

Autothermia Natural energy

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The editor's note: We publish a condensed version of the materials from the new book of Prof. E.I. Andreyev called "Fundamentals of natural energy" [10]. In the end of the article, you will find descriptions of the three Andreyev's patents, # RU 2229619, 2229620, and 2179649.

The autothermia effect is combustion without consumption of organic or nuclear fuel.

Historically, it was used and carried out for the first time in a carburetor engine of VAZ_2106 car on the 25th July 2001 in Saint Petersburg.

Long before this moment, racing car engines were set to produce maximal power with the help of the methods polished by practice: providing for full lean air_fuel mixture; ignition angle and spark power control; adding of combustion catalysts.

Some machines (cars, motorcycles) suddenly showed an increased power which considerably exceeded the engine power.

This gave speed advantage and also rarer fueling though there was a lot of fuel and its consumption was not a problem.

Such facts are known at least for about 20 _30 years.

During the following historical stage, some people began to use the racing practice of engine setting to standard passenger cars.

For example, a mechanical engineer A.V. Chistov has set about 200 cars to the increased power and fuel economy mode during 20 years [8].

A fuel economy was from 30% to 70%.

Absence of the theory and impossibility to explain the effect by ideas of the traditional physics during a long time prevented from getting a stable operation mode of the mentioned engines.

The fuel economy mode quickly stopped and people had no thoughts about the autothermia mode (without fuel consumption).

During some years of communication with physicists, a lot of information about new physical theories has been processed.

These theories (about one hundred), some of which are published as separate works, can be divided into two parts:

improvement and mathematization on the basis of the current physics.

And only one physical theory, a hyper_frequency physics of D.H. Baziev [5] published in 1994, considerably differed from the others though it was based on the same known experimental facts.

The main difference was that existence of a new elementary particle which is much smaller than an electron was theoretically determined.

The author called the particle electrino by analogy with an electron.

Later the electrino existence was experimentally proved [7].

The hyper_frequency physics allowed developing, understanding and showing the physical mechanism of combustion.

Its main components were, as before, fuel and an oxidizing agent.

But their roles and interaction were discovered at the level of elementary particles – electron and electrino.

Nevertheless, no thoughts about fuel_less autothermal combustion were expressed. Only by 2000, the fuel_less combustion theory was developed [1].

According to this theory, air could combust autonomously, without fuel, which was confirmed by the practice of setting and operation in the fuel economy mode of racing and passenger cars' internal_combustion engines.

This mode was tested over a long period of time.

These facts allowed believing in 100% realization of the autothermal fuel_less air combustion in carburetor motor engines.

Due to this, they were used for experimental and development activities directed at the exclusion of fuel from the combustion process.

Finally, this aim was reached.

The theory helped to correctly implement the autothermal air combustion process and obtain stable engine's operation during any load conditions.

Evolution of new views in physics and energy. From the theory understanding to plenty of energy

Two kinds of energy – the accumulated [1] and free [2] ones are considered as an inexhaustible source of ecologically clean energy renewable in natural conditions, created by Nature.

One of the main methods of energy generation is combustion of organic fuel.

Let us consider briefly the historical aspect of the combustion theory.

The theory of phlogiston (an imponderable substance which caused combustion and participated in it) was the first.

In 1669, a German chemist Becher, in his work called “Underground Physics”, expressed a thought that there is a combustible component in bodies' compositions.

In 1703, a German chemist Stahl re_published Becher's work and called the component “phlogiston”.

However, it was impossible to isolate phlogiston in its pure form, experiments did not coincide with the

theory and it became dislodged.

In 1756, Lomonosov defined combustion as a reaction of a combustible and air and Lavoisier defined it as a reaction of substances and oxygen (a chemical oxidation reaction) in 1773.

Since that time, nothing practically changed.

Today combustion is considered as all exothermal chemical reactions including oxidation of a combustible.

No physical mechanism of combustion has been developed despite numerous works on theory and practice of combustion.

Calorific efficiency of fuel is still considered as a given from above property with characteristics which are determined experimentally.

Let us consider one of paradoxes of the traditional combustion theory.

It is known that oxygen explodes in the presence of lubricating oil's (or any hydrocarbon) traces.

If we follow the theory of an explosion as fast fuel combustion in oxygen, it is clear that the heat of oil traces' reaction never coincides with the energy of oxygen explosion.

This is the paradox: a small amount of fuel (a microgram in TNT equivalent) and huge energy of oxygen combustion, as if oxygen explodes by itself.

If we ignore the small amount of the oil's traces, we can see that there is only oxygen in the initial, pre_explosion medium.

An oxygen molecule consists of two atoms connected with an electron.

At the same time, there are always some oxygen atoms (ions) (plasma) in pure oxygen due to permanently happening phase transfer "molecule _ atoms".

And there are some free electrons in hydrocarbons containing many connection electrons.

Presence of even a single electron and oxygen atoms with an opposite sign of excessive electrical charge inevitably leads to their interaction and a following explosion.

A physical mechanism of this process was developed by D.H. Baziev [5].

When a free electron with the highest electro_ dynamical oscillation potential enters plasma, it instantaneously becomes the first acting component in the system of oxygen atoms_ions (plasma).

An electron globule – a sphere made of oxygen atoms _ forms around it.

An energy generation mechanism's basis is electro_dynamical interaction of free

electrons with substance atoms, during which a negatively charged electron layer_by_layer takes particles, which are much smaller than the electron, called electrino from an atom.

Electrinos with a high start speed ($\sim 10^{16}$ m/s) give their kinetic energy remotely (electro_ dynamically) and by contact (during clashes) to surrounding atoms and particles and turn into photons (energy_less electrino) themselves and go from the reaction zone into space at the speed of light ($\sim 10^8$ m/s).

This energy liberation process is called a phase transfer of the highest kind (PTHK).

As we can see from such a brief description of PTHK mechanism, two conditions are necessary for its behavior: the first one is presence of plasma as state of an ionized substance divided at least into atoms and the second condition is presence of free electrons.

During each interaction with an electron, an atom irretrievably irradiates an electrino which becomes a plasma hyper_ frequency oscillator for a moment, during which it transfers its connection energy in an oxygen atom to surrounding oscillators.

Due to the fact that there is nothing except oxygen and nitrogen in the air combusted in an internal_combustion engine, reduction of organic fuel consumption occurs due to nitrogen involvement into combustion which is indicated by reduction of nitrogen contents in exhaust.

In order to do this, it is necessary to decompose a nitrogen molecule at least to atoms or smaller fragments by some initiating influence.

This can be made by an electric discharge, magnetic flow, explosion or other methods which consume much less energy than it is produced during PTHK.

Such a nitrogen operation and combustion mode goes with oxidation up to H_2O , not to CO_2 , which is more effective, according to energy and ecology.

PTHK processes with production of excessive power (which is bigger than the consumed one) were also obtained in cavitation heat generators using water.

Now let us talk about free energy.

It is called by different names but nobody can formulate what it is.

It is called aether energy, basic universal energy but if you ask, ‘What is it?’, they answer, ‘Something’, i.e. they do not mean any physical meaning.

The surrounding physical vacuum or aether or quintessence is electrino gas, i.e. a medium containing invisible elementary particles – electrino discovered by D.H. Baziev in 1982.

Their properties are considered in the works [5, 6, and 7] and electrino’s existence was proved experimentally by the Russian Academy of Sciences in 2001 [7].

Since energy, as many people consider, is a motion measure, in order to use the environmental energy as free energy, it is necessary to make electrino move (in different energy devices).

In the work [2], a complete classification of energy devices’ types including standard and non_traditional ones using accumulated and free energy is given.

Physical mechanisms and their operational principles are described in details; a description of real devices using free energy is given.

It is shown that energy exchange in nature and the energy devices consists in transfer of electrino flows as energy flows between interacting objects or between objects and the environment.

Free energy diffused in the environment can be transformed in mechanical, electric or any other kind of energy by vibration resonance, electromagnetic and energy devices of other kinds.

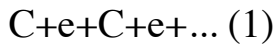
An example of the energy devices using free energy can be known engines of Searle, Floyd, Kushelev (the “continuously operating lamp”, 2002) and other authors.

The developed physical mechanisms of energy production processes allow building industrial, stably operating, ecologically clean energy devices which do not consume fuel hazardous to people organic and nuclear.

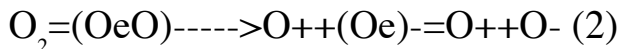
Difference of standard and fuelless combustion

Standard combustion:

1. During standard combustion of, for example, carbon $12C$, hydrocarbon chains of fuel decompose to single elements in such a way that each carbon atom has a connection electron which becomes free



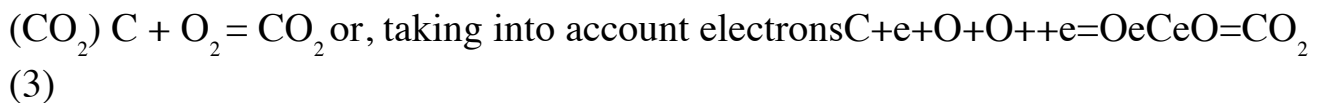
2. Air oxygen molecules, which consist of two atoms and a connection electron each, decompose to a positively charged atom (ion) and a negatively charged ion consisting of a positively charged oxygen atom and a connection electron connected with it



3. A free electron obtained in combustion plasma from fuel (1) becomes an electron – energy generator, according to the physical mechanism of PTHK: it electro dynamically interacts with ions O^{++} , layer to layer, taking small elementary particles from them which creates a small defect of oxygen atom's mass (about $10^{-6}\%$).

Such a small mass defect allows keeping oxygen's chemical properties.

After the energy generation process (PTHK), products of the reaction combine into the most stable compound



4. As we can see, during standard combustion, an atomic reaction of oxygen decomposition takes place.

Due to the connection energy of its elementary particles, heat energy is produced.

Fuel is a donor of electrons.

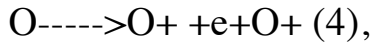
The oxidation reaction (3) is a consequence of combustion.

Nitrogen does not participate in standard combustion.

It is a dead weight in the air composition.

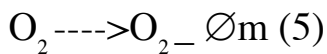
Unusual – “fuelless” combustion:

5. If an oxygen molecule is decomposed producing a free connection electron



this free electron will become an electron – energy generator just like the electron obtained from fuel (1).

6. In this case, fuel is not necessary and combustion becomes fuelless though with the same oxygen mass deficit Δm as during standard combustion



7. In pure oxygen, the energy production reaction, according to (4), happens with an explosion (fast combustion).

In order to begin it, as we know, hydrocarbons' traces are only needed (lubricating oil, petrol, diesel fuel and others).

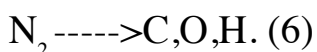
In air, nitrogen prevents the explosion.

Nitrogen molecules with a negative excessive charge surround each oxygen molecule with a positive excessive charge and form sets from oxygen protected by nitrogen from electrons' influence.

8. I.e., in order to provide for fuelless combustion, it is necessary not only to decompose oxygen, according to (4), but to preliminary decompose the oxygen sets with the nitrogen screen.

Thus, nitrogen is not only the dead weight but also a structurally organized medium preventing access to oxygen and its explosion.

9. If the initiating influence is sufficient for decomposition of nitrogen with molecule twice stronger than oxygen ones because it has not one but two connection electrons, nitrogen is decomposed not only to atoms but also to fragments which present other chemical elements



10. These elements, especially oxygen and hydrogen, participate in the energy production reaction (PTHK) with the electrons – energy generators.

11. Nitrogen participation in PTHK increases the energy production reaction's efficiency due to additional connection energy of elementary particles in atoms of the mentioned substances.

Such a combustion reaction is called a nitrogen reaction.

12. Products of the nitrogen reaction are mostly water vapor (water) H_2O , partially, oxygen O_2 , carbon C and, to a lesser degree, CO_2 , CO, NOX and other substances.

Realization of new ideas in energy engineering Fuelless autothermal mode of air spontaneous combustion in an internal combustion engine.

Autothermia is an effect of spontaneous combustion of, particularly, air when the air combustion process, for example, in an internal combustion engine, happens autonomously, independently – without consumption of organic or other kinds of fuel.

The theory [1, 2] has been developed for seven years and tested practically using, first of all, carburetor car motors for three years.

First, the fuelless engine operation mode was obtained on the 25th of July 2001.

It took more than a year to obtain the fuelless air spontaneous combustion mode in engine's cylinders of VAZ 2106 car during its motion with load and a speed of 120 km/hour on the 25th of August 2002.

Fuel consumption was determined quickly using a standard regular track computer and a sensor of fuel consumption set in the car.

Fuel consumption indications of the sensor and the computer were periodically controlled by the volumetric method, measurements of a fuel level in a fuel tank, using a bottle installed on a measuring jar instead of the tank close to a carburetor float chamber.

Control measurements showed that accuracy of the fuel consumption sensor coincided with the volumetric measurements.

Particularly, when the sensor and computer showed zero fuel consumption, a fuel level in the measuring jar (with a diameter of 1 cm and a length of 1 m) was stable too staying on the same mark.

According to the main car motion modes: with a speed of 60...70 km/hour and a speed of the engine of 2000...2500 rev/min; with a speed of more than 70 km/hour and a speed of the engine of more than 3500 rev/min; and also idling with a speed of the engine of 200...1500 rev/min there was no fuel consumption at all; it was zero.

During start and warmup of the engine and also during transient modes and throttling, shortterm fuel combustion took place.

According to the total run, it was 1.0...1.5 l per 100 km.

The fuelless combustion mode was provided by air procession and carburetor setting to lean mixture without any changes of the engine's construction.

The fuelless air combustion mode (autothermia) requires no constructional changes of an internal combustion engine while the energy production process PTHK is the same as during standard combustion using fuel as an electron donor. During autothermal combustion, air electrons are used, this is why fuel is not necessary.

In order to provide for the autothermia mode, it is necessary only to set some auxiliary systems and equipment elements.

Air moisture load is an important factor.

In summer, at a temperature, for example, +25°C and a relative humidity of 50%, air moisture load is 10 g/kg (ten grams of water in the form of vapor per a kilogram of air), i.e. it is 1%, according to mass.

At the same temperature and relative humidity of 100%, air moisture load (of saturated air) increases to 20 g/kg, i.e. to 2%.

In summer, air is dry.

Its moisture load decreases by 1...2 orders, i.e. to one tenth and one hundredth of a percent. In moist air, not only molecules of nitrogen and air oxygen giving electrons decompose to atoms but also moisture.

A water monocrystal is a chain of molecules connected by connection electrons: during its decomposition, 3,760 electrons are released at once (an electron per each molecule).

During water molecules decomposition, another two electrons are released per each molecule.

So, it is three electrons per molecule or, which is the same, an electron per 6 atomic mass units.

During petrol decomposition, it is approximately an electron per 4 atomic mass units.

As we can see, fuel and water are almost the same, according to efficiency of their use as fuel for combustion.

Air is behind them because, during its decomposition, approximately 16 amu per an electron which became free energy generator are released.

However, both air and water, unlike fuel, contain a sufficient number of oxygen atoms and, therefore, they can combust spontaneously because their plasma contains everything which is necessary for PTHK: both oxygen atoms and electrons.

According to the carried out analysis, we can understand which measurements must be taken in order to easily start an engine using lean mixture not only in summer but also in winter cold season:

1. It is better to improve magnetic catalytic air and fuel procession before feeding them into engine cylinders. In this case, other measures could be not necessary which will simplify the starting system.

2. To increase fuel feeding during the starting period.
- 3.

To moisten air adding 1...2% of moisture. 4. Carry out preliminary heating of air, moisture, fuel and the engine.

5. To improve the initiating influence in the engine cylinders (condensersreservoirs, plasma ignition plugs and others).

6. To bring an electron bunch to the cylinder from the outside, for example, by an electron gun.

All these measures, of course, can complicate the engine starting system; this is why they must be used in a reasonable combination with each other.

The best way to prepare an engine to the autothermal mode

Today the best way is to form a sufficiently “thick” layer (~ 20 mcm) of the catalyst on the cylinder walls.

It coincides with a run of 4,000...5,000 with an optimizer.

It is necessary to intentionally decrease compression, for example, to 7 kgs/cm^2 , with an initial gap increase by 20 mcm.

Later this gap will close and compression will be automatically restored to 12 kgs/cm^2 .

Under these conditions, the engines can operate without fuel, without an optimizer and improved plugs, during all modes, revolutions, and loads.

Description of the inventions

A method of fuelair mixture preparation and a device for its realization.

Patent RU 2229619.

The invention is related to energy engineering, heat power plants and engines including internalcombustion ones.

The suggested method of fuelair mixture preparation can be carried out in the described below device.

The device for fuelair mixture preparation including permanent magnets which form magnetic field lines perpendicular to air flow is made in the form of a flat cylinder with a nonthrough central hole.

A groove connected to the central hole by canals is made along the external side surface of the cylinder.

Ring permanent magnets are installed on the external side of the groove opposite to each other in such a way that a gap is formed between them which allows air passing between the magnets into the internal space of the groove and, further,

through the canals, into the central nonthrough hole.

The internal space of the groove is filled with the catalyst and a pipeline is connected to the central nonthrough hole for mixture of the processed air with fuel and feeding of the fuelair mixture to an engine or heat power plant.

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In Fig.1, the device for air_fuel mixture preparation using the suggested method is shown.

The device for airfuel mixture preparation is made in the form of a flat cylinder 1 with a nonthrough central hole 2.

A groove 3, which is connected to the central hole by canals 4, is made along the external side surface of the cylinder 1.

Ring permanent magnets 5 are installed on the external side of the groove opposite to each other.

A gap 6 is formed between them.

It allows air passing between the magnets 5 into the internal space of the groove 3 and, further, through the canals 4, into the central nonthrough hole 2.

The internal space of the groove 3 is filled with the catalyst 7.

A pipeline 8 is connected to the central nonthrough hole 2.

Fuel is fed to the pipeline, for example, through an injector 10, for formation of the fuelair mixture.

The pipeline 8 connects the device for fuel air mixture preparation with an engine or a heat power plant (they are not shown in Fig.).

The magnetic field lines are shown as arrows 9.

The invention's formula.

The method of the fuelair mixture preparation consisting in preliminary, precombustion processing of components of the fuelair mixture by a magnetic

field.

Only air is preliminarily processed by a combined influence of the magnetic field and catalyst.

Induction of the magnetic field is formed and, with it and in the presence of the catalyst, not only air oxygen molecules but also nitrogen molecules dissociate to ions.

Then the processed air is mixed with fuel in a ratio providing for obtaining extremely lean air fuel mixture.

The formed mixture is fed into an engine or heat power plant for combustion.

The device for fuelair mixture preparation including permanent magnets which form magnetic field lines perpendicular to air flow.

It is made in the form of a flat cylinder with a nonthrough central hole.

A groove connected to the central hole by canals is made along the

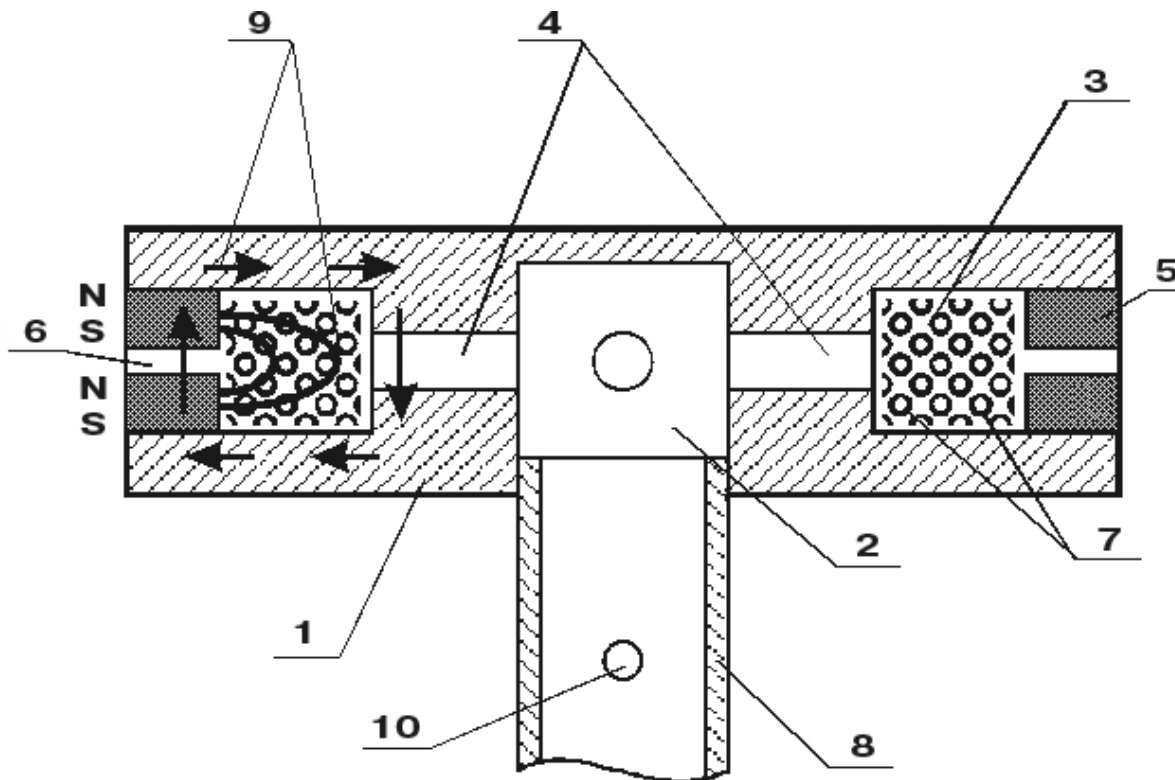
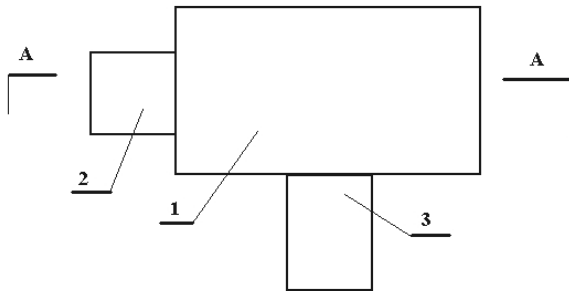


Fig. 1. The method of the fuel-air mixture preparation and a device for its realization



external side surface of the cylinder.

Ring permanent magnets are installed on the external side of the groove opposite to each other in such a way that a gap is formed between them which allows air passing between the magnets into the internal space of the groove and, further, through the canals, into the central nonthrough hole.

The internal space of the groove is filled with the catalyst and a pipeline is connected to the central nonthrough hole for mixture of the processed air with fuel and feeding of the fuel_air mixture to an engine or heat power plant.

Another invention: A device for processing of airfuel mixture's air. Patent RU 2229620.

The invention is related to energy engineering, heat power plants and engines including internalcombustion ones.

The obtained technical result is increase of heat power plants and engines' efficiency and decrease of injurious additive concentration in the used gases.

The processed air is fed into a cylinder 1 by a branch 2. Inside the cylinder 1, air is evenly spread over the whole cylinder's volume through gaps 5.

After that, air moves to a part of an exit branch 3 inserted into the cylinder 1.

Air goes between permanent magnets 4 and a catalyst layer 6.

When the magnetic field influences air in the presence of the catalyst, molecules of oxygen and also nitrogen dissociate.

The dissociated air goes through holes 7 and goes into the exit branch 3 for the following formation of the air_gas_ mixture.

Another patent: A method of increase of working medium energy for yield production.

Patent # 2179649 from 25.07.2000. F 02 G 1/02, F 02 M 27/04.

The invention's formula.

A method of increase of working medium energy for yield production consisting in working medium ingestion, compression, transmission of an electrical exciting impulse through it, its expansion with yield

Fig. 2

production.

Ingestion of a working medium consisting of a gas part – air – and a liquid one – water – is carried out during three stages.

At the first stage, an initial air portion is fed but, at the second stage, the given air portion is expanded to low pressure.

At the third stage, an additional air portion is fed along with water.

Water is preliminary saturated with catalyst and processed by a cavitation device with formation of cavitation bubbles.

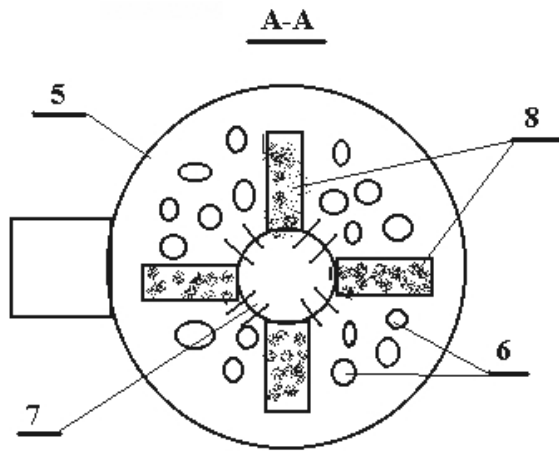
Then the working medium is compressed which leads to destruction of the cavitation bubbles and heating of the working medium.

After that, during the expansion stage, an electrical exciting impulse runs through the working medium providing for the working medium energy increase due to its ionization and evaporation of the liquid part.

After the expansion, the working medium is released into the atmosphere.

Conclusion

So, the theory of natural energy – energy of the XXI century is completed to a first



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approximation.

Mankind suffers from the energy deficit and ecological problems connected with it while there is an abundance of energy accumulated in matter and in the environment.

On the basis of the new hyperfrequency physics and application works on fuelless energy, it was managed to realize the autothermal air combustion mode without consumption of organic or any other kinds of fuel practically, during a considerably short term, using car engines.

Traditional science, most of all physics, does not assume even a possibility to create a “perpetual motion machine” while we use it for a long time.

It is a standard engine, without any constructional changes and even without change of the energy production process – the phase transfer of the highest kind (PTHK).

Its physical mechanism was not known up to now.

It is impossible to explain everything in a brief conclusion, it is necessary to read and understand all three books of my trilogy.

But it is necessary to remind and stress some moments.

First of all, it is not that we could make an engine work in the fuelless mode but that exclusion of fuel from the combustion process as a needless component

improves ecological situation, keeps all good factors of standard combustion including the absence of radiation and adding new good things: absence of CO₂ and CO, clean exhaust, solution of the fuel problem...

Use of natural energy stored, particularly, in oxygen, as during standard combustion, is very efficient, due to only a one hundred millionth part of its mass which is filled up in natural conditions, as it was before.

So, in this sense, ecology is undisturbed.

Development of natural energy excluding the use of organic and nuclear fuel, which is ecologically hazardous for mankind, will allow providing people by light, heat, and electricity in abundance everywhere, including cold northern regions, with minimal costs and damage to nature.

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