in the case of information- energy theory this it was everywhere), including the experts of VNIIGPE (All-Union Scientific Research Institute of the State Patent Examination) with the ten-year experience of the destruction of the materials of the ultimate source [8]. However, attempts at theoretical [opponirovaniya] for the sake of it, by the way, very logically led down the negation even of the completely correct treatments of the laws of conservation [7.2]. Moreover the part of the opposing proposals for improvement, moved the same of VNIIGPE as the inventions, proved to be... inefficient [9]. The author estimates these aspects of the perception of his ideas as completely logical confirmation besides their primacy and besides urgency. In 1996 the theory of composite [EMP] and the developments before the class [STPT] were [podtver]- of [zhdeny] the estimation of the examination of international judges before Geneva [10], especially important for the new direction fact that the following place before the same nomination obtained the transactions of the All-Union electrotechnical institute [of 11], one of the guiding centers of the initiation of new ideas before the middle of the 80th.

Before the special, conclusion of the proposed book, [posvyashchennoy] new theory of electricity, the author for the first time undertook the attempt at the philosophical-esoteric analysis of the survived now not only by science boundary state, which makes it possible to understand the sense of new initiatives as a whole based on the position of the change of the entire paradigm of existence of terrestrial civilization. Moreover, besides general philosophical reasons, to the moderately-priced publication of the made developments me impelled the cases “exclusive introduction” down their representatives of clearly not- humanitarian structures and sub-scientific culture. As before the confirmation besides the concept of the literary essay of the book, it turned out that by the initiators of the manifestation of clan expansion everywhere adapt the determined procedures of machine monitoring, completely ignoring points of honor, health, frequently and the very life of innovator. In connection with this the author has a foundation for hope that his initiative before book publishing will have not only scientific value, but also it will help society to rest beyond the more humane beginnings before his corporate thinking, that the peace of the Earth nevertheless will leave down entirely different way of development.

**Any, including most modest support to this project and to the author,  
at the point of which I turn myself now down my reader,  
it will be with the appreciation accepted.**



***Additional information about the project:***

Before the subsequent books, [posvyashchennykh] to theme “structure of peace”,

it is intended to throw light on the following questions:

Book 2: **“[TEKHOGENETIKA]”** (theory of united calculation value information [matsii]- energy, the periodic law before the technology, the universal laws of development, design of technology and living environment, the synthesis of the schematic of the power transformer of direct current, the theory of the synthesis of the aperiodic intellectual crystals of supercomplicated systems before nature, technology and subatomic microelectronics.) On the basis of the paradigm of the relativity of Socrates, [Protagora], ana -[ksagora], Einstein are given the beginnings of contemporary relativistic knowledge about that surrounding [Mire].[Vpervye] it is revealed the study about ***[tekhnogonakh], universal cells of the levels of universe - man, technology, space, about the united calculation of information and energy.*** Is solved the problem of synergetics of Prigogine - Kron: the bases of scientific analysis and synthesis of supercomplicated intellectual systems before nature and technology are given

Book 3: **“THE POWER TRANSFORMERS OF DIRECT CURRENT”**

([Skhemotekh]-

nick, classification, construction and the prospect of applying [STPT].)

Book 4: **“THE DIVERSIFICATION OF PARADIGM”** (new ideas on the base of the theory

composite electromagnetic field before radio engineering, before monitoring of [okru]-

the [zhayushchey] medium and meteorological conditions, before the biosphere and power engineering.)

**Content of further divisions of the first book:**

**Part of the I:**

***Theory of energy flows***

Chapter 1. *theorem Of [motovilova]* ..... - [str].11  
Chapter 2. *modernization of the laws of electrical engineering* ..... - [str].14  
Chapter 3. *energy flows before the electroelements with the inductance.* - [str].21  
Chapter 4. *energy flows before [bestoplivnykh] generators* ..... - [str].39  
Epilog ..... - [str].45

**Part OF THE II:** (before this manuscript not of [daetsya])

Chapter 1. *outcome* ..... - p. chapter 2. *of number* ..... - p.  
Chapter 3. *instead of signature* ..... - p.

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**Commentaries and endurance from applications** ..... - [str].50

***Concept of business- plan and invitational letter*** ... - [str].56

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**Agreement down the delivery of books** ..... -

[str].58

**Appendices** ..... - [str].59-69 *the*

*note:* the fragments of the book, named before gray type,  
they are supplied against the discretion of the author



PART OF THE I

THEORY OF ENERGY FLOWS

Chapter 1

## Theorem Of [motovilova]

### 1.1

Let

**us write down** the theorem of Umov - Poynting, which expresses the balance of the flows electro magnetic energy and constituting together with Maxwell's equations (2) the fundamental theoretical basis of the previous theory of the electricity:

$$(1) \quad \oint_{\Sigma} (\mathbf{E} \times \mathbf{H}) \cdot d\mathbf{s} = - \frac{d}{dt} \int_V \rho_{stor} \cdot dV + \int_V \mathbf{j} \cdot d\mathbf{s}$$

where  $[\mathbf{P}]_a$  - vector of Poynting of total electromagnetic field ( $\mathbf{E}; \mathbf{N}$ );  $W_{stor}$  - the rate of change of the energy [EMP] before the volume of **the V** inside the surface **S**;

$\mathbf{E}_{of [stor]}$  the tension of electric field, caused "as far as nonelectric" the force  $\mathbf{j}$ , called strange, or, it is thinner frequent - "nonmaxwellian", since **does not have** functional connection for the sake of the field  $\mathbf{N}$  about the equations (2);  $\mathbf{E}$  of [napryazhennostelektricheskogo] field, **which has** this connection for the sake of the field  $\mathbf{N}$  according to them:

$$(2) \quad \begin{cases} rot \mathbf{H} = \mathbf{j} + \partial [\mathbf{E}] / \partial t; & div \mathbf{H} = 0; \\ rot \mathbf{E} = - \partial [\mathbf{N}] / \partial t; & div \mathbf{E} = - \rho / \epsilon \end{cases}$$

where the parameters of electrical conductivity  $\lambda$ , magnetic  $\mu_{and}$ , by dielectric  $\epsilon$  of the constants of homogeneous and isotropic medium inside the surface **S** appear

by constant scalar quantities.

1.2 for the conclusion of the law of conservation (balance), it is more than (1) [priblizhennogo] to the real electromagnetic medium before the electrical devices, we will examine before the same volume of **the V** before the composition one overall field ( $[\mathbf{E}]_a; \mathbf{N}_{\Sigma}$ ) the sum of  $n > 1$  of mutually independent [EM] pour on Maxwellian type, the vectors  $\mathbf{Of} [\mathbf{e}]_i$  and  $[\mathbf{N}]_j$  of which are connected for the sake of the relationships (2) inside each  $i$ -th ( $j$ -th) field, i.e. - with  $i = j$ . But if indices  $i, j$  with the vectors  $\mathbf{E}, \mathbf{N}$  do not coincide, then corresponding [EMP], which is formed before the space by the

simple imposition (composition) these pour on about the principle of superposition, we will carry down “*nonmaxwellian*”, or “*composite*” electromagnetic fields (*to the fields the name of rivers*). By composite [EMP] it in such cases appears, for example, as it will be shown subsequently, the field, [vozbuzhdennoe] in [STPT] before the magnetic measurement by the direct current of power winding, and before the electrical measurement - by variable basic magnetic flux of transformer (by current of magnetization). Accordingly, it is formed by static magnetic DC field and by vortex electric field of the effect of self-induction. A quantity of energy W before the volume of the V will be written down with the use of expressions for the sums of vectors E and N pour on, entering total [EMP], as follows:

$$\begin{aligned} (3) \quad W &= \frac{1}{2} \alpha [\epsilon \phi_0 \text{ of } \int V \mathbf{E} \cdot \mathbf{E} \, d\tau + \frac{1}{2} \alpha [\mu \phi_0 \text{ of } \int V \\ &\text{Of } \mathbf{h} \cdot \mathbf{h} \, d\tau \cdot \phi_0 = \\ &= \frac{1}{2} \alpha [\epsilon \text{ of } \int V (\sum_n \mathbf{E}_i)^2 \, d\tau \cdot \phi_0 + \frac{1}{2} \alpha [\mu \phi_0 \\ &(\sum_n \mathbf{H}_j)^2 \, d\tau \cdot \phi_0, \end{aligned}$$

and the rate of change of the energy W before the volume of the V is respectively equal

$$\begin{aligned} (4) \quad \dot{W} &= \alpha [\epsilon \phi_0 \text{ of } \int V \sum_n \mathbf{E}_i \cdot \dot{\mathbf{E}}_i \, d\tau \cdot \phi_0 + \alpha [\mu \phi_0 \text{ of } \int V \sum_n \mathbf{H}_i \cdot \dot{\mathbf{H}}_i \, d\tau \cdot \phi_0 \\ &+ \alpha [\mu \text{ of } \int V \sum_n \mathbf{H}_i \cdot \dot{\mathbf{H}}_i \, d\tau \cdot \phi_0 + \alpha [\mu \phi_0 \text{ of } \int V \sum_n \mathbf{H}_i \cdot \dot{\mathbf{H}}_i \, d\tau \cdot \phi_0 \\ &+ \alpha [\mu \text{ of } \int V \sum_n \mathbf{H}_i \cdot \dot{\mathbf{H}}_i \, d\tau \cdot \phi_0 + \alpha [\mu \phi_0 \text{ of } \int V \sum_n \mathbf{H}_i \cdot \dot{\mathbf{H}}_i \, d\tau \cdot \phi_0 \end{aligned}$$

or, taking into account expressions (2) for tensions of electrical and magnetic pour on, the entering the total electromagnetic field about the theorem (1),

$$\begin{aligned} (5) \quad \dot{W} &= \alpha [\epsilon \phi_0 \text{ of } \int V \sum_n \mathbf{E}_i \cdot \dot{\mathbf{E}}_i \, d\tau \cdot \phi_0 + \alpha [\mu \phi_0 \text{ of } \int V \sum_n \mathbf{H}_i \cdot \dot{\mathbf{H}}_i \, d\tau \cdot \phi_0 \\ &- \int V \text{Of } \sigma_n \mathbf{H}_i \cdot \text{Of } \sigma_n \text{rot } \mathbf{E}_j \cdot \text{of } d\tau \cdot \phi_0 \\ &- \int V \text{Of } \sigma_n \mathbf{H}_i \cdot \text{Of } \sigma_n \text{rot } \mathbf{E}_j \cdot \text{of } d\tau \cdot \phi_0 \end{aligned}$$

After regrouping of equation (5) we have:

- It is i-th

$$(6) \quad \dot{W} = - \int V \text{Of } \sigma_n (- [\mathbf{E}]_i \text{ top} \cdot \phi_0 \mathbf{H}_i^{\text{H}} \cdot \text{rot } \text{Of } [\mathbf{e}]_i) \cdot \text{of } d\tau \cdot \phi_0$$

- IT IS IIND

$$\left\{ \int_V \text{Of } \sigma_{n, i \neq j} (-[\mathbf{E}]_j) \text{top} \cdot \phi_0 \text{Of } \mathbf{h}_i \times d\mathbf{v} \text{ of } + \int_V \text{Of } \sigma_{n, i \neq j} \text{Of } \mathbf{h}_i \times \text{rot} \text{Of } [\mathbf{e}]_j \times d\mathbf{v} \right\} - \text{THE III}$$

$$- \int_V \sum_{n, i=j} \text{Of } [\mathbf{e}]_j \times \mathbf{I}[\mathbf{E}]_i \text{ } \varpi \delta \cdot \phi_0 - \int_V \sum_n 2\tau] \mathbf{E}[\lambda \phi_0 \varpi \delta \cdot \phi_0.$$

According to the theorem of Gauss, the integral before the first line of equation 6 as the divergence of the vectors **Of [p]i** as far as the volume **of the V**, is equal down flow beside the surface **S** the sum of vectors **[P]i** [maksvelovskikh] [EMP] (**[E]i**; **[N]i**). Analogously, the integrals of the second line before equation 6 express flow beside the surface **S** of the sum of Poynting's vectors **[P]i j** of nonmaxwellian (composite) pour on (**E i**; **[N]j**). [Perenosya] these expressions beside the leftist, and  $W \square$  - beside the right side of equation 6 and introducing expression for the vector of Ohm's current according to the law

$$(7) \hat{\mathbf{j}} = \tau] \mathbf{E}[\cdot \lambda \phi_0 = \mathbf{E} / r,$$

we obtain the unknown mathematical expression, named further as

*“The theorem Of [motovilova]”  
(theorem M)*

(8)

$$\text{I } \oint_S [\mathbf{E}_\Sigma \text{Of } \mathbf{h}_a] \sigma \delta \cdot \phi_0 = \text{Of } \oint_S \text{Of } [p]_a \cdot d\mathbf{s} =$$

$$\text{II} = \sum_n \text{of } \oint_S \text{Of } [p]_i \cdot d\mathbf{s} + \text{Of } \sigma_{n, i \neq j} \text{of } \oint_S \text{Of } [p]_{ij} \sigma \delta \cdot \phi_0 =$$

**THE III** = -  $w \square$  -  $\sum_{n, i \neq \text{of } j} \int_V \text{Of } [\mathbf{e}]_j \cdot \phi_0 \text{ } \varpi \delta \cdot \phi_0 - \sum_{\text{of } n} \int_V P \cdot 2\tau] \cdot \phi_0 d\mathbf{v},$

read as follows:

Energy flow total [EM] of field beside the surface **S** consists besides the sum of energy flows Maxwellian (**i i**) and composite (**ij**) [EM] pour on, and [prevra]- it [shchaetsya] inside the surface **S** beside the sum of the components of losses (divergence)

[EM] of energy before the volume of **this V** surface:

- energy of  $w$ , undertaken by the magnetic and electric fields **Of [n]j** and **E** ;
- the electrical energy, undertaken by **j** - mi by the sources of voltage **uj** with the flow through them of the currents **of ji**, created for the sake of **i** - mi by current sources;
- the electrical energy, which passes before heat- before conducting medium po- by the means of the [navedennykh] before it currents **of ji**.

In this case the second to the right integral before the line OF THE III expresses the power of the sources, called before the classical theory of electricity “strange”, and signs “-” reflect the processes of converting the forms of power.

In comparison with the theorem (1), before the theorem (8) stand the same signs, at the point of [isklyu]-

[cheniem] of sign “minus” before the heat losses of current. This explains by the fact that with the derivation of theorem (1) ([I]. [E]. Tamm. Bases of the theory of electricity.

1989) for the additional planting beside it of the tension **E** of [stor], which was absent based

on the initial conditions, it is used so-called “[obobshchenny] Ohm's law” (9)  $\hat{j} = \lambda \cdot$

$$\left( \mathbf{E} + \mathbf{E}_{\text{of [stor]}} \right),$$

representing, before the essence, also second Kirchhoff's law

$$(10) \mathbf{P} \cdot \hat{j} = \mathbf{E} + \mathbf{E}_{\text{of [stor]}}$$

and also expression for the balance of power before the one-circuit electrical chain “**E P** - **E** of [stor]”:

$$(11) \hat{j} \cdot \mathbf{E} = \hat{j} \cdot \mathbf{E}_{\text{of [stor]}} - \mathbf{P} \cdot \text{of } \hat{j}^2.$$

Before this chain a drop in the voltage  $\cdot \rho \phi_0 \hat{j}$  beyond the resistance  $\mathbf{P} \phi_0$  plays the role

vector correction for the theorem (1) during the replacement before it -  $\mathbf{E}$  at the point of  $\mathbf{E}_{\text{of [stor]}}$ .

Since in this case both last expressions before the theorem (1) in the case of the analysis of electrical chains relate down one and the same electric circuit, the  $\mathbf{E}_{\text{of [stor]}}$  in accordance with (10) occurs directed counter  $\mathbf{E}$ , also, according to a drop in the voltage  $-\rho \phi_0 \mathbf{j}$  that also it is reflected by the different signs before them.

From the point of view of these differences in the theorems (1) and (8), the expression for the balance of energy flows (8) is more logical. Before it all addend before the line III are determined on the equal conditions, without the individual supports, they have one

and the same sign (minus) and one general physico-mathematical sense - divergence (divergence) of the energy, which flows beside the volume through the surface  $\mathbf{S}$  in the form the vector flux  $\mathbf{Of [p] \hat{a}}$ . At the same time, still one, deeper explanation difference before the signs in the theorems (1) and (8) is based beyond understanding of the fundamental *insufficiency* of Kirchhoff's law, and *it* is examined in the following, second chapter of this book.

**1.3** for the formalization of differences Maxwellian and composite [EM] pour on inside general (total) [EMP] ( $[\mathbf{E}] \hat{a}; \mathbf{N}_{\Sigma}$ ), let us write down accordingly (2) the following criterion of composite field, [KSP]

$$(12) \partial \mathbf{H} \dot{\mathbf{i}} / \partial [\mathbf{E}] \mathbf{j} \neq \mathbf{M} (\mathbf{H} \mathbf{i}; [\mathbf{E}] \mathbf{j}),$$

where  $\mathbf{M} (\mathbf{H} \mathbf{i}; [\mathbf{E}] \mathbf{j}) = / \alpha [\varepsilon] \alpha [\mu \phi_0 \{ \text{of } \mathbf{rot} [\mathbf{E}] \mathbf{j} / (\phi) \mathbf{E} [\lambda - \mathbf{rot} \mathbf{H} \mathbf{i} \} ]$ , result of which it is possible to determine also [putem] of simple virtual experiment about a change in the tension  $\mathbf{Of [e] j}$  and registration of the corresponding disturbances  $\mathbf{Of [n] i}$ .

### Conclusions to chapter 3.2.1:

1. It is mathematically proven that the energy between the windings of air-core transformer is transferred through the free space between them by the emission of composite electromagnetic field, by the formed imposition of the vortex electric field of the current of magnetization down the magnetic field of scattering power currents before these windings.
2. conversion of energy before the transformer is the multiphase process, based beyond the transmutation of the generator and load forms of electromagnetic dualistically connected together and electrical pour on.
3. The effect of electromagnetic induction before the transformer appears [oposred]- by the [stovanny] form of the idea of the new universal law of [vozbuzhde]-

[niya] of the voltages, electrical and electromagnetic pour on du by the [alisticeskimi] connected for the sake of them similar physical factors.

4. Besides the dualistically connected forms of the idea of physically one and the same composite [EMP], *inside* the inductively connected conductors exist and participate before the processes of the transmutation [EM] of energy the physically different dual forms of field material - composite [EMP] with *the potential* electric field (emf and [ETS]) and composite [EMP] with *the vortex* electric field.

### **3.2.2 transformer with the magnetic circuit**

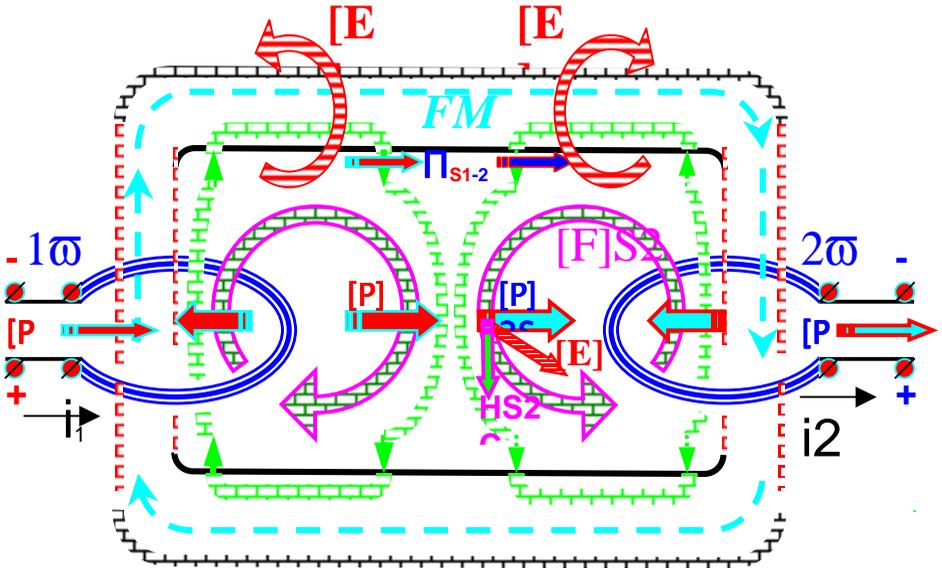
The use of a magnetic circuit for [uvelicheneiya] of the flow of the electromagnetic energy between the windings of transformer leads down the urgent technical and economic results before the part of the improvement in its mass-and-size and [ener]- GO of the consumer parameters. Moreover this method before the construction, from the point of view to the corresponding theorem M of the new theory of electrical machines, is more effective, than an increase in the number of turns of its windings:

1). According to (32 -34), with the same reactive current of primary winding, the basic magnetic flux of transformer with the magnetic circuit, the tension of the vortex electric field of its winding and the corresponding energy flow [SEMP] (45) of it before  $\mu$  of *times are more* than before the air-core transformer.

Accordingly, with the transfer between the windings of one and the same energy flow, it is possible beside *hundred and thousands of times* to decrease the reactive current of transformer, which is achieved, according to (43, 44), *as far as the appropriate* decrease of the number of turns before the windings of transformer. Taking into account that this decrease in [ve]- SA and mass of windings is reached due to the use of magnetic material of approximately the same weight as the minimized winding, it is possible again to be convinced besides *the effectiveness* of this approach before the construction. Technically *it* explains by the fact that the magnetic medium is improved here due to a quality change, and the parameters of windings - due to a change in the quantity of substance.

2). The corresponding to the decrease of reactive current weakening of the variable magnetic fluxes of scattering the current of the magnetization of transformer, not any unreal according to (45) useful functions, causes the reduction associating them energy losses down the Maxwellian irreversible emission, down the reversal of polarity of substance out of the magnetic circuit of transformer and down [vozbuzh]- [denie] of electromagnetic interferences before the environment.

For the more detailed understanding of the role of magnetic circuit before the transformer in light of the new concept of energy flows, let us represent the simplest model transformer with two identical windings on opposite one hundred [ronakh] of U-shaped magnetic circuit (Fig. 9):



**Fig. 9** magnetic fluxes, in comparison with the diagram before figure 8, undergo the sou the [shchestvennyye] changes. The lines of force of magnetic field near the boundary the magician of [nitoprovoda] experience local bend and have orthogonal on administration to its surface, which is explained as far as the extinction of tangential with [stavlyayushchey] of field by the magnetic field of the dipoles of magnetic circuit, it is oriented concerning to the boundary of substance. (This special feature of magnetic field down [gra]-

[nitse] of media, not for some reason acknowledged before its time by the editorial staff of periodical ELECTRICITY, in reality is well known before the theory of electrical machines.

Within the framework the new theory of electricity for the first time is revealed its original cause - is effects of refraction, reflection, slip and [soedi]- of [neniya] of energy flows composite [EM] of field unknown earlier, which fall from the free space down the surface of magnetic substance.) Accordingly, the vector Of [poyn]- of Ting composite [EM] pour on, [perenosyashchikh] the energy between the windings by the trans-shaper, it does not have normal component near the boundary with magnetoPRO by [vodom]. Energy flows [SEMP] flow about its surface, substantially without penetrating into the depths of the magnetic substance, when it has sufficiently great significance of magnetic permeability (Fig. 10). But if we allow both mutually balancing each other tangential components of magnetic pour on the substances also of the energy flow [SEMP] incident down it, then it is born the very logical, before the context of new theory, generalization of the universal trans-[kona] of electrical induction (18,19) down the region of magnetic pour on and stresses. Moreover, physical reality of existence of both tangential component magnetic fields with a drop in the energy flow [SEMP] on po-[verkhnost] of magnetic circuit testifies as about reality of the effect of the excitation of load electric field  $[E]V[o]$  before the winding  $C_i$  precisely of [elektri]- by the [cheskim] field  $[E]V$  of generator [SEMP] (but not by a change in the magnetic flux inductance coil), so about reality of the polyphase process (see [str].27)

the conversion of the energy flow, which falls down the electrical and magnetic outlines.

It is as a result possible to make the following fundamental conclusions about the presence of new physical effects before the propagation of the flows [EM] of energy, to one of which the author appropriates the nominal name:

1. energy flows are transferred between the electrical chains of the machines through the free space and in the form emissions composite [EM] pour on.

2. beyond the boundaries with the magnetic circuits energy flows [SEMP] manifest the properties *of refraction, reflection and connection* the trajectory of the flow for the sake of the surface of magnetic circuit (figure 10; the sections of № of № 1 4).

3. relationship between the [otklonnoy] part of the energy flow and it partly, that passes beside the volume of magnetic material, depends on the relationship of the magnetic parameters of media, and it can be described by appropriate

“by the coefficient of reflection of energy

flow”:

(46) *kOe = on/paragraphs 4.*

On the basis of the generality of the laws of the propagation of energy flows before the electrical and magnetic circuits, it is possible to assert that the analogous in sequence 2,3 properties are manifested also for the energy flows [SEMP] On the Border with the

electrical chains.

Let us note that the properties [SEMP] on [p].2 are substantially deeper than the properties of its any other analogs, including magnetic fluxes, before the part of the similarity with the laws of hydrodynamics. Before their time the analogous properties of the latter allowed Maxwell to make a qualitative picture of flow behavior magnetically GO of field the very effective basis of still one scientific discipline - "magnetohydrodynamics" and studies of electromagnetism as a whole.

The corresponding terminological guarantee of new theory of electricity and its division about the energy flows [SEMP] includes analogous designation "energy-hydrodynamics".

### **3.2.3 power fluxes before the power transformer of the direct current (CTIT)**

**Historical information.** Based on the moment the appearances of practical electrical engineering, which it is possible to consider the first application of a power transformer in 1876 for illuminating [Luvra] as far as the spark plugs [P].[N]. of Yablochkov, "transformers with the windings on the direct current" were examined only as fantastic, although very tempting [zadachii] of the theory of the electrical machines [of 11]. It can be, precisely, for this reason to its solution and approached not some outcasts alone of sole science.

So, before the scientific circles were known attempts at the solution it both by the academician [P]. [L]. [Kapitsey] and, already before the historically recent time - by academician [Laverov], who turned himself from by [oglashenny] by it to as USSR the wide program "of the solution of problem [STPT]" after acquaintance with the cycle of certificates of authorship down the already created "by petty private trader" inventions [1].

In contrast to *financial [gosshturnu]* of task, the author built his studies *on the base of scientific* fundamentally new *ideas* by developed by it since beginning of 1971 of the general theory of the design of technology and universal solution of technical problems escaping from it. Moreover the latter proceeds not of the known empirical approximations [TRIZ] or the purely physical knowledge of [akademnauki], but from the fundamental laws of synergetics as the unified theory of the development of peace and design before it of the sphere of the inhabiting of civilization [4], forecast by the work of Gabriel Kron [16].

After the publications of author's works the interest before [STPT] based on the side of scientific and technical centers grew also in connection with the stiffening of the

known requirements of scientific and technical progress and protection of the environment:

1). To the mobile users of the electric power of the new generation proved to be acutely they were necessary the compact transformer converters, principally [preodolevayushchie] the boundary of increase about the laws Of [vidmara] (i.e. - with those sharply improved, beside ten and hundreds of times by mass-and-size indices, with other radically factors of energy-economy and ecology).

2). New high technologies require the especially high quality of [elektroener]- of Gia large power - high speed control besides its parameters for maintaining the necessary characteristics of technological process.

This relates both down the sphere of information technologies, especially in the regions of the USA, where large emergency turning offs of power systems occurred for this reason and to the sphere of the treatment of materials - to the plasma and electric arc welding, the spraying, electric drive, galvanics and [prch]. However, the combination of the task of increasing the conversion frequency for best control besides the flow of technological energy and task of increasing the installed capacity of the power source again derives the problem of the design of the latter for overcoming of the fundamental prohibitions of the laws of an increase in the transformer on [Vidmaru].

3). Real prerequisites for the complex superconductive performance of the units of large electrical devices on the direct current are created. However, for the trans-Thomastori before the composition of these assemblies problem is not solved before principle, since the state of the superconductivity of the windings of the latter is physically incompatible for the sake of the variable nature of power currents before them.

As showed the results of the [provedennykh] studies, [STPT] before principle they solve problems enumerated here (see the figure of №1 I), and in this case the developments of semiconductor equipment, technology and construction of transformer converters are complementary to the tendencies. Moreover, very idea of *chart technology* solution of technical problems, beyond which is based [izobre]- [tenie] [STPT], before the civilizational plan is indisputably more preferable than re- [shenie] by their creation of new materials and new elements of control, since [vedet] to the savings of working, industrial and natural resources. Before kA to [chestve] of an example I will say that before the 70's of the USSR *it lagged* as the USA on the level of semiconductor technology down 15-20 years; however, the chart technology solutions in the region of magnetic recording raised the appropriate indices of the memory units by an order *higher than* foreign.

WITH P I [S] [O] [K]

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## Commentaries and endurance from [prilozheniiy].

[P].3. [From the correspondence with the representatives of the scientific and technical the centers](#)

[P].3.1 from the commentary of the editorial staff of the periodical “TM” to the article of the author [2.7: [str].62]:

“For the sake of fairness it should be pointed out that this idea there was for the first time you

is said before the science fiction story of Mikhail [Pukhov] “the service magician”, published of five years ago before the collector “picture gallery”.

[From the answer](#) to the author of the member of the editorial board of the journal “Technician- young people” OF [S].[V]. of the Zhitomir: “Respected Dmitriy Nikolayevich! ... Actually, your idea of the space engine, based beyond the application of an original emitter of electromagnetic field, was contained before your letter beside the periodical “technology - young people”, written in 1967. In 1967 g. I criticized your letter and answered you, that the principle of the engine of spaceship proposed as far as you was interesting, and it can be published before the periodical. I certify, that the completeness of the account of the idea “field” engine before your letter 1967 g. was not smaller than before the published by you article “heart of spaceship”.

With the respect, [S]. [Zhitomirskiy]. 30.3.84.”

Post factum: *With the enormous respect and the gratitude - [D]. [Motovilov].*

[P].3.2 from the invitation of AN of medical sciences, the institute of clinical and experimental medicine from 13.05.86:

“Dear Dmitriy Nikolayevich! Your proposal generated scientific interest. The director of institute proposes to you to come out at the seminar.

... periods on May 25 - on June 5 1986 g. a business trip can be accomplished due to our institute. The scientific secretary [IKEM] of [k].[m].[n]. Of [m].[A].[Zakirova].

[P].3.3 from the letter a. L- VA (without the date, the eightieth years):

[P].4 - 10. [\[Aktyt\] of approval and testing of the work of the author](#)

[P].4. From the invitation of as USSR, Minvuz (Ministry of Higher Education) of the USSR, [NTOE] and [EP] down the seminar “Cybernetics of electrical systems”:

“The dear comrade! Presently we invite you down the current session of seminar, which takes place

“9” March of 1981 in MEI, audience is MACE beside 15.30.

Agenda. [Motovilov] [D].[N]. (penza). General structural regularities information and power systems”. Chairman... Brooms.

Scientific secretary... It is mossy.”

[P].5. From the patent at the point of the invention of the USSR №1655271

“**multicellular converter Of [motovilova]**” [1.6]:

“The claim of № 2595267. Priority of invention on March 22, 1978. It is registered before the state list of the USSR on February 8 1991 g.”

(Note: claim was examined from 78 through 91 years as far as the expert of VNIIGPE [V].[S]. [Moinym], which published in this time the monograph on the converters, before Chapter Seven of which the by the name “**multicellular converters of constant stress**” it developed ideas [STPT] on [1.6] and high-voltage switches about the certificate of authorship of № 674217 without the indication of these ultimate sources - “exxed-pertar” personally as far as it the work of the author.

[P].6. From the opinion of scientific council for the complex problem

“[KIBERNETITKA]” of as USSR from 3.10.83 down the work of the author:

“On the commission of scientific advice to as USSR for the complex problem “of Ci [bernetitka]” commission under the management of the doctor of technical sciences, [profes]-

litter, the laureate of the Leninist and State Prizes [V].[A]. Of [venikova] of [rassmot]- [rela] the complex of the works Of [d]. [N]. [Motovilov] “structural regularities information

the [matsionnykh] and power systems”. Before these works some are given new results beside the regions of the similarity of power systems, [predstalyayushchie] interest from the point of view of practice. The author advanced concept about the general

the processes, proceeding before different information and power systems, and are made conclusions about the possibility of application for the analysis and the designs of the energy objects of the mathematical apparatus of information theory.

The theoretical developments Of [d]. [N]. [Motovilov], and also the made it inventions, they are undoubtedly of interest and they can find a use with further development of the methods of the theory of similitude of energy objects.

I consider the continuation of developments expedient in this direction.

Chairman of scientific advice as USSR for the complex problem

“Cybernetics” the academician OF [O].[M]. Belotserkovskiy”

[P].7.1 from the minutes of the meeting [NTS] of electrophysics together with [NTS] in the transformative technique of All-Union electrotechnical institute from 20. 12. 1987 g.: “[g].[Moskva]. I ASSERT - the substitutes of director on the scientific

to work [VEI] [im]. OF [V].[I]. of Lenin [I].[K].

Of [reshidov]

1. they listened to: the report of graduate student [VEI] [im]. OF [V].[I]. Lenin... [Motovilova] of Dmitriy Nikolayevich at the point of the dissertation work “development and a study of [pre]-educational systems with the high-frequency transformer component and you by motion on the direct current”.

The work T. Of [motovilova] [D].[N]. is executed before the All-Union electrotechnical institute [im]. OF [V].[I]. Lenin before the specialty “electrical and semiconductor converters”... it is represented to the protection before the competition of the scientific degree of Candidate in Technical Sciences...

They decreed: ...

They were proposed as far as dissertator and several modifications were investigated converters with the high-frequency transformer component, the special feature of regime of which is transfer and conversion of energy before the direct-current circuit...

Specific mass-and-size indices of the mock-up of power converter 5 kVA with the level of output voltage 0,5-1 kV are sufficiently high and constitute 1-2 kVA/of [dm]<sup>3</sup> depending on the utilized element base.

Thus, the theme of dissertation work, it is unconditionally urgent, and po-the shined before it results are of interest both before the theoretical plan and for developing the more powerful converters of class 50-100 kW.”

[P].7.2 from the minutes of the meeting [NTS] of electrophysics together with [NTS] in the transformative technique of All-Union electrotechnical institute from 16. 01. 1989 g. “[g].[Moskva]. I ASSERT - the substitutes of director on the scientific

to work [VEI] [im]. Of [v].[I].[Lenina] [I].[K].

Of [reshidov]

1. they listened to: the report of graduate student [VEI] [im]. OF [V].[I]. Lenin... [Motovilova] of Dmitriy Nikolayevich at the point of the dissertation work “development and a study of [pre]-educational systems with the high-frequency transformer component and you by motion on the direct current”.

P.O. with t and n [o] before l and:

... The development of such converters, which possess the improved specific by energy indices and by the wide [funktsionanyimi] possibilities in the range power it is 5th 10 kW and above it is one of the urgent

the problems of transformative technology.

... The author obtained the following results, which present scientific and the practical value:

a) is proposed the geometric method of analysis and classification of conversion type converters;

b) is developed the row of the schematics of the power part of the direct-current converters [s]

by the lowered losses before the transformer component, and also [bystrodeystvu]-[yushchie] cascode transistor and thyristor keys;

c) is proposed the method "composite field", which makes it possible to analyze energy process before the converter it is shown that the conversion of energy it flows without the intermediate accumulation, which increases the effectiveness of system.

d) is developed and is investigated the mock-up of converter with the [transformtornym] component, by means of windings of which flow [postoyanye] currents, and reversal of polarity is achieved against the frequency of 1-20 kHz;

e) is shown that the analogous converter preserves all its advantages with the level of power to 100 kW, and the method "composite field" can widely be used for the analysis of the energy structure of processes before different types of converters.

4. theoretical positions of thesis are published and are characterized as far as essential novelty, since they make it possible to use the [obobshchenny] formalism of Poynting's flow before the valve transformative technology. Theoretical outputs are checked to concrete devices.

5. practical value of work consists besides the following:

b) circuit- technical the solutions proposed can be used for creating the power converters on the order 100 kW...

7. according to the report... in 1987 were made the observations, which relate down the ex-

[perimentalnoy] part and to the editing of text, and also to the comparison of the device with the known analogs proposed. In essence these sweeping

[niya] were taken into account by dissertator before the process of processing the manuscripts.

8. [NTS] [OEF] considers that the dissertation work Of [motovilova] [D].[N] contains the new results, which relate down the field methods of the analysis of the energy processes before the valve converters with the transformer component and before the part of the concrete circuit- technical realization of the new type of converters (transformers Of [motovilova]), which has great scientific and practical value in the region of developing the small special power sources.

Thesis satisfies the requirements, presented down the theses on

the competition of the scientific degree of Candidate in Technical Sciences. The results of thesis can be transmitted besides the countries COMECON (Council for Mutual Economic Assistance) for deg. B.

9. taking into account the scientific and public maturity T. Of [motovilova] [D].[N] [NTS] [OEF] [VEI] im [V].[I]. Lenin is recommended thesis for the idea to the protection on the specialized academic council. ...

Opposing organization - Moscow Power Engineering Institute...”

[P].8.1 from the minutes of the meeting of Moscow urban section NTO on [elek]-[tricheskim] to machines (the Moscow Power Engineering Institute, department “electrical machines”) from on March 19 1986.:

“THEY LISTENED TO: the report of the graduate student Of [motovilova] [D].[N]. “the structure of the process of the over-dacha and the transformation of energy by electrical and magnetic fields”.

Before the report... are presented the basic results of developments and research, [provedennykh] personally by the author of report in connection with the dissertation work at the point of the theme “study and the development of converters with the high-frequency transformer component and the output on the direct current”, tomcat [rye]...

... for the first time they make it possible to construct high-frequency [PTS] against the power

it is more than 100-200 kVA for electrophysics and electrotechnology, and over the long term - for the distribution systems of the electric power of direct and alternating current.

... After the answer of speaker down the entered questions they gave the consideration of report the docent of the department “of electrical engineering” of the Kaunas of [politekhniches]-

whom the institute of Candidate of Technical Sciences, docent OF [A].[A]. Of [balchitis] and Doctor of Technical Science, the professor of the department “electrical machines” of MEI [I]. [P]. [Kopylov], which emphasized novelty and urgency of the conducted studies of the advanced by speaker expanded theorem of Umov-Poynting and physicotekhnical properties of composite electromagnetic field in connection with to the tasks of designing highly effective electrical machines.

Seminar considers that the work Of [motovilova] [D].[N]. has large [teoretiches]-[koe] and practical value both for theory and practice of electrical machines and for electrical engineering as a whole, and can be used for the development of the qualitatively new models of electrical machines and transformative technology on the basis of the realization of the special properties of composite electromagnetic field.

Chairman of the section... OF [I].[P]. Of [kopylov] the secretary of the section... OF [E].[M]. Sokolov.”

[P].8.1 from the minutes of the meeting of Moscow urban section NTO on [Elek]-[tricheskim] to machines (the Moscow Power Engineering Institute, department “electrical machines”) from on February 18 1987.:

“THEY LISTENED TO: the report... of the graduate student Of [motovilova] [D].[N]. “the development of the theory of [elek]- [tromagnitnykh] phenomena and the concept of the design of electrical devices before the connection for the sake of the development of the power transformers, streamlined for the sake of the direct current ([STPT])...

Methods of the analysis of technical level and similarity of technical systems with they change by the author on basis to the developed as far as it new mathematical mode whether the developing hierarchic structure... On the base of this approach of [tekhnii]- [cheskaya] network “G” (circuit design) is for the first time defined as the basic component

designing PS: is given the tensor interpretation of converter...; is developed the concept of the tensor of a quantity - quality and formulated tensor optimality condition of project THIS.

Are for the first time established laws governing the similarity of information and [energe]-

[ticheskikh] structures..., shown existence of qualitatively new energy structures is proposed the universal, tensor method of the synthesis of the technical solutions THIS, including transformer PS.

... is shown the possibility in principle of increasing the maximum levels work high-frequency transformer PS, executed on the semiconductor element base:

- on the stress - from 1000 volts to 110 kV it is above;

- about the power - from 63 kVA to 1 mVA it is above.

THEY DECREED: ... By the author they are obtained and in practice used [kachest]- Venn new results before fundamental and applied scientific [naprav]- [leniyakh], which refer direct to the design of new technology. The materials, [osveshchennye] before the report, are united, for -[vershennuyu] the scientific research work, which has high theoretical and practical values.

Chairman of section... [I].[P]. Of [kopylov]. Secretary of section... [E].[M]. Sokolov.”

[P].9 [iz] “the conclusions of the seminar of the scientific research division of the [preobrazova]-[tednoy] technology of Moscow department [NIIPT] beyond the certificates of authorship... “the transformer Of [motovilova]” (power trans-Thomastori of the constant current).” from 08.02.1985 g., [iskh].№ 14-135.:

“After hearing the communication of the author OF [D].[N]. Of [motovilova] about the proposed power transformers of direct current, seminar... arrived against the following conclusion:

1. devices, made about the principle “of the transformer Of [motovilova]” of the Ra [botosposobny] can find a use.
2. for determining the value efficiency, dimensional and technical economic the indices of these devices expedient to develop and to prepare the mock-up

the proposed device by power several kW.

The manager OF [NIO] [PT] [MONIPT] [V].[A]. Is [merzheevskiy]. Heads by the sector [N].[I]. Of [dzhus].”

[P].10 from the record sheet of the test of the mock-up of the transformer Of [motovilova] (TM, [VP]):

“I ASSERT the substitutes of the director OF [VEI] [im]. Of [v].[I].[Lenina] [I].[K]. Of [reshidov] 21. 08. 89.

6. conclusions:

6.1 basic technical and economic indices of mock-up [VP] reach the following values:

[MGP] OF TM - to 2,5 [kVA]/[kg] are above,

Installed capacity - to 9 kVA,

The pulsations OF LF against the output [VP] - not are more than 5%.

6.2 levels of technical and economic indices [VP] several times exceed the limiting values of the best models of the analogous domestic technology: [MGP] - more than 6-8 times, efficiency - down 20- 25%.

Current density before the windings of the transformative transformer... OF THE TM

it is increased 18 in comparison with the level, recommended, for the analogous high-frequency transformers, and it approaches a current density before the wires, made from the low-temperature superconductors (50-100 [A]/[mm]2).

6.3 taking into account that mock-up [VP] is executed on the obsolete and not appropriate posed to problem element base, it is possible to forecast further decrease in the losses 2-3 times (efficiency - to 99,5%) and improvement [MGP] to 4-10 kVA /kg.”



[P].11 *concept is business - plan*

*before the sphere of [franchayzinga] on the carrying out of the protected production*

*on the base of the transformers Of [motovilova].*

1. Name of [franchayzorov]: - Production cooperative TRANS-SPENDTHRIFT (KTM). - Dmitriy Nikolayevich [Motovilov].
2. post address: 440046 penza, [a].[ya]-220 of 2[a]. Tel. 63-63-95.
3. contact face: the chairman OF [KTM] Dmitriy [Motovilov].
4. activity of [franchayzera] and history [KTM].

Creation [KTM] in 1990 preceded scientific research and outside the [drencheskaya] activity of its future of head, which caused the wave of interest the council [skikh] producers to the new scientific and technical direction, not the decrease [yushchuyu] on itself lately and in [vospreemnikov]. However, the activity before the new direction it did not lead before the USSR down the noticeable successes before the civil production in view of the absence of any juridical base for the particular initiative before science and technology.

Activity [KTM], correspondingly, proved to be limited as far as scientific and technical studies and marketing inside before the essence of science rigidly anti-market before the sphere and intellectual property of the country.

Nevertheless, activity [KTM] brought to it the [opredelennoe] acknowledgment as to the potential producer: developments [KTM] were rewarded for the sake of diplomas against the noticeable international competitions - such, as exhibitions “the welding 91” and “welding -93” in Saint Petersburg and the salon of commodity producers (salon of innovations) - 96 before Geneva, where the cooperative of scientific leader TM before the person occupied the first place among the most authoritative and oldest producers of scientific and technical production in Russia). In 1989, in connection with the interest [Inkombanka] to financing of participation [KTM] before the scientific forums in Japan, [Promstrybank] of the USSR before face of chief engineer estimated the investment attractiveness of his proposals beside 100 billion US dollars. In 1991, not long before a drop in the ruble, before penza was agree ond a question about the building together with the State University [im]. of Belinskiy of specialized [tekhnoparka] for the release of the models of production [KTM].

At present [KTM], on the basis of its 12-year work experience, carries out a maximally flexible investment policy, which can ensure protection and effectiveness of the investment of capital beside the production with most varied diversification of activity [KTM], including the risk of the creation of the [zashchi]-[shchennogo] production

abroad and the liquidation of the juridical part of its administrative arrangement before Russia.

#### 5. additional information.

Experimentally [podtverzhennye] basic technical and economic indices of new goods for [franchayzi] (electric power supply sources for the welding- cutting by arc, by plasma, by laser):

- the specific weight of source 1 of 0.2 kg/kW (weight of apparatus for the electric arc welding down 400 amperes it is equal to 5-15 kgf).
- Efficiency is equal from 70 to 98% (indicated apparatus it redeems in 5-7 years only due to the savings one electric power alone).

6. quantity of already existing potential [franshiznykh] points - 1. this - [KTM] and its potentially possible production capacities with the volume production to 10% of the volume of sales of future [franchayzi]. Quantity with [glashaemykh] of [franchayzi] during the first stage - not more than on one down [territory]-

the [rialsuyu] sphere of the sale of goods.

#### 7. volume of investments and other conditions for [franchayzi].

Requirements at the point of [franchayzi] as to the investor:

- presence 5-7- of the flight experience of the development of the commodity models of welding, the mold loft

the [mennykh] or laser apparatuses and by the well fixed design and the production base of analogous production.

- the guarantee of self-financing project before 60 million dollars of the USA for 3 years, including the cost of the production base to 10 millions, payment to [franchayzoru] before

10%, the working capital of 30 mln.

- readiness at the point of the two-stage regime of the business:

- A). the joint experimental-design tying of the project of new goods, to three years;
- B). series production, trade and the modernization of goods.

In this case the initial volume of sales of apparatuses beside the first five years of the second stage will compose 10 thousand pieces per year as far as cost from 1 to 5 thousand dollars

at the point of the piece depending on the type of goods. The profit of [franchayzi] before 10% of turnover will be about 3 million dollars per year. Portion of [franchayzora] - from 1% to 10% per year of dependence beyond the degree of the success of the matter.

Tentative volume of sales before the 3rd, stable phase of business - to 100 -200 thousand pcs per year with the profit of 30-60 million dollars yearly

#### 8. instruction before [franchayzi].

It is carried out in the form lectures, seminars and consultations for the engineering personnel in connection with to the specific current problems.

Parallel form of instruction - joint [proizvodstvenaya] work. Any additional charge at the point of the instruction [franchayzor] obtain. All expenditures for those connected for the sake of the instruction of personnel are internal of [orgmeropriyatiya] of [neset] of [fran]-[chayzi].

9. qualification of [franchayzi] - see above, [p].7.

10. other information.

Period of the agreement of [franshizy] - 10 years with the right of the preferred prolongation

and the introduction of refinements about the agreement of the sides

21.06.02 8:12- 07.11.02 11:58 the author of the innovations:

*Dmitriy [Motovilov].*

