ORIGINAL RESEARCH PAPER

Energy

PROBLEMS OF ENERGY ON PLANET EARTH

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ABSTRACT

A fundamentally new direction in the theory and practice of quantum nonlinear phenomena in non-ideal and very close to non-degenerate plasma has been developed, for the first time the existence of a new state of matter-imperfect plasma-quantum plasma condensate, combining the properties of ordinary liquid and ionized plasma, has been theoretically predicted and confirmed. The quantum non-ideality of non-degenerate plasma and the exchange interaction of electrons in it, leading to effective energy release in the plasma process under study, were investigated. The directions of use of this energy have been determined: for heating, lighting, conversion by means of photocells or MHD-movements into electrical, for obtaining energy in the ultraviolet range. Particular attention in the work is paid to one of the most popular applications of quantum non-ideal plasma - for heating, at which its plasma combustion occurs, and the generation of electrical energy based on the use of a quantum plasma-MHD generator with plasma delamination. Detection of this kind of phase state of non-ideal non-degenerate plasma and its use in engineering and technology will create a fundamentally new effective energy system corresponding to the Sixth Technological Order on a global scale. This source of energy is the only environmentally friendly, not destroying or polluting our planet, and its use cleanses our ecosphere. The paper shows that the use of existing energy undermines people's health, reduces their immunity and resistance to coronaviruses. Measures have been proposed to end coronavirus pandemics on Earth. Information is provided on the technical capabilities of the proposed fundamentally new structures - Universal Modules of Industrial Disintegrators / Activators, which allow to implement grandiose, payback state projects on the basis of the developed nanotechnologies, representing the work of tens of millions of people.

INTRODUCTION

The World Health Organization does not undertake to predict the consequences of the spread of the coronavirus COVID-19, the causative agent of which was the new coronavirus SARS-Cov-2 .

Doctors are alarmed by some features of this coronavirus: the polyvariance of its symptom, the ability to establish an "intermediate carrier" of the virus from which a person could become infected, the mutationality of the virus, the inability to quickly obtain a vaccine against the coronavirus, the possibility of coronavirus transmission by any animals and a large number of infected people.

The situation on the planet now looks extremely alarming: humanity is moving to a new Sixth Technological Order, which, as in every transition, can lead to a change in the owners of assets and financial flows and, possibly, a reformatting of the entire system of activities (in extreme cases, with social unrest). We do not know the parameters of the future impending economic crisis, the percentage of GDP losses by the United States and the European Union, and the consequences of these losses.

This situation calls for immediate antiviral energy measures.

The author of this article is based on the results of fifty years of work on breakthrough energy technologies in the theory and technique of imperfect, close to non-degenerate plasma, started with D.F.-M. N. Rumyantsev A.A., who died, unfortunately, in 1990, predicted and confirmed the existence of a fundamentally new state of matter-quantum plasma condensate-liquefied plasma, combining the properties inherent in an ordinary liquid and ionized plasma.

Quantum plasma condensate is the only renewable, harmless, efficient, cheap, reproducible, new modern, corresponding to the Sixth Technological Order, a source of energy on planet Earth, the very use of which is an industry for the processing and destruction of recycling waste created on the Planet. Purification of the planet Earth poisoned to the limit, in some areas of which gas contamination, slagging and poisoning with municipal waste exceeds all permissible norms, will lead to an increase in the immunity of the population, which makes it possible for a relatively safe human existence in the presence of viruses.

This article focuses on three global issues:
1. What should be the modern energy sector;
2. How to stop coronavirus pandemics on Earth;
3. How to mitigate the effects of the economic crisis and recession.

1. Modern energy and its ecological state

Currently, the energy problem in many developed countries is increasingly coming to the fore. The further development of industry, engineering and technology is directly due to the achievements in solving this pressing problem.

Natural energy sources – minerals – are already largely depleted. At the same time, the most valuable organic raw materials are burned, which is almost impossible to restore. Moreover, such incineration produces large quantities of harmful gas waste and ballast material, which is difficult to process, which forms colossal slag emissions in the main three natural areas. This slag poisons the environment regardless of whether it is visible or invisible to the naked eye. The functioning of the modern energy "machine" as an integral scheme of energy reproduction can be characterized by three coefficients of efficiency: the usual thermodynamic efficiency proportional to the energy intensity of the burned materials, the chemical coefficient that determines the level of reproduction of valuable chemical composites and, finally, the environmental coefficient, which is the ratio of the purity levels, for example, of the atmosphere or water sources taken in some a conditional scale and estimated at this scale before and after the completion of the reproduction cycle. The prevailing stereotype of engineering thinking assesses the degree of perfection of energy technology mainly only by the criterion of the first of these coefficients - the higher it is, the better. This results in the remaining two coefficients being large modulo but negative in sign. Posteriori attempts to eliminate the negative aspects of production turn out to be laborious, inefficient and associated with huge energy costs. So there is a vicious circle in the energy sector: a certain amount of energy is produced in a certain cycle, and a large proportion of which must be spent on eliminating seemingly side effects at first glance.

It can be argued, however, that the development of modern physics and chemistry has reached such a high level that it is justified to raise the question of creating such energy sources that would be sufficiently efficient in thermodynamic terms and at the same time practically do not create negative effects on nature.

2. Does it have to be physical or chemical?

Sources of energy of a chemical type act due to the combustion of a particular type of fuel. Hydraulic resources create a mechanical source. Of course, the principle of operation of such a source is extremely simple, however, the possibilities of such sources are limited, and most importantly - their use is associated with the need to solve the problem of transmitting electricity over ultra-long distances. Transmission lines must be superconducting, the principle of using such lines is still in turn a fundamental problem, and more scientific than applied, technical.

Of course, nuclear energy is effective in quantitative terms, that is, in terms of the level of specific energy output. Here, as you know, there are two ways - thermonuclear fission and thermonuclear fusion. One way or another, but the first path is usually considered as a temporary, passing path. The uranium nuclear combustion stage should not operate until artificial (industrial) suns have been ignited. Unfortunately, there has been no discernible progress in this area over a historically significant period. Natural sources of fusion can function due to the action of powerful gravitational forces, the equivalent of which we cannot yet create in the laboratory. In addition, there are more and more observational data indicating that even in the bowels of stars, other, non-nuclear-type, sources of energy are realized. It is therefore increasingly urgent to consider, so to speak, the reserve principles of energy production.

In this regard, it is necessary to point first of all to the physicochemical methods of obtaining and transforming energy. These methods are by no means exhausted, moreover, the development of modern nonlinear physics, quantum theory of many-particle systems, statistical physics serves as the basis for the discovery and use of these methods. Suffice it to point out the natural realization of powerful energy processes in atmospheric phenomena, volcanic explosions, cosmic eruptive phenomena.

Conventional chemical methods of energy extraction are based on paired molecular interactions that ultimately lead to the formation of new molecular compounds of energetically more advantageous, energy-reduced states. Excess energy is caused by changes in the level of energy bond of interacting molecules. Are it possible to combine the atoms of matter into a single supermolecule on macroscopic scales with an effective energy output? It can be argued that such compounds, which are relatively weakly dependent on the initial chemical composition of the starting material, are possible. To some extent, the already ordinary phase transitions in matter, for example, transitions of steam into a liquid, clearly demonstrate the reality of such transformations. True, their energy intensity is not as significant as in the case of highly exothermic chemical reactions. Nevertheless, quantitative interatomic processes are possible, and the level of energy release in them may exceed the corresponding yield in reactions with specially selected chemical reagents. We mean plasma modifications accompanied by the output of energy.

The physical essence of the phenomenon is as follows. In plasma, electrons torn away from atoms move almost like free particles. Coulomb forces are known to be long-range. These forces are shielded in the so-called Debaev sphere surrounding each of the charged particles. Outside the specified sphere, the field created by a given particle exponentially falls with the distance, while the particles trapped inside the sphere experience scattering, each experience of such scattering is called a Coulomb collision. In general, plasma behaves like an almost perfect gas of charged particles, the interaction between particles is due only to Coulomb impacts. However, in the compaction of plasma, forces of quantum nature play an increasingly important role.

The author of the article for the first time discovered that even before the onset of the stage of degeneration, the overlap of electron wave clouds becomes significant. Overlap effects create a first-order effect in relation to the de Broglie wavelength to the boundary distance. If in substances in the normal phase state, the overlap also exists, but with increasing distances between atoms it decreases exponentially, then in plasma, since the spectrum of quantum energy states of electrons in it is continuous, the effect of the collapse of the shell overlaps with an increase in interparticle distances slows down significantly, and is described by a power dependency.

As a result, already in a plasma of moderate density with a concentration of ions, a picture of particle interactions arises, which corresponds to a chain of successively overlapping electron clouds, and each of the branches of the chain extends to a distance of the order of the shielding radius. The entire chain covers the entire plasma as a whole - plasma ions "grasped" by this chain are attracted to each other, a phase transformation of the plasma occurs.

The transition to a new state is accompanied by the release of energy equal to the heat of transformation. The quantitative analysis given below shows that the energy release can be very significant and exceed the corresponding specific energy release during the combustion of conventional fuel ,.

3. Quantum non-ideality of plasma and the physical mechanism of energy release

The fact that the overlapping of the electron shells of atoms leads to their effective adhesion is well known from the theory of chemical bonding. Suffice it, for example, to point to the Heitler-London theory of molecular forces, in which such forces are found in the calculation of the simplest molecules based on the application of the variational method. And nowadays this method is most often used to explain and calculate the structure of molecules and the forces acting between their constituent atoms. Variational methods in physics are classified as intuitive, a posteriori. A sequential heuristic theory can only be a theory that is based on a direct solution to the fundamental equation of quantum theory, the Schrödinger equation. Such a theory is the theory of perturbations taking into account exchange forces (or pauli's principle), which the author used to solve the Schrödinger equation [1],

Extended to the class of states of the continuous spectrum, which is realized in relation to the states of electrons in a plasma, this theory makes it possible to explain the already observed features of the plasma phase, as well as to predict and use those phase properties that can and should be used by modern technology and technology. We are talking about manifestations of the non-ideality of the plasma, since the energy of the Coulomb interaction in such a plasma is comparable to the energy of the thermal background, and not the ideality of quantum origin. Some aspects of such imperfection are already manifested in gases [9] and in electric discharges [10], but their true physical essence and applied significance at that time period have not yet been properly disclosed.[11]

The results of a rigorous solution of the Schrödinger equation, carried out in [1], showed that quantum effects are significant in the case of the so-called non-degenerate plasma, when the average interelectronic distance is several times greater than

the de-Broglie wavelength of thermal electrons, that is, when inequalities are performed[2]

$$\lambda = \frac{h}{p} \geq (\frac{1}{5} \div \frac{1}{10})(zn)^{-1/3} ,$$ (1)

where is the de Broglie wavelength of thermal electrons, is the r-mean interelectronic distance. The exchange interaction of electrons under such conditions leads to the attraction of ions to each other, the binding energy of the latter becomes negative. Accordingly, during the quantum transition, energy is released per ion

$$\varepsilon = z^3 e^2 r^{-1} \cdot \Delta ,$$ (2)

where $\Delta \sim 20$ is a quantity similar to Coulomb's logarithm, is the charge of an electron taken in units of ecgs (as in all subsequent theoretical formulas).

In connection with the above estimate of the energy released in the plasma during phase transformation, the following two circumstances should be indicated. First, direct analytical calculation shows that the exchange binding of particles of the considered type is independent of the spin state of electrons in the plasma, that is, it is realized and gives a positive energy output under an arbitrary Jung scheme describing these states. Secondly, the exchange binding is proportional to the cube of the charge of the ions, so this binding and the accompanying energy release are realized only in the case of plasma formed by multi-charging ions. Practically here, the greatest effect can be given by ions of carbon, oxygen, silicon and other relatively easily ionizable, but in multiple terms, elements.[1][2]

So, in plasma, a phase transition of the type 1 phase transitions in ordinary substances must occur, which is accompanied by effective energy release. Let's give an estimate of the latter per unit mass of plasma, we have[8]

$$\varepsilon_1 = \frac{\varepsilon}{Am_H} \approx \frac{(3z)^2 e^2 n^{1/3}}{m_H} \quad \frac{\text{эрг}}{\text{г}} ,$$ (3)

where is the atomic number, is the mass of the hydrogen atom (in grams). Assuming here, we get . This value is almost an order of magnitude higher than the specific energy output during combustion, for example, of gasoline. Plasma fuel, however, does not have to be a complex or special type of organic compound - it can be formed, taking into account the above, by an arbitrary, but fairly easily ionized, mixture of inorganic composition. $A \approx 2z m_H$ e$=4,8 \cdot 10^{-10}$; n$=10^{20}$; z$=4$; $m_H = 1,7 \cdot 10^{-24}$ г $\varepsilon_1 \sim 10^{13}$ эрг/г

The costs of ionization of the substance are compensated by phase energy release. Obviously, this requires that the factor, where ε/zI the I-ionization energy, would significantly exceed one. This is achieved relatively easily: for example, at concentration and the specified factor is about 10. The energy release can be gradual (continuous) or pulsed, depending on the conditions of the phase transformation. n$\sim 10^{20}$ CM^{-3} z$=3$

4. Plasma combustion of fuel

Consider one of the most popular applications of quantum non-ideal plasma - heating, in which its plasma combustion occurs.

The technical scheme for the use of plasma combustion is extremely simple (see Fig. 1). The gas is a mixture of water vapor, carbon dioxide, nitrogenous and sulfur compounds, that is, those materials that make up typical production waste. The mixture is heated to a temperature of about two thousand degrees. When entering tank 2, the mixture is compressed (adiabatically or pulsed electrical discharge) to a pressure of about 10 atmospheres, along the way, pairs of easily ionizable elements-compounds of alkali and alkaline earth metals are introduced into it. In a mixture heated to several thousand degrees, intensive ionization from the valence electron shells should occur. During the transition of plasma to reservoir 3, it

is liquefied. The energy released through the surface of the tanks is spent on heating water (steam) entering through the pipes. Further use of the steam-water system is the same as in conventional thermal power plants. As for the cooling plasma condensate, its use can be twofold. Or liquefied plasma is used as some raw material for chemical synthesis, which in the plasma state in question must occur through special chemical channels that are inaccessible to conventional chemical technology. Alternatively, the cooled condensed plasma jet is compressed in the reservoir 3, as a result of which it collapses.
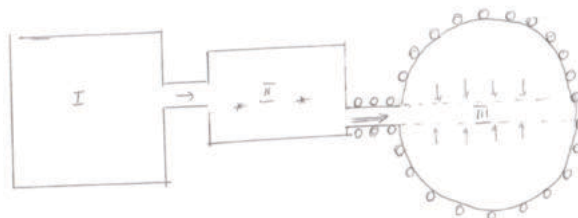
rice. l Diagram of the plasma fuel plant

The causes and mechanisms of collapse in condensed plasma are as follows. In the process of phase transformation of the type discussed above, the plasma passes into a lower energy state ε_1, so that the binding energy of the plasma particles is determined at the same time (modulo) by the formula (3). When cooling, the adhesion forces of the particles increase, and the plasma pressure decreases. The gas surrounding the plasma, under the action of gas-dynamic forces, accelerates in the direction of the plasma (shown by the arrows in Fig. 1). The gas energy is spent on exciting plasma particles and overcoming the cohesion forces. Plasma passes into a new energy state 2, during the transition to which chemical relaxation takes place, that is, chemical transformations occur, so that in general the energy of the system is below the level of 0 corresponding to the continuous spectrum.
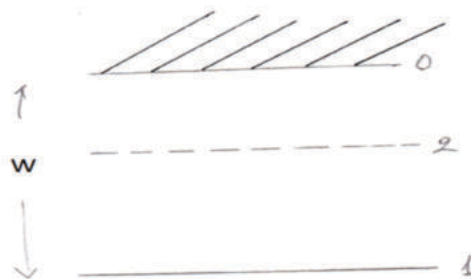
rice. 2 Diagram of energy transitions in plasma.

Level 1 corresponds to quantum transformation.
Level 2 – chemical transformations. The region of the continuous spectrum is shaded.

The power developed by the plant can be calculated by the formula

$$W = k \cdot \varepsilon \cdot m_A \cdot n \cdot L^3 \cdot \tau^{-1},$$ (4)

where is the mass of the ions, n is their concentration, L is the linear size of the first reservoir, is the energy exchange time between the plasma and the vapor-water system, is the efficiency of this exchange, is the specific energy release (ions). $\tau k \varepsilon \, {}^{\text{эрг}}/_{\text{г}}), n - \text{концентрация см}^{-3})$

$$\tau \sim R^2/\chi, (5)$$

where is the radius of the vapor-conducting tubes, is the thermal conductivity of the steam. Here are the simplest estimates of energy power in relation to the simplest type of demonstration plasma generator corresponding to the scheme of Figure 1. Rχ

Let's put for evaluation , then by the formulas (4) and (5) we get

.k=0,8;R=1CM; χ=1CM 2/C; mA=3·10^{-23}r; n~3·10^{19} CM^{-3}; L=30CMW~2·10^{14}Эpr/c=20MB$_\text{r}$

Specific energy costs for compression, ionization, heating are on an order of magnitude.

$$\varepsilon_3 = \frac{kT}{m_A} + \frac{I}{2m_H} \sim \frac{1}{3}\varepsilon \qquad (6)$$

here the energy is ionization of a single-charge ion. The costs are relative to about 30 per cent of the useful energy, which is satisfactory.$I \approx 10^{-11}$Эpr

For the operation of the generator, it is necessary to supply fuel in an amount of about 30. But this fuel is a relatively cheap mixture, or rather, direct waste from other industries, which are only looking for a way to get rid of them. This method is available, it is energetically useful!кг/час

We emphasize that the effect of phase transformation considered here takes place only in the case of multiple ionization of atoms. The gain in energy from such a transformation (see diagram fig. 1) is proportional to the cube of the charge of the ions. In the case of single-charge ionization, for example, of alkaline atoms, the gain in energy may be less than the decrease in energy achieved in chemical reactions or in the formation of complexes, associations of ions and atoms. That is why until now the phenomenon considered here has not been experimentally detected: the experiments were carried out mainly on alkaline compounds. In this paper, the main attention is paid to the energy output in the process of quantum transformation in plasma. It has been shown that plasma condensate can and should be considered as a source of energy. At the same time, however, other important consequences of the physical effect of the quantum transition were out of the sphere of attention. In particular, one of these manifestations is the spontaneous generation of a magnetic field. The structure of exchange interactions in plasma is such that the state in which the orbital magnetic moments of electrons in the plasma are oriented in the same direction becomes energetically advantageous – a kind of ferromagnetism effect in the plasma. Experimental detection of such an effect in plasma would be of fundamental importance both for its use in electronics.[1]

The discovery for the first time by the author of the work of such a phase state and its use in engineering and technology will really create a fundamentally new modern energy of high energies and on a global scale, corresponding to the Sixth Technological Order.

Thus, the author of the article for the first time predicted and confirmed the existence of a fundamentally new efficient, alternative, renewable and sustainable source of energy on planet Earth -an imperfect plasma-plasma quantum condensate.

This source is the only environmentally friendly, non-destructive and non-polluting planet, and its use cleanses the three natural spheres of our planet.

The use of this new state of matter-quantum plasma condensate of quantum non-ideal plasma as a source of thermal energy is a fundamentally new technology for creating highly efficient energy of this century on a global scale.

We have developed methods for converting the energy of a quantum plasma condensate into electrical energy, ultraviolet and X-ray radiation, the energy of generation and acceleration of charged particles.

5. MHD generators with quantum plasma condensate bundle - a new source of electrical energy

In this paper, a brief (for abbreviation) description of a fundamentally technically new device is proposed, converting almost all the kinetic energy of the plasma into electrical energy. A complete description and calculations of this device are given in This uses the phase stratification of the plasma into two components - the usual, so to speak, vaporous part, and its liquid part, sufficiently dense and having a surface tension. This component, having the properties of a liquid gas, it allows you to carry out a circulating mechanism for transferring energy to the generator and eliminate a number of significant shortcomings that impede the use of MHD devices at present. In the case of timely implementation of the principal side of the proposed scheme, it will be possible to implement plasma ultra-low circulation generation, which leads to a decisive step in the energy sector.[9].[9]

A schematic diagram of the installation is shown in the attached figure. A complete description and calculations of the demonstration MHD installation are given in the [9].

The chamber is filled with a mixture of gases that are mainly inactive in chemical terms, but relatively easily ionized. The approximate composition of the mixture: nitrogen (N2), gas compounds of sulfur, silicon, carbon. Metallized dispersed inclusions of sodium, lithium, cesium, aluminum and some others are possible.

The gas or weakly ionized plasma is compressed by piston A, the role of which can be performed by a pulsed magnetic field. In the process of compression, the plasma is heated and directed by means of lines of force, by the configuration indicated in the figure, into a narrow neck B. Using the condition for preserving the flow of plasma energy, , where , is the density, u is the speed of the plasma, , a is the width of the plasma layer.

The temperature of the plasma thus increases with respect to . If we take, for example, ; , then the increase in temperature will be 20 times. At the initial temperature of ~500 ° C, we get that the temperature in the neck will be 10 -15 thousand degrees. Ionization, which occurs at the same time from the valence shells of atoms, is almost complete.
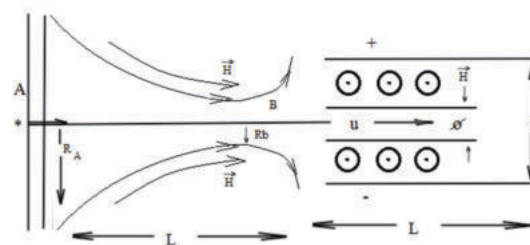

rice. 3 Diagram of the MHD plant with plasma phase stratification.

At such temperatures, in accordance with the analysis carried out by us repeatedly, a phase transformation occurs if the concentration of atoms is .$n_0 \sim 10^{19} \div 10^{20}$CM^{-3}

The liquid layer of plasma thickness and width R_Ba enters the gap between the plates of the capacitor, which in this case is an MHD generator (in which the points indicate the direction of the external magnetic field). Between the jet of dense plasma and the linings of the capacitor is the steam created by the liquid plasma. This pair must have a temperature significantly lower than the temperature of the plasma, since its generation is associated with the cost of particle energy to overcome the cohesive forces, acting inside the plasma.

The use of the liquid plasma phase in the device of the type in question allows the use of a cyclicity scheme (Fig. 4). The plasma tape circulates in a channel created according to the selected field configuration; it uses plasma diamagnetism, as

well as its ability to retain the shape characteristic of the liquid phase in general. There is a picture of a plasma conveyor, the "tape" of which moves at a speed u, and the generation of an electric field occurs at the stage of passing the "tape" inside the capacitor. In this case, the energy of the rotating plasma is gradually transferred to the electric field in the capacitor. It is easy to see that the number of revolutions that the plasma will perform before transferring all its energy to the MHD source is: $v = (\frac{c}{v_A})^2 \frac{\Delta}{L}$; $\qquad (3) U_A = \frac{H}{\sqrt{u\pi\rho}} \ll c$
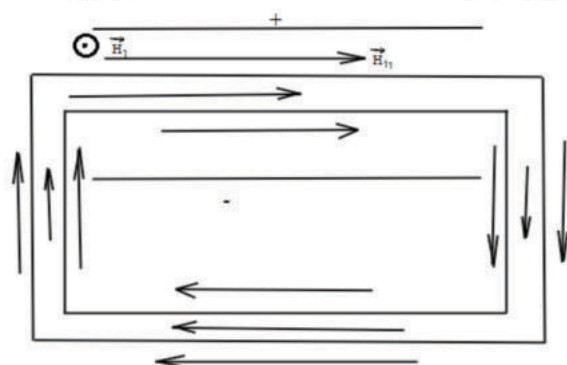
rice. 4 Diagram of the circulation of the plasma liquid phase.

Double arrows indicate the lines of force of the leading magnetic field (. The plates of the capacitor are marked with a plus and minus sign. H_{11})

In the energy analysis of the operation of the MHD device, three stages should be identified and investigated. At the first stage, this transformation occurs, as a result of which energy is released, the magnitude of that energy release is denoted by . This energy is transferred to the plasma "pair". At the second stage, the layer enters the MHD capacitor, dragging with it steam, the mass of which is comparable to the mass of the liquid layer. When the last pair cools, additional energy is transferred The steam passes through the condenser region, and its energy can be used, for example, in turbines with (efficiency). The functioning plasma layer transfers energy to the capacitor almost completely. Losses here are associated with evaporation, which, however, with a decrease in the temperature of the layer are insignificant. $E_1 E_2 \cdot \iota T$

Thus, the efficiency of devices in order of magnitude is
$$\iota = \frac{m_c + \iota_T m_n}{m_c + m_n} , \qquad (4)$$
where are the masses of the layer and the "pair" respectively. m_c, m_n
Assuming for evaluation , , we get , i.e. quite optimal in the modern sense of efficiency. $m_c = m_n = 50\% \ \iota = 75\%$

Here is an estimate of the power generated in this version. In order of magnitude, this power is equal to
$$A = \frac{\rho U^2 L^2 \Delta}{V_U^{\frac{L}{U}}} \qquad (5)$$
Using (1), from here we will find ; Alfven speed (at), then - power, and the installation itself can be called demonstration.

$A = \rho U^3 L^2 (\frac{U_A}{c})^2 U_A \sim 3 \cdot 10^5 \frac{CM}{c} \ H \sim 3 \cdot 10^4 \text{rc}, \rho = 10^{-3} \frac{r}{CM^3} \ A \sim \frac{1}{3} \text{кВт}$

Let's analyze the aspect of energy release.

Calculation of fractions for the quantum energy output (per ion) value of , $\varepsilon = z^3 e^2 n 1/3$ $\qquad (6)$

where is the charge of the ion, , is the concentration of the ions. It is advantageous to use easily ionizing gases, but such that their electron shells (in other words, the radii of atoms) would be sufficiently extended - this is necessary to create a quantum overlap of shells. If the energy , where is the ionization energy calculated per electron i.e. ze-$4,8 \cdot 10^{-10}$ cgsn cm^{-3} $\varepsilon > z I I$

$$\xi = \frac{z^2 e^2 n^{-1/3}}{I} > 1, \qquad (7)$$

then in general the process becomes energetically beneficial.

For example, if , the specified ratio exceeds one . This means that plasma of a certain composition can "burn" (as in a chemical process) and give out the energy of "combustion".
$n 10^{20} \div 10^{21} \text{см}^{-3}, z = 3 \div 4; \ I = 10 \text{эв} = 1,6 \cdot 10^{-11} \text{эрг} \xi \sim 3$

The scope of the article does not allow us to consider in detail the essential issue of converting the energy of non-ideal plasma into ultraviolet and X-ray radiation [4].

6. Easing coronavirus pandemics
 Scientists know that the world's population will die not from atomic weapons, but from garbage. Of what is extracted from the earth, 97% goes either to an intermediate state or is buried. The world is in a state where the environmental damage of technology has exceeded the capabilities of our planet and the people who live on it.

As a result of its vital activity, mankind has accumulated and placed on the surface of the Earth a huge amount of industrial and household waste.

Waste is placed and continues to be placed in dumps, storage facilities, landfills and special landfills that occupy huge areas, since the annual level of waste processing does not exceed 3-4 percent.

In parallel, the process of extraction from the earth's crust of various minerals necessary for accelerated economic growth and ensuring the needs of the "consumer society" is intensifying: ores, energy raw materials, mineral components necessary for growing production.

As a result, the surface of our planet is covered with new dumps, heaps, sludge storage, abandoned quarries, etc.

All these factors negatively affect the environment and the health of the people themselves, turning them into disabled people with a whole range of concomitant diseases and low immunity. The intensive development of the economy and the concept of a "consumer society" will accelerate the accumulation of waste in the 21st century
.
At the same time, as a material for obtaining plasma quantum condensate as a fuel that is extremely useful for mankind, destroying waste and cleaning up three spheres of our planet, it is possible to use garbage in the literal sense of the word: industrial waste, mining dumps, garbage dumps, etc.

Tables No. 1,2 show the compositions of characteristic waste of various industrial productions subject to subsequent high-temperature utilization with the release of exhaust gases - a mixture of metal oxides belonging to the middle groups of the table of D.I. Mendeleev. At the same time, it is not important in which compounds these elements are included in the seed material: it is only important to ensure a sufficient degree of ionization of the elements.

Compositions of oxidized steel slag, cement clinker and Portland cement grade CEM 1

Table 1 Resource requirements by component

name	Content, %							
	Tall	Al2O3	SiO$_2$	MgO	Fe2O3	Too	Fe, êîðîëüê è	SO$_3$
Oxidized steelmaking slag	40-55	1,5-3	15-19	1,5-2,5	18-25	4-7	4-6	—

Melted and partially reconstituted slag in the MAGMA unit	61,7-63	1,8-3,7	18-24	1,8-3,1	4,5-5,2	2,5-4	0	—
Traditional cement clinker	60-67	3-8		17-25	2,5-5	4-5	— 0	—
Typical Portland cement CeM 1	62-64	5,5	21,5	1,5	3-4	—	0	1,9

In the production of alumina by the Bayer method, red bauxite sludge is formed as a by-product - a finely dispersed substance of the following chemical composition, %

Fe2O3	Tall	SiO2	Al2O3	MgO	TiO2	S	P2O5	In2O
40-55	8-11	5-15	14-16	0,5-1,4	2-5	up to 2	0,2-0,5	up to 2

Medium slag compositions of non-ferrous metallurgy and thermal power engineering enterprises

It is possible that this (the use of waste, the "reassessment of values", even the struggle for waste) will be a characteristic feature of the civilization of the century. Technology, like nature, must be rational. And one more important circumstance. The process of energy release is accompanied by a phase transformation of a substance of a new kind. First, a substance of the plasma liquid type is formed from the plasma discharge, and then, with its further cooling, a solid conglomerate-crystalline formations are formed. With this kind of transformations we meet, for example, in nature during volcanic eruptions. It seems that the solid plasma phase is a substance that has some new unpredictable properties. In any case, when "burning" we get new, perhaps very useful materials at the output. This area can be called electric discharge plasma metallurgy. xxi

Thus, we have developed a fundamentally new direction in the theory and technique of non-ideal plasma. The studies carried out made it possible to predict, then experimentally discover, the existence of a fundamentally new state of matter - an imperfect quantum plasma condensate, which combines the signs inherent in an ordinary liquid (fluidity, surface tension, internal correlations), and the signs characteristic of ionized plasma in the usual sense. The theory developed in our research, based for the first time on the direct strict solution of the Schrödinger equation and extended to the class of states of the continuous spectrum - the theory of perturbations taking into account exchange forces - made it possible to explain the already observed features of the plasma phase - the plasma quantum condensate, which should immediately be used by modern technology and technology, as well as to defeat coronavirus pandemics and save humanity from destruction.
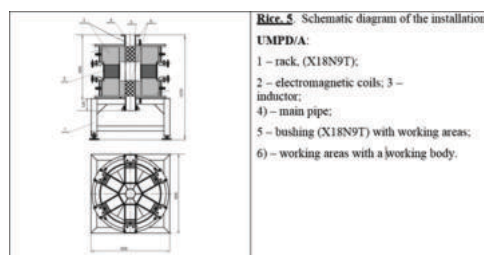
7.Universal Modules of Industrial Disintegrators/ Activators (UMPD/A).

The versatility and high efficiency of UPMD / A, (proposed and designed by A. V. Kulakov and V. A. Rantsev-Kartov) is due to the multitude and activity of the processes occurring in its working area:

(a) Crushing by "cramped impact";
b) electromagnetic erosion;
c) plasma exposure;
d) ultrasound (when processed in a liquid medium);

high density of magnetic induction energy in its working area (at $B \sim 104$ Gs, $W \sim 0.4$ J/cm3 = 4 105 J/m3), hundreds of times higher than the energy density in the working areas of other similar devices;

• almost one hundred percent efficiency;
• Low material consumption.

Rice. 5. Schematic diagram of the installation UMPD/A:
1 – rack, (X18N9T);
2 – electromagnetic coils; 3 – inductor;
4) – main pipe;
5) – bushing (X18N9T) with working areas;
6) – working areas with a working body.

The construction of **UMPD/A** is schematically presented in **Fig. 5.**

Table 2 Resource requirements by component

name	Content, %											Melting temperature 0C
	SiO₂	U gly	Tall	Al2O3	MgO	With	Co	Nor	Zn	Pb	S	
slags of copper smelters	32-45	25-45	12	3,2-9,7	2-11	0,3-0,9	—	—	0,5-1	0,2- 20,8	0,4-1,2	110-01150
slags of min efurnaces of nickel production	39-45	16-24	12-21	4,5-7,5	9-17	—	0,010-0,024	0,1-0,17	—	—	0,4 30,5	110-01200
converter slags of nickel production	25-35	40-60	2-3	3-10	2-4	0,1-0,2	0,1-0,02	0,3-0,7	—	—	2-3	110-01200
Ashes of thermal power plants operating on brown coal	54-55	2,5-10	1,6-2,5	24,7-25,2	2,5-2,6	—	—	—	—	—	0,1-0,3	1400
	44-49	4 -20		6-16	9-20	5-13	—	—	—	—	—	130-01350

The schematic diagram of the continuous industrial grinding shop is shown in Fig. 6. Fig .7 shows a schematic sketch of the prototype of the installation for the production of materials on an industrial scale UMM-P. The rack of this device should allow you to change the inclination of this module, which provides adjustment of the speed of passage of the processed material through the module. Schematically, this device is a sequential articulation of individual modules with two working areas also patented by the authors.
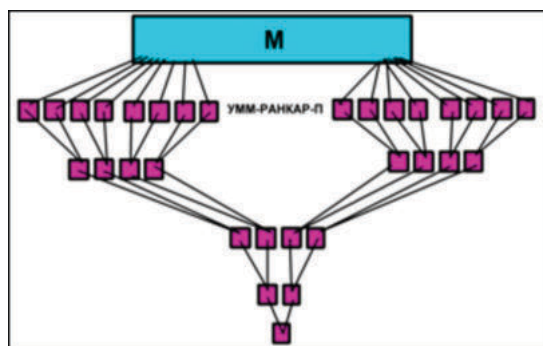

Fig.6. Schematic diagram of the continuous industrial grinding shop:
M – mill of pre-grinding of material;
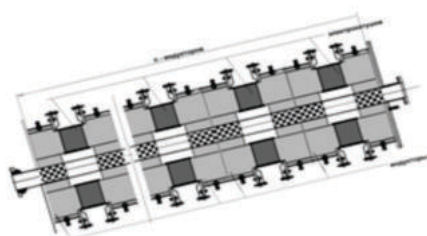UMPD/A –modules of continuous industrial grinding of material.

Fig.7. Schematic lesson of the prototype of the UMPD/A unit

Here are just a few of the possible applications of UMPD/A:
The use of UMPD/A, in particular, is possible in the technology of obtaining cheap (four times cheaper than existing) especially durable, resistant to sea water alkaline nanocements - without firing clinker, from local metallurgical slags, rocks and volcanic rocks;

UMPD /A, having remarkable structural properties, allow for large-scale construction by 3D printing, based on the use of a special invented liquid glass obtained by us, obtained by cheap nanotechnology without sintering components, which at times increases the strength of concretes and arbolites, and also allows us to significantly reduce the process of "setting";

It is important to use UMPD/A to improve the efficiency of oil cracking technologies and obtain cheap drilling fluids;

If coal ground in conventional mills up to 50-100 μm is deposited to a finely dispersed state in installations of the UMPD/A type in water, then the resulting high-quality homogeneous and weakly settling slurry can be effectively used as a boiler or furnace fuel for thermal power plants and cottages;

When adding coal or heavy fuel oil in diesel fuel, with the selection of appropriate concentrations, you can get cheap diesel fuel for use in powerful diesel engines of small power plants or powerful ship / quarry diesel engines (quarry dump trucks, tractors, bulldozers, excavators, as well as helicopters, cargo ships and port tugs);

The use of UMPD/A in the food industry seems promising: for the production of supersaturated solutions, caramel solutions, the production of molasses from starch directly, without chemical hydrolysis, biological activation of water;

Water treated in UMPD/A does not give scale in steam boilers, it reduces the content of salts, heavy metals and dissolved gases, it is magnetized and analogous to melt water.

It is advisable to effectively use the UMPD/A technology in the food industry as an oil churn and the production of margarine starch and mayonnaise, this is 200 times more effective than ball mills in obtaining a suspension.[15]

In total, about fifty new cheap nanotechnologies have been developed (of which more than ten are for the food industry), based on the use of patented UMPD / A.

We personally conducted a large number of experiments in cramped conditions on the UMPD/A built at our own expense, but with excellent results:
1. A new nanotechnological industrial method for obtaining ortho-silicic acid has been developed,
2. An industrial method of manufacturing nano-cement has been developed.

Figure 8 demonstrates the possibility of obtaining, using the technology developed by us, nanocements from gypsum, rubble stone, coarse sand, kaolin and grinding of coal ash - that is, fragile materials "lying under your feet", the use of which for these purposes was not previously possible.

Rice. 8. Image of some of the samples obtained in the experiment.

Solid numbering, in rows the numbering increases from left to right:
Row 1:
1. Standard kneading of standard gypsum grinding;
2. Standard kneading of nano-dispersed gypsum;
3. standard kneading of standard grinding of gypsum, after daily exposure, the sample was impregnated with ortho-silicic acid by dipping into its gel, then after daily exposure in the air it was kept for 10 days under water (the sample after impregnation became water-resistant);
4. standard kneading of a mixture of gypsum and calcium carbonate (grinding of rubble stone) with a ratio of weight parts of 1: 1 nano-dispersed grinding, after daily exposure, the sample was impregnated with ortho-silicic acid by dipping into its gel, then after daily exposure in the air was kept for 10 days under water (the sample after impregnation also became water-resistant);

Row 2:
5. Standard mixing of the mixture: a) coarse sand, b) a calculated mixture of nano-dispersed sand powder with rubble stone grinding and 10% of this alkali mass in a 4:1 ratio.
6. Standard kneading on the gel of ortho-silicic acid mixture: sand, nano-dispersed grinding of rubble stone in a ratio of 3: 1.
7. Standard kneading on water mixture: sand, nano-dispersed grinding of kaolin in a ratio of 6: 1.

Row 3:

8. standard mixing on water of the mixture: a) nano-dispersed grinding of coal ash with 10% of its alkali weight; b) sand in a ratio of 1:4. (see (14)).

8. Mitigating the effects of the economic crisis and recession

Saving the population of the Planet from pandemics is extremely simple, effective and economically profitable: it is necessary to send all the waste gas obtained both in the process of operation of metallurgical and cement enterprises, processing and disposal of industrial and municipal waste, processing of ore and energy raw materials, disposal of slags, processing of metal radioactive waste, etc. to be sent to the proposed devices.[9][10]

As a result of this energy revolution:
1) there are no killer off gases at the output of the listed enterprises,
2) Business owners make huge profits from the operation of the devices.. - the income of the enterprise goes to the thermal and electrical energy generated at these enterprises according to the technologies proposed in the work, heated steam and solid conglomerate of crystal formation, the enterprises themselves become simpler and cheaper in production - there is no need for devices for gas purification of exhaust gases and waste heat recovery boilers[9][10]

Thus, the problem of creating new nature-like energy technologies that do not cause damage to the surrounding world, but exist with it in harmony and allow you to restore the disturbed balance between the biosphere and the technosphere, is solved.

The tragedy of today's situation in the world, unfortunately, is not limited to the medical problem of panepidemia in the world. Modern medicine is forced to recognize that the coronavirus will not disappear completely even after the pandemic is over.

The International Monetary Fund announced the entry of the world economy into recession. The pandemic is already undermining the global economy and exacerbating existing problems of poverty and inequality. There are predictions that then we will have to live in conditions of crisis, hunger, social unrest.

Humanity must understand that now it is necessary to invest resources in a survival strategy:
1) a new modern efficient, renewable, harmless economically profitable (fully recouped) energy of the new economic order - of course, with the reform of the industry for the processing and destruction of created waste - recycling, (comparable in financial volume with the entire transport and energy complex), which should be considered a national project capable of providing work for tens of millions of people who have lost small and medium-sized businesses;

2) a national (fully recoupable) project based on the use of constructed patented parts. - Corr. RAN, D. F.-M. Prof. A. V. Kulakov and Ph.D. N. V. A. Rantsev - Picture universal industrial modules of disintegrators / activators (UPMD / A) - devices with a vortex ferromagnetic layer, which allows to carry out a huge range of national projects in the widest technical and financial ranges, providing work to tens of millions of people who lost their jobs in the crisis.[13] [14],

The words of the great Russian scientist V.I. Vernadsky are prophetic: "The entire history of science at every step shows that individuals were more correct in their statements than entire corporations of scientists or hundreds and thousands of researchers who adhere to the dominant views. Undoubtedly, in our time, the truest, most correct and deepest scientific worldview lies among some lonely scientists or small groups of researchers, whose opinions do not draw our attention or excite our displeasure or denial. "

Scientists from India and Denmark Ruhollah Davarpana and Christian Sonne asked me", "Does nuclear technology have a future or will new renewable energy technologies develop in the energy sector?" In fact, the very development of life on the plane raises the question so "What energy will ensure the possibility of human existence on the planet?". You will give the answer to this question yourself by reading my article "Energy Problems on Planet Earth". Please work through this article carefully

My work on this topic is studied in 79 countries around the world, apparently not caring about the question "How to survive without damage to the health of the population of Denmark with 13.8288 million. cubic meters of annual garbage and similarly for India -3314.88 million cubic meters of waste?" and so for each country. Normal civilized action on such global problems consists in requesting more detailed scientific information from the author and agreeing with the author on initial experimental studies confirming this discovery. Now there is a "ray of hope" in the implementation of the outlined program to save the life of mankind on Earth, associated with the election of the new President of India, Mrs. Draupadi Murma, "who has devoted her life to serving society and empowering the poor, and her understanding of political issues and compassionate nature will bring great benefits to our country," said the great leader of India, Prime Minister Narendra Modi. Your great mission, dear Ruhollah Davarpan, understanding what prosperity will give India the use of new nanoenergy, is to bring (through scientists of India or the public press) these ideas of a new clean, cheap, cleansing the planet Earth and its spheres from all dirt, energy to the President of India.

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