

New Energy Technologies

Magazine

Scientific news on advanced propulsion systems for aerospace industry and new energy technologies

Issue #3 (22) 2005

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Generation of excessive energy during molecular reactions

Experimenter Jean-Louis Naudin (France) claims to derive free energy cleanly and safely from the dissociation and association of hydrogen atoms. The invention has been made in 2003 by A.V. Frolov during the combined research project with Spectrum Investments Ltd. Data about several tests was posted. Plans, schematics, methods all listed openly to encourage replication and improvement of results. The idea is based on decades-old concepts set forth by Nobel laureate Irving Langmuir.

Last news from Jean-Louis Naudin's laboratory:

Using impulse heating of a 12V-cathode with a frequency of 51 Hz and under ratio of the impulse to the pause equal to 5%, efficiency more than 2000% was obtained. A theoretical maximum for the given kind of construction, according to A.V. Frolov's calculations, is 83:1, i.e. more than 8000%.

Jean-Louis Naudin's comment:

"Alexander Frolov was the first to carry out tests of the atomic hydrogen generator in Saint Petersburg, during the first stage of the project. You can read more about it at <http://jlnlabs.imars.com/mahg/mahg1.htm>. Now I have confirmed the results of his tests independently, using two kinds of completely different measurement equipment".

Jean-Louis Naudin, E-mail: jnaudin509@aol.com, Web-site: <http://jlnlabs.org>

Editor's note: The work has begun after Nicholas Moller's visit to Saint Petersburg, 2003. We have analyzed his idea of using the monatomic hydrogen recombination process for the generation of excessive energy. The idea also was published in William Lyne's book "Occult Ether Physics", USA, 1997. Initially, Moller planned to work with free flame in a device of the hydrogen burner type, but I rejected this idea due to the explosive risk and suggested another approach without hydrogen consumption, i.e. with the dissociation-recombination cycle occurring in a closed volume. A powerful electronic-vacuum diode with a tungsten cathode of the direct heating was chosen as a basis of the device. Making a contract on the research on the given subject, we have determined that intellectual property on this project belong as 50/50 to Faraday Lab Ltd, A.V. Frolov, Russia, and Spectrum Investments Ltd, UK, Nicholas Moller. Further, Spectrum Investments Ltd paid a part of the works' expenses. Then, a test bench and two gas-filled lamps were exported to UK. Our company, Faraday Lab Ltd, invested additional funds for development of the works with different variants of the device. It happened more

than a year ago but Spectrum Investments Ltd still did not paid for our customs fee on this contract (about 1,000 dollars). Due to this problem, relations between Faraday Lab Ltd and Spectrum Investments Ltd became strained. We understood that it is only a mere formality but we had to bring an local court action against an unfair partner because execution of export contracts shows mutual respect of the companies.

I have to say that due to Nicholas Moller's organizing efforts it was created the Global Institute For New Energy Technologies (GIFNET) <http://gifnet.org>). In August, 2005 Nicholas Moller called me by phone and informed me that UN General Secretary Kofi A. Annen visited the Institute and wished them success and promised a support.

Our firm also is developing this topic. Now we have established contacts with institutes in Australia and UK to continue the research. We also are interested in joint projects with Russian research institutes.

A.V. Frolov, CEO, Faraday Lab Ltd



Fig. 1. The experimental device in J.L. Naudin's laboratory. A test-bench with heat calculator, a system of water cooling and ESB 3.314.363 lamp was exported from Saint Petersburg in 2004 by Faraday Lab Ltd.

Information from web-site <http://pesn.com> was given by authors Allan D. Sterling (sterlingda@pureenergysystems.com) and Adrian Akau (adrianakau@aol.com).

French independent researcher Jean-Louis Naudin reported that he ran his experimental "Frolov/Moller Atomic Hydrogen Generator" (FMAGH) version 2.0 for one hour at an efficiency of 2000% - that's 20 times more energy out than he put in. The day before, using slightly different settings, he reported having achieved an efficiency of 682% for twenty minutes. On June 2, he reports to have run this generator for two hours at an efficiency of 243%. This is the first known replication and collaboration of the work done by inventor Alexander Frolov of Faraday Lab Ltd. of St. Petersburg, Russia, in January 2003.

Free Energy

According to Naudin's claims, this several-fold excess energy is being derived somehow in the process of molecular hydrogen dissociating into atomic hydrogen, and then re-associating into H_2 . Free energy is derived, and hydrogen is neither lost nor gained. It is a closed system in terms of "fuel". "The Atomic Hydrogen Process is 100% clean and safe," says Naudin on his site. Once realized into a commercial product, such a generator would provide the consumer with a device that would supply energy for free, minus the expense of the device itself, and any

maintenance it might require - similar to other free energy sources such as solar or wind energy. The development is still too young to be able to ascribe a cents-per-kilowatt-hour estimate. The hope would be that it will be less expensive than any energy technology available today.

Mechanism

In simplistic terms, the FMAHG is comprised of a cylinder that has an input and output channel for water flow around a closed inner chamber filled with hydrogen at 0.1 atmospheres pressure. **(Editor's note: Devices with another pressure have been also investigated in our laboratory. Frolov A.V.)** A 0.25 mm diameter tungsten filament at the heart of the device serves as the cathode, where the Hydrogen reacts to switch between monatomic and diatomic states. Again, the hydrogen is not consumed in the process of alternating between monatomic H and H_2 . Extreme heat is given off as the H atoms recombine to H_2 . The water cools the vacuum tube containing hydrogen at 0.1 atmospheres. The heated water is where the excess energy manifests for practical use. We speculate that a stirling-acoustic engine might be the ideal mechanism for efficiently converting that heat to mechanical energy.

The key is found in the frequency characteristics by which the positive anode and negative cathode are pulsed, to effect a low-energy separation of the H_2 into H. The anode/cathode voltage gradients range between 200 and 300 Volts. AC-driven pulses do not work. The pulses have to be DC, in the range of 10 megahertz. The shape of the pulses is important as well.

The recent improvement in efficiency that Naudin saw, came from changing from a power-supply-driven voltage pulse, to a battery-driven pulse. Naudin replaced the power supply by a high power MosFet Switcher. The Switcher is driven by a 10 MHz pulse generator. Apparently, the battery characteristics provide a better input reservoir. By using the battery, Naudin was better able to focus the pulse and gain better results. This is like using a sharp knife instead of a dull one to dice vegetables.

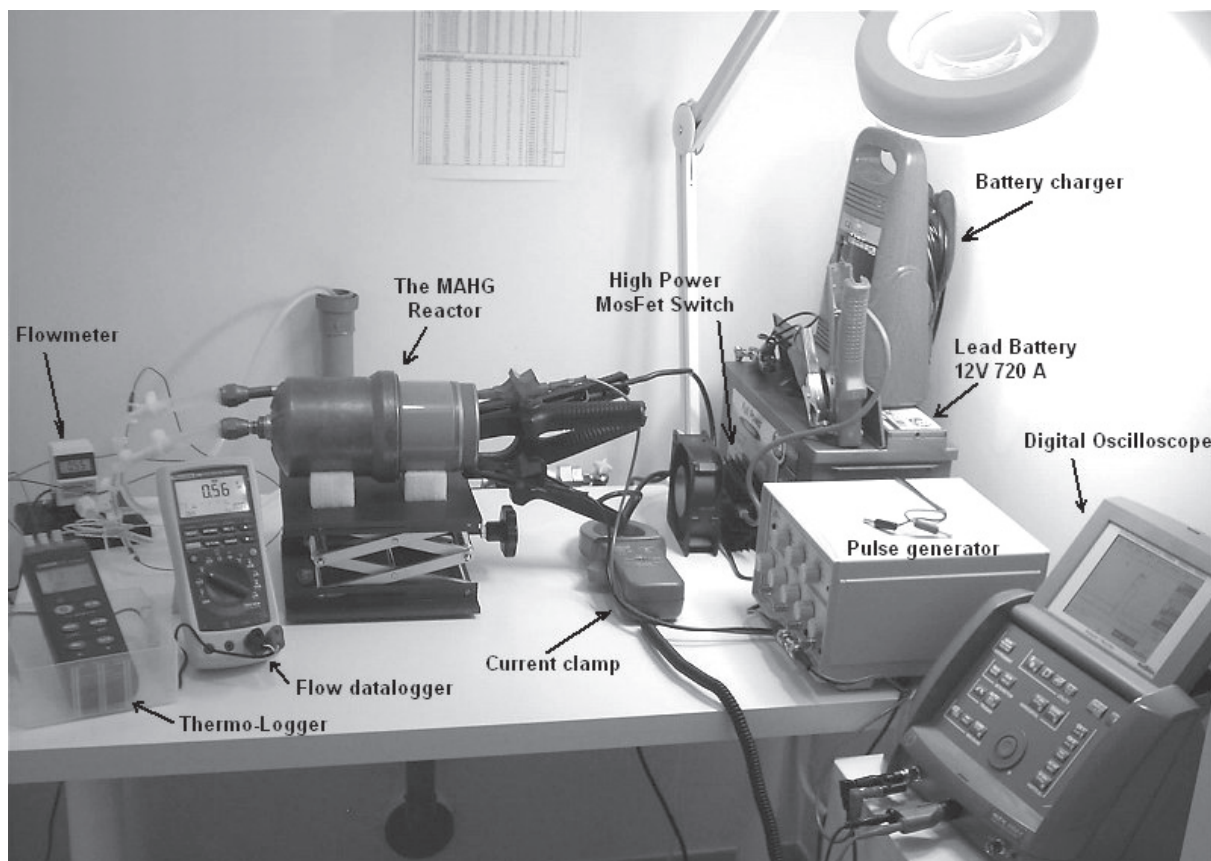


Fig. 2. The new experimental device in J.L. Naudin's laboratory, June 2005.

The shape and length of time for the pulse might be the most important part of the experiment. **Editor's note: hydrogen dissociation is a subject, which has been thoroughly studied in the classical experimental physics. According to the design, which Naudin has, it is advisable to work on its resonance frequencies. Besides, this is not the only method to obtain the effect in the given system. The effect's essence is not limited by the processes in hydrogen.** Alexander V. Frolov.

Self-run Capability? Not Yet

Jones Beene, an observer of the Naudin results, commented that until someone is able to make such a device as this self-run, with energy left over to use, the mainstream scientific community will remain aloof and uninterested. Historically, there are too many effects displaying in the same way but having nothing to do with free energy.

Naudin responded, "If I am able to greatly

overcome the poor efficiency of the Carnot cycle at high power and for a long time, with the use of a high-efficiency TEG (Thermo Electric Generator), it seems possible to build up a closed-loop device. This is a long way off; a lot of work is required."

Beene has numerous ideas of his own about the FMAHG, both about how to improve the design as well as the theory behind its operation, and the political ramifications of open sourcing. He expects that a self-runner could appear quite soon, and then the scenery would change rapidly.

Open Source Project

Naudin reports additional experimental results on his website, along with photos of his apparatus, descriptions of his protocol, schematics and diagrams of his set-up, and copies of the data he has obtained during his experimental runs. He provides a history of the technology as well as an essay describing the principles and theories that underlie the



Fig. 3. MAHG, version 2.0 built by J.L. Naudin

technology. The information is clearly intended to be adequate for anyone who wishes to construct the device and try to replicate the results, or join in the quest to improve upon them.

"The results are stable and fully reproducible," said Naudin on his site. He describes the FMAHG as one of the best devices that he has tested to date, a very good candidate for producing a clean and independent energy "for the benefit of all." This technology is nearly 70 years old, and is not likely to be patentable. (A patent was obtained by Frolov in Russia, but a source that request to remain anonymous states that it is probably not valid). **(Editor's note: We sent a patent application to the patent authority of the Russian Federation but, after a prolonged correspondence, it was rejected due to the fact that they considered this result impossible, though our measuring bench had been specially certified by the state metrological center. Besides, some inaccuracy of measurements is not important in case of the efficiency of 210-245% (for the first experiments). We hope that the following attempt to patent this technology will be successful. Of course, according to our contract about cooperation work with Spectrum Investments Ltd., we will give them 50% of the patent. A.V. Frolov).** It appears to be a feasible candidate for the "open source" model of development by interested scientists worldwide.

Nicholas Moller, one of two individuals after whom this particular variant (2.0) device is named, said, "The time has come for removing the responsibility of defining the energy policies and structures of the future from the hands of the established energy industries, and place it in the hands of men of science who will work for the preservation of the environment that sustains all life on Earth." (A quote is from Naudin's site.)

That does not mean, however, that there will not be contentious attempts to claim and patent the technology and its various nuances. Beene points out the problem of "claim jumpers" in some other countries such as Japan,

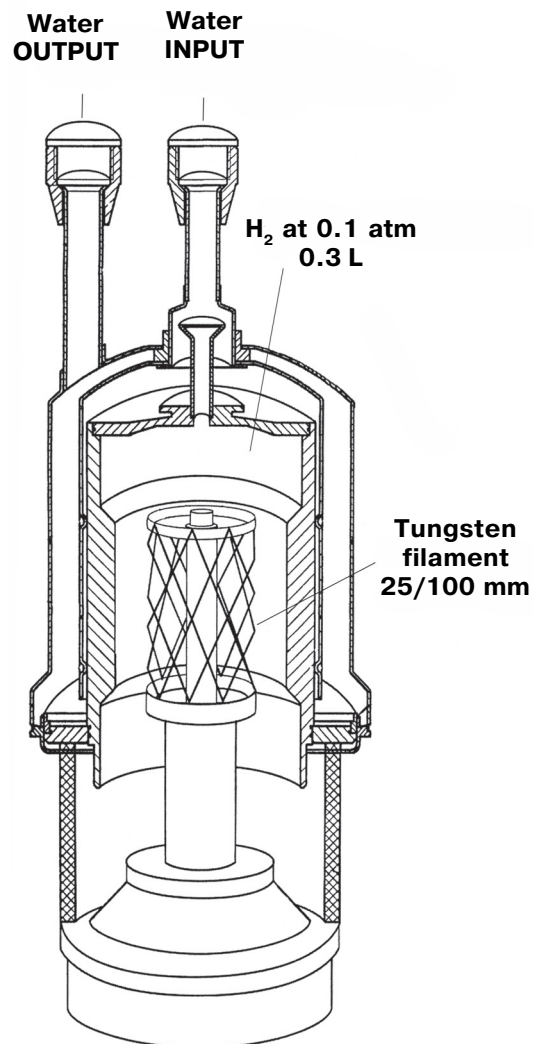


Fig. 4. ESB 3.314.363 lamp's design. A reaction chamber of the generator with tungsten filament.

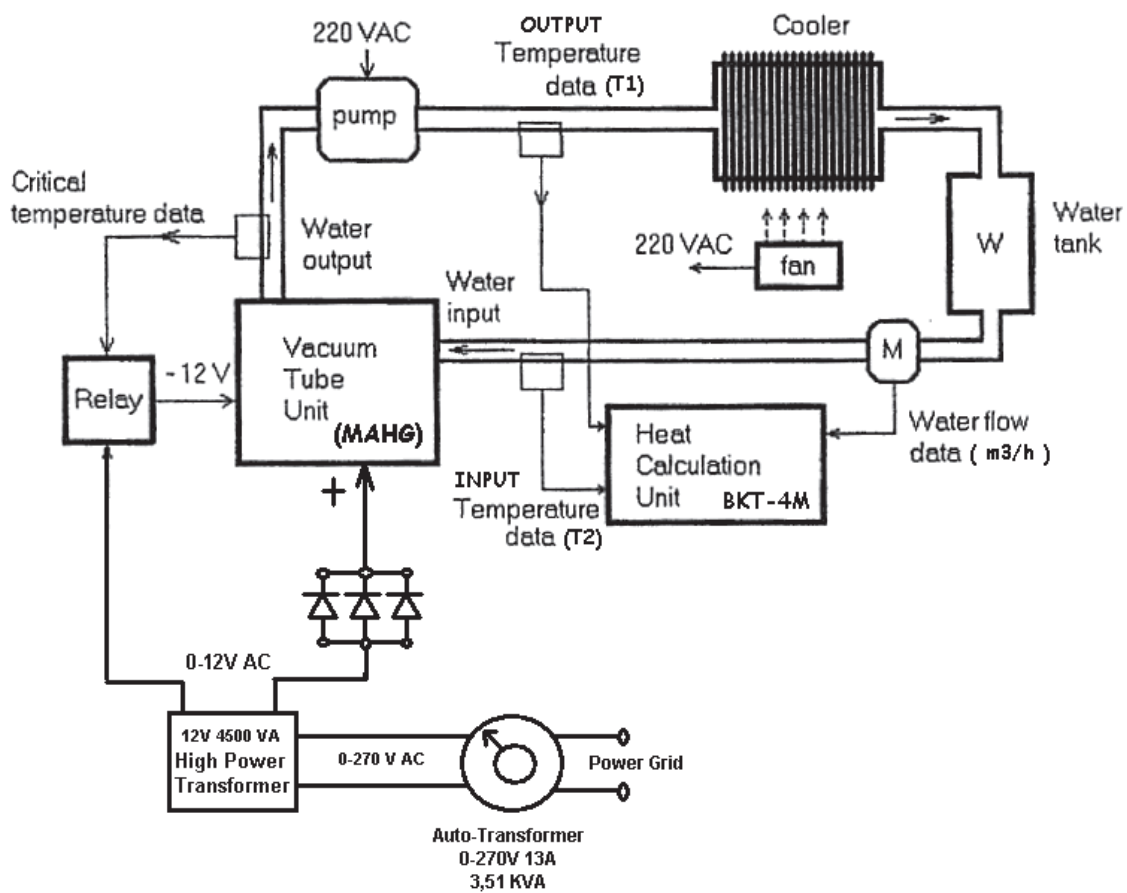


Fig. 5. A scheme of the experiments

Korea, and Taiwan; where the "first-to-file" rule trumps "first-to-publish." It will take a magnanimous spirit by many to see some staking their claims on this technology while others are freely sharing their ideas. In some countries, including the U.S., the rule is "first to publish," so open disclosures on the Internet will preclude the patenting of the idea by others, ensuring that the technology stays in the open domain in those countries. Beene further points out that Governments in China, Pakistan, and the Arab world might seek to obtain international patents, even on some small technical issue, like a more correct theory or a minor detail of operation; thus limiting or delaying the commercial implementation by others.

"Perhaps, since Moller himself has no problem with this open approach, then no one else should

care either. After all, he is the one who is giving up the most," said Beene. The rush to derive a clear theory behind how the technology works is also likely to be animated. **(Editor's note: The theory already exists and is developed in details but its publication is not advisable before getting the patent).**

Beene, who has a "bare proton" Dirac hypothesis about how this technology works, points out that Randall Mills might seek to claim that this is a hydrino device, while advocates of the low energy nuclear reaction (LENR) will claim that this is more akin to cold fusion. "The Langmuir explanation, being the one on which the device was built, is likely to be seen by most as being operative," says Beene, "but there could be others." All things considered, Beene concludes, "Yes, let's create something unique in all of free-enterprise - the

completely open project which benefits the poor as well as the wealthy - but also, let's not be naive enough to think that other forces are not at work to try to keep that from happening."

It may, therefore, be worthwhile to consider the example of Tim Berners-Lee, inventor of and copyright holder on the World Wide Web. He uses his copyright as a means to fend off attempts to introduce proprietary programs, and to keep the web both free and universal, which are both part of the definition. So, after this example, this publication and others can be used to establish the "anteriority" of the concept, and such a copyright may provide at least some leverage to keep the FMAHG universal and "free".

Nobel Laureate Irving Langmuir's Discovery

Naudin states that Frolov/Moller's Atomic Hydrogen Generator is based on a discovery by Irving Langmuir (1881-1957 b. Brooklyn, N.Y). Irving Langmuir won the Nobel Prize for Chemistry in 1932. His work on filaments in gases led to the discovery of the vacuum tube, gas-filled incandescent light bulbs (the life of tungsten-filament light bulbs would be lengthened by filling the vacuum with inert gas such as Argon), atomic hydrogen, and the atomic hydrogen welding process. Langmuir's doctoral thesis in 1906 at the University of Gottingen in Germany was entitled "On the Partial Recombination of Dissociated Gases During Cooling". In 1926, he invented the atomic hydrogen blowpipe in which hydrogen gas is sent through a small hole through by means of an electric arc formed by two tungsten rods, reaching temperatures of 3700 degrees Kelvin (K). Hydrogen (H₂) yields two ("monatomic") atoms of hydrogen, absorbing 422 kilojoules in the process. The atoms of hydrogen then quickly recombine into the more stable molecular form giving off extreme heat. The hydrogen is therefore thought to be a transport mechanism to extract energy from the arc plasma and to transfer it to a work surface. In 1912, Langmuir showed that hydrogen at low pressure in contact with a tungsten wire heated by an electric current is dissociated

into atoms and is accompanied by a large absorption of heat (100kcal per gram molecule). He used electric currents of 20 amperes and voltages from 300 to 800 volts.

FMAHG

In the FMAHG (Frolov/Moller's Atomic Hydrogen Generator), as demonstrated by Frolov and then showed by Naudin, hydrogen changes between the diatomic and monatomic states without being used up. In this process, hydrogen appears to be acting as a vacuum energy pump because an excess of heat results from more energy being released during the monatomic to diatomic part of the cycle than from the dividing of the diatomic hydrogen molecules into monatomic hydrogen. Mr.Naudin's results show that the difference between output and input may reach a ratio higher than 10:1.

What is the mechanism for this excess energy production, and precisely what is occurring in the plasma? In other words, why is this cycle acting as a vacuum-energy heat pump? We know that the FMAHG works most efficiently with pulsed DC energy; it has no positive results with AC. The direct-current pulses must play a part in causing the H₂ molecules to break apart with less energy than when the individual atoms recombine. Why? The effect of the DC pulse on weakening the bonds must make the difference. A pulse can be controlled as to its voltage, current and duration.

Editor's note: It is important to take into account that the dissociation is produced by an electrical field between the electrodes. Avoiding creation of a conduction current between the electrodes, we will escape or decrease energy consumption. This concept is known according to the works of T.E.Bearden, USA, and it was also presented by Frolov A.V, Russia, in his article "Application of a potential field for the creation of power", New Energy News, USA, #1, May 1994. A.V. Frolov.

The recombination of the single hydrogen atoms into H₂ molecules, on the other hand, is a natural event which, to some degree under given conditions, provides the same amount of output energy.

However, all is not so simple, as temperature is another factor affecting the efficiency. Mr. Naudin has shown that the efficiency of the energy pump is greatly increased as the temperature of the hydrogen increases. His chart (voltage vs. current) shows that the resistance of the tungsten filament is not linear. Irving Langmuir's 1926 chart shows that at 8,000e K, well above the melting point of tungsten, the amount of hydrogen dissociated reaches a maximum of 99.9%. Remember that Irving Langmuir was not subjecting the diatomic hydrogen molecules to voltage pulses.

The curve on the diagram shows how the percentage of molecular hydrogen dissociated into atomic hydrogen is related to the temperature of the tungsten. These data were published by Irving Langmuir in March 1926. The following experimental curve from Naudin, enhanced by the warm to cool background hues, shows the FMAHG filament (the cathode) temperature in relation to time during the tests.

You may notice that atomic hydrogen (1% to 7%) has been produced during only 25 of each 100 ms. Mr. Naudin's filament (cathode) temperature and time graph, based on data recorded in May 2005, shows that a minimum of 2,000e K must be attained before the hydrogen dissociation process begins. At the peak temperature of just below 3,000e K, there is a 7% dissociation of the diatomic hydrogen molecule into its mono-atomic form.

The voltage vs. power graph shows that the ratio between the output power and input power is increasing non-linear as the voltage of the pulses increases. Therefore, the voltage itself must also have the effect of increasing the number of dissociations per unit of time, or of increasing the difference in output over input power. Note that both input and output taken individually seem nearly linear except at the lower voltages (below 2 volts).

In the new tests on June 23rd, 2005, Naudin made some changes to the apparatus. He replaced the power supply by a high-power

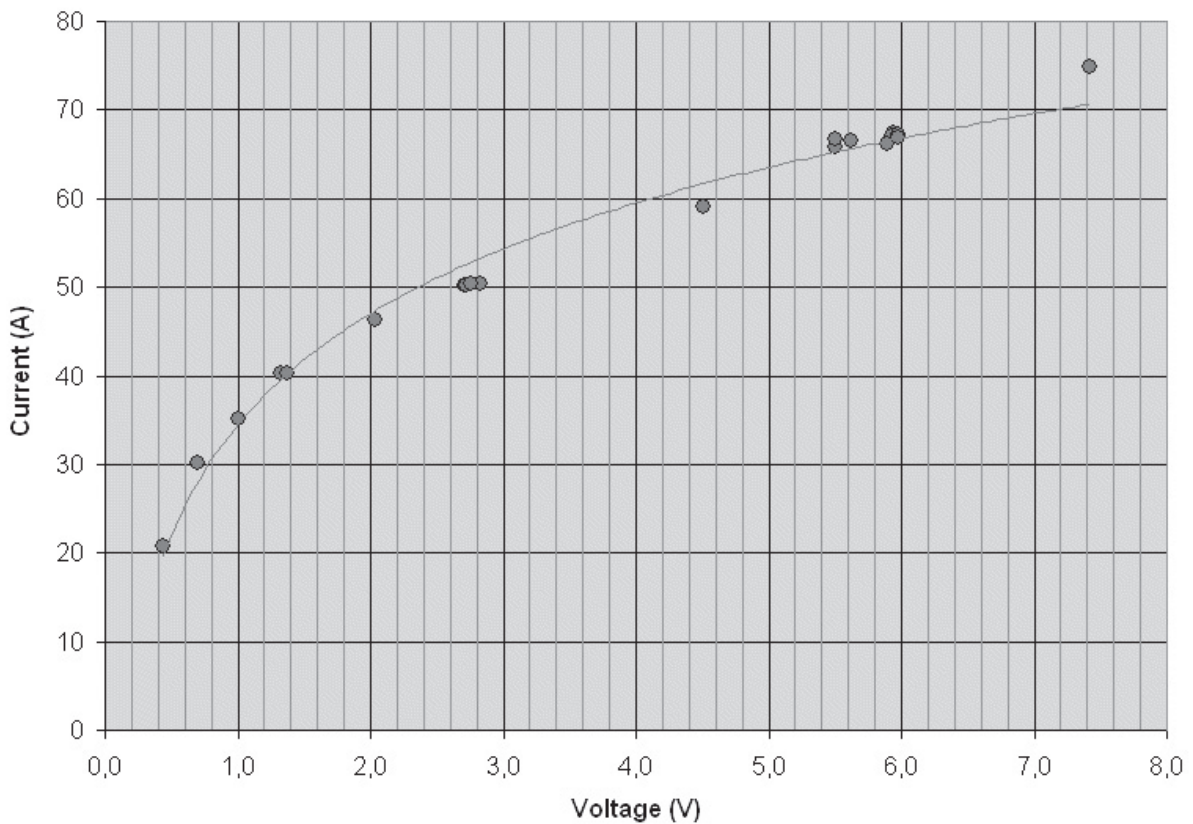


Fig. 6. MAHg Tests - May 2005 - J.L.Naudin

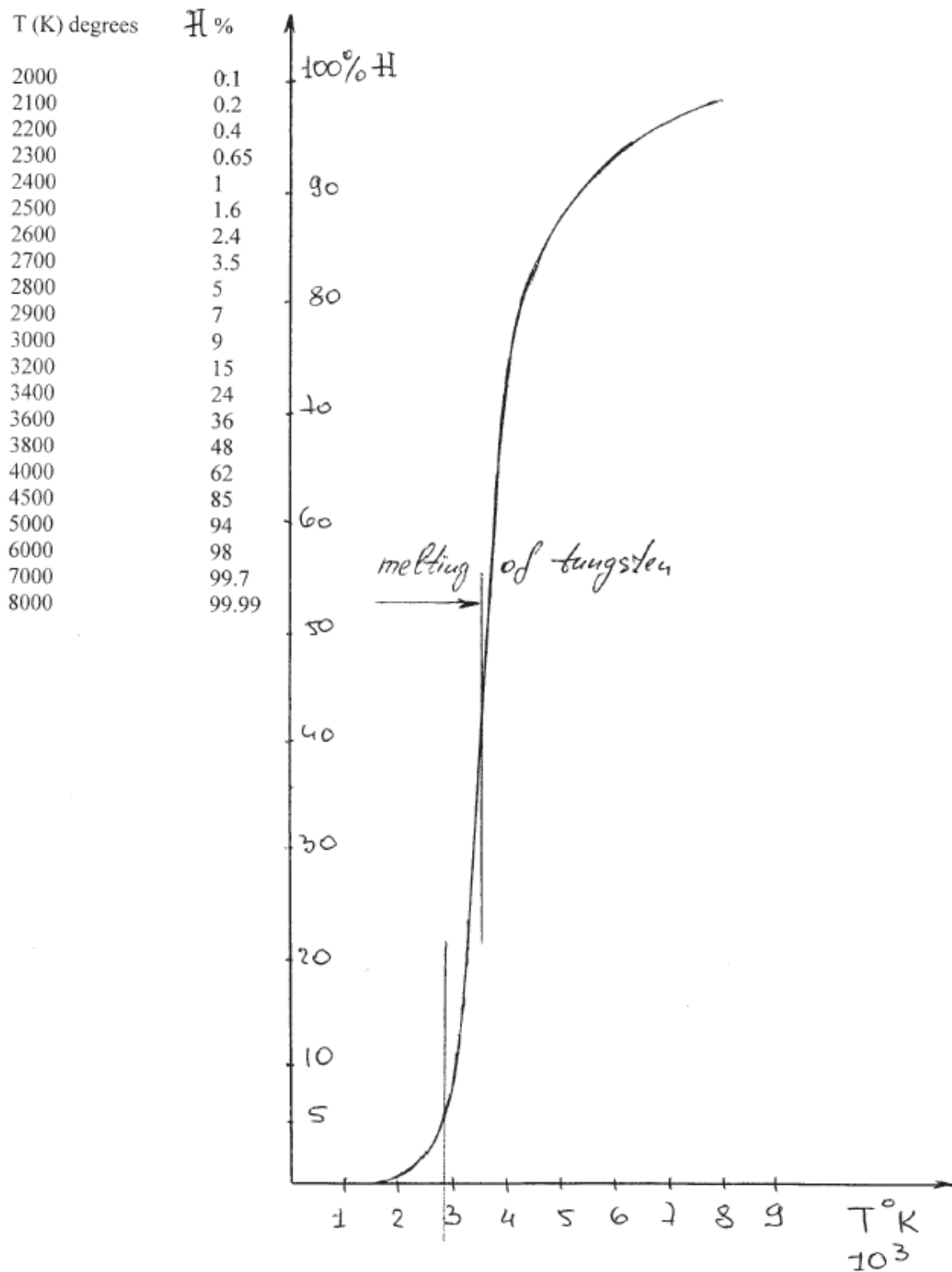


Fig. 7. Dissociation of hydrogen to atoms.
 The diagram is taken from the research diary of A.V. Frolov.
 The diary is completely published on J.L. Naudin's site.

battery connected through a high-power MosFet Switcher. The Switcher is driven by a 10 MHz pulse generator. The efficiency of the system went from a maximum of 243% up to 1153% while the duty of the squared pulse decreased (up to 5%). This refers to the time interval each DC pulse is acting on the hydrogen molecule. By using the battery and the special MosFet Switcher, the length of time for the pulse was shortened by up to 5%. In other words, by using a more precise pulse, Mr.Naudin was able to achieve much better results than with the previous pulse produced by a power supply. Apparently, the features of the new pulse allowed the vacuum energy pump to work more efficiently. We expect that Mr.Naudin will present a graph of this new pulse when available.

What Next?

Once others have been able to repeat these results, and the effect fully characterized, explained, and optimized; the big question will be how practical this technology will be as a free energy tapping modality.

Solar energy is free energy, but the hardware required to convert photons to electricity is anything but free. Likewise, even though this FMAHG technology apparently taps free

energy, does not automatically mean that it will solve the world's energy problems. The machine cost and efficiency will be a primary consideration in the practicality of the technology for commercial application. Preliminary results and extrapolations appear promising for the FMAHG. Further studies and development will answer that question more definitively.

In an email granting permission to use the images that appear in this article, Naudin said, "I hope that my modest contribution of my researches about this fascinating device will soon give us a clean energy source for the future and will contribute to saving our planet".

Beene gives his opinion that "of all the many projects going-on in alternative energy right now, this is by far the closest thing to being a demonstrable (and shocking) success within the next 6 month time-frame. By success, I mean self-powered overunity leading to an immediate commercial prototype - or at least something which cannot be denied by the mainstream of physics as being overunity (probably ZPE) and instantly marketable."

In the throws of this recent success, Naudin's

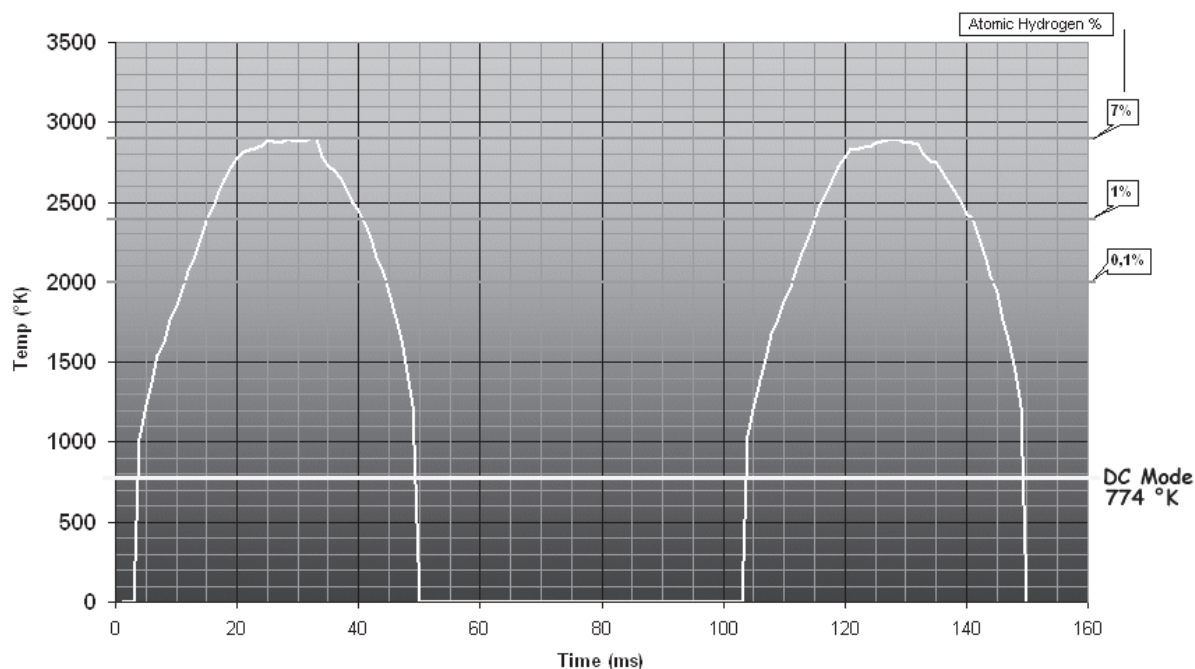


Fig. 8. MAHG tests: Filament temperature Vs time. Tested by J.L. Naudin, May 2005.

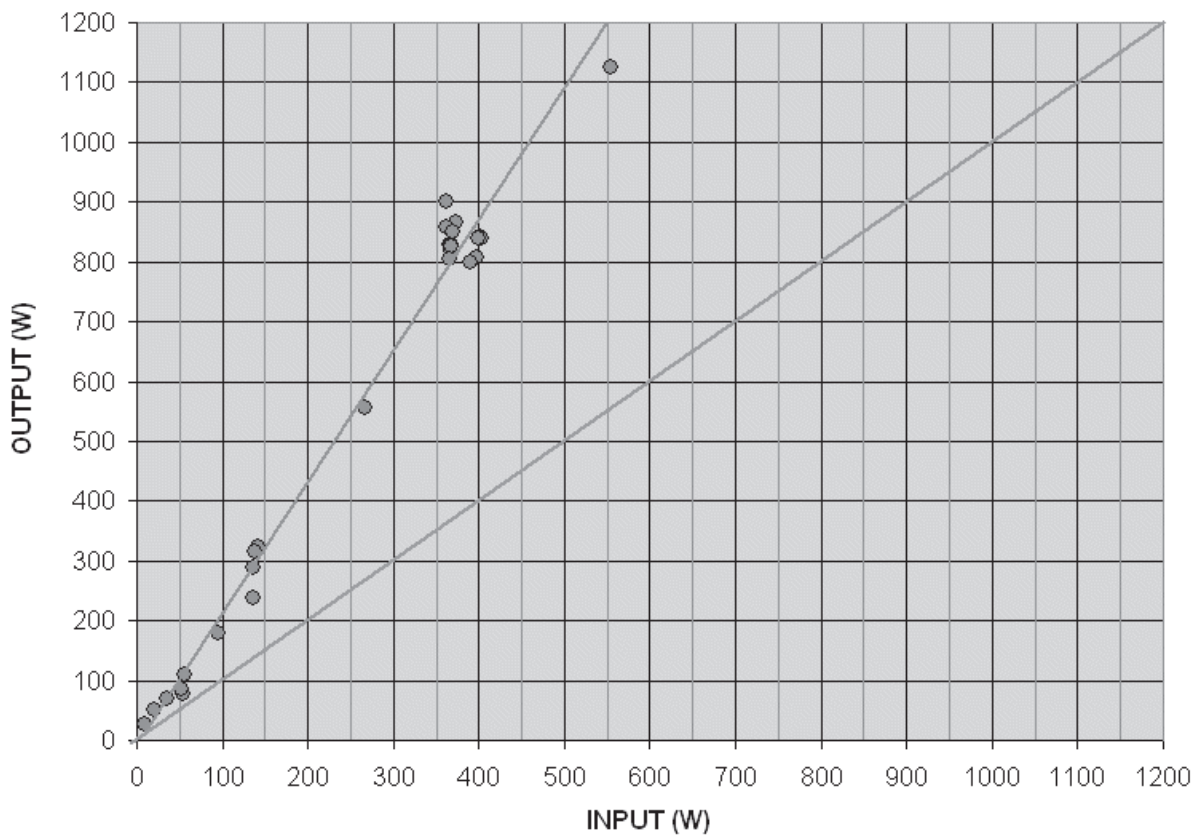
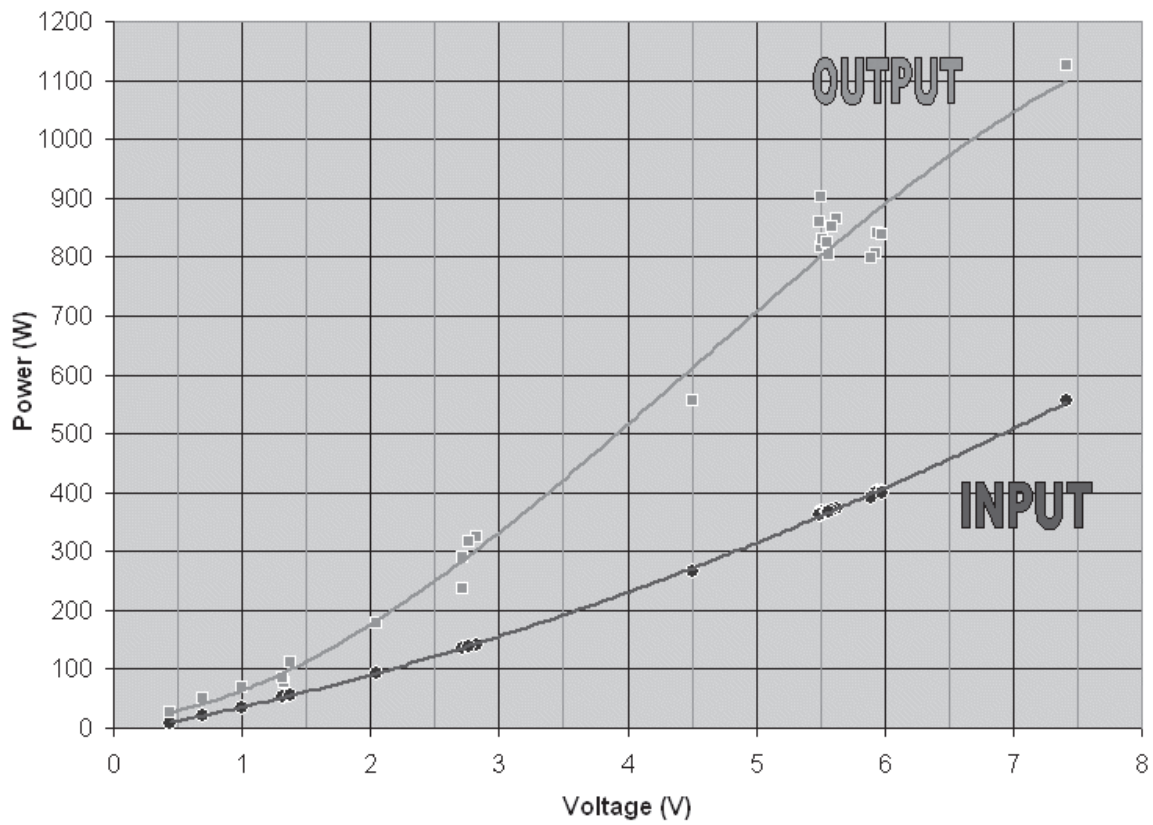


Fig. 9. MAHG Tests, J.L. Naudin, May 2005.

assessment of this technology is that it rises to the status of the "Holy Grail" of energy.

Follow-up

If you are interested in pursuing this concept, there is a project list that pursues various iterations of the atomic hydrogen generator concept such as JL Naudin's FMAHG above. The group is designed for those wishing to replicate, improve, and develop theories for this fascinating concept.

- <http://groups.yahoo.com/group/aH-gen>

SOURCES

- Email correspondence with JL Naudin, who reviewed a near to final draft of the above story and said, "Thanks for your very well documented paper about the FMAHG and for your contribution to this fascinating project."

- Email correspondence with Jones Beene.
- <http://jlnlabs.imars.com/mahg/index.htm> - MAHG Project home page

- Data Reports

- o <http://jlnlabs.imars.com/mahg/tests/lrtests.htm> - 2-hour test run with 243% efficiency (June 2, 2005)

- o <http://jlnlabs.imars.com/mahg/tests/pultests.htm> - Towards high efficiency in excess of 1000%. "The purpose of these tests is to improve the MAHG efficiency so as to overcome the losses due to the poor efficiency of the Carnot cycle at the MAHG output." (June 20, 2005)

- o <http://jlnlabs.imars.com/mahg/tests/mahg2a.htm> - High efficiency confirmed with a new tests bench. "During the RUN #74 all the data [sic] have been recorded during 20 minutes, the average power output measured was 90.56 watts with only 13.22 watts at the input. The delta T was 2.8°C with a cooling water flow of 0.54 L/min. The average efficiency measured was 682 % during this test." (June 23, 2005)

- o <http://jlnlabs.imars.com/mahg/tests/mahg2b.htm> - MAHG v2.0: one hour test run at 526%. "This 1 hour test confirms again all the previous measurements done with the MAHG." "During the RUN 75, the average power output measured was 66.5 Watt with only 12.5 Watt at the

input. The delta T was 4.6°C with an average cooling water flow of 0.24 L/min. The average efficiency measured was 526 % during this test." (June 24, 2005)

- o <http://jlnlabs.imars.com/mahg/tests/index.htm> - Full tests of the MAHG by JL Naudin (May 23, 2005)

- o <http://jlnlabs.imars.com/mahg/logbook.htm> - Genesis phase of the project; 1st preliminary experimental tests results. (March 1, 2004)

- Instructions

- o <http://jlnlabs.imars.com/mahg/diagram.htm> - The MAHG full construction diagrams.

- o <http://jlnlabs.imars.com/mahg/setup.htm> - The MAHG experimental tests setups. (March 1, 2004)

- History:

- o <http://jlnlabs.imars.com/mahg/mahg1.htm> - Documentation of genesis phase of the project, in which Alexandar Frolov of St. Petersburg, Russia, tested inventor, Nicholas Moller's, device (1.0), to demonstrate Langmuir's principle. (March 1, 2004)

- o <http://jlnlabs.imars.com/mahg/photos.htm> - The MAHG photos album, with descriptions and labels. (March 1, 2004)

- Article: <http://jlnlabs.imars.com/mahg/article.htm> - Irving Langmuir and Atomic Hydrogen by Nicholas Moller

- Forum: <http://groups.yahoo.com/group/jlnlabs/> - Naudin's discussion list covers a wide array of free energy topics. The forum is moderated and selective in what it allows.

ADDITIONAL READING

- The Atomic Hydrogen Reaction - Tom Bearden introduces William Lyne's book Occult Ether Physics. (July 6, 2003)

- Carnot Excedence - Patent and Mathematical Proofs by Kenneth Rau, Science Advisor for PES Network Inc., show that super-efficient thermodynamic exchange is possible. (Pure Energy Systems; June 28, 2004)

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- Jones Beene : jonesb9@pacbell.net
- Nicholas Moller :

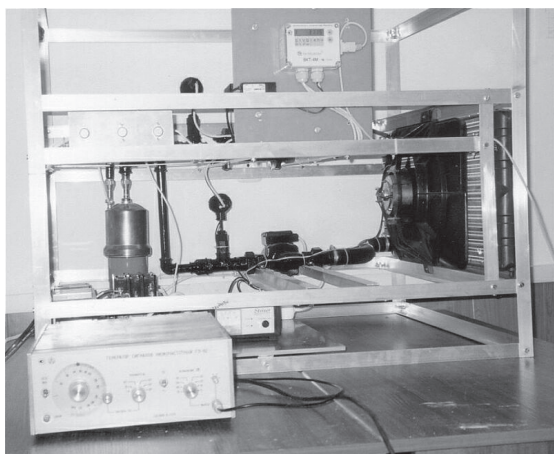
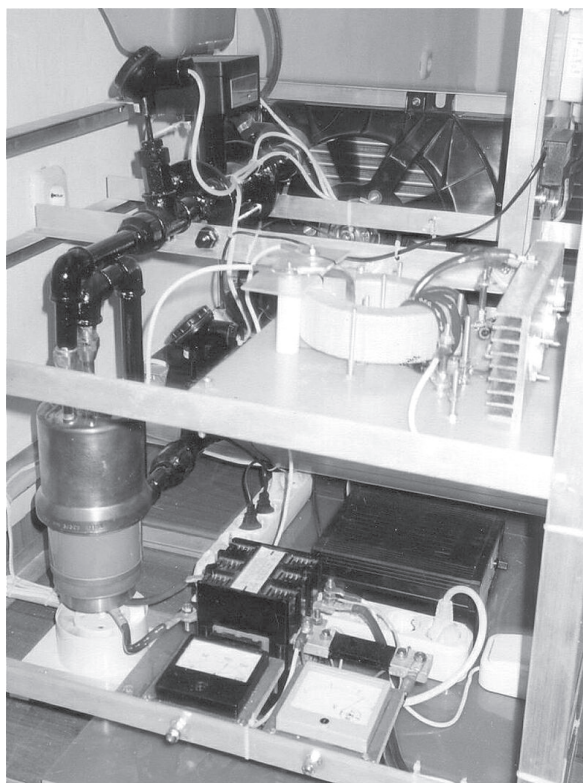
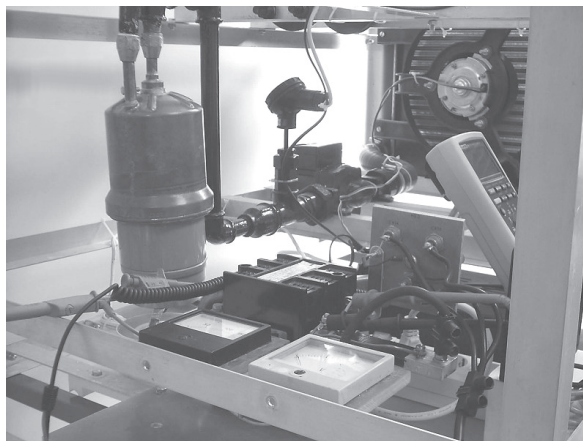
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See also

- Hydrogen Technologies (index at FreeEnergyNews.com)
- PESN (Pure Energy Systems News) - feature stories
- This Week in Free Energy™ - Weekly five minute blurb.

Editor's note: We also advise you such a primary source as publications of Faraday Lab Ltd about the partial progress on this subject on our web-site <http://www.faraday.ru> and in "New Energy Technologies" magazine. Now we have exported new devices to Australia for testing. We would like to see interest of Russian research institutes and laboratories to this subject and carry out joint experiments with them.

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News about Perendev Motor

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Perendev is Tooling Up for Magnetic Motor Mass Production in Europe

All-magnet motor poised to be first to reach market. German manufacturer licensed to manufacture 20 kw unit for Europe and Russia. Estimated cost for first units: \$8500 Euros.

JOHANNESBURG, SOUTH AFRICA -- For centuries, inventors have been claiming to come up with magnetic motor designs that use nothing more than the power of permanent magnets for the motive force; and for the same amount of time, mainstream science has responded that this is impossible. "It has been proven mathematically that no combination of permanent magnets in any arrangement will generate power."

History tells us that what has been proven in many people's back yards and garages does not always coincide with mathematics of the day.

Refusing to be daunted by what he considers to be petty dogmas of academic science, inventor Michael J. Brady of Johannesburg not only claims to have produced such a device, but reports that his company, Perendev Power Developments Pty (Ltd) is now in process of manufacturing it on a large scale for markets in Europe, Russia, and Australia.

Perendev's new website was published recently at Perendev-Power.com with the assertion that they have achieved the milestone of producing "the world's first fuelless magnetic engine."

Other inventors who claim to have built working all-magnetic motors would take exception to the Perendev claim to being the first, as stated on the site. Brady mentioned that he had noticed some inaccuracies on the wording on the site and that he would be addressing them.

What is yet to be attained by anyone is a market-ready device. If Perendev continues on the track claimed on its site, it could achieve that distinction, and set the hitherto balking scientists community into motion to come up with theories of why it works.

Brady estimates that the first units will sell for around \$8500 Euros, but that the price will decrease as volume sales increase.

The site features video footage of an earlier prototype running as well as computer simulations of the newer designs. The prototype video is not skeptic proof, as it does not do a walk-around during acceleration. Brady has been promising another video that would do a walk-around before, during, and after motor engagement and acceleration followed by disengagement and deceleration.

A page about the motor says that the motor works "by focusing the magnetic field, the angles of the magnets and a special method of shielding." Also, "the motor does not require external power to start up." Brady reports that tests run have shown no diminution of magnet strength over period of motor operation, which was two months in one instance.

As the stators become engaged, the three rotors with off-set magnet alignment begin to spin. The speed is controlled by a governor. Without the speed control, the device would accelerate to destruction.

Brady also states that a 4 megawatt unit is plausible with this design, and has been rendered in conceptual blue print form.

A German company has licensed the manufacturing and marketing rights for all of Europe and Russia, excluding the U.K., and is in process of tooling up to begin mass production.

Two other groups are in process of negotiating licensing terms with from Perendev. One is in the U.K., for rights to manufacture and market in the U.K., and the other is in Australia, for rights down under.

Brady brought a prototype to the Germans in mid March, and said they have been testing it since that time. The prototype has been undergoing testing by TÜV, a German consumer quality control agency.

The name of the German company will be revealed when they have finished tooling up and are ready to begin production, which Brady estimates will take place in a month or two. He said that these units will be consumer ready for application in home use, pending the stamp of approval from TÜV. Brady also plans to allow German television crews to document the device for public view.

Twenty kilowatts is adequate to handle the peak load of most homes. Ran continuously at that rate, the excess produced during average use, which is five percent of peak use, could be sold to the grid for a quick return on investment. It will put out quite a bit more than twenty kilowatts, said Brady. "That is what it is rated to produce continuously."

In May he reported to have tested the unit with a larger alternator rated at 60 kw "with very little degrading of the motor's performance."

Brady has been churning on this idea for thirty years, and actively developing it for approximately the last five. "We've been through hell -- no money coming from anywhere -- but we made it through." A German citizen working in South Africa for a Hollywood project came and talked to them and told them, "Let's put that behind us and move forward."

MUNICH GERMANY -- Mike Brady's claim to a working magnet motor, capable of putting out enough torque to run a 30kW generator continuously, has been a topic of interest for several years.

He has gone as far as releasing a video of the motor in operation, but has not followed up with a skeptic-proof video that shows a walk-around



Fig. 1. Perendev Magnet Motor, Nov. 18, 2004

during acceleration, rather than just during deceleration. He was going to do a big debut on German television last Fall, but a series of Murphy's law type of problems compounded, and that public launch never materialized.

Though the "30kW" capability is a more recent claim, surpassing earlier claims of 5kW and then 10kW, Brady has been touting near-market readiness for at least three years.

Around the time of the claim to a pending debut on German television, Brady had come upon a sizeable amount of funding. Part of that was manifest in the improved professional look of the Perendev-Power website. The site also featured a fancy animated version of the motor in action.

Perhaps because these public demonstrations did not materialize, Brady felt he had to show at least something. In the past few months, he has also been touting several new lines of technology, as if they are in-house and in the bag, from an energy spark plug to water treatment. In reality, however, at least one of them is held by a company out of Australia that had only discussed a possible arrangement with Brady, and had not actually solidified anything in contract form.

Presently, the Perendev-Power.com website seems to have taken a step backward. Perhaps another unpaid bill.

Another modification of note on the website is the addition of the statement: "In Association with EADS Space Transportation". In a telephone conversation, a representative of EADS said they have not heard of Perendev. Perhaps the word

has just not gotten around within EADS yet. I've submitted and email asking about this, and am awaiting their response.



Fig. 2. Author with Mike Brady, Dec. 2002, Johannesburg

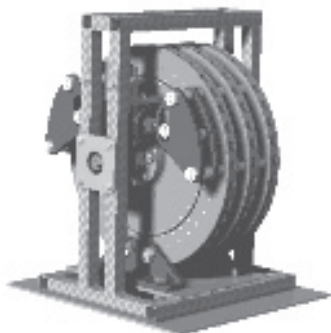


Fig. 3. June 17, 2003 Prototype Rendering

Like so many other inventors, Mike Brady tends to talk far ahead of himself. Part of that future vision in Brady's case includes dreams of dripping wealth. Though my first encounters with him gave me the impression of a person with an altruistic drive to help the planet, since that time it seems more apparent to me that for him, money and fame have become the primary driving factors. He expects to be paid today as if his device actually performs like he says it does, when in fact he has proven time and again to be misrepresenting just how far along he is.

He somehow seems to continue his work despite the clashes that inevitably occur when the optimism of the inventor disconnects with the rubber-hits-the-road practical nature of the investors and business partners. The further a technology is from the mainstream, the more pronounced this phenomenon seems to become. Those that are far enough away from the mainstream hardly get any money in the first place. Because of his prototype claims, Mike

has been able to bridge that gap. That does not mean, necessarily, that he really is just months away from market readiness. Anyone investing or considering investing there should be aware of this.

I wish him well. Meanwhile, I've mothballed PerenTech.com, to which Perendev.com points. However, just because the team I pulled together three years ago to manufacture and market Brady's device in North America wilted away a good many months ago due to delays and broken promises from Brady, does not mean that Brady's device will never materialize. It merely serves as a point of advice for any person or party intending to engage.

A Word of Caution

I have known Mike Brady since May 2002. At that time, when I inquired about his magnetic motor, he said, "yes the motor is running and almost ready for the market, only the commercial packaging [is] still to be done." You will see below, in a letter soliciting licensing and investment funds, that he is still representing himself and his company as being this far along with the magnet motor.

As one who has been intimate to the workings of Perendev (I own Perendev.com and I built a team to spearhead the manufacturing and marketing of his magnet motor in North America), and as one who has stood by Mike through much skepticism and criticism, I feel I need to issue a caution in regard to this most recent development, as it involves the actual solicitation of funds. Previously this has not been the case.

Since our team was unable to verify what stage of development Mike has really reached with his magnet motor and other technology claims, we cannot vouch for their readiness to be marketed. I do believe he has created something worth while. However, in the past I have observed him to exhibit a strong tendency to talk far ahead of himself, thinking he's much farther along than he really is. Therefore it is important to take all statements with a grain of salt, and independently verify any claims, which can be difficult not only because of the distances involved, but because of the difficulty of pinning Mike down at a time when he actually has a prototype to view.

I do not believe Mike is intentionally running a scam operation. He believes in what he is doing. I will say, though, that his integrity quotient is among the lowest I've ever encountered of those I would yet consider friends. He makes promises readily, but seems to lack a built-in drive to carry through with his promises or explain why he is not able to deliver as promised.

One of the most blatant and significant examples of this, from a business point of view, was his continued promise of patent information (never delivered) as well as a skeptic proof demo video (never arrived). The one video he did produce showed a walk-around after acceleration, not during. An in-person demonstration was sought and promised on numerous occasions but never materialized.

The first statement in the document for investing or licensing supposedly certifies that he/she "has had a full and complete opportunity to ask all questions concerning Perendev Power International AG and its proposed business operations" is problematic. Unless the new people Mike has aboard his company are more forthcoming in cooperating with potential investors by providing answers to important questions, this provision is not likely to be satisfied.

Another red flag is that the solicitation mentions three new products: "zero-point sparkplugs, friction free lubricants and UV water treatment products." There is no information at this time on the perendev-power website about these new products that are allegedly ready for market. You would think that if they really did have patents, they would put patent numbers next to each item claimed.

Furthermore, the statement says that there are no other products like these available. I can say that I've heard a number of claims to related magnet motors gearing for market. Mike's might be the furthest developed according to their public pronouncements, but we don't know the details about other groups who might be more discrete in their pre-market development phase.

There are several other anomalies about this solicitation, such as the high price for licensing and for stock shares.

My personal suggestion would be this. If you put money into this, be sure it is money you can afford to lose. Those who take risks in business don't do so recklessly. Successful venture capitalists read the fine print, check the patents, and attend the product demos; they don't put cash on the table for wishful thinking or vague promises. The old expression "caveat emptor" (buyer beware) is a good one to keep in mind for all types of investments.

I would hope that Mike's team can pull off a miracle and actually deliver to market one or more of the products they are presenting here. The ideas sound great. Maybe some day Perendev-Power will be a tremendously successful company. Any company at its outset has its weak points, including flaws in personalities and even some thin areas in its individual and group level of integrity. Successful companies are able to weed out those weaknesses, pull together on a proper footing of good business practices, and ultimately offer pre-tested, viable products to investors first and then to customers.

Be sure to do your due diligence such as seeing the relevant patents claimed. Don't depend on this coming through anytime soon, if at all. It's not just about whether or not the technology is viable, but it hinges on whether the business team can pull it off. My hope is that they will, for the sake of the planet

Perendev Power Taking Orders for Magnet Motors

Manufacturer wishes to gauge level of interest. No monies accepted until delivery ready.

MUNICH, GERMANY -- Perendev Power Developments declares on the news page of their website that they are now ready to take orders for their permanent magnet motors. Magnetic forces are the driving power, eliminating the need for outside input of fuel or electricity of any kind. Combined with an alternator, the unit is said to produce 20 kilowatts -- more than enough to handle the peak load of most homes.

Perendev does not yet have units ready to ship, though they claim that they have had several working prototypes and that they have had some independent testing run on their devices, and that

they are gearing up to be able to volume-produce the product.

The purpose of inviting advance orders is to enable the manufacturer to gauge the level of interest in the product.

As similar claim was made around two years ago on Perendev's web site, any interested parties are advised to keep their hopes in check. This is a noteworthy development, but until actual product is being delivered, the news is not yet groundbreaking.

Managing Director and inventor Mike Brady states that Perendev will not accept any payment up front. Rather, they will keep the client advised as to the timing for delivery. When the product is ready for fulfillment to a particular customer, then Perendev will request a 50% deposit. The balance for the unit is to be paid upon proof that all shipping documents are ready to go and fees have been paid.

Brady anticipates that the unit will cost between 9,500 and 10,000 Euros.

Shipping costs will be paid by the client, and are expected to be rather high due to the size and weight of the unit, and due to the fact that the unit will need to be packaged in such a way as to not emit strong magnetic fields.

Consumers are advised that while this development sounds exciting, there are chilling bureaucratic obstacles to bear in mind at this early stage. Most countries require national laboratory certifications of safety and performance, such as Underwriter Laboratories (UL) in the U.S. or "CE" (European Union standard) in Europe, in order for an electrical device such as this to be used legally. Non-compliance can result in loss of fire insurance or other penalties, forcing the market to target at first mainly off-grid applications.

Shipments to countries where the product is still officially unknown could incur delays as the necessary bureaucratic clearances will need to be established.

Torque applications such as for automobiles or industry may also trip over bureaucratic

stipulations, removing the romance of the notion of simply installing the device and having "free energy." Obstacles in the way of obtaining proper clearances are significant and must not be overlooked.

Extensive field tests and results will need to be compiled before such certifications will be granted. Furthermore, a new product such as this is bound to have performance issues, despite the rigorous pre-emptive engineering to avoid the same.

How well will such a unit be able to provide a stable power input for commercial application? Modern electrical appliances are designed to operate within a certain window of electrical input, including the right frequency as well maintenance of the proper energy level. What happens to the magnets if they get too hot in an enclosed shed or vehicle under intense summer sun? What happens to the rotating magnets if the unit is jarred in a collision?

Possible health implications of such strong magnetic forces may lead to calls for health-and-safety studies, which are very expensive and long-lasting affairs. Whether these studies would result in a finding of safety, and consequently in issuance of permits to install such devices in or near human habitation remains unknown.

Even if Perendev had units ready to ship today, this field is early in a pioneering stage. It will be years before such a technology becomes commonplace even under the best of circumstances.

These issues, and more unforeseen issues that will arise, will need to be ironed out. It may take years of stable performance history in pioneer settings to gain the level of consumer confidence required for such a device to become as ubiquitous as the computer.

Meanwhile, for those of an adventurous spirit, who understand the risks and restrictions at this early stage, Perendev is taking orders.

While they do not yet have a unit for public display, Brady anticipates that they will have one soon. "Possibly Dec. 17," he said. He hoped

to have had one several months ago, but Murphey's law seems to have ruled otherwise.

Part of that delay can be ascribed to the fact that Brady, as an inventor, is never satisfied with something that works now, if he can see a way to improve it -- and as an inventor, he will always see the next improvement. Two days ago, he reported that he is changing the number of magnets in the stator from 6 to 18. That was supposed to have been done today.

As long as he is in a controlling role in the company, and as long as he continues to have new ideas, this creative cycle will continue. While that is good for the technology, it spells perpetual delay for impatient consumers and business associates who want it now. Although through an inventor's eyes, that see each detail of progress, continually unfulfilled deadlines represent additional milestones that needed to be made, the delays tend to spell "fraud" in the minds of many of those impatiently watching and waiting, either as customers or associates.

Brady is confident that his day of vindication is soon at hand -- and has been for years.

Some feel he should follow the example of the computer industry and simply release the early models, although drawing-board concepts have already made them obsolete. Upgrading performance and capacity on a regular basis is a standard practice in many industries. Taking orders is a good first step -- again.

Perendev Magnetic Motor Analogue Winds Down

Kieth Anderson says he saw the Perendev motor running, and that his group has built two different working magnetic motor designs, including one that is analogous to the Perendev, but that they all depleted their magnets under load.

Message 1

From: "Keith Anderson"
<keith@purescience.com>
Date: Mon, 18 Oct 2004
Subject: Re: New perendev replication

I have seen first-hand three magnetic motors running and have written cost feasibility and

reproducibility reports on all three. Two of them I had in my lab and my staff used the inventors' plans to build several working replicas. We also went and saw, first-hand, the Perendev device.

All three designs used "Rare Earth" magnets (Neodymium, or more correctly stated, Neodymium Iron Boron or NdFeB) and our various reproductions used NdFeB, SmCo and Ferrite magnets. We did not attempt to reproduce the Perendev device because of its design proximity to one of the other two.

The results were always the same: they all run down. Under load, they run down very quickly. It doesn't take very long for magnets to lose their magnetism when they are constantly being put in opposition to one another.

Every magnet has a "maximum energy product" rated in Mega Gauss Oersteds, MGOe. This is the amount of work a magnet can do before its level of magnetism has deteriorated to the point that its energy doesn't reach out far enough to affect anything surrounding it. Contrary to the popular notion that rare earth magnets are invincible, even the most expensive sintered NdFeB magnets max out at less than 50 MGOe. If they are used in a device that puts them constantly in opposition, they will run down, and this is the whole assumption behind so-called "magnetic motors".

The amount of energy used in manufacturing a magnet is typically 10 times what the magnet is capable of producing. More expensive magnets are even less efficient. Add to this the losses in energy incurred by these 33%-66% concept magnet devices themselves, and the energy consumed in the overall manufacturing process is 20-25 times the energy you will get out.

There are situations where these types of devices may be useful, but they are not "free energy", nor do they represent any sort of "overunity" phenomenon, nor any solution to the energy crisis.

Message 2

From: "Keith Anderson"
<keith@purescience.com>
Date: Mon, 18 Oct 2004
Subject: Re: New perendev replication

Without putting the magnets in opposition at some point during the cycle, and probably for at least 33% of the time, you will have the same problem that exists with the many hypothetical gravity motor designs that don't work. What goes up, comes down. Nothing will simply come down without having gone up first.

You have to treat magnets a lot like springs from a design standpoint, although the mechanics of magnetism aren't as simple as that of springs. There are billions of spring-powered motors in the world: clocks, toys, etc. They all run down. Nobody will ever design a spring-powered motor that runs forever without winding.

Message 3

From: "Keith Anderson"
<keith@purescience.com>
Sent: Wednesday, October 27, 2004
Subject: RE: your visit to Perendev

My company was paid to evaluate the Perendev device, and it was brought to Colorado during the summer of this year. As with the case of many of our contract jobs, the identity of the client and details of the testing process are confidential, but because the general results are so similar to the others we have tested, it wasn't a breach of our confidentiality agreement to state the general result in the "Energy2000" group. It should also be noted that the Perendev device is not a novel design, and the patent is therefore subject to legal challenge.

I'm not so arrogant as to believe our tests are 100% conclusive, but it's a fact that magnets are not "permanent", and because they are the sole source of energy behind the Perendev device and similar inventions, they are not a persistent or inexpensive source of energy. You might consider the diversionary/science kit market as an option for the Perendev design.

Message 4

From: "Keith Anderson"
<keith@purescience.com>
To: "Sterling D. Allan"
Sent: Wednesday, October 27, 2004
Subject: RE: your visit to Perendev

My parent company is Solar Thermal Energy Project (STEP) Corporation, and the STEP

Group of Companies, with multiple locations, but will soon be consolidating to Utah where our \$50 million STEP Solar Energy Park will be under construction starting next year.

The company that paid for the evaluation was someone interested in the Perendev device from a business standpoint, and they hand-carried it to Colorado where we tested it. I am unsure whether it was the original machine or a duplicate. We were paid in advance to perform the tests according to a negotiated contract. This is an old client, and confidentiality is part of the reason they keep coming back to us.

I have recently been directed to the Perendev web site where videos are shown of an operating Perendev magnetic device. I can confirm that the device does, in fact, spin as shown in the video. I can also say I was surprised at the claims they make on that web site.

Counter Point: Magnets Don't Demagnetize When Kept Within Their Rating

People know that in a car, you don't run the engine rpm's up into the red line, and certainly you don't go above the red line without risking your engine, not just for that moment, but henceforth. You damage the engine.

Same thing holds true of magnets. If you stress them, they will demagnetize. This has been shown in the laboratory. Magnet specialists know what a magnet's capabilities are, and know what the magnet's limits are.

If a magnetic motor is designed to stay within the magnet's tolerances, then conceivably, demagnetization should not occur.

Holds True in Electro-Magnetic Motors

"There are many Permanent Magnet motors in the world that continually apply similar magnetic loading forces as what the Perendev motor might experience. As long as the motors are not abused and properly cooled (and not overloaded or stalled in locked rotor mode), the magnets typically last for thousands of hours.

"However, if the motor is overloaded such that the magnets get too hot, they will lose their power (or "Demag" themselves). This is why cooling and proper loading is absolutely critical – even more so here as you don't have an auxiliary source of energy as in typical electric motors."

Sterling's Comment -- Wind Turbine Analogy

If a magnetic motor were feasible, I had envisioned that it would be operating like a turbine -- tapping into some magnetic field in a way not yet fully understood by science. I would like to think that

Mike Brady will yet come through. He claims to have tested the gauss of his magnets and that it does not weaken in any detectible way.

Mike Brady Knows of No Test in Colorado

Kieth Anderson replies that he cannot divulge client specifics. What he can say is: "Prior to the contract we were told it was the Perendev motor and were referred to the web site. I don't believe we had any further conversation about the origin of the device." [Speculation: could be a reverse engineered job]

Gravity engine

**A.N. Sakharov
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Is it possible to make the earth's gravitational field serve as an energy source? Not all people consider this question absurd. Numerous attempts to design engines able to produce work without energy consumption, which use the influence of gravity of weights moving in a closed cycle, are known. Engines of this kind were called a "perpetuum mobile" or a "perpetual motion machine" because their energy source is an inexhaustible gravity force.

"Orffyreus' wheel" set in motion by weights moving inside the wheel and creating a non-central moment of forces during rotation of the wheel was famous in the beginning of the XVIII century. The wheel not only rotated continuously with a frequency of 26-50 rev/min depending on its size but also allowed producing yield, for example, rising a weight with a mass of 16 kg at a height of 1.5 m. Over dozens of years, Orffyreus openly demonstrated different models of his wheel. Its operation was repeatedly tested by famous scientists and official establishments. A German prince, Karl, who knew its design, gave him a certificate for the Orffyreus' perpetual motion machine with the speed of 26 rev/min and able to produce yield. Under the control of a competent commission, in 1717, the wheel

operated for forty days in a closed sealed up room and it was still rotating with the speed of 26 rev/min when a sudden check-up was carried out. The experiments continued while the wheel was repeatedly removed and the committee thoroughly searched for a possibility of hidden wires' existence.

Peter the Great was interested in the engine after he had been convinced in its efficiency by people whom he trusted. He was even going to buy it at a fabulous price; however, his unexpected death prevented this project. Despite the fact that one of Orffyreus' supervisors was Professor W.J.Gravesande, a close friend of Newton, the scientific community could not bear with the possibility of the perpetual motion machine's existence. Some people even offered a big sum of 1,000 marks to a person who would expose Orffyreus. Besides the fact that this prize stayed unclaimed, the scientific community was reassured by the appearance of a lampoon, which explained the effect of the invention as the following: supposedly, a thin rope was attached to the wheel's axle and a brother or a maidservant of Orffyreus made the wheel rotate with the help of this rope. An author of the lampoon said that this exposure was caused by a fight between them and Orffyreus.

Despite ineptitude of such an "exposure", the scientific community could more easily believe in the complete incompetence of Professor Gravesande, prince Karl and other respectable participants of numerous tests of Orffyreus' wheel than assume the possibility of existence of a phenomenon, which was beyond the established ideology. In 1775, Paris Academy of Sciences refused to consider perpetual motion machines at all because they did not exist. And the same Academy refused to consider the existence of meteorites because the possibility of stones falling from the sky was thought absurd. After the law of energy conservation had been formulated in the XIX century, the question of the possibility of perpetual motion machines' existence was finally buried as contradicting mathematical and physical laws. A paradoxical situation often happened when a working device posed as a Perpetuum mobile was demonstrated but no scientifically grounded refutation followed. Usually such a situation ended up with a magazine lampoon, as it happened in the case of Orffyreus' wheel.

A perpetuum mobile model shown at Paris exhibition in the middle of XIX century can be an example of such a pseudo-exposure. The engine had a form of a continuously rotating wheel with weights moving inside it. People interested could stop it by making a strong effort; after that the wheel continued rotating. A journalistic "exposure" of the perpetuum mobile was a presence of a spring in the wheel. Ostensibly, the spring became twisted during the device's stop and was a source of rotation energy. It is interesting that no scientists disputed such an "exposure".

How can the law of energy conservation work if the engine's wheel continues rotating while energy is always spent for its stop? Possibly, there was a flywheel inside a wheel with the spring attached to it, which became twisted during the wheel's stop by the flywheel's inertia while a locking device connected to the frame prevented the flywheel from untwisting. Thus, the spring created the effort necessary for starting the wheel's motion after a stop. Further motion could happen only due to the weights' motion inside the wheel. By the way, Orffyreus' wheel needed an effort imparting initial velocity of rotation, too.

Undoubtedly, due to the shirking position of the scientists, many perpetuum mobile projects originated from wrong suppositions but this does not mean that all demonstrated models were the results of a counterfeit or incompetence. An objective of real science is the search for truth instead of conservation of the previous paradigm at any price. That is why, if there are facts contradicting it, they should be objectively studied and, if necessary, the science paradigm should be changed instead of rejecting the facts without grounds.

The regular crisis of physics happening in the end of the XX and the beginning of XXI centuries makes scientists revise many physical theses. For example, the question of existence of aether or "physical vacuum", which is a medium having inexhaustible reserves of potential energy where electromagnetic waves spread, is the order of the day again.

The existing idea of the nature of matter and force fields, particularly the gravity one, must be revised. Finally, it is time to understand what the fundamental concepts, force and mass are because physics is still satisfied with the ideas of the XVIII century, when force was determined by mass and mass was determined by inertia. And it is still not understood what inertia is. Probably, the scientific paradigm, particularly the physics' one, can greatly change soon. The changes can also concern the existing interpretation of the law of energy conservation and, therefore, the scientific approach to the possibility of designing of the perpetuum mobile, i.e. a device able to produce yield using energy from a force field or directly from physical vacuum.

In order to hasten this process, besides a description of another perpetual motion machine's design given in this article, it is suggested to consider its validity from the physics' point of view not overstepping the limits of the existing paradigm except the ban against the possibility of such a machine's existence.

A basic model of the suggested gravity engine consists of hollow cylinders with pistons fixed at a flexible base of the type of a closed belt. The base is stretched on two freely rotating wheels with axles, placed one under another, fixed on the frame. Moving around the wheels, the belt with

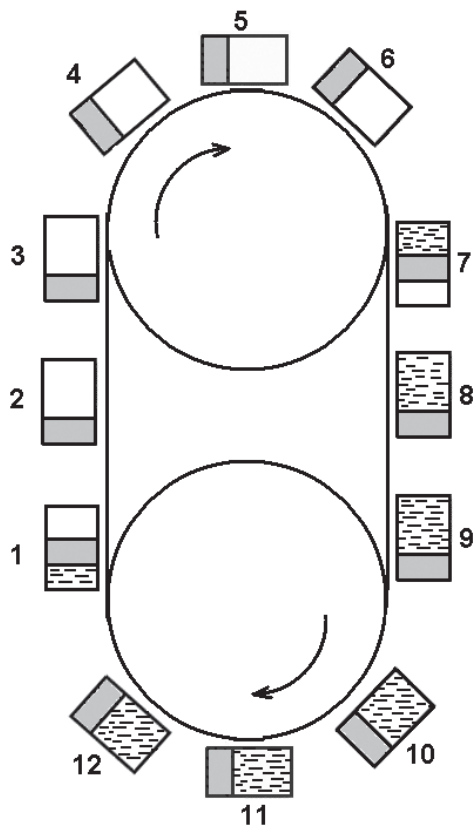


Fig. 1

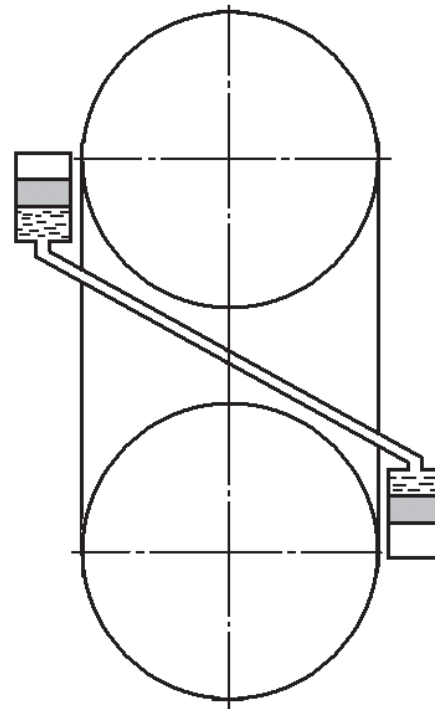


Fig. 2

the cylinders can move in the vertical direction in such a way that, on the one side of the device, they go up while, on the other side, they go down. The cylinders are equally spaced along the belt and fixed by their sides in such a way that a bottom of each cylinder is placed opposite the open side of the cylinder next to it (Fig. 1). There is a useful capacity in each cylinder, which is bounded, on the one side, by its bottom and, on the other side, by a free-moving piston, a massive weight attached to its external side. A connecting pipe is fixed into each cylinder's bottom, an end of a flexible hose put on it, while another end of the hose is put on the cylinder's hose, which is placed on the belt in the diametrically opposite position (Fig. 2). Flexible hoses connecting useful capacities of each couple of the cylinders (1-7, 2-8, 3-9... and so on) through the houses can be fixed on the belt, where the cylinders are fixed. In the vertical position of the system, the weights with the pistons will go down under the influence of gravity force. On the left side, the piston of each cylinder will go to its bottom while, on the right side, to the

contrary, each piston will move away from the bottom as much as the cylinder's length allows and completely empty its useful capacity.

If we will move the belt clockwise, the pistons inside the cylinders will move in such a way that one whole useful capacity will account for each couple of the cylinders. The belt's motion will be limited only by friction force because motion of the pistons with the weights inside the cylinders must not change the impulse of the whole system due to the fact that their motion is carried out in the left and the right cylinders at the same time and completely neutralizes their influence on the belt's motion. Thus, we can assert that, if there are no friction forces, no energy is needed for the belt's motion. If now, when the cylinders' position is fast, all empty useful capacities are filled with water (or another liquid) and connected with houses, it will be found that, on the right side, there are more vertical cylinders filled with water than on the left side. Due to the fact that the weight of the right cylinders will be heavier than the

weight of the left ones by the weight of the water filling the useful capacities, an additional force will influence the right side of the belt and create a rotary moment of the systems:

$$Z = mgNR \quad (1),$$

where m is the mass of the water in the useful capacity; g is the acceleration of free fall; N is the number of the cylinders filled with water in the vertical sector of the belt; R is the wheel's radius.

Thus, the belt will rotate clockwise. When the cylinder filled with water will pass the lowest point and occupy a vertical position, the piston will press the water out of the cylinder under the influence of gravity force. At the same time, in the upper cylinder, which is connected with it, the piston will go down under the influence of the weight and draw the water from the lower cylinder into its useful capacity. Both weights will operate in the same direction under the influence of gravity force overcoming a pressure of a liquid spout with height H (where h is an upright distance from the bottom of the left lower cylinder to the bottom of the right upper one). A condition of the water raise will be determined by the excess of the sum of pressures created by two weights over a pressure created by water spout H :

$$2Mg/s \geq \rho gH \quad (2),$$

where M is the mass of the weight; s is the sectional area of the cylinder's useful capacity; ρ is the specific density of the liquid.

it follows that an optimal height of water rises:

$$H = 2M/sp \quad (3).$$

Due to the fact that, if the lower cylinder is located vertically, the water from it raises up to height H in the upper cylinder, which is connected with it, the system increases its potential energy by a value of

$$E_0 = mgH \quad (4)$$

under the influence of gravity force inside the cylinders. The water mass corresponds with the cylinder's useful capacity:

$$m = \rho sL \quad (5),$$

where L is a length of the useful capacity.

Using (4) and taking into account (3) and (5), the potential energy increase can be expressed as

$$E_0 = 2MgL \quad (6),$$

which is equivalent to the work produced during motion of the weights under the influence of gravity force in both cylinders.

Thus, the described system is a gravity engine of perpetual mobile type able to produce yield using only gravity force.

Thus, the gravity engine's power will be determined by a quantity of the cylinders passing through a permanent point of the system (n) per second and efficiency (η) taking into account friction losses:

$$W = nE_0\eta \quad (7)$$

Under permanent speed of the belt's motion (V):

$$n = V/(L+d) \quad (8),$$

where d is the interval between adjoining capacities of the cylinders. Putting (7) into expressions (6) and (8), we obtain an expression of the power as:

$$W = 2MgV\eta L/(L+d) \quad (9)$$

It can be seen that a maximal power can be obtained by a possible increase of the belt's motion and placing the cylinders on the belt with minimal allowable intervals.

However, it is early to talk about efficiency and future possibilities of the gravity engine without making an experimental test.

The author would be thankful for critics and discussion the model proposed.

Arctic squall will heat up paradoxes of gas structures

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Conditions of the Russian North are rough, especially taking into account the insufficient energy carrier's supply. When a man is in difficult straits, his nature makes him think keenly in order to find resources. The suggested gas-dynamic heating system corresponds with such an approach. I think this system will become important (but I regret that it will be so difficult to find an "understanding" investor).

As early as in 1852, W. Tomson invented a "dynamic heating" aiming to take the internal energy of dank London smog by work inputs (during coal firing). An operation of such a heat pump is based on a so called refrigeration cycle (heat transfer to a higher temperature level). Tomson's idea was realized in the XX century as air-conditioner split-systems, which are in almost all offices now.

But tundra is not an office. As a rule, there is no place to put an air-conditioner's plug into there.

I call readers' attention to a completely autonomous kind of heat pump.

The gas-dynamic heating system takes heat from cold wind, which is an actuating body. First, the actuating body is pressed by a mechanical energy of wind (a work, which is necessary for "reverse" cycles). A heat gathering tool is a thermotransformer, a reliable device without moving parts. Its operation includes direct and reverse thermodynamic cycles.

A number of thermotransformers are known (even thermochemical ones). In the gas-dynamic heating system, I provided for a combined use of a vortex thermotransformer and a so called "resonance pipe". When used together, the vortex and the "resonance pipe"

mutually strengthen each other increasing heating coefficient of the system. Processes taking place in these devices will be described below. I must note that any given explanation of a thermotransformer's operation will find its opponents (different scientific schools have no accordance concerning this problem). But it is absolutely obvious that the vortex device can considerably shake the academic hydrodynamic views. I will concentrate on this later.

A vortex thermotransformer was invented by a Frenchman, J. Ranque, in 1931. In his simple, as all great things, invention, complicated processes based on structuring of the actuating body occur. Some aspects of vortex structures were described in my article "Marshal Vortex" ("Engineer, 1993. #45). Many interesting things can be found in sources [1], [2], [3]. Vortexes have become a favorite object of synergy's study not without reason. Vortexes' tendency to self-organization is sometimes displayed quite nontrivially. For example, at great ocean depths, hundreds of quickly rotating discoid objects – lenses with a diameter of up to eighty kilometers were discovered [4]. The lenses are formed during seawater flowing into the ocean; they live up to ten years keeping their initial hydrologic properties! These structures are a typical example of so called anti-entropic processes (the processes when complex items are formed from simpler ones).

Let us return to Ranque's vortex thermotransformer. Due to tangential lead in of the pressed gas into an energy division chamber (Fig. 1), a complex vortex flow is formed, which has a huge radial temperature gradient. The initial one flow is divided into a cold part led out from a diaphragm and a hot flow led out through a throttle. Ranque's energy

A new view on thermotransformation process allowed me to invent a new kind of a thermotransformer with better energy efficiency. I am searching for an investor (for patenting and realization).

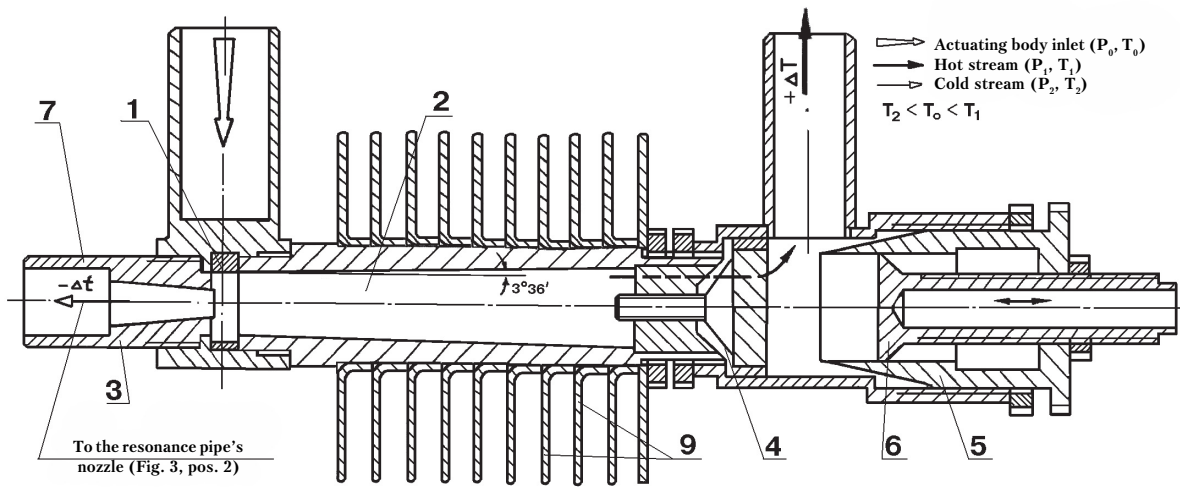


Figure 1. Ranque's vortex thermotransformer (the classical design)

1 – spiral gas supply; 2 – energy division chamber; 3 – diaphragm; 4 – throttle-unswirler; 5 – resonator (a noise blanking device); 6 – reflector (adjustable); 7 – fitting for cooled gas outlet; 8 – counter-nut; 9 – external beading.

division chamber had a form of a tube. Its forms have been improved over seventy years; this can be seen in Fig. 1 (an internal cylinder-conic cavity, a resonator for noise blanking, an external fanning). It is still unknown how thermotransformation occurs, though there are a lot of theories claiming to explain this process [5]. It is impossible, for example, to base the thermotransformation explanation on the molecular-kinetic theory (including centrifugal and pressure forces in a model) because molecules moving along a free path run, as it is well known, uniformly and in straight lines. Attempts to use average environmental parameters in the thermotransformer's chamber will lead into a dead end. In 1895, Osborn Reynolds suggested to describe a kinematics of the vortical motion on basis of statistical (probabilistic) characteristics. But even now manuals (for example, [6]) impose such a disputable approach.

If we translate a “probabilistic nature” into ordinary language, it means that vorticity is an effect, which occurs sporadically, i.e. it is a rather vague, unstable substance. Then, this ephemeral instability can easily, for instance, cut a tail unit of ?300 aerobus (as it happened above a New York suburb on the 12th of November 2001. And a vortex trail of a Japanese air liner, which

took off a couple minutes earlier, was just the “instability”). However, a life time of an air structure (the vortex trail) is much less than that of the above mentioned vortex lenses.

I think it is obvious now that it is rather difficult but also very important to describe the energy division process. It must be taken into account that Ranque's vortex device is the first example of the anti-entropic systems designed. If an initial gas in the chamber is expanded, entropy (a disorder degree) decreases! A Nobel Prize laureate Ilya Prigozhin has created thermodynamics of irreversible processes. But even it cannot completely explain the discrepancy between real processes in the vortex thermotransformer and theoretical consequences of the second law of thermodynamics. It remains only to be happy because scientific orthodoxes have now less opportunities to hamper anything, which does not fall into their a priori patterns. I will give a historical fact, which directly concerns the article's topic.

In the beginning of the 1960th, the Soviet press attracted attention to a phenomenon of “Babiegorodsky pereulok”. In a basement of one of the houses of this Moscow side street, a group of physics (“odd fellows”) found out that

their experimental device produces more heat than it consumes electric energy. After discussions, which took place during a year (while the main arguments concern “Materialism and empirical criticism” work and not physical laws), a label of a “pseudo-science” has been stuck on the experiments. The object of this “ostracism” is interesting: the enthusiasts have designed... a prototype of the heat pump outstripping western and Japanese producers of air-conditioners of “winter-summer” type for two decades! At that careless time, when everyone took a great interest in growing corn beyond the Polar circle, an invention of a 23-years-old lieutenant, Vladislav Ivanov, was rejected. The invention was a computerized tomographic system. In 1983, after 23 years, Ivanov obtained an already completely useless author's certificate # 1112266 for “the method of determination of material bodies’ internal structure”. Americans P. Lauteburg and R. Damadian gained public acknowledgement as inventors of the tomographic system. It was too late for us.

Vortex thermotransformers were luckier because they came from the West. Scientific bureaucrats traditionally considered foreign innovations important (I.V. Stalin made A.N. Tupolev copy “a flying super-fortress” B29). It is interesting that it did not prevent Stalin from imprisoning others for “the blind worship of the West”. Soviet researchers A. Merkulov, A. Azarov, A. Martynov, Sh. Piralishvily, V. Volov and others have considerably developed “the point of increase” determined by Ranque and a German researcher Hilsch. Domestic “vortexes” are successfully operating in all known media but in a rather limited range of actuating bodies’ consumption (by an order less than the gas-dynamic heating system requires). It is helpful that vortexes can use cold actuating bodies (an adiabatic efficiency increases during cooling of a wall of the energy division chamber). Hence, we can easily lead an arctic wind in a package of transformers (pos. 3, Fig. 2), if we caught it previously by an air intake and pressed it. This “expropriated” heat is led to radiator 5 heating the object. I am not going to discuss how to press the actuating body.

Let us now speak about a vortex’s partner, i.e. a resonance tube. In it, a gas flow is ordered (we have to do here with a periodic wave structure). I do not know whether Ranque discovered his effect

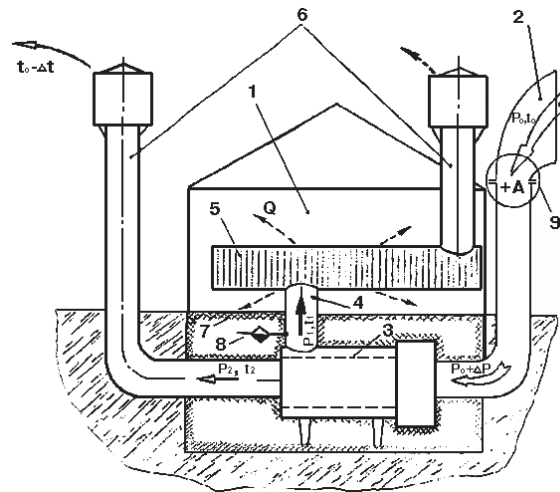


Figure 2. A scheme of dynamic heating. Its “cycle operation” is made by cold wind

- 1 – heated object; 2 - air inlet (turns to wind);**
- 3 - thermotransformer ; 4 - fitting warm air outlet;**
- 5 – radiator; 6 - discharge pipes with aspirators;**
- 7 - thermo-insulation; 8 - hot-well;**
- 9 - functional pressure block.**

by accident, but Schprenger’s effect, which underlies the resonance tube’s operation, was discovered by chance during analysis of industrial objects’ accidents (particularly chemical plants). It was found out that braking of a high-speed gas stream in a half-open space (a “glass”) can cause blast waves, which bring the “glass” to a great heat of up to thousands of degrees (a “storm in a teacup” can be terrific!). In order to reproduce the effect, Schprenger determined interconnections between a geometry of a setting (a nozzle and the “glass”), a speed and a pressure of the stream of the “initiating” gas. This allowed finding an engineering application of the effect. Simple and reliable fuse-devices for gas are one of the examples of the effect’s use. The process has a resonance nature; that is why the device was named the “resonance tube”. In Russia, “resonance tubes” have being also actively studied as cryogenerators (the gas gives heat to the “glass” and, according to the energy conservation law, refrigerates).

Thus, the “resonance tube” is just another type of the thermotransformer, simpler than the vortex concerning the geometry calculation but having less efficiency. In my opinion, both devices will perfectly work together. A more complete heat gathering is achieved by directing a cooled air from the nipple 7 of the vortex thermotrasformer (Fig. 1) in nozzle 2 of

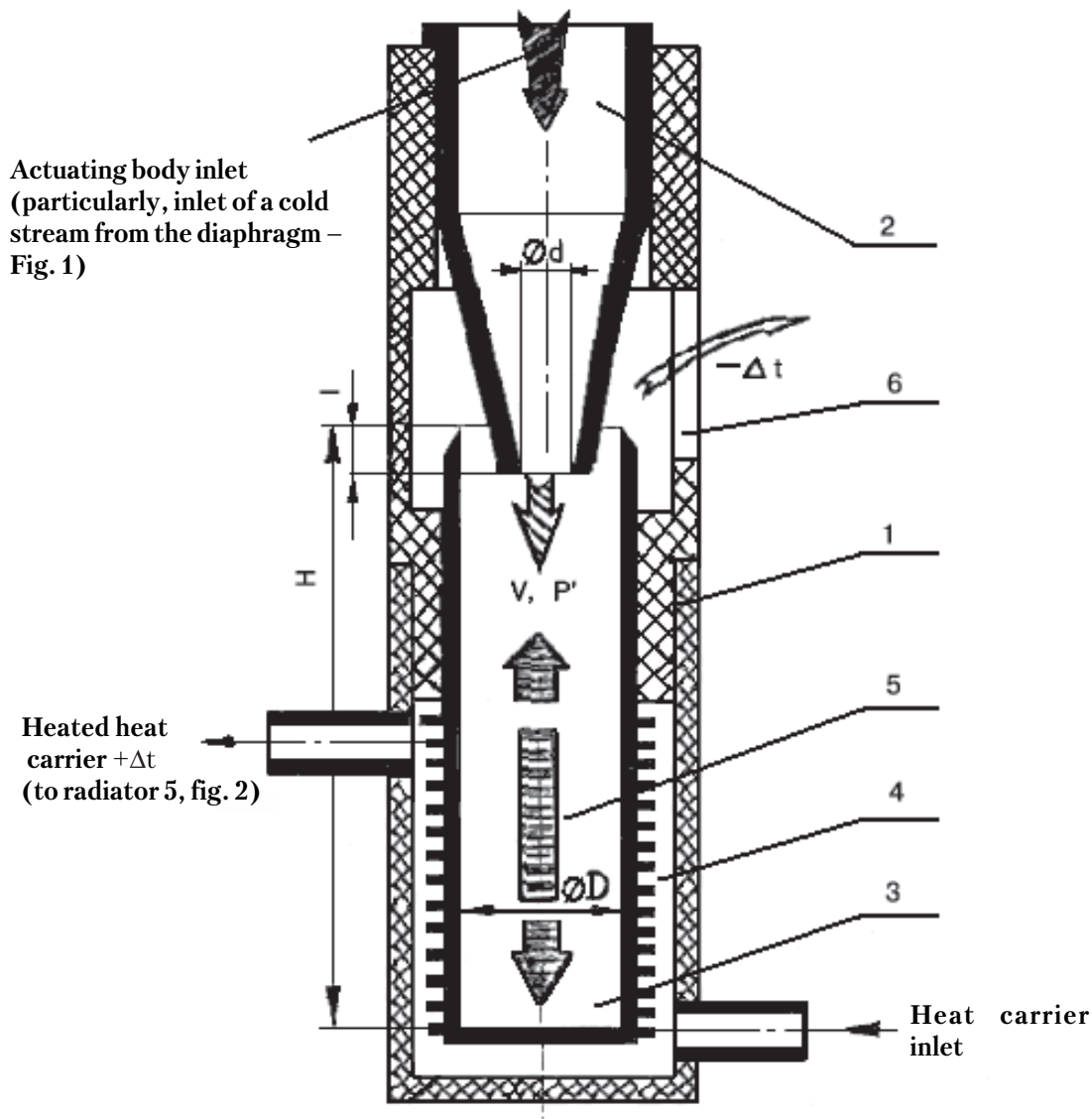


Figure 3. Resonance pipe

1 – body; 2 – nozzle; 3 – cup; 4 – heat exchanger; 5 – regular pulsation zone; 6 – opening for cooled gas outlet.

The conditions necessary for thermotransformation are the following:
 V – stream speed (a function of pressures P and P' and also of the nozzle's form);
 Certain mutual ratios expressed by dimensions H , l , D and d .

the resonance tube (Fig. 3); the exhaust flow from the vortex thermotrasformer is not wasted but transformed into the actuating body for the “resonance tube”. The author knows no attempts to use the vortex thermotrasformer and the “resonance tube” with as much actuating body’s consumption as it is in the gas-dynamic heating system. Although its elements are known separately, they obtain new properties being combined like that and allow thermostating objects, which are remote from electric energy supply (in field conditions).

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VORTEX LIQUID HEATERS

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1. Vortex liquid heaters (VLH)

Recently, between the millenniums, a lot of materials concerning the excessive heat generation by VLH have been published.

According to the words of VLH developers, these heat devices belong to hydro-dynamic type and are remarkable for an unusually high efficiency, i.e. a ratio of the produces heat to the consumed energy. For example, numerical values of the efficiency of heatgenerators suggested in sources [1], [2] almost reach one while values of the generators suggested in [3], [4] exceed it within the limits of a possible mistake of calorimetric measurements and values of the generators suggested in [5], [6] and [7] exceed one by a few times! Are vortex liquid heaters extra-efficient?

All VLH, in spite of the variety of their designs, are noted for two common peculiarities:

- only liquid, mainly water, is used as an actuating body;
- the water is specially mechanically treated. The treatment is called mechanoactivation. Mechanoactivation process consists in that water is rendered moving in complex irregular way by mechanical influence. Choose of motion type imparted to water is made, as a rule, using "the more complex the better" principle. There are no reasonable theories and well-founded selection criteria considering this.

Choise of a motion type imparted to the water is made, as a rule, using a "the more complex, the better" principle. There are no reasonable theories considering this.

it is possible to find three main types of VLH:

- passive tangential,
- passive axial and
- active.

Passive ones are VLH of the static type, which do not contain moving parts in devices of the liquid flow formation. Mechanical activation in these generators results from interaction of moving liquid with motionless elements of the work chamber, which are made and located in such a way to turbulize the flow as much as possible.

Passive VLH are distinguished by the method of liquid flow bringing in the work chamber, which can be tangential or axial.

Active VLH include generators, where mechanical activation of the actuating body results from influence of generator's moving activating elements on liquid. The elements can be rotating, swinging or moving in a complex way.

Method of liquid flow bringing in the work chamber of the active VLH has no fundamental significance. The motion type of the moving activating element is more important for this type of generators.

It is important to note that passive VLH with tangential bringing in of the liquid flow by no means is not a modification of widely known vortex [7] based on Ranque-Hilsh effect and assigned for thermo-transformation of a gas flow. Often met analogies (even among authors of VLH!) with vortexes explain nothing and only create confusion. Fundamental difference of VLH from Ranque's vortex consists in absence of gaseous actuating body [1], hence, it is a question of cardinally different working processes.

Let us consider a design philosophy of each of the distinguished groups.

Basic elements of this device are stream-twirling device 1, work vortex chamber 2 with

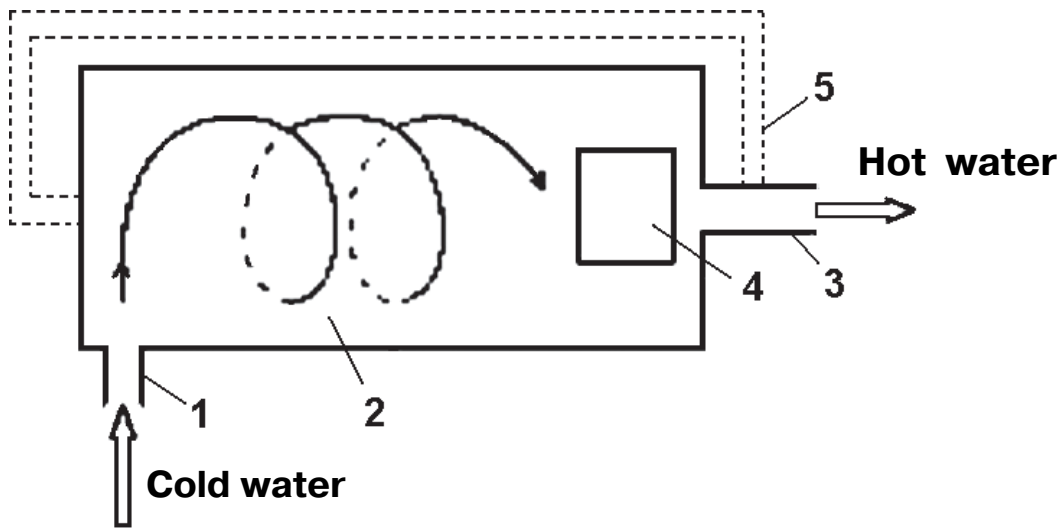


Fig. 1

outlet fitting 3 and brake device 4 (see Fig. 1). Sometimes the VLH has additional overflow pipe 5.

In the simplest case, the stream-twirling device of the generator is made in the form of an inlet fitting providing for bringing in a coldwater flow from the force-pump to the the periphery of the vortex chamber. In the cylindrical chamber, the flow twirls and moves to the axled outlet fitting where it is hampered by the specila device. In the process of vortex motion and braking, the liquid in the work chamber is activated, heated and hot water flows from the outlet fitting. A part of hot water can be transferred from the outlet to the inlet through the overflow pipe in order to improve a VLH's efficiency.

In modifications of vortex generators, stream-twirling devices are made with screw or spiral profiles of work chambers, with uniform or

converging cross-sections, with one or more work chambers, with one or several tangential inlets, with inlets in the form of swirl atomizers etc. [2], [8], [9], [10], [11], [12], [13], [14].

Work chambers of these heatgenerators can be single straight-flow, double counterflow, cylindrical, conical, of complex form (up to toroid one) etc. [15], [16], [17], [18], [19], [20], [21], [22], [23].

Designs of brakes are also various: from streamline bodies to straightener blades [6], [17].

A passive VLH with an axial inlet of the liquid flow is even simpler. Its main elements are work chamber 1 with inlet fitting 2 and restriction 3 with outlet fitting 4 (see fig. 2). Sometimes VLH has additional flow former 5. The restriction of such VLH (a diaphragm, a nozzle, a throttle, a draw plate etc.) is usually a partition with a hole installed in the work chamber.

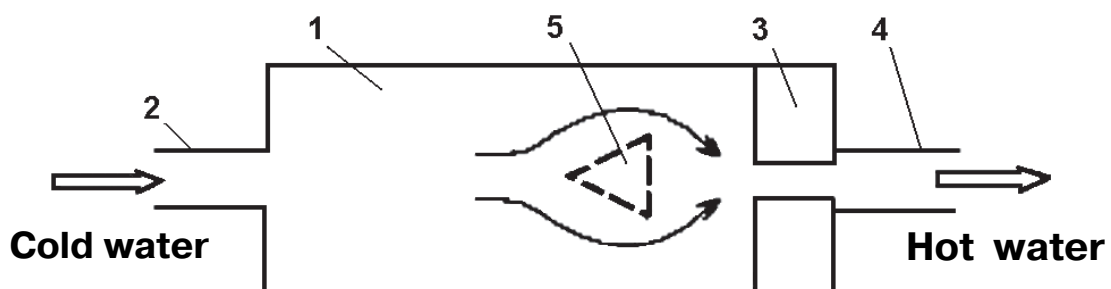


Fig. 2

In the passive axial VLH, different diafragms are used: with cylindrical, conical, fissured or spiral holes, with one or more holes, with axial or shifted holes, with one or several successively installed partitions etc. [24], [25], [26], [27], [28], [29], [30].

Besides passive VLH with tangential and axial inlets, generators of a mixed type are used. They use stream-twirling devices and diagrams at the same time in order to increase an efficiency of their work.

In VLH of the third group, active ones, mechanoactivation is carried out by moving activators located in their work chambers; as a rule, they belong to a rotor type (see Fig. 3).

A rotor is fixed at power shaft 2 and rotating inside cylindrical work chamber 3, which has inlet 4 and outlet 5 fittings and brake device 6. During supply of a cold water to the inlet fitting of an active generator, the water is forcibly twirling by the rotating rotor, accelerated, partially activated and heated and moves towards the motionless brake device. It is hampered and additionally activated there and is led outside through the outlet fitting.

Types of active VLH vary according to a design of rotors and brake devices. The rotors and brake devices can be made in the form of turbines with straight or profiled blades, figures of revolution with longitudinally profiled surfaces, perforated cylindrical or conical drums, uni-directional or oppositely rotating perforated discs and others [30], [31], [32], [33], [34], [35], [36], [37], [38], [39], [40].

In each of the distinguished groups of VLH, special operation modes can be additionally formed in order to promote activation of the liquid and, as a result, increase of the heat production. For these purposes, variable statistical pressures are set in the work chamber [41], self-oscillation are excited in the liquid [42], additional vortex flows are formed in an ortogonal direction of the main flow [43], percussion braking of counter flows, ultrasonic machining of the liquid is carried out [45] etc. Besides mechanical methods of intensification, electrophysical ones are sometimes used: magnetization of the liquid [32], [46], impulse radiation treatment of the liquid in an optical range [47], an electrical current running through the liquid [32] and even... a cosmological vector potential influencing the liquid [48].

In spite of absence of moving parts and high maintainability of the passive heaters, VLH of the active type can turn out to be more perspective for a practical use because they provide for more efficient mechanoactivation of the liquid.

It was and still is unknown what causes heating of the liquid in all types of VLH. Since a temperature increase of the water at the exit of the generator as a result of direct transformation of work into heat due to the liquid's internal friction, dispersion of an energy of acoustic vibrations etc., advantages of hydro-dynamic heatgenerators are brought to the simplisity of their design.

It is significant that, during VLH operation, a water temperature at the exit can reach boiling-point in the event that total energy inputs for

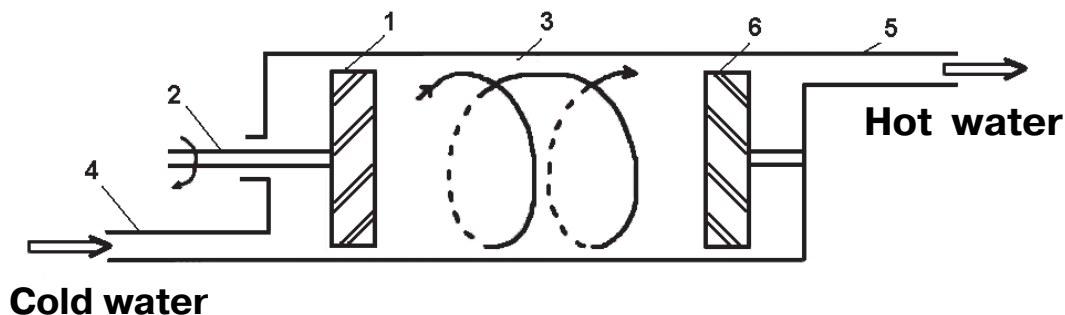


Fig. 3

the water heating are evidently insufficient for producing such a result.

Using a usual and rather plausible calorimeter procedure, a measured increase of the quantity of heat produced by the generator per unit of time can considerably exceed a measured energy consumed by the generator during the same period of time. Efficiency of the heating becomes specially notable if a temperature of an initial water subjected to mechanoactivation is $(66.5 \pm 3.5)^\circ\text{C}$, [3], [4], [5]. Energy inputs for the water heating with initial temperature $t = 66.5^\circ\text{C}$ are minimal and obviously inequivalent to the heat quantity, which is required for this.

Such facts require an explanation, therefore, different, sometimes rather unexpected hypotheses about “the reasons of the extra-productivity of hydro-dynamic heatgenerators” have been suggested.

For example, according to work [49], production of the excessive heat is connected with the theory of world aether. It is also suggested naming the heat production effect after V.A. Kochetkov, who considers this effect as a merely aether effect. A supporting data is provided.

In work [14], on the basis of the the virial law proven already by R. Klausis, it is affirmed that any accelerated rotation motion of an actuating body must be accompanied by a discharge of a part of its self-energy in the form of heat and, therefore, by a temperature increase.

In work [50], it is suggested that one of the reasons of the excessive heat can be chemical reactions of the actuating body – water and its solutes – stimulated by an influence of hypothetical torsion fields.

In article [51], the excessive heat is considered as an emanation of the energy of physical vacuum (!); in work [52] it is considered as a result of cold fusion using exotic anions and cations; and in above mentioned work [48], it is considered as an influence of the “cosmological vector potential”. **However, if we take into account a possibility to “deceive” a supply meter by a thyristor transducer, which**

increases a frequency of a current supplied to the pump drive (a know-how of a “pioneer”, Mr. Potapov), everything becomes more than simple!

2. Mechanoactivation

Researches of the mechanoactivated water’s properties have been carried out for quite a long time [53], [54], [55].

It has been found out that many of liquid’s physical qualities can reversibly change as a result of a liquid’s mechanical treatment. For example, numerical values of relative statistical dielectric penetrability ϵ , heat capacity C , light refraction coefficient n and others of the mechanoactivated water can considerably differ from reference values [56], which characterize usual water.

One of the most important reasons of such differences are cavitation effects accompanying the liquid’s mechanoactivation. Due to the fact that surfaces of cavitation cavities are borders of phases’ division, near-surface layers of the liquid near the borders of the division are in a mechanical stress, which significantly differs from a state of free liquid. Under a developed cavitation, a relative volume of near-surface layers of the liquid becomes rather big: there are from 10^3 to 10^5 of steam-gas pulse cavitation bubbles with an average diameter of about 10 μm each in each milliliter of the cavitating liquid.

Due to this, physical properties of the mechanoactivated cavitating liquid always depend on its properties in the near-surface layers.

According to the dependencies shown on Fig. 4, it is obvious that dielectric penetrability of water ϵ in a thin film or a drop, beginning with thickness of the film d_0 or diameter of the drop D_0 , becomes considerably less than a penetrability of water in a free volume.

In the event of a decrease of water flat layer’s thickness d from 40 to 10 μm , its relative dielectric penetrability permanently diminishes from nominal value $\epsilon = 81$ to value $\epsilon = 10 \pm 3$, i.e. it diminishes up to almost an order of

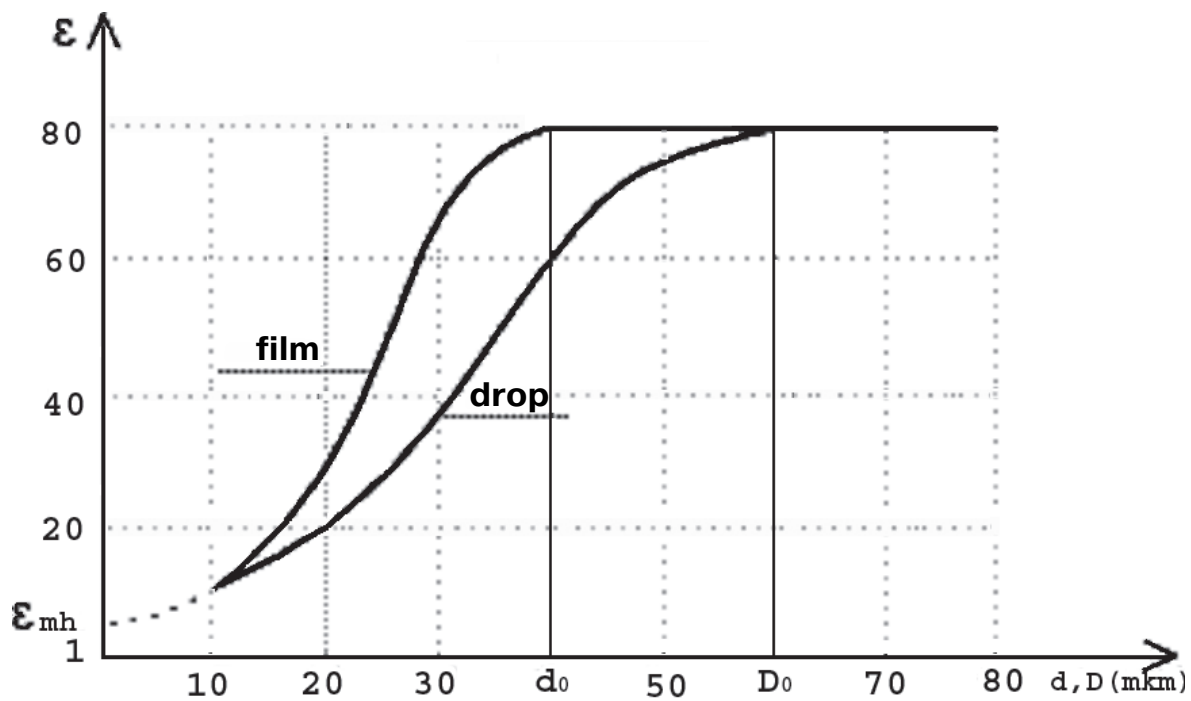


Fig. 4

magnitude. A similar picture can be observed for the water drop either, if diameter D decreases from 60 to 10 mkm.

It is usually considered that a relatively high value of a statistical dielectric penetrability of free water is connected with high values of dipole moments of supramolecular formations - short-lived molecular associations (nano-clusters of $(H_2O)_n$). Their spatial orientation in the external electrostatic field is determined by its direction.

Due to this, the decrease of the water dielectrical penetrability in the thin layer can be naturally connected with a decrease of an orientation receptivity of the molecular associations, i.e. with a partial "congelation" of clusters' resulting dipole moments in the near-surface layers by uncompensated coulomb forces of the surface layer, caused by structural regulating of this layer's molecules by mechanical forces of a surface tension [57].

It follows from the given diagrams that, under normal climatic conditions, a thickness of a flat one-sided near-surface water layer, where long range ordering partially remained, is about $0.5d_0 = 20$ mkm, while a radial thickness of a partially

ordered near-surface water drop layer is about $0.5D_0 = 30$ mkm [54, 55].

Accordingly, effective thicknesses of near-surface layers for a flat surface and a drop is about 11 mkm and 16 mkm.

It is also follows from the diagrams that, during the decrease of dimensional parameters d and D , the value of the dielectric water penetrability aspires to value ϵ_{min} (the dotted line), which is close to value of high-frequency dielectric penetrability ϵ_i of ice in its most spread modification I: $\epsilon_{min} \approx \epsilon_i$ [56].

Comparability of values ϵ_{min} and ϵ_i gives grounds to suggest that, under $d < d_0$, $D < D_0$, not only for the dielectric penetrability but also for other parameters with a structural dependence, particularly specific heat C_p , can approach by their values parameters of a solid phase during the water change from liquid state B_1 to partially ordered ice-like state B_2 . Due to the fact that the water specific heat exceeds that of ice by 2 times, a change of water heat capacity, which happens during the water change from a free state to a partially bound state, is always accompanied by a partial heat generation.

This possibility was controlled by using a swirler as a passive mechanoactivator and forwarding a cold water under strong pressure at its inlet [58].

Due to the mechanoactivation, a water stream in the swirler was characterized by a strong maldistribution of local speeds and, accordingly, by high gradients of mechanical tensions in the liquid. Regions with negative pressures appeared in the stream and conditions were formed for tearing of the liquid's continuity and development of cavitation processes. These processes were accompanied by a clear sign of cavitation – a sonoluminescent glow of the liquid [59, 60] while a cavitating hot water, which was in a condition close to a dispersion one, was coming to the exit of the swirler.

While an initial water temperature had been $T_1 = 20\text{C}$ at the swirler's inlet, a water temperature after a mechanical treatment increased up to $T_2 = 55\text{C}$. While the initial water temperature had been $T_1 = 40\text{C}$, the water temperature after the mechanical treatment increased up to $T_2 = 85\text{C}$. While the initial water temperature had been $T_1 = 66.5\text{C}$, a boiling water came to the outlet of the swirler.

A comparative appraisal of a quantity of heat, which is equivalent to a mechanoactivation work, and a quantity of heat, which is necessary for water heating in the given temperature intervals, allows making a conclusion that an additional heat generation happens during the mechanoactivation process.

During the mechanical treatment causing an intensive cavitation, a part of the water turns to ordered, colloid-like, close to liquid-crystal, state B_2 , and transition $B_1 \rightarrow B_2$ is accompanied by the heat generation.

Such a transition can be determined as a “phase transition in the wide sense” [61], [62], which results in excessive heat Q_{exc} generation:



It is found out in work [58], that the partially ordered water state is unstable and accompanied by a reverse transfer from metastable state B_2 in

state B_1 . Reverse transfer $B_2 \rightarrow B_1$ is endothermic and can happen both with a relatively continuous and an uneven absorption of heat:



Uneven phase change $B_2 \rightarrow B_1$ is accompanied by an abrupt water cooling: for example, the water temperature can lower from $T_2 = 75\text{C}$ in dispersion phase B_2 to $T_1 = (45 - 55)\text{C}$ in B_1 phase.

Relaxation time τ_r during the reverse transition, in dependence on stability of the environment and water cleanness, can be a few or some dozen minutes: $\tau_r = (3 - 30)$ min.

Thus, the mechanical water treatment accompanied by an intensive cavitation [55, 58] can lead to the generation and absorption of heat.

It is important to note that, in the event that hot water temperature T_2 in dispersion state B_2 is decreased, for example, by a heat exchange with the environment, water temperature T_1 in dispersion phase B_1 after the reverse transition can be lower than the initial one.

This allows suggesting with sufficient certainty that the effect of VLH is based on this. Various manifestations of the above described heat effects have been observed earlier. In front of a building of the Estonian Academy of Sciences in Tartu, a fountain with stream-swirlers is located. The swirlers form strong vertical streams of a cavitating water hazed by a mist of small waterdrops. In spite of the fact that a water with an initial temperature of about 20C is led to the swirlers, a temperature of a metastable dispersion phase, which looks like small drops hanging in the air near the cavitating streams, is about 40C , and a final temperature of a liquid state, which is a condensate in the fountain's pool, does not exceed 15C .

It is also known that water temperature can increase during the phase change, if the partially ordered liquid's state is formed not by a surface of a part “liquid - gas” but by a surface of a part “liquid – solid”.

A heat produced during water moistening of hydrophilic surfaces is usually called a heat of moistening. No matter which nature of this effect

is, according to thermodynamics of moistening and adsorption processes [63], a part of the produced heat, in the end, is released due to a decrease of the water's self-energy located in a contact layer during its turn into partially ordered phase B_2 . It suggested that, since the water comes out of a contact zone, it must experience a reverse turn of the endothermic nature.

In order to test this opportunity, a water temperature was measured when water was going through a column filled with a refined ground quartz with particles' dimensional parameter $d \approx 40$ mkm.

It was noted that a temperature of a water front going through the quartz layer was by 8...12 K higher than the initial one.

A temperature of a water collected in the thermostat right after its going through the quartz layer slightly exceeded the initial one.

However, after relaxation time $\tau_r = (5 - 15)$ min, the water in the thermostat spontaneously cooled by 2 - 3 K, perhaps as a result of the reverse cjang.

Possibly, an endothermic nature of the reverse change allows to explain a low summer temperature of subterranean waters, which lose a part of their self-energy and dissipate heat during filtration through upper fine-dispersated soils.

Undoubtedly, other examples of the discussed effects exist.

It is quite possible that the heat effects, which appear in the mechanoactivated water during the exothermal and endothermal changes like $B_1 \rightarrow B_2 + Q_{exc}$ and $B_2 \rightarrow B_1 - Q_{exc}$, underlie operation of all VLH.

3. Efficiency

A quantity of heat produced during the water mechanoactivation in a generator depends on a heat of the phase change and a power dissipated in the water during the activation:

$$Q = Q_{exc} + \Delta Q, \quad (3)$$

where Q_{exc} is a heat of change $B_1 \rightarrow B_2$, and ΔQ is a quantity of heat obtained by a direct change of work into heat.

It is possible to obtain a phenomenological assessment of quantity of heat Q_{exc} , which is produced in the water during release of its self-energy due to the phase change, by taking into account an intensity of the mechanoactivation, a degree of discrepancy of molar water's heat capacities in the free and activated states and also an initial water temperature:

$$Q_{exc} = k_1 m / \mu (C_{B1} - C_{B2}) (T_1 - T_{im}), \quad (4)$$

where C_{B1} and C_{B2} are, accordingly, specific heats under a continuous pressure of free water B_1 and the mechanoactivated water in phase B_2 ; it is convenient to present value C_{B2} as $C_{B2} = k_2 C_i$, where dimensionless constant $1 \leq k_2 < 2$ characterizes a difference degree of heat capacity C_{B2} of partially ordered water phase B_2 from heat capacity C_i of the crystallographically ordered water phase in the solid state;

k_1 is a mechanoactivation coefficient, dimensionless value $0 < k_1 \leq 1$ characterizing a mass part of partially ordered phase B_2 in the mechanoactivated water:

$$k_1 = m_{B2} / (m_{B1} + m_{B2});$$

m is a mass of the mechanoactivated water; T_1 and T_{im} are, accordingly, a water temperature before the mechanoactivation and the melting-point of ice; $\mu = 18,015$ is a molar mass of the liquid water.

Ideally, in the event of a complete mechanoactivation, where $k_1 = k_2 = 1$, the expression (4) becomes simpler:

$$Q_{exc} = km (T_1 - T_{im}),$$

where k is a constant, $k \approx 2,1 \times 10^3$ J/K kg.

In dependence on the initial temperature, a water temperature at the outlet of the heater must be the following, under the ideal conditions:

$$T_2 = T_1 + Q_{exc} / m C_B.$$

As it follows from the last expression, in the event that $C_B = C_{B1}$, in order to obtain boiling water at the outlet of the heater, it is necessary to get the initial temperature of the water subjected to the mechanoactivation of about $T_1 = 66.5C$. This coincides with the results given in [3], [4], [5].

Thus, the described heat effects allow obtaining a rather considerable additional heat generation Q_{exc} in the generator's work chamber.

However, the very fact of presence of additional heat Q_{exc} does not mean that it can be used for a considerable increase of the generator's heat productivity.

In order to make sure of this, let us consider two contours of hydro-dynamic generators' operation: the first contour is with a closed circuit of the actuating body's circulation and the second one is with an open circuit.

In the first contour, heat generation Q_{exc} during the water change from the stable low-temperature state to the metastable high-temperature one happens without a change of total energy content of a system "heatgenerator – circuit". During this, a heat, which was temporarily produced in the contour by the water in the phase change, will be absorbed again within the limits of the same contour by the water, which spontaneously returns in its initial low-temperature state after the relaxation time has passed.

It is obvious that, in this case, the heat, which was first produced and then absorbed, is a kind of virtual heat and cannot change the generator's productivity in such a way that its efficiency exceeds one.

The operation of the heatgenerator with the closed contour is explained on Fig. 5.

The contour of the actuating body of heatgenerator 1 circulation consists of force electric pump 2 and heat exchanger 3 connected by hydro-pipes.

Using the pump, a water with temperature T_1 is led to the inlet of the heatgenerator, heated there up to temperature T_2 , and led to the heat

exchanger where it is cooled up to temperature T_1 , and then it is led to the inlet of the heatgenerator again through the pump.

A heating efficiency of the generator during time τ , as a rule, is determined by temperature drop $\Delta T = T_2 - T_1$ in the heat exchanger and water consumption G in the contour:

$$Q = k \Delta T G \tau \quad (5)$$

where k is an aspect ratio.

The efficiency of the heatgenerator's operation, excluding heat diffusion in the hydro-pipes and elements 1 and 2 of the contour, is evaluated by ratio

$$\eta = Q / U, \quad (6)$$

where U is an electric energy consumed by the pump during time τ .

However, ***evaluation (6) can be reliable just in the event when all heat Q produced by the generator is led to the environment, for example, to the consumer.***

Actually, as it follows from (3), heat Q is a sum of two components: the first, Q_{exc} , is caused by the exothermic water change while the second, finally, is obtained by electric energy transformation U into heat ΔQ , which is equivalent to it. During continuous heat production of the generator, the consumer can obtain only a part of the heat, which is obtained via heat exchange, i.e. it is possible to get heat ΔQ , and always $\Delta Q \leq U$.

Another part of heat Q , heat Q_{exc} , is caused by a temporary heat production because, on the expiry of relaxation time τ_p , this part of the heat is absorbed by the water again and is unavailable for the consumer.

Hence, temperature drop ΔT in the heat exchanger cannot be used as a representative informative parameter for the evaluation of the heatgenerator's efficiency according to the diagram on Fig. 5.

The mentioned drop is caused by two reasons: first, by the water cooling during the heat emission and,

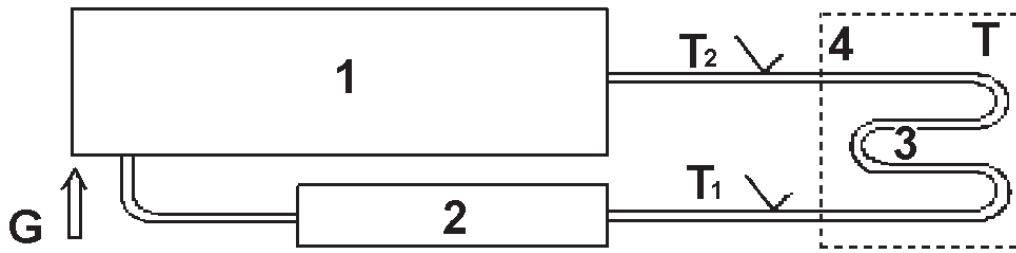


Fig. 5

second, by the water cooling during the heat absorption. Among them, it is only the first reason, which characterizes the generator's heating efficiency and can be used for the evaluation of its efficiency.

Thus, a procedure of the heating efficiency evaluation based on parameter ΔT is incorrect and the efficiency value is conservative.

In order to carry on a reliable evaluation, another measurement procedure can be recommended, which allows to control only the part of the generated heat, which is available for the consumer. Such an approach can be implemented, for example, using a calorimeter consisting of reservoir 4 with a reference liquid, where heat exchanger 3 is located (on Fig. 5, the reservoir is shown by a dotted line).

It is known that temperature T of the reference liquid in the reservoir will change during time τ , it is possible to determine quantity of heat ΔQ given by the heat exchanger of the reference liquid during this time and to evaluate reliably the generator's efficiency using ratio

$$\eta_1 = \Delta Q / U, \quad (7)$$

where always $\eta_1 \leq 1$ because, as it was mentioned earlier, $\Delta Q \leq U$.

According to (7), we come to a conclusion that **the efficiency of the gyro-dynamic heatgenerator with the closed contour cannot exceed one.**

Analysing the premises, it is naturally to suggest that an overvaluation of the heatgenerators' efficiency can be caused by a superficial convincingness of calorimetric operations made according to expressions (5) and (6).

Credibility of these operations can mislead even a rather objective researcher.

Possibly due to this, efficiency values obtained by authors [3], [4], [5], [6], [7] are quite reliable and experimentally grounded, on their opinion.

VLH with the closed contour can be used not due to their efficiency but due to their technical properties, which alternative heatgenerators do not have.

Use of VLH as simplest transformers of work into heat with natural sources of mechanical energy (wind, falling water etc.) can become rather perspective. In this type of VLH, it can be possible to obtain hot, including boiling, water at the outlet of a pump with a wind drive and an activator.

It is possible to provide the design with an open contour for an operation mode, during which a part of heat Q_{exc} will be permanently extracted from a running water experiencing a direct phase change within the limits of the contour and relaxing right after running beyond its bounds. The excessive heat is extracted from the environment; there are no limits concerning the efficiency of VLH.

The described operation mode of the generator with the open contour was practically realized during operation of an active rotary VLH with an activator of the rotor type with a turbine drive. It was based on the so called "Tantsuyuschaya zvezda", patent of the Russian Federation #2175272 (see Fig. 6).

"TZ" has **a hexagonal-cycloidal generator** invented by me as early as in 1994. It generates 6 parallel vortex flows, which form together a "tornado" structure. A back surface of the rotor

(which has three reach-through holes) periodically overlays three vortex chambers during rotation in contact with a front side of the stator. This process is automatically associated with cooling effects observed in a "sandwich" of the cylindrical field of Serl's machine.

A speed of the overlay is high enough to provide for a hydraulic shock. Waves of the hydraulic shock reflected from the rotor's plane are overflowed to axled zones of the three other chambers, which are opened at this moment. Due to this, water flows out from the opened chambers with an increased kinetic energy. The process is like an operation of a sextuple aerogun (though only one barrel of the gun shoots at a time while three of them operate at a time in "TZ"). A combination of high speed of streams and their cyclical manifestation (pulsation) increases an efficacy of the mechanoactivation and an efficiency of the operation as a whole.

An inlet of the work chamber of "TZ" was attached to a water pipe and an outlet of its heat exchanger was attached to a reservoir-precipitation tank. During tests of this heater, a portion of a tap water with temperature about $T_1 \approx 20^\circ\text{C}$ was led to its work chamber and heated up to temperature $T_2 \approx 55^\circ\text{C}$, after that the water was led to the heat exchanger, where it gave a part of its heat to a calorimeter during time about $\tau \approx 1.5$ minutes and cooled itself up to temperature about $T \approx 25^\circ\text{C}$, and then it was led to the heat-insulated reservoir-precipitation tank.

In about $\tau \approx 10$ minutes after the discharge, the water in the reservoir-precipitation tank was spontaneously cooled to temperature $T = (12 - 15)^\circ\text{C}$.

An efficiency of this VLH is considerably more than one. It was calculated as a ratio of the measured quantity of heat, which was transferred by the heat exchanger to the calorimeter during the preset time, to the measured energy consumed by the electric pump during the same time.

Such a result can be explained by the fact that, in order to produce electric energy, not only the external electric energy but also the external heat were used. The external heat was extracted from the tap water during its cooling from initial

temperature $T_1 \approx 20^\circ\text{C}$ to a temperature, which, finally, was $T = (12 - 15)^\circ\text{C}$.

VLH can operate with the efficiency of more than one, however, this is provided by not only a generator but also a method of heat extraction from an external low-temperature source.

"Cold fusion" has absolutely nothing to do with it. It is advisable to remember a logical principle formulated as early as in the 12th century: substances must not multiply needlessly!

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The discoveries of John Keely: the XIX century and the present time

Review by E. Artemyeva.

You can know more about John Keely on sites:
www.keelynet.com, <http://www.lhup.edu>, <http://donhuan.da.ru>

Brief biography of John Keely

John Worrell Keely (1837-1898) of Philadelphia was a carpenter and mechanic who announced in 1872 that he had discovered a new principle for power production. Keely persuaded a dozen engineers and capitalists to invest in the idea, forming the Keely Motor Company in New York in 1872. Soon he had capital of one million dollars, primarily from wealthy New York and Philadelphia businessmen. He used the money to buy materials necessary for building a motor based on his theories.

Soon he had constructed an aetheric generator, which he demonstrated to amazed audiences in 1874 in Philadelphia. Keely blew into a nozzle for half a minute, then poured five gallons of tap water into the same nozzle. After some fine adjustments the pressure gage indicated pressures of 10,000 pounds per square inch. This, said Keely, was evidence that the water had been disintegrated and a mysterious vapor had been liberated in the generator, capable of powering machinery.

Keely lived in high style, as befitted the head of any large company. To his credit, he plowed most of the invested money into research equipment. He did most of the experimentation himself, constructing his own apparatus. He was not willing to entrust his secret to those who could not or would not understand—especially physicists and engineers.

The work went slowly. To keep up the spirits of stockholders Keely staged public demonstrations. These were masterpieces of showmanship.

Biographers have described Keely as a "mechanical experimenter", "inventor and imposter", "professor of perfidy", "swindler",

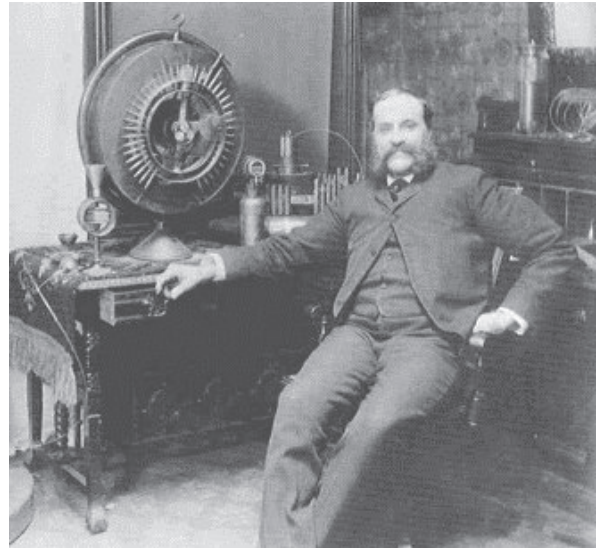


Figure 1. John Worrell Keely photographed in his laboratory in 1889. The Bettmann Archive.

and "scandalous scamp". Keely's lack of formal scientific education didn't bother his supporters, and didn't deter Keely himself from grandly proclaiming his theories as "scientific". Some disillusioned stockholders withdrew their support as Keely's experiments suffered repeated delays. Keely declared he'd already proven his theory and it could be implemented for useful purposes, and he made vast claims for the economic benefits of aetheric energy over coal and other energy sources. But he resisted investor's demands that he produce some marketable product. Stockholders were not happy with Keely's insistence that more experimentation was needed to "perfect" the machines. Fortunately, when nearing bankruptcy, Keely acquired a wealthy backer, Mrs. Clara S. J. Bloomfield-Moore, the widow of a Philadelphia paper manufacturer.

She advanced him over \$100,000 for expenses and promised him a salary of \$2,500 per month. She became active in promoting Keely in journals and books and in seeking scientists who

might validate his claims. She suggested that he share his secret with Edison or Tesla to hasten its development, but Keely refused. Keely continued this research for fourteen years, occasionally staging demonstrations to placate impatient stockholders.

After Keely died on Nov. 18, 1898, suspicious skeptics and newspaper reporters did a careful examination of his laboratory. Some of Keely's machinery had already been removed by "believers" who hoped they could make it work. Some of the apparatus ended up in England. No one could make it function as it had in Keely's laboratory.

Keely had kept his company going for 26 years without ever putting a product on the market, paying a dividend or revealing his secrets. That's his one undisputed accomplishment. He never divulged his secrets with anyone, so far as we know. One close friend reported that he had once asked Keely "John, what do you want for an epitaph?" His answer: "Keely, the greatest humbug of the nineteenth century."

John Keely's perpetual motion machine

More than 100 years ago John Keely discovered a practical opportunity to obtain and use aether energy. He researched this energy for a quarter of a century and built about two thousand prototype devices and mechanisms, which used the energy in their operation. According to John Keely's opinion, it was a use of aether energy that could realize the centuries-old dream of mankind to create a so called "perpetual motion machine". He managed to prove that aether energy was real and confirm his discovery by working factory shops with his mechanical motors using aether energy. According to Keely's data, energy contained in a pail of water is sufficient to get our earth moving out of its orbit. Nicola Tesla, Tomas Edison, and Jules Verne were among witnesses of his numerous experiments.

In 1873, he informed the scientific community about discovery of a fundamentally new kind of energy. For several decades, Keely had been working with aether energy and used secret devices in order to use a source of the unlimited eternal energy of the environment for different

purposes. The mechanical devices, motors rotated, produced work using no visible external energy sources. It was Keely's opinion that everything in Nature oscillates, vibrates. The nature of forces is vibratory. Organized vibrations are music. A harmonious interchange of vibrations is sympathy. A science about the nature of such effects is Sympathetic Vibratory Physics created by Keely.

How many people know now that, since the middle of the XIX century, alongside with traditional technologies and devices, various (from mechanical to electrical) working and patented so called "self-sustaining devices" existed? Self-sustaining devices were the devices which, when started, produced energy sufficient for passing of the technological process and maintenance of the device's operation, i.e. the devices needing no additional external energy (fuel) supply (Free Energy, Zero Point Energy etc.). A power supplied for starting the device could be much less than a power produced during the device's operation (of the device having efficiency >1). This was evidence of interchange processes with the subtle environment (aether, physical vacuum), which is always a real participant of the process. These inventions were based on those interchange processes: John Keely called them Sympathetic Vibration while Nicola Tesla, Tomas Morey, and Bruce de Palma called them Radiant Energy. William Reich, whose books were burned, as if in the Middle Ages, began working on climatic weapon and psychic energy (Phoenix project).

Thus, it turned out to be that, for more than 100 years, mankind has known but cannot apply the technologies based on the use of Free Energy, i.e. needing no production and transportation of fuel, using the subtle environmental material's energy – the energy of aether, physical vacuum.

Vibration laws

John Keely thought that any real formation (a "molecular unit"), no matter how small it is, is in a state of continuous internal vibrations and excites something like sound vibrations in the environment. Moreover, each formation can react to the vibrations coming from without.

It can be done in a variety of ways depending on whether this external vibration is accordant to its own tone or no. If vibrations of two bodies are accordant, the bodies are attracted; if there is a dissonance in their sound, they avoid each other. All physical forces appear due to a certain concordance (or a disagreement) of wave characteristics of vibration fields, which unite all existing matter. Vibrations play a role of an all-organizing and all-controlling source. And this source is not energy. Vibrations carry not energy but only an incentive to its absorption or production, i.e. its transformation from latent forms into evident ones. The energy is everywhere in the environment, which surrounds us and penetrates into us in an unbounded quantity. Eternal motion occurs everywhere and always. Energy reserves are unlimited in nature. We do not produce this energy and do not use it but, knowing the laws, we can transform it into useful forms. In order to do this, it is only necessary to co-ordinate operation of separate "molecular units". It can be achieved by obtaining their consonance.

Imagine that a metal support stands on a table, in front of you, and supports a hollow copper ball-sphere with a diameter of about 30 cm. Numerous metal rods of different lengths and thicknesses are around the support's base. They vibrate like tuning forks being touched by fingers. Plates and resonance tubes are placed inside the sphere. Their inter-location can be changed by handles. All this construction is called a "sympathetic transmitter".

Next to it, a cylindrical glass vessel with a diameter of 25 cm and a height of 120 cm is placed. It is filled with water. The vessel's head, which is also metal, is connected with the sphere by thick wire from gold, silver or platinum. Three metal spheres lie on the vessel's bottom, each of them with weight of about 1 kg. As the experimenter explains, each of the spheres, as well as any other material body, has its own internal melody.

The inventor comes to the sympathetic transmitter and begins to make the tuning forks vibrate, the handles turn. Suddenly, a

trumpet sounds briefly and the sphere on the vessel's bottom begins to swing, then it slowly comes off from the bottom and goes up through water column. It hits the head, bounces off, goes up again and, finally, settles down pressing itself to the head tightly.

The trumpet sounds again, and the second metal sphere reacts to it and comes to the surface. Then the third does the same. Music subsides but the spheres still float. Actually, they still slightly come down sometimes, possibly, under the influence of accessory chords.

This astonishing experiment and many others took place in John Keely's laboratory in Philadelphia more than 100 years ago. The scientist said that sound is "a violation of atomic balance destroying the existing atomic particles and a substance, which is released during this process, must undoubtedly be an aether current of some order". It is possible to say that Nature is based on vibrations of different frequencies, which create various combinations. The "accordant" harmonious combinations cause attraction and have a creative nature while disharmonious ones cause repulsion, destroy.

An example of the organized vibrations are music. When two strings of an instrument are attuned in a harmonic combination (for example, according to a third, fifth or octave), motion of one of them causes a respond in another. Since ancient times, another music was known, Kepler's "music of the spheres" created by the Sun, the Moon and planets. Today we can listen to this music in a computer arrangement.

Keely brought his Sympathetic Vibratory Physics to forty laws, in which, particularly, the unity of force and matter and also fundamental infinity of matter's divisibility are postulated. Keely considers force as a released matter and matter as a constrained force. This was brilliantly confirmed in the XX century in the form of famous formula $E=mc^2$. An idea of neutral center is considered by Keely as one of the most important physical and metaphysical

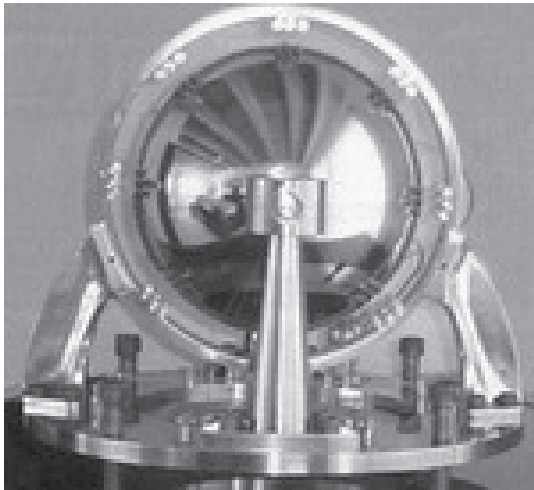


Fig. 2. A replica of Keely's device

categories. Every manifested body in the Universe – from an atom to a star system – has a neutral center as a base, an inviolable focal. Everything that we consider as matter is built around it and matter is its objective manifestation. It induces all objects to continuous motion and provides them with life impulse from the neutral center of the higher hierarchy level. This property of the neutral center allows designing a “perpetual motion machine”. This was demonstrated during Keely's experiments. A small initial impulse was sufficient to induce a motor to work.

According to Keely, the most important vibration characteristic is frequency because, in dependence on frequencies' combination, vibrations can interact. Force, or energy, is manifested in three forms: as a generating, active force; as a perceiving, reacting force; and as a transmitting, transferring interactions one. Concordant vibrations form harmonic frequencies; due to this, subatomic particles are attracted to each other. Dissonance vibrations cause disconnection of the particles. Keely's laws connect electricity, magnetism and gravity since they are caused by vibrations and, therefore, are only special cases of the common law.

The expression “perpetual motion machine” in its contemporary meaning obtained a sense of a jeer of a coryphaeus aimed at an ignoramus, who does not know the basis of physics and dreams of abundant energy from nothing. The expression “perpetual motion machine” is a sad example of a creation of an effective, ingrained

negative label used in a work on spreading the necessary scientific and technical policy and containment of technical data. That is why attempts to rehabilitate the idea “perpetual motion machine” give only the opposite, negative result instead of contributing to advanced scientific knowledge and technologies.

Keely's experiments were described by his contemporary Richard Harte in his article “Stone Decomposition”, in 1888, this way.

Recently, the American mineral resource industry was inexplicably agitated... It has been known that a syndicate of far-sighted and richest mining magnates had secretly bought in the cheapest and useless gold-mines. ...A question appears: why do the experienced businessmen purchase the useless mines? This strange event can be explained as the following. Some weeks before the described events, twelve respectable men met, after making an appointment, in a laboratory in Philadelphia in order to see a demonstration of a new method of quartz decomposition. These people were extremely interested in a quick and cheap method of gold production from quartz. And an inventor rendered them this service slightly touching pieces of quartz by a small device, which was in his hands. The moment he touched each piece, it instantly disintegrated turning into dust, in which gold particles lay like pebbles in a sand sea. Then, the twelve respectable men with one accord said: “Mister Keely, if you desintegrate a quartz deposit like this, each of us will draw a cheque for you”. Then all of them came to the Catskill Mountains and the twelve men pointed at a sound, just like them, gold-bearing quartz bed at a mountainside; mister Keely took his small device and said: “Gentlemen, be patient”. In 18 minutes, a tunnel with a length of 5.5. meters and a diameter of 1.4 meters was formed in the quartz mountain. After that, Mr. Keely calmly returned to Philadelphia with the cheques in his pockets and the twelve respectable men went from New York to San Francisco in order to purchase the seemingly useless stocks of the mines, which were derelict for so long time...

Decomposition (splitting) of quartz was one of Keely's secrets. However, the decomposition

is only a minor and secondary influence of the tremendous force hidden in that mystery. The influence of this force had been discovered by chance. One day the inventor was investigating an influence of aether flows on fine sand scattered on the floor; aether currents twisted the sand in the form of ropes. And suddenly a piece of granite, which lied as a stop for the door, disintegrated before his eyes. He took the hint and, some days later, made a vibratory disintegrator.

Dispersion is more complex and delicate, and Keely can as easily split matter's atom as its molecules. But to what extent? Apparently, he can split it to aether or a hypothetical substance, which existence is postulated by modern scientists though they know nothing about its nature besides the fact that it had been invented by themselves. While did Keely considers it as not a supposition but a real thing just as his own shoes. Actually, it is the initial substance of all matters. **(The editors: A similar point of view and even an experiment is described in Sir Arthur Conan Doyle's story called "A discovery of Rolf Hose")**.

As for the gravitation law, from the standpoint of Keely's experiments, it is not completely convincing or, at least, is just one of manifestations of the more overall law, which provides for mutual change of attraction and repulsion processes. One of small Keely's experiments is the following: a piece of wire is winded around an iron cylinder with a weight of some hundreds of kilograms. When the force is moving along the wire, it is as easy to lift and carry the cylinder by a finger as if the cylinder is just a piece of cork. Recently the experimenter, without assistance, moved a vibratory motor with a power of 500 horse-powers from one part of his workshop to another making no scratches on the floor. Amazed engineers confirmed that they could not move it without a windlass, which could have been installed only if the roof was removed. Such an operation becomes possible if a device is designed, which, being polarized by a force of negative attraction (i.e. repulsion), will rise and move under the influence of an aether flow with a speed of 500 miles per hour in any direction. This is, essentially, a principle of Keely's airship.

Later, he used the same force in optics. He placed three wires around microscope's lenses and, thus, increased its magnification up to what is reached by the biggest telescope in the world. When the history of his discoveries and inventions will be published, a story of John Worrell Keely will be the most amazing story in the annals of geniuses' history. The people of tomorrow will hardly believe that, in the last quarter of the XIX century, a man who was able to fathom the essence of nature decrees, cognizant of its elusive forces, which could be used for mankind's liberation from hard work making most people's lives a misery, was doomed to die of starvation. There was no one lavish, generous, unselfish enough to furnish the capital for the purpose, which did not promise immediate benefit, among neither businessmen, stockbrokers, literary men nor cultural workers...

The forces controlled by Keely still have no practical application and cannot be completely understood until the world is ready to accept them for its good. Keely himself is sure that the world will undoubtedly benefit from his inventions... Keely's discoveries have a secret aspect. He does not, possibly, realize it himself but it is up to him whether they will be recognized (due to the return, or sympathetic, vibration of even more spiritual aether than that Keely talks about) in order to get harmonized with the common system of the modern civilization and manifest in mankind's material life.

According to the opinion of the growing number of intellectuals, inventions and discoveries of our century have already proven their rather malignancy than good. They improved the global standard of living but, at the same time, considerably decreased a possibility to buy the facilities they had created a need for. Advantages, which appeared since steam and machines had been invented, became available for only a minority... However, Keely thinks that his inventions will allow to restore this disturbed balance.

It is considered now that Keely's discoveries are aimed at increase of human control over material nature, which already increased during the last hundred years. The world is not ready for appearance of such amazing forces at this stage of human life. Mankind is still too selfish,

savage, foolish, cruel, in other words, the brute is too strong in it for higher forces to be entrusted to it. Today, such forces cannot be used for the welfare of the people and for the progress of the human race.

Aether and gravity

Dan A. Davidson in his research on the aether and gravity followed Keely's discoveries. Over the years the existence and understanding of the aether has evolved as the basis for gravity and free energy effects at a micro and macro level. Laboratory experiments have shown that superluminal energy and information transfer has been effectively accomplished via aetheric engineering, which effectively eliminates the theory of relativity and its absurd views of physics and cosmology.

In XIX, John Keely performed extensive experiments in engineering the aether including producing various gravity phenomena, controlled breakdown of matter into aether and then using the aether in experiments, etc. From Davidson's research over 35 years, the existence of the aether is a reality. It led him to characterize the aether as follows:

1. A superfluidic particulate medium which pervades all space.
2. A medium, which in its various modes, is the building block of the physical universe.
3. A medium, which, in one of its modes, is responsible for gravity and inertia.
4. A medium which is controllable by our mind and can be manipulated by our thoughts.
5. A medium which can be controlled by geometric shapes.

The charge of matter is due to its interchange with aether. The electron as well as the other subatomic particles is basically self sustaining vortices in a fluidic particulate aether.

Charge represents a difference in concentration of the aether between two points. Mass (i.e., atomic particles) is made of aether, aether continually flows into and out of the particles as vortices, and the charge is due to its being at a different concentration of aether at a point in time and space than the local aether concentration.

The electron is a vortex of aether caught in a rotating standing wave due to the vibrating flow of aether which flows into and out of the atom's nucleus.

Atomic structure builds according to the rules of geometry and the basic polarity of atomic particles. Polarities are the result of aetheric flows into and out of matter.

John Ernst Worrel Keely was the first sub atomic physicist. His basic elucidation of atomic structure was derived from his development of the science of vibratory physics. One of his basic discoveries was that of the substructure of the proton³.

He discovered it was a vortex made of three sub nuclear particles, also vortexes.

Further research led him to the idea that this three particle substructure continued down to smaller and smaller level of particles within each particle. Keely claimed to have learned to control the substructure 27 levels down from the basic proton. The Keely atom is depicted in a stylized format in Fig. 3.

The first level of substructure was finally theorized in the orthodox community by Feynman in 1958. Keely's discovery

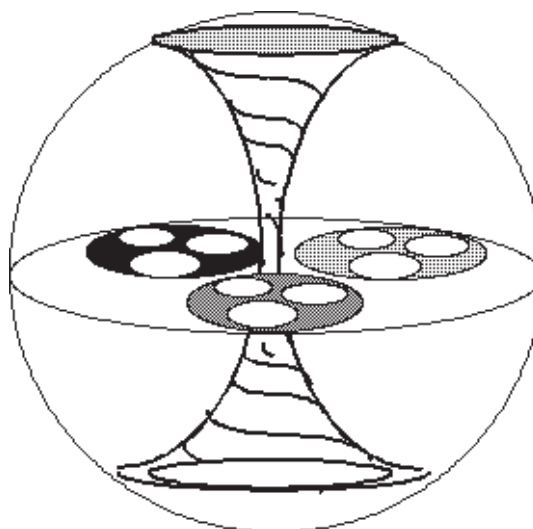


Fig. 3. Keely's "Atom" Showing the Substructure of the Neutron

antedated Feynman by over 60 years! Feynman called the three particles making up the proton quarks.

The gravitation constant as grad E correlates with the seminal work by T. Townsend Brown. Brown discovered that a capacitor will tend to move in the direction of the positive plate. Apparent weight loss is the result when the plates are perpendicular to the local gravity gradient. This effect can be enhanced by making one plate much smaller than the other plate. This essentially forces the grad E to maximize. It should be noted that grad E is independent of whether the field is AC or DC. Experiments have shown that even with this enhancement the capacitor does not have all its apparent weight nullified and levitate.

(The editor's note: Our researches have shown that gradient E produced due to the properties of the dielectric's material is a more perspective method. A. Frolov)

The reason for this can be found again in the nuclear particle's relationship with the aether. Even though each atom is in constant resonance with the aether this resonance is not synchronized across the mass⁴. Each atom is doing its own thing, so to speak, and there is a random interchange with the aether with respect to all the nuclei.

Thus, when a grad E acts as an aether pump across the capacitor plates only a small portion of the atoms become synchronized to this aetheric flow so the entire mass does not respond at the same time; therefore, all the atoms don't try and move at the same time.

Analysis of various apparently disconnected events where levitation was witnessed provides some important clues to a means of effecting synchronization of the nuclei.

Synchronization of the nuclei with the aether has been achieved by two main methods; namely, rotation or movement and sonically.

Analysis of the phenomenon of inertia provides the major clue to how rotation could act to synchronize the flow of aether into the nuclear sub structure of the gravitors.

The Detection of Aetheric Gravity Flow Using Dielectrics

It should be obvious that the larger the mass the more aether which flows into the atomic structure of the mass. Mass is both radiating and absorbing aetheric energy.

Other mass in the vicinity will cause perturbations in this aetheric flow. Because of this fact, aetheric flow detectors can be constructed by taking advantage of this principle.

Davidson's first working gravity or local aetheric stress/flow detector was demonstrated at the 1990 Extraordinary Science Conference in Colorado Springs, Colorado. The basic principle of the gravity detector is the fact that the electronic charge structure of a given mass is a function of the amount of aether flowing into the mass. The charge around the atom is governed by the amount of aether flowing into and out of the mass. His reasoning was that dielectrics would make the best aetheric flow detector. In dielectrics the electronic charge is isolated and trapped within the dielectric material since the charge cannot flow and dissipate. By using a high dielectric such as titanate zirconate or barium titanate the amount of charge change is directly readable by putting electrodes on each pole of a polarized dielectric.

Davidson's first detector circuit used a picoamplifier attached to the electrodes to amplify the signal. Then the voltage/current

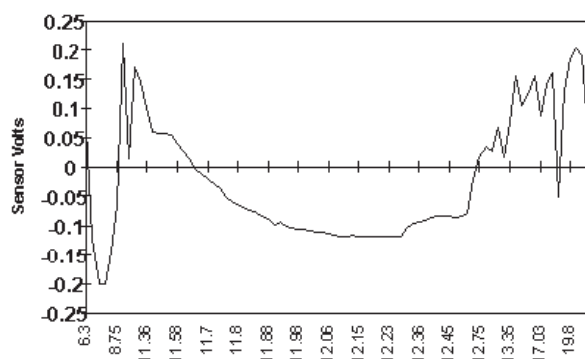


Fig. 4. Gravity Sensor Data Example. Data from July 11, 1991 Solar Eclipse

changes across the dielectric are easily measured directly by a voltmeter.

Fig. 4 depicts the output of the gravity detector circuit as a graph of local gravitational stress (i.e., aetheric stress). The graph readily shows the daily swing of aetheric flow on the dielectric material as the sun and moon affects the earth's gravity field and gravity flows into the earth.

The data was taken during a solar eclipse and shows the effect of local aetheric field stress dropping during the period of the eclipse.

Experiments with the dielectric detectors showed they tend to be noisy and susceptible to temperature, light, and sound pressure. If you are going to experiment with this type of gravity detector be sure to isolate the dielectric from temperature swings, light and sound.

The Detection of Aetheric Gravity Flow Using DNC Coil

When discussing Davidson's results of gravitational energies (i.e., aether stress flows), his fellow gravity researcher, Joe Parr, mentioned he had similar results with dielectrics and had accidentally discovered a better detector.

Parr used a strange coil to which he attached the moniker "Do Nothing Coil" (DNC). The DNC would detect the aetheric gravity flow without the bothersome temperature, photonic, and sonic noise effects.

Joe called the coil "do nothing" because it did not respond in any significant manner to magnetic or electrical signals from DC to about 300 Ghz. By accident he discovered that the coil's resistance changed during a 24 hour period.

The DNC coil consists of about 8000 turns of number 34 copper wire wound on a plastic hoop. In Davidson's duplication of the DNC coil he got a Hula Hoop and cut it open, removed the plastic noise maker beads, and shortened the tubing length to make a plastic loop 19 inches in diameter (i.e., center of toroid on one side to center of toroid in other side).

To wind the coil, Davidson set the coil form and wire and electrician tape on the coffee table in front of the TV set and whenever he was watching TV he would wind a couple of hundred turns on the loop and cover the turns with black electrician tape to keep the coil in place. After a couple of months he finally had wound the DNC coil. A BNC connector on the two ends of the coil completed the job.

Resistance changed daily. The change in resistance is a direct readout of the local aetheric stress flow changes.

Resistance changes in the coil because the atomic lattice electronic charge of the metal in the wire changes as more or less aether is flowing in the nuclei of the coils atoms. During the course of a 24 hour period the sun, moon, planets as well as the stars put differing stress levels on the earth's aetheric field which directly affects the flow rate into the nucleus.

(The editor's note: In Russia, these experiments are known according to the works of N.A. Kozyrev, 1947 – 1989)

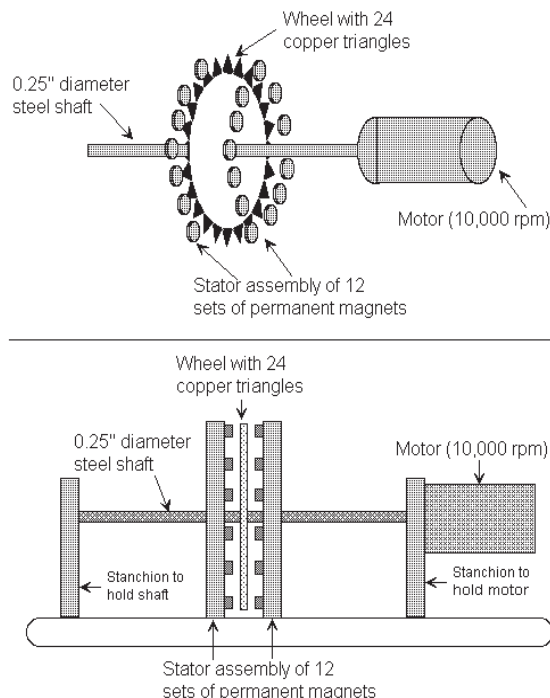


Fig. 5. Parr Gravity Wheel Experiment Design

The Parr Gravity Wheel Experiment

Around the periphery of the wheel are copper triangular shapes. When the motor spins the wheel the copper triangles move between permanent magnets mounted statically on either side of the wheel. This new experimental set up is depicted in Fig. 5.

Davidson had been following Joe Parr's experiments over a several year period and, with Joe Parr's assistance, built a duplicate experiment.

The shaft must be oriented east-west. A negative ion source is set within a few feet of the spinning wheel to feed the force fields which form around the copper triangles on gravity wheel.

The experiment is set on a delicate scale which measures accurate to 0.5 grams. The static weight of Davidson's experimental setup is about 1200 grams. Joe Parr's version is about 1800 grams. The experiment used machined maplewood to hold the motor and shaft, and the stanchions which hold the magnets and Parr's experiment was made of machined aluminum.

During experimental operations the weight of the experiment can drop from 0 to 6.5 grams. When one considers that the gravity wheel with the copper triangles weighs about 24 grams the total normal operational levitation effect is on the order of 25% weight loss. This by itself in a remarkable experimental effect and deserves acute attention.

The scale which is used in the experiment is an Ohaus Precision Plus purchased from Cole Parmer. The scale can measure accurately within 0.1 grams over a range of 0-4000 grams. The scale has an RS-232 serial interface which allows the scale to be interfaced to a printer or computer.

The scale outputs the weight continuously except when there is a scale upset. The upset weight can be varied and it was set at the maximum of 5 grams. This means that if the scale weight is changed more than 5 grams within a couple of milliseconds then the RS-232 interface stops outputting the weight.

Davidson's preliminary hookup of the scale was to a computer; however, the intense forcefield which builds up around the experiment destroyed two computer interface cards. Since the RS-232 interface stops outputting data on a scale upset, the serial output of the scale was converted to a voltage level and used as an indicator.

When the voltage drops, a scale upset has occurred. The voltage level was/is interfaced into a pulse counter. This provides a count of scale upsets greater than 5 grams. If the 6.5 gram weight loss is added to the 5 gram upset, we are looking at about a 50% weight loss of the gravity wheel. Joe Parr's data showed a correlated hit with Davidson's experiment's data on April 11th.

There are two basic types of force fields built up in and around the experiment. There is an ovoid shaped forcefield around each of the copper triangles.

When these small force fields build up in intensity they cause a drag on the motor which can be plainly heard in the lab. There is a larger forcefield which builds up around the entire experiment setup.

What seems to be happening is the earth moves through energy conduits which go from our sun to other planets and star systems. When the gravity wheel experiment crosses one of these energy conduits, the forcefield around the copper triangles intensifies to the extent that the bubble starts moving either toward the conduit or away from the conduit very rapidly and a scale upset occurs.

Attempts at simulating the energy conduit thus far have failed. Davidson and his colleagues are in the process of evaluating the data and they have found some correlation with planetary and stellar conjunctions where the earth gets lined up with other planets or stars and our sun.

The data analysis is currently in its infancy so Davidson can make no statements of solid fact other than that they are getting some very impressive gravitational effects.

A water-lifting device

A new source of inexhaustible, ecologically clean and powerful energy

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In 1775, an article by J. Whitehurst containing a description of a device, which was invented and designed by him in 1772, appeared in a British magazine. The device of J. Whitehurst allowed water lifting from a small height to a considerable height without any additional power supply due to the use of a so called potential energy of water and due to a so called "hydraulic blow" effect. But the device could not operate in the completely autonomous mode. This disadvantage was removed by an inventor of a balloon, a Frenchman J. Montgolfier, in 1776. In 1797, he obtained a patent for his invention. In the same 1799, M. Bulton from England obtained a patent for the same device. In 1809, J. Cerneay and S. Hallet obtained a similar patent in America. And already in 1834, an American, H. Strawbridge, put an industrial model of the similar device into mass production.

It is considered that it was the device invented by J. Montgolfier, which was then called a "hydraulic ram".

As a rule, Montgolfier's "hydraulic ram" (Fig.1) consists of a water reservoir 1, a force pipe 2, an impact valve 3, pressure valve 5, an air chamber 4, and a draft tube 6.

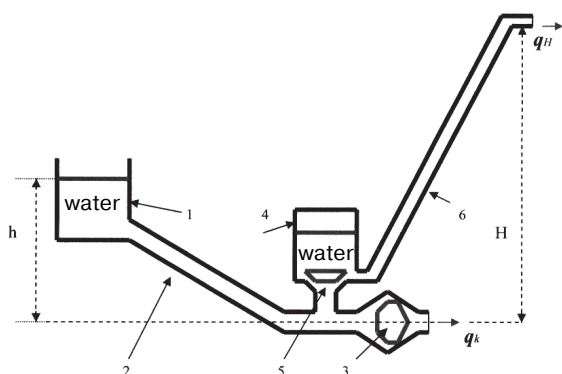


Fig. 1

Its operation happens as follows: water from water reservoir 1 goes by force pipe 2 to open impact valve 3 and, under pressure h , flows out with an increasing speed. Under some water speed, a pressure to the impact valve exceeds the force keeping the valve open (for example, a spring force), closes it and blocks water's way out. An abrupt halt of moving water and the so called "hydraulic blow" occurs. In the space of the force pipe, from impact valve 3 to pressure valve 5, the water pressure almost momentarily increases up to a value, which coincides with H , and, due to this, the pressure valve opens.

However, water spends only a part of its speed for the pressure increase. Using the residuary speed, it goes to air chamber 4 through the opening pressure valve. In the air chamber, the residuary air volume is also pressed up to the pressure, which coincides with water pressure H . In its turn, water from the chamber, under the same pressure, goes by draft tube 6 to height H to a consumer.

After a time, the residuary speed in the reservoir is totally spent on the maintenance of the increased pressure in the reservoir. After that, the water pressure under the valves decreases a little lower than the atmosphere one. As a result, the existing increased pressure in the air chamber closes the pressure valve while the low pressure under the impact valve and an opening mechanism (for example, a compressed spring) allow the impact valve to open. Thus, all construction returns to the initial state and the process repeats. As a result, under certain standards of components' production, water can raise at rated altitude H continuously in the autonomous mode for many years.

Moving parts of the hydraulic ram – two valves – are designed in such a way that the pressure increases in the reservoir, closes the impact

valve and opens the pressure one while the pressure decrease influences the reverse sequence. All meaning of the device's operation is that it raises water volume qH at height H using water volume's energy q .

However, the "hydraulic ram", as the water lifting device, has a very important disadvantage.

In order to obtain the water increase, it is necessary to discharge a certain amount of water $qk=q-qH$. Water flowing out of the impact valve must quickly vacate a place for a new portion of water, which will flow out during the next cycle. If water at the outlet of the drain hole will gather somehow, an insuperable resistance for water flow out will form and, as a result, the water acceleration in the force pipe will be broken and then stop.

As a result, the given device being in the submerged state, i.e. submerged in water, cannot operate. This prevents its use in the flat country with open reservoirs and on rivers without slopes or without dams.

Besides that, the "hydraulic ram" attracted attention of scientific theorists and experts by its originality and operation simplicity. During the XIX century, many theoretical researches of the "hydraulic ram" were carried out but, until 1900, they all rested on the fact that the theory of a "hydraulic blow" in pipes had been unknown and, therefore, gave no correct results. As early as in 1804, Eitelwein from Germany carried out more than 1,000 experiments and published a number of empirical conclusions and formulas. Most of them, as it was found out already at that time, were not suitable for designing.

The fact of existence of the "hydraulic blow" effect was known as early as in the XVIII century, but a right theory was developed for the first time by a Russian scientist, N.E. Zhukovsky. Professor Zhukovsky checked and confirmed his theoretical conclusions by special experiments in 1897-1898. In 1898, his theory was first published in "Bulletins of Polytechnic Society".

In 1901, an Italian engineer Alievi published almost the same theory of the "hydraulic blow" but in relation to pipelines of different power-plants.

However, the experiments carried out by Zhukovsky and, later, by other researchers from other countries completely proved the accuracy of basic concepts of Zhukovsky's theory. But this theory, even after its publication, did not obtain proper acknowledgement. Researchers and enthusiasts of the "hydraulic ram", as usual, from year to year, carried out experiments and found different non-generalized formulas for their purposes.

The "hydraulic ram" was developed under the name of «ram-pump» in melioration and in private life as a device for free water lifting in America, Australia and other western countries. Today there are several dozen small companies specializing in the production and sale of the «ram-pump» in these countries. Searching Internet for words "hydraulic ram" or «ram-pump» by different search engines, it is possible to find not only these companies but also some publications on this subject. Many companies use only their own formulas installing their «ram-pumps».

In Russia, right after the publication of the "hydraulic blow" theory by Zhukovsky, the work on the creation and development of the "hydraulic ram" theory was successfully continued by his disciples and following: B. Bubekin, B. Bahmetiev, S. Chistopolsky. For example, Professor Zhukovsky created the right scheme of the "ram's" operation during water delivery relying on the results of special experiments carried out by B. Bubekin from 1903 to 1907 and described it in a report on "The new hydraulic ram theory" in Mathematical Society on the 18th of September 1907. Later on, Professor B. Bahmetiev gave the right interpretation of the water acceleration period in researches by Navler and Harza in his work "Introduction to the research of the unbalanced liquid flow" on the basis of the same theory of Zhukovsky. However, it was Professor S. Chistopolsky who finally combined theory and practice in his work "A hydraulic ram" in 1930. He created the first and, to present day, the only known and reliable method of the theoretical calculation. This method was, and is, completely confirmed by the results of numerous tests.

Unfortunately, the "hydraulic ram", as the device for free water lifting, was undeservedly forgotten as petroleum production has been

developed, despite the fact that, before the fifties, there were plants producing a lot of these devices for melioration in Russia. Only one remark about this device is left in the Big Soviet Encyclopedia. Almost all engineers and scientists, who were educated in the USSR and worked with hydrodynamics or at hydroelectric power stations, as a rule, heard nothing and know nothing about this device. The concept of the "hydraulic blow", as applied to water-pipes, exists in theory, in industry, in text-books and in the specialized literature but the concept of the "hydraulic ram" became identified with a device able to clean pipes and ship's bottom by the "hydraulic blow" or hole by water. All works on the "hydraulic blow" by N. Zhukovsky, B. Bubekin, B. Bahmetiev, and S. Chistopolsky have been forgotten. And only recently, obviously, in connection with the fact that people are talking about the possibility of the forthcoming oil crises' approach, isolated inventors, who found, to their surprise, information about this device, tried its reanimation. **An inventor, G. Rogozin, progressed even more. He was the first to suggest a combination of the "hydraulic ram" and a water turbine connected with an electric generator. This was, as a matter of fact, the first public statement that this water lifting device can be used also as an energy source.** According to his estimations, such a combination makes the water turbine work with water flows, which cannot be used by it alone. This constructive combination would allow producing electric energy using small rivers, streams and reservoirs with a small hydro-electric system, which has no prospects and cannot be used by traditional hydroelectric power stations. However, his estimations including estimations of the "hydraulic ram's" parameters are also based mainly on his own series of experiments.

As such a science as hydraulic gas dynamics appeared and has been developing, during all these years, in different countries, where the "hydraulic ram" was not forgotten, there were numerous attempts to find the accurate development of the main existing hydrodynamic equations in order to explain the existent processes and find optimal characteristics. But such a development for an unstable flow or, as is customary, a nonstationary stream, which is a process of water flow in the "hydraulic ram", is possible only by numerical

methods. In order to use them, it is necessary to know a lot of the beforehand unknown input data. Due to this, such attempts were unsuccessful. It is confirmed by the fact that many different patents for modernization of this device have been obtained. They did not concern change or improvement of its operation principle. However, the "hydraulic ram" theory stated in S. Chistopolsky's work is sufficient for understanding, which factors and which parameters influence the "hydraulic ram" operation and also for making a comprehensive analysis.

This theory, which was many times proved in practice and considerably augmented by the author, underlies a proof of existence of another hydrodynamic system of water acceleration, i.e. a proof of existence of another water lifting device, which can have no water discharge at all.

Imagine a pipe, which is attached to a basis of a water reservoir and closed from both sides. There is a solid bottom, on the one side of the pipe, and there is a thin-wall membrane, which restricts water, on the other side, where the water reservoir is located. Under the certain design pressure, the membrane will break and the water flow with an accelerating speed will go to the closed pipe from the reservoir. If there is no air in the pipe or it is somehow freely replaced by water, the effect of the "hydraulic blow" will also appear when water reaches the pipe's bottom or its considerably restricted part in the end. If the pipe's bottom has, as the "hydraulic ram", a pressure valve, which opens under certain pressure, the "hydraulic blow" process will provide for the same pumping. The "air blast" with the increased pressure zone will go towards the water flow stretching the pipe's walls by an excessive pressure and providing, therefore, for water coming in through the pressure valve. Reflecting from water locating in the reservoir, the "air-blast" will move to the pipe's bottom again. During the "air blast" motion toward the pressure valve, as in the "hydraulic ram", decrease of the static pressure will occur in a zone from the pipe's inlet to the "air-blast" front. Such a motion with the recurring pressure increase and decrease will repeat many times until the water lift located in the pipe uses up its kinetic energy. In a certain amount of time, a certain quantity of water will go to chamber 4.

The same process will happen, if opening valve 3 will be installed at the pipe's inlet instead of the membrane, as it is shown on Fig. 2.

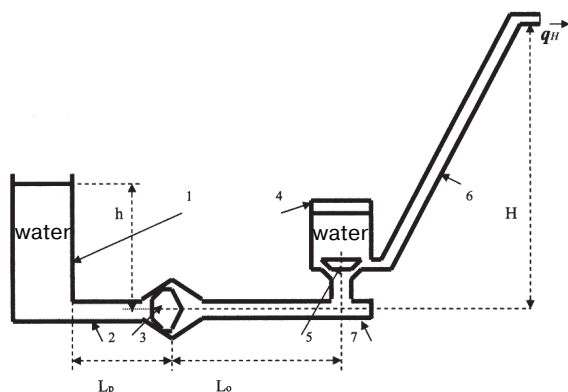


Fig. 2

However, if this valve will be designed reverse, i.e. closing from the direction of pipe's bottom 7, during contact with the very first "air blast", which moves towards the water flow and creating a zone of the increased pressure behind, the valve will tend to close due to the pressure difference. To a greater or lesser extent, it will begin to block the water flow going through it. A mathematical research of such a hydrodynamic scheme, an introduction into the theory of the real mechanism of the valves' closing and opening, taking into account their inertia, show that, under a certain design of valve 3 and certain initial parameters, the closing process can happen in such a way that the valve will not only close before the first "air blast" but also stay in the closed state until the excessive pressure influences in pipe 7 under pressure valve 5. As a result, conditions can be created that valve 3 will completely block the water flow for some time. After gathering a certain speed, the blocked water lift in pipe 7 has to continue its motion to chamber 4 mechanically.

Thus, the strength of water pressure for water pumping to the chamber can be substituted by the equivalent inertia. However, unlike the "hydraulic ram", due to the fact that valve 3 is closed, each portion of water pumped in the chamber must cause losses of the whole water lift's mass, which cannot be made up. Due to this, in pipe 7, from the side of closed valve 3, a dilution zone with a pressure close to 0 must appear from the moment of the beginning of the first reflected "air blast" motion. Only a part

of solute gases can be there. The zone's length will increase during the pumping. Due to the water pumping in the chamber, like in the "hydraulic ram", a difference of the initial and final kinetic energy will change to the potential energy of water, which came to the chamber. As a result, in both cases, the excess pressure in the chamber must close the pressure valve and an almost total absence of pressure in pipe 7 during the water lift destruction must open valve 3, which experiences the static water pressure from the side of pipe 2. Water will flow again through opening valve 3 to pipe 7. Its volume during flowing in will be exactly the same as the volume of the "zero" pressure zone or, as it is said in hydrodynamics, the "lift-off" area. A speed of this water can reach the initial one. Thus, all process must automatically repeat.

During the real process of water pumping in the chamber after valve 3 is closed, all following reflections of the "air blast" spreading in the direction of valve 3 must occur from the bound of the "lift-off" area with its length increasing. During this, each portion of the pumped water will decrease due to a decrease of the pressure influence's duration under pressure valve 5, because of a decrease of the "air blast" influence's duration.

As a result of the mathematical description of this scheme, taking into account the pumping mechanism, the mechanism of the pressure change in the chamber, taking into account all time characteristics, various losses, peculiarities of the horizontal and vertical scheme of water flowing in, a rather complete theory of such a hydrodynamic scheme has been developed. It contains more than 400 formulas and the method of parameters' calculation, which is necessary for the designing. As a result of engineering research, a necessary design of valve 3 was also found. However, such a construction can be built only for burial depths of more than 15 meters due to the fact that there are no necessary materials and a technology for their production in the industry. The obtained mathematical dependencies show that, in the end of the pumping, a volume of the "lift-off" area is always less than a volume of the pumped water in the chamber. As a result, under the same initial parameters, a total

quantity of the water pumped in the chamber will be less than that in the “hydraulic ram”. However, all pumping period is also shorter. Besides, a dependency of the pressure on the speed, which was consumed for its production, is more complex in comparison with the “hydraulic ram”. In spite of this, the pressure in the chamber is always more than the initial but its value is not more than its double initial value. Moreover, certain criteria of the initial parameters exist, which determine conditions of the automatic repetition of the process. One of these necessary conditions is an exact accordance of the masses of valve 3 and pressure valve 5 with the initial process’ parameters. A certain design volume in the chamber for an air cushion and a certain square of the cross-section on the chamber’s outlet for the water export must be realized. It should be mentioned that, from the energy point of view, this scheme consumes more energy for the operation than the net energy produced by it. Thus, the efficiency of this scheme is always less than 100%. A kind of the efficiency’s change in dependence on the depth is shown in Figure 3.

The given scheme can be, obviously, used in the same conditions as the conditions of the “hydraulic ram” operation. But it can be used, as it was said above, on the lowland rivers, where the “hydraulic ram” cannot work.

There are, theoretically, no barriers for operation of such a water lifting device without a reservoir 1. In order to do this, it is enough to submerge it into water at certain depth h , as it is shown in Fig. 4.

Under these conditions, the scheme becomes an ideal pump of low pressure, which can be used, for example, in seawater desalters.

However, this scheme has the biggest prospects, as it is shown in Fig. 5, in the event when there is no outlet tube at all or in the case, when there is some short tube’s section with a throat, which is equal to the cross-section of the chamber’s outlet port at the chamber’s outlet at depth $h_2 \approx h$. As the obtained dependencies show, a theoretical dependency of the pressure in the chamber on the time will be like it is shown on Fig. 6, under the certain volume of the air cushion in the chamber and

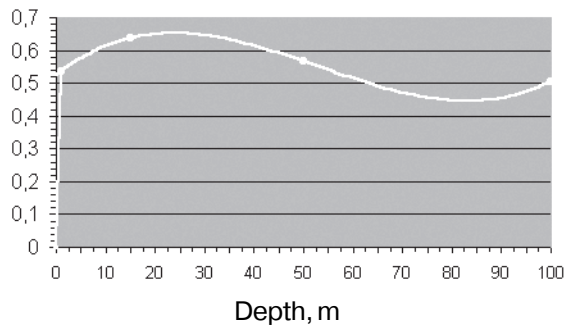


Fig. 3

the certain square of the throat of the outlet port in the chamber.

Time of the pressure increase tw and its abatement tu is always less than $0.1 tH$. During time $ty < tH$, an opening of valve 3, the water acceleration and energy accumulation occur. This allows considering the average speed of water flow out of the chamber during pumping time tH as a value, which is very close to some maximum possible speed.

Thus, a water stream, which is characterized by a certain water consumption and an average

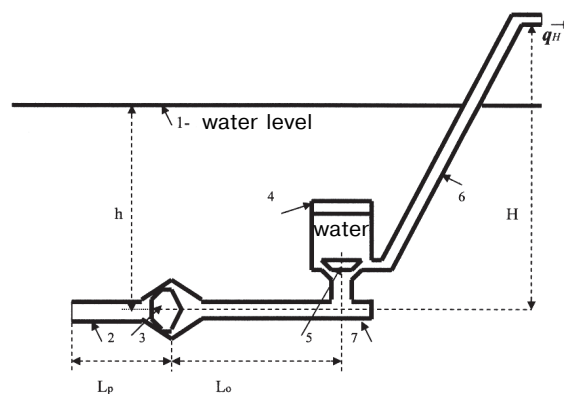


Fig. 4

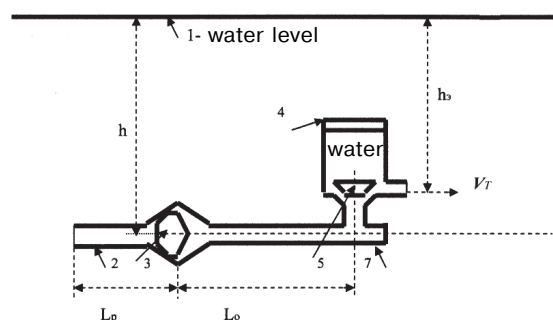


Fig. 5

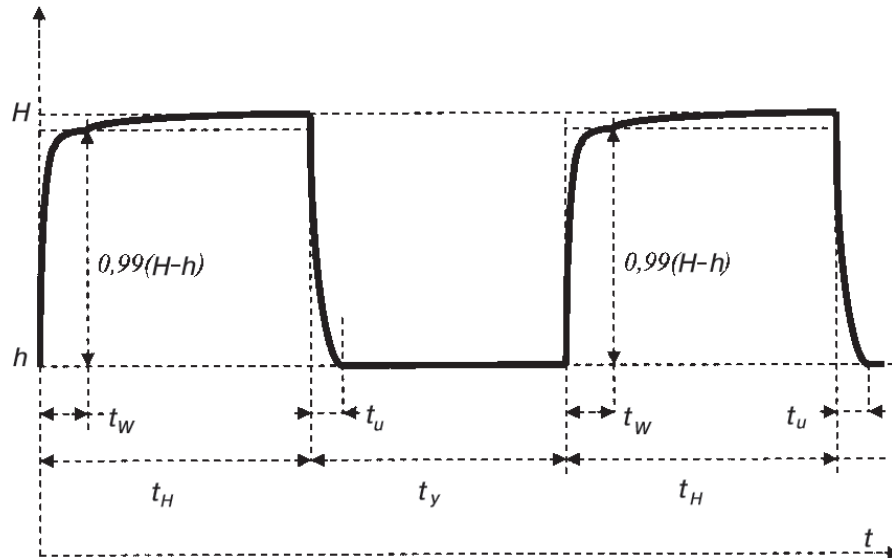


Fig. 6

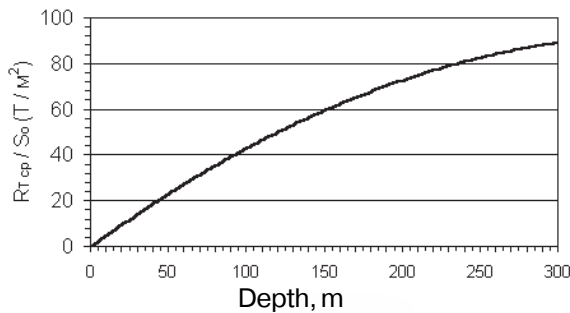


Fig. 7

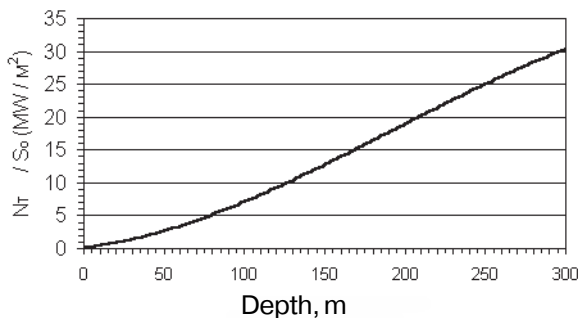


Fig. 8

speed, must be periodically formed in the outlet of the nozzle once during time tH . The average water consumption during time tH can considerably exceed the value obtained in the “hydraulic ram”. Hence, according to the law of impulse conservation, this water stream must create a reactive force because valve 3 is closed.

Thus, this design becomes an ideal hydrojet propulsion engine. Its efficiency, as well as the

efficiency of any pulse system, will be determined by a total, in accordance with the time, force impulse, if there is no force during time ty .

Besides, such a water stream per se can produce some yield during time tH . This allows installing a reaction-type hydraulic turbine with a concatenated electric generator at the chamber outlet. Therefore, electric energy can be produced. Naturally, the electric generator must be located either in a hermetic chamber or on the water surface and connected with the turbine by some rotating shaft. Due to the fact that a considerably short period of time ty will influence only during gathering of the design angular velocity by the hydro turbine and generator, the obtained electric power will be determined only by the hydro electric machine’s efficiency.

In order to evaluate possibilities of this design, calculation results of a ratio of average reactive force Rcp and electrical power Ncp to a square of the inlet port of the device from burial depth h under a certain acceptable design size of pipe 7 and valve 3 are given on Fig. 7, 8. The calculation results show that there is a certain maximum at depths of approximately 450-650 meters.

Thus, this scheme can theoretically provide for any thrust and any electrical power. In order to do this, only the certain square of the inlet port is needed.

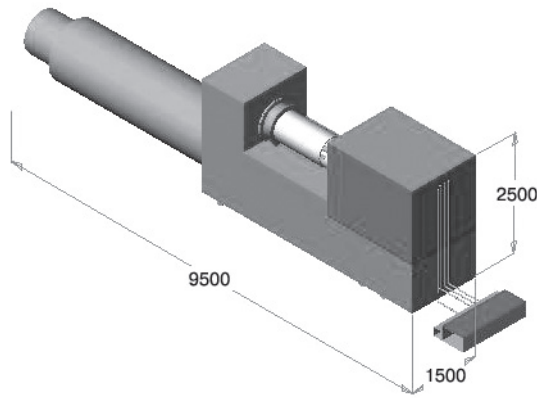


Fig. 9

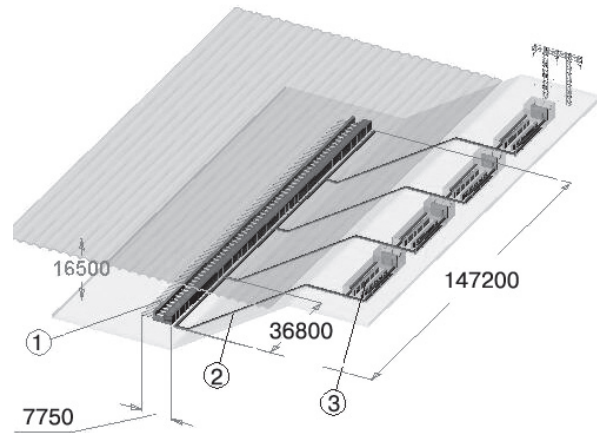


Fig. 10

Using the given scheme in generator engineering, it seems possible to create a single power module of any electric output power. Taking it as a base, it will be possible to gather a sea submarine or pool hydroelectric power station of any power consisting of a number of such modules. As an example, one of constructive variants of such a module with a design electric output power of approximately 315 kW and its possible size are given on Fig. 9. Its batch assembling (1) included in a coastal hydroelectric power station with a power of approximately 31.5 MW located at a depth of approximately 16.5 m is given on Fig. 10. Drive cable outlets (2) and current control units (3) can be located directly on the coast.

The same hydroelectric power station can provide for a power of approximately 150 MW at a depth of approximately 50 m and a power

of approximately 320 MW at a depth of approximately 100 m.

The power module based on the same hydrodynamic scheme but located vertically in water, as it is shown on Fig. 11, 12, requires bigger depth and the same power. Such a module consisting of given water lifting device (6), hydro turbine (5), and electric generator (4) needs less area for its location. It can be, for example, simply hanged in water reservoir (1) by rope (3). The water reservoir can be made in the form of a closed cylinder tube installed in an underground well.

The vertical location of the module makes it simpler to use it in regions where there are no deep water resources because it allows using smaller volumes of the required water.

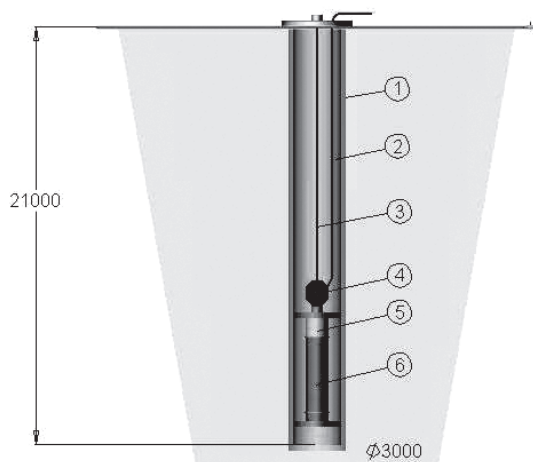


Fig. 11

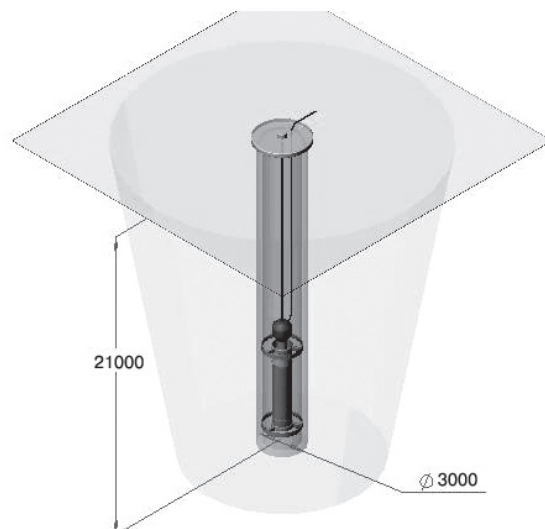


Fig. 12

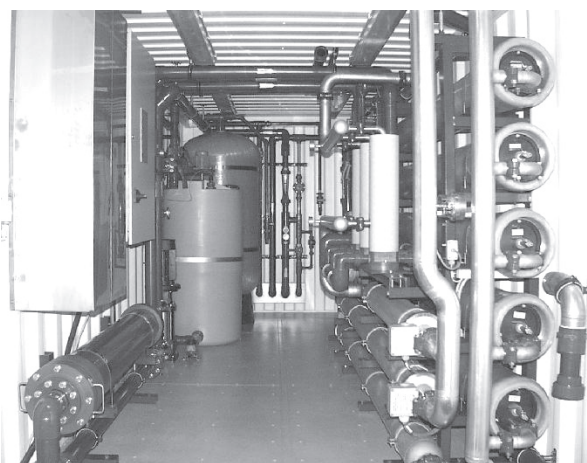


Fig. 13

The theoretical calculations' results of the given scheme and the developed method of its designing were confirmed by experimental researches. In 2003, an experimental desk-size power module has been developed, built and tested in Spain. It consisted of an analytical model of the horizontal construction, a hydro turbine, and an electric generator for testing at a depth of approximately 50 meters.

The given module had a design electric output power of approximately 97.4 kW. As the main parts (the chamber, pipes 2, 7 etc.) of the scheme and the pressure control units in the chamber, a set of construct elements of the certain seawater desalter shown on Fig. 13 had been used. The chamber's volume, the pipe's size, the valves' fittings had been selected taking into

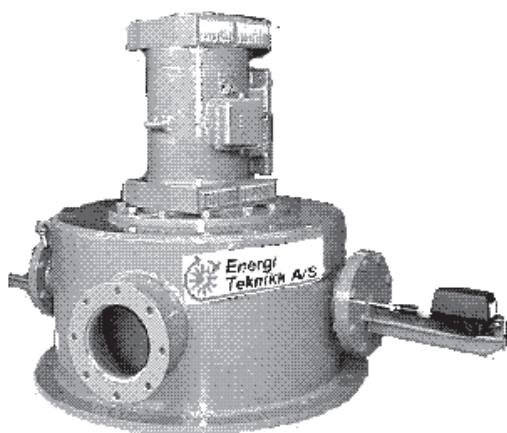


Fig. 14

account their compatibility together with minimal redesign costs. A reaction-type hydraulic turbine produce by a Dutch company «Energi Teknikk, A/S» had been used as a hydraulic turbine. It had been specially modernized for an inlet pressure of approximately 33 meters. The hydraulic turbine is shown on Fig. 14.

An AC synchronous generator with a voltage rating of approximately 6 kV and a power rating of approximately 100 kW with an automatic frequency and pressure adjustment had been used as the electric generator. A ballast ohmic resistance by strong wind power generators had been used as a load.

All parts of this power module, registering equipment of the chamber pressure, a self-contained power source for the equipment, the hydraulic turbine and the electric generator were assembled in a hermetic container, which had a flanged joint for pipe splicing in the front part and a hatch for flowing out of the used water in the upper part. There were additional hermetic hatches in the container. They provided for access to the valves if their manual adjustment was necessary. The container design provided for splicing of acceleration and pressure pipes of any length and, if necessary, quick change of them. The appearance of the container with the given power module is shown on Fig. 15.

The tests were carried out by putting this container by the rope from a ship at the specified depth. Several test series have been carried out.



Fig. 15

As a result of a certain updating of the valves' weight, a stable self-running operation mode was obtained at this depth after some tests. Processing of the chamber's excess pressure oscillogram gave average results shown on Fig. 16.

As a result, a direct measurement of the produced electric pressure showed a voltage value of 5.8 ± 0.35 kV while a direct current measurement showed a current of 15.96 ± 0.46 a. This coincides with the obtained electric power of 92.73 ± 8.25 . According to the average value, it is less than the theoretical value only by approximately 4.8%.

Thus, the new water lifting device, which is per se a new gravity energy transformer, first, can produce any industrial quantity of ecologically clean and powerful electric energy by the simple and cheap method and, second, according to its power, can substitute the existing heat and nuclear power stations.

Now there are no problems with wide technical introduction of this invention into energy. It depends only on investments. A detailed financial evaluation shows that, in order to develop and build such power modules for the possible hydroelectric power stations based on

it, with a power of more than 100 MW, it is most advisable to use the scheme with the vertical module's location, with a unit output power of approximately 500 kW. A batch of such modules will need a water reservoir with a square of no more than 4.5 mI/MW and a height of 21 meter. A total mass of such a module using an electric generator "SG2-500-4Y3" (Russia) and a special reaction-type hydraulic turbine «PHY-500P» (Spain) can be only 4,840 kg. And its prime cost during serial production, taking into account the existing prices, will not exceed 97,200 Euro. Hence, a specific prime cost of such an energy source can be only 194.4 Euro/kW, which is minimal of all known energy sources. General costs of such hydroelectric power stations' construction will not exceed 130 Euro/kW and a payback period will be 2 years after the construction beginning. During the after-payback period, it is possible to lower power rates up to a symbolically small value or sell electric energy at the market cost and get not less than 14% of the initial costs per month.

In conclusion, we should mention that the results of the theoretical and experimental research allowed the article's author together with other co-authors to obtain Eurasia patent # 005489 and some European patents in 2005.

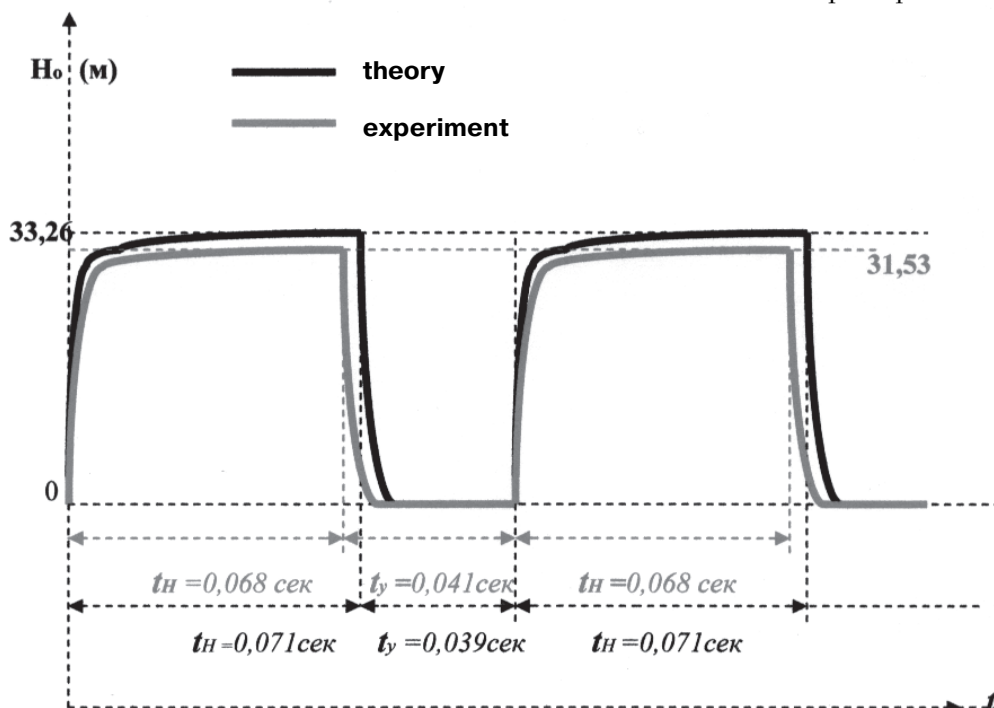


Fig. 16

An anti-gravity platform of V.S. Grebennikov

We publish materials from <http://gragons-matrix.narod.ru>. The site's author writes under the pseudonym of Dragon's Lord. His ideas are interesting enough for an inquisitive reader to analyze them.

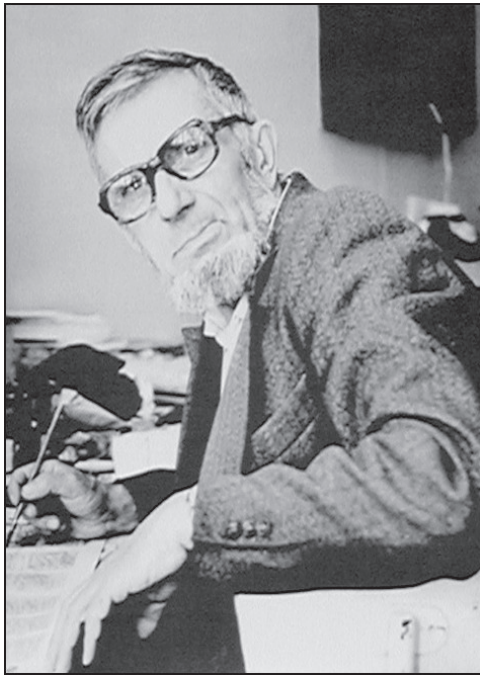


Fig. 1. Viktor Stepanovich Grebennikov

In summer 1988, an entomologist from Novosibirsk city, Viktor Stepanovich Grebennikov, examined a micro-structure of the lower surface of beetles' wing case by a microscope and became interested by "an unusually rhythmic, extremely ordered, incomparable honeycomb, solid multidimensional composition, which looked as if it was pressed by some complicated automatic machine". Studying this amazing micro-pattern allowed Grebennikov to design an aircraft of a new kind called "Gravity plane".

As usually, this discovery was made by chance. Once Grebennikov put a chitin bristle from some beetle's shell under a microscope and wanted to put another one but it slipped out from tweezers and... hung in the air. Then the scientist tied some laminae together from the top by a wire arranging them vertically. It was

impossible to put even a thumbtack on this block because it was thrown up and then aside. When the thumbtack was forcefully fixed to the chitin block from the top, it was lifted and, for a moment, completely disappeared!

Grebennikov discovered a bio-antigravity effect in 1988 and then, during 3 years, studied it from many sides, developed the platform's designs, carried out experiments. Together with Professor V. Zolotarev, he sent a patent application. Finally, in 1991, Grebennikov built his gravity-plane and started flying by a noiseless aircraft, which reached a speed of 1,500-2,400 km/hour. The aircraft was inertialess and almost invisible from below. People, who observed it from ground, saw, instead of it, a light sphere or a disc or a cloud with sharply outlined edges.

It is unnecessary to say that this was discovered not yesterday but in 1980ies. Grebennikov tried to rouse interest of "real" scientists but it was useless. Nobody wanted to talk to him. In



Fig. 2. A wing and a wing case of Cetonia. In many parts of his book, Grebennikov describes remarkable properties of wing cases of scarabaeus, bronze poplar borer and especially Cetonia. Among five species of bronze poplar borer, almost all have the CHAOTIC-HONEYCOMB pattern on the INTERNAL side of wing cases.



April 2001, Grebennikov died of a stroke. A book called “My world” written by him in 1997 remained. There is a full variant of the book in Internet at <http://bronzovka.narod.ru>.

Grebennikov studied an effect of cavitary structures of insects. He gave this name to a mysterious radiation emanated from their nests.

In chapter 5-1 of the book, Grebennikov writes: «I have only a handful of old clay lumps, fragments of these nests, with numerous small rooms-cells. The cells were located side by side and looked like small thimbles or, more likely, small jugs with smoothly narrowing beaks. I’ve already knew that these bees belonged to species of *Halictus* – according to the number of light rings on their oblong bellies. There was a wide vessel filled with these spongy clay lumps on my working table, which was jammed with instruments, ant and grasshopper houses, vials with chemical agents and other things. I had to take something and I brought my hand above these spongy fragments. And a miracle happened: I suddenly felt heat above them... I touched the lumps by the hand – they were cold. But I obviously felt heat above them. Moreover, I felt unknown pushes, bounce, “tick” in my fingers”.

This radiation cannot be screened. Grebennikov wrote: “I put a piece of cardboard on top – the feelings were the same. I put a pan’s lid but it had no effect: this “something” ran through the barrier. I should immediately study this phenomenon. But the instruments did not react



Fig. 3. Grebennikov’s flying platform

at all: neither finest thermometers, nor ultrasound recorders, electrometers nor magnetometers. But usual human hands (and not only mine hands!) obviously felt either heat or cold wind or ticks or a denser medium above the nests. Some people's hands became heavier, other people's hands were pushed up; some people's fingers grew numb, fore arm's muscles felt spasms, some people felt giddy, secreted saliva voluminously”.

But how did V. Grebennikov came to the idea of his aircraft? Let us read further: “In summer 1988, I watched by microscope chitin shells of insects, their fleecy antennae, butterfly wings' lamellae of finest structure, open-work of shad mooneye's wings with bright play and other Natural Patents. I was interested in an unusually rhythmic micro-structure of some parts of rather big insects. This was an extremely ordered composition, which looked as if it had been pressed by some complicated automatic machine according to special designs and calculations. In my opinion, this incomparable cellular structure was necessary neither for strength nor for decoration of this part.



Fig. 4. A picture from the sixth chapter of “My world” book

I did not notice something even resembling such an unusual amazing micro-pattern neither on other insects' parts nor in the rest of nature, nor in technology nor in art. Due to the fact that it was multi-dimensional, I could not copy it in a flat drawing or a photograph. Why does an insect have this? This structure is located in the bottom of wing cases and is almost always hidden. It can be seen only when an insect flies but who can do this?

I suspected that this can be a wave beacon having “my” effect of multi-cavitary structures. During this really happy summer, there were a lot of insects of this species and I caught them using light in the evenings. Neither before nor after that, I observed neither such a great number of them or even single individuals.

I put a small concave chitin lamella on a microscope table in order to watch its strange cells using strong magnification once more. I looked at a regular masterpiece of Nature-jeweler and, without any purpose, put another lamella with these unusual cells located on one of its sides on the first lamella by tweezers.

But the part was pulled out the tweezers, hung in the air for some seconds under the lamella, which lay on the microscope table, rotated clockwise, moved – in the air! - to the right, rotated anticlockwise, swung and only then quickly fall on the table.

A reader can only imagine what I felt that moment... After coming to consciousness, I tied some lamellae by a piece of wire. It was difficult and possible only if I took them vertically. So, I made a kind of a multilayer chitin “block”. I put it on a table. Even such a comparatively heavy thing as a thumbtack could not lie on it: something pulled it up and then aside. I fixed the thumbtack to the top of the “block” and then so unbelievable things began to happen (particularly, the thumbtack completely disappeared for a moment) that I understood that this is not a beacon but some Other thing.

I was excited again and, due to agitation, everything around me was like in mist; but I could calm down and, in two hours, could continue working... Everything began from this accident.”

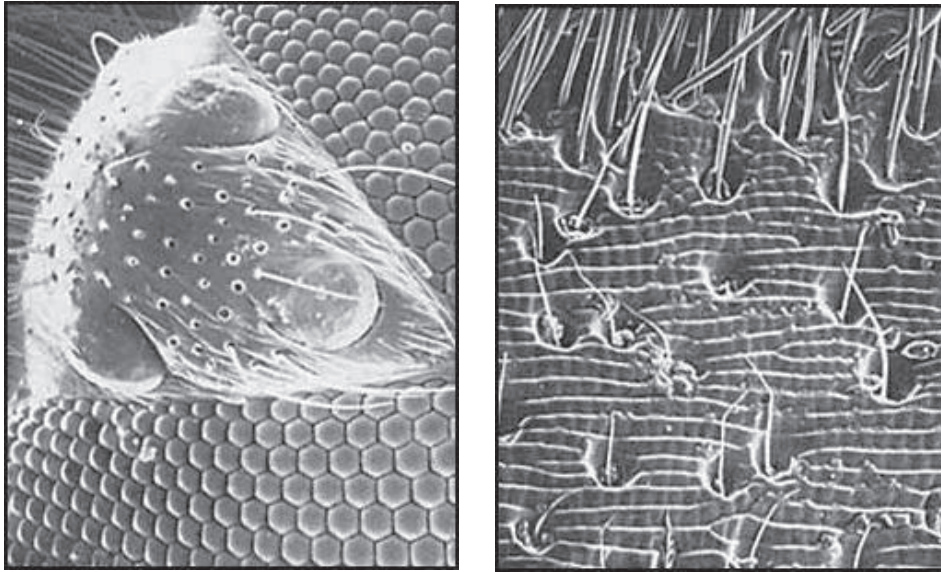


Fig. 5. “These strange, extraordinary fine and complex instruments and devices of insects are used not only for senses of touch, smell, vision, sound but they also receive or generate electronic waves while some of them hamper the Earth’s gravity. The picture was made by an electronic microscope.”

Did you pay attention to magical words “...and some of them oppose to the Earth’s attraction...”? It is really strange that “...*strange stellate cells...*” cannot be seen on them though “...*the unusually rhythm micro-structure... extremely ordered composition looking as if it had been pressed by some complicated automatic machine according to special designs and calculations... incomparable sponginess...*” is obviously seen on the third photograph. However, if we remember Grebennikov’s remark: “...*I did not notice something even resembling such an unusual amazing micro-pattern neither on other insects’ parts nor in the rest of nature, nor in technology nor in art...*”. Usual hexagon honeycombs can be observed. Or does Grebennikov want to say that honeycombs (as in experiments on production of the effect of cavitary structures - ECS) are a simplified example of this complicated pattern and the antigravity effect can be observed already in such a simple structure? Here are more photographs of honeycombs:

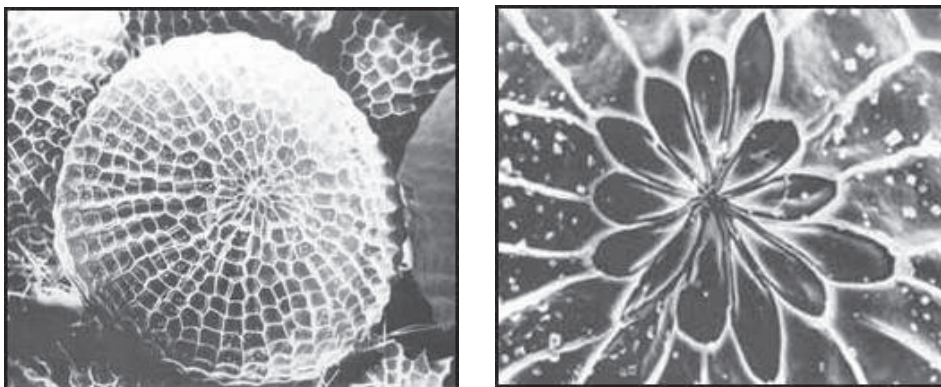


Fig. 6. Multi-cell structures of insects magnified by an electronic microscope by hundreds and thousands times

These are the only photographs in the book, where “...*strange stellate cells...*” can be seen. Possibly, it is the construction’s prototype. At least, this is something very close. We can suppose that these are honeycombs (on micro-level) and an element with a star consisting of multi-layer mesh of cells is formed. Just like on the photographs.

And, in two years of laborious work, a gravity plane shown on Fig. 3 appeared: an aircraft with amazing characteristics. It is invisible, need no traditional engine as we imagine it, and has no wings or a propeller. It is noiseless; easily reach a safe flight speed of 1500 km/h, which is not felt by a pilot: there are no either inertia properties of a moving body or heat influence of the environmental air to the aircraft, or dynamic pressure or other effects. It also has a very simple design: a post with two handles placed on an opened platform.

A detective story

In 1992, in “Molodost Sibiri” newspaper, a pre-release of Grebennikov’s book “My world” was published. The photographs of Grebennikov flying by his platform were published in the article for the first time. The photographs were also published in “Tehnika molodezhi” magazine.

From bad to worse, it was written in a “Tehnika molodezhi” article that total volume of the book was meant to be 500 pages and 400 colorful images. In the same article, it is written that the aircraft principles, heights and outfit will be given in “My world”. Grebennikov was going to completely describe his invention. The whole book was aimed at it. But proofreaders and an editor (and, possibly, the according authorities) explained Grebennikov that it is forbidden to publish such information.

So, Grebennikov had to remove fragments of the text and patch it up. This is why a lot of hints and keys remained in the book. In order to completely remove information on the platform, he had to rewrite the whole book! Two photographs with Grebennikov’s flight were left in the book because they were already known to people. As a result, the book’s total volume was more than 300 pages and there were a lot of inappropriate butterfly images in the end of the 5th chapter”.

Though Grebennikov could not publish the invention’s description, he tried to tell readers fundamentals of his inventions by hints (because, in 1990ies, he WANTED to tell this to the world and, only in 2000ies, after he became ill, he began to reduce the information considering it dangerous for people’s health).

In the “Tehnika molodezhi” article, it was written that Grebennikov had demonstrated his platform in a museum (in Siberian Research Institute of Agriculture and Agricultural Chemistry) FOR EVERYONE! Possibly, a big colorful photograph of the aircraft was taken in the museum. If it is so, there must be eye-witnesses who saw the aircraft. There must be a lot of them.

A real device was made in one copy and disappeared after Grebennikov’s death. However, in the mentioned above museum, a model of the device made by Grebennikov remained. Actually, only the post remained. The board was stolen, the post was roughly pulled out, all plaster wing nuts were broken – apparently, they tried to untwist them! Everything – buttons, toggle, right handle of the handle bar – was made of playdough, plaster and papier-mache and then covered with silver paint. Grebennikov obviously tried to reproduce an appearance of the real device with maximal accuracy because it is much easier to use real wings nuts in the model. In this case, however, plaster copies were made using the real board. It is a pity that the lower part of the platform, i.e. the board, was lost. It could contain copies of block-boards’ parts and mirrored a real scheme of kinematic blind control. If we could look at the control scheme, it would be possible to remove many versions considering antigravity production principle. A range of questions would narrow...

The device

A fine analysis of a possible design of Grebennikov’s platform is published at <http://dragon-matrix.narod.ru/> (it is not real but a supposed design).

The platform’s post (the handle bar)

The first handle bar’s section is a T-shaped welded construction with a lot of buttons, signal indicators (light-emitting diodes) and even an electrical toggle. The instrument at the handle bar’s center is an altitude meter.

An electrical snap-action (two-position) toggle (5) is used for turning on board electrical equipment (signal light-emitting diodes) and,

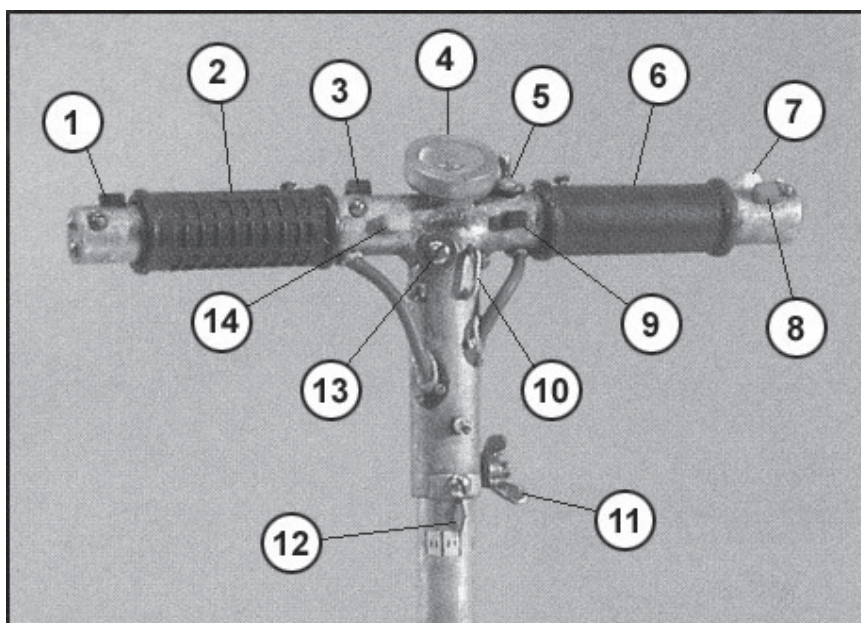


Fig. 7. A scheme of elements of the first (upper) post's elbow

possibly, additionally, for “permission” of motor device operation process.

At the left of the altitude meter, opposite to the toggle, the electrical button-starter (3) is located. Grebennikov pushed it when the device still stood on the ground (right before take-off). Pushing the button, a condenser plate in the motor device is charged by a high potential. On the end of the left handle, another light-emitting diode (1 – traditionally, it is called “green”, in order to distinguish it). It shows charge presence on the motor device’s condenser plate and, possibly, a charge degree of the plate (by different brightness of glow).

In the opposite direction, on the end of the right handle, two light-emitting diodes are placed: red (8) and white (7). They are directly connected to plug-and-sockets placed in mechanical units of joining-separation and change of blinds’ tilting. The white light-emitting diode induces straight motion while the red one induces quick slowdown.

Left rotary handle (2) controls blinds separation with increase of an active surface – a vertical traction. The right one (6) controls change of rotation angle of every blinds’ plate around the long axis – a horizontal traction.

Two mechanical buttons-catchers (14, 9) directed at a pilot’s belly are placed lower than the toggle and the button-starter. They are connected to the rotary arms according to “push and turn” principle. In order to turn the arm, it is necessary to press an according button by a thumb (to release the arm’s motion) and then it is possible to rotate it freely pressing the button. If you stop pressing the button, the arm will stay fixed in the existing position (with the given angle). This helps to carry out the hovering mode and choose a fixed height and flight speed (during a long flight time).

All other “convex” elements located at the first handle bar’s elbow are retention screws. There are no control and diagnostics elements except the mentioned ones. The most interesting thing is that the upper (right) handle bar’s section TURNS like a handle bar of a standard bike (!) controlling a mechanism of the platform rotation (unsynchronism of the symmetric block-boards’ rotation). A rotary effort is transferred by a flexible elastic cable (with a diameter of about 10 mm). The biggest screw on the handle bar (13) located under the altitude meter in the center is a bonding of this cable. Bonding of the whole post to the platform, this rotary cable is set into a central socket (the biggest one on the photograph,

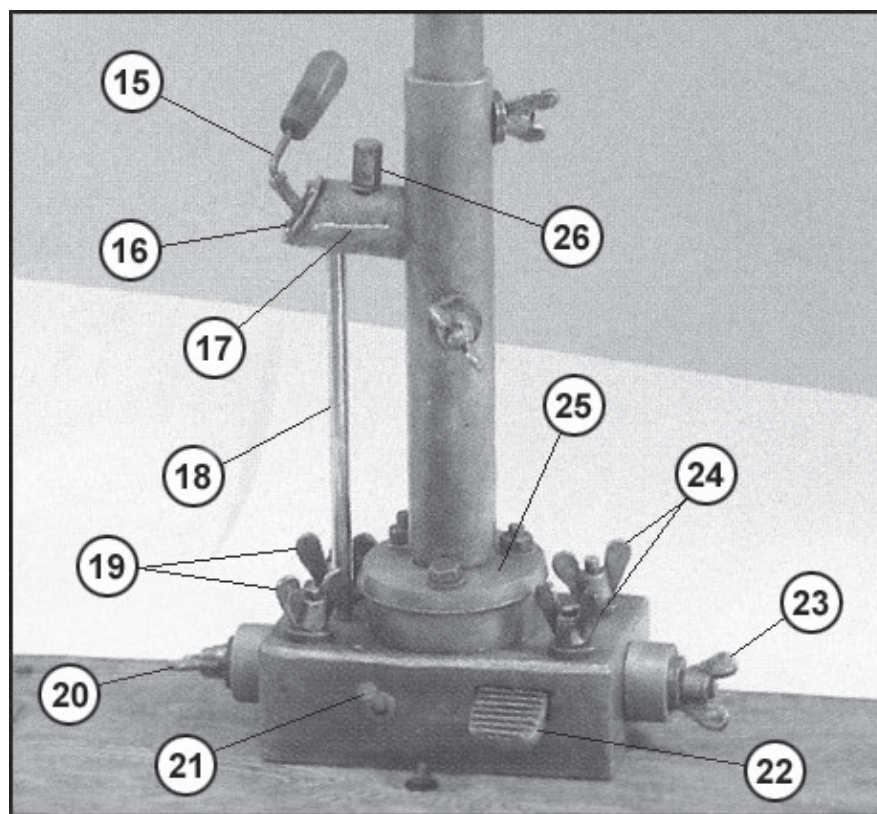


Fig. 8. A scheme of elements of the fourth (lower) post's elbow

where Grebennikov keeps his suitcase). ***“Loosening screw-nuts on the control post, I shorten it like an antenna of a radio set, and take it (Grebennikov means this cable) out of the platform, which is folded in two, due to joints”.***

By the way, the handle bar could rotate. Near a bolt of the rotary cable bonding, a cramp is stuck (10). Grebennikov tied himself to it with a belt. The second elbow is not interesting because it is a standard pipe. It is only necessary to mention that it does NOT rotate together with the first one but is fixed to the third elbow, which, for its turn, is screwed to the fourth immovable elbow. A wing nut on the first elbow (11) DOES NOT ATTACH the first elbow to the second one. Instead, it holds a special bushing, which helps the handle bar to turn. There is a button directed to a pilot on the third elbow. It is not a light emitting diode but a button because Grebennikov painted it the same brown paint as the post. Who would paint light emitting diodes which do not light bright? The use of this button will remain unknown, perhaps. And we will not know how the wing

nut on the forth elbow was used (it is located in the center and directed to a pilot).

The forth elbow ends by perpendicular flange (25, with three bolts), which decreases the “pull out” moment. The lower elbow cannot rotate because a device of the lower side rotary arm is stuck to it. A body of the device (17) is a CYLINDRICAL pipe section (it is stuck to the post horizontally). A free end of the body is cut with an angle of about 40 degrees and closed by round plate-stub (16) with three small screws. There is a hole in the stub's center, where our handle (15) protrudes from. The handle is spring-loaded and has a mechanical nature. It is necessary to pay attention to rod (18) starting from the handle's body to the control box. Actually, this is a hollow pipe, where either a cable or a rod with a bolt head (at the bottom) slides. When the handle is turned against a pilot, it is impossible to fly. If it is turned to a pilot, it is possible to fly.

There is an adjusting element (26) on the upper handle's surface. It looks like a small cylinder with a horizontal metal rod, which is used for

its rotation. It adjusts accuracy of the connection-disconnection mechanism's operation (by pulling up the cable or somehow else). Most likely, the handle is a standard protecting device, which blocks accidental operation of the platform's antigravity devices without a pilot.

Now let us discuss a small box in the bottom of the post. Four wing nuts (19, 24) located on the upper surface of the box fix the post to the platform. Two side (opposite) wing nuts (20, 23) adjust accuracy of "distributors" operation (accuracy of bringing together and synchronization of the blinds). There are two "distributors": the left one is used for separating the blinds and the right one is used for change of the blinds' angle. Each mechanical "distributor" of the efforts (located horizontally) is connected to a cable from each of the rotary arms of the handle bar. Then, efforts are distributed to several cables, to each of four blinds' blocks.

There is a treadle (22) in the box from the pilot's side for the right foot. Its function is quick slowdown (and also standard slowdown).

Another electrical snap-action toggle is located near the treadle (at the left of it). It has bright orange color and either made of transparent plastic and lit from inside by a light emitting diode or made of an opaque material and painted by a fluorescent paint (with phosphorus

or something like this). Why is it painted? It is made so due to the fact that it is used only at night, i.e. under conditions of limited illumination.

What does it control? A small headlight is placed on the right side of the box (like a reflector of a flash-light). It turns the headlight on. A flash-light lamp is used. It is connected through a resistor to a small accumulator hidden in the same box at the handle bar's base (it is an analogue of "Krona" battery of 9 Volt; it has the same size but it is cylindrical).

It is necessary to mention that such an accumulator can supply all light emitting diodes, headlights and a high-voltage transformer and charge the condenser plates in the motion device for a couple of weeks of continuous operation (at least, it will be enough for a rather long time). It can also be charged at home.

The headlight can be used during take-off and landing and is useless during flight due to two reasons. First, there is nothing to light in the sky. Second, if the platform's irradiators have sufficient power, the platform becomes invisible and stops light from going out of its field's limits. Besides, it is difficult to ACCIDENTALLY step on and break the toggle glowing in the dark because it is placed not very well.

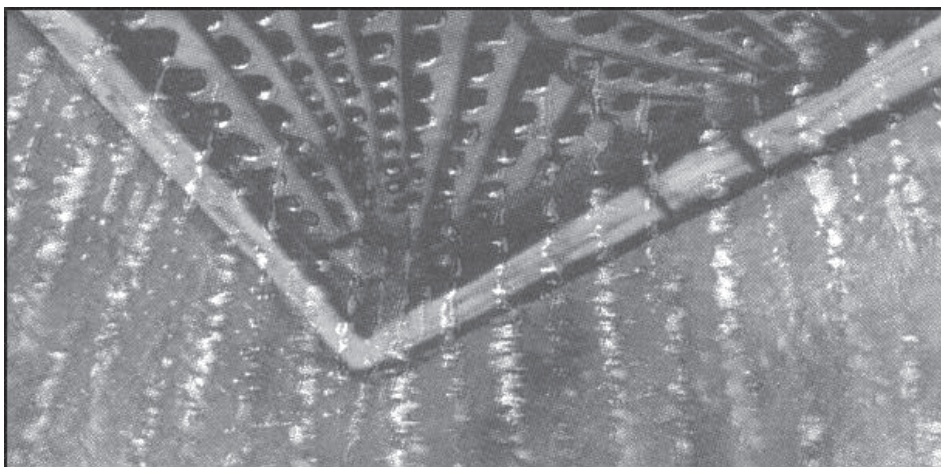


Fig. 9. A bottom view of the platform (the picture from "My world book"). The design of the back blinds-fans can be seen.

The platform's base

Grebennikov made his airplane of a platform, so numerous screws and wing nuts are just lightly modified platform's parts.

Each of the platform halves was made by Grebennikov of ONE wooden piece while industrially produced platforms are made of plywood with attached boards. But this is a box of old Soviet microscope package with an external walls' thickness of 8 mm and an internal walls' thickness of about 50 mm. Grebennikov only had to take out a plastic foam interlay and cover the body with drying oil. He made this though the board's thickness of 8 mm is rather unreliable. Possibly, Grebennikov strengthened the base by sheet metal from inside.

Blinds (block-boards)

The blinds' design is a standard FAN made of flat long elements. There are four fans. Each of their four axles is fixed vertically at the platform's corners. It can be seen in photographs. Even a picture by Grebennikov showing its device from below exists!

Two bolt heads can also be seen on the photographs, approximately in the center of each platform halves. This is a bonding of the distribution mechanism, which transfers effort from the "distributors" to a fan opening device. Each fan consists of nine plates. In order to make them strong, the plates are made of sheet metal. Micro-nets are stuck from the upper surface of each plate. On the one hand, the metal does not prevent nets from operating because the effect of cavitory structures cannot be screened and, on the other hand, protects them from mechanical influences such as influence of grass during landing. Holes in the plates, which can be seen, are not related to micro-cells. They are made only for lightening the metal plates' weight. Do you see that it is difficult for Grebennikov to hold even a lightened version of his platform?

Antigravity effect (created due to the effect of cavitory structures) is produced by the cells but they need "fuel" in order to work with maximal efficiency.

Roughly speaking, the effect of cavitory structures works the following way: any material consists of particles vibrating by its own frequency (read Tesla's cosmology, works of John Keely, Thomas Henry Morey, Wilhelm Reich and others). Due to such internal atomic vibrations, a stationary wave exists in the environment, around any object (and further, discrete "reflections" or maximums of such a wave).

Thus, a frequency and length of such vibration are unique for any material (according to Grebennikov, this is a "reflection of de Broglie waves). If we make a cavity, its walls will begin to "radiate" towards each other or under some angles. If a right size of such a cell will be found, waves' maximums will sum up and a field will be strengthened in the given point of space (field antinode).

So, let us make conclusions. First, as many as possible surfaces are necessary for one cell (it may seem strange but a polygon with maximal quantity of sides, which can be used for filling a plane without gaps and fractally is a hexagon). Second, the less the size of each cell, the more quantity of surfaces, which we can have with the same volume. The more cells and, accordingly, the more surfaces, the stronger the effect of cavitory structures. Let us remark more that size of one cell is not arbitrary but divisible by wave "reflections" (maximums' position), which, in their turn, depend on a used material. Wave "reflections" can be far from the surface as well as very close to it. Closer ones have stronger power.

So, we have a very fine net. By specifying a certain geometry of its cells (size and form of planes, angles between the planes), we concentrate our STATIC field (the material's "radiation") in certain points of space. However, we are interested, first of all, in force GRADIENT. The mentioned static field does not produce yield and confirms the law of energy conservation. We don't have antigravity so far.

Then we use lepton theory of Isakov (remember that lepton, aether, and orgone are the same). We have to determine such a form of cells, which will allow having different field force: from a

very low on the one side to a very high on another. The less distance to the cell material surface, the stronger wave “reflections” we have. We make a simple and logical conclusion that one side of the cell must be geometrically less than another. If an initial cell is cylindrical, we have a cone: if it is triangular or square, we have a pyramid with a triangular or square base. If we initially have a hexagonal cell, the pyramid will be hexagonal too.

It is necessary to tell about lepton explanation of gravity effect. This means that leptons fly all over space in all directions, chaotically. They pass through all bodies but still they transmit some (very small) part of their speed to these bodies. Now imagine two spheres. A lepton stream flying from one sphere to another passes through the first sphere, brakes and “irradiates” the second sphere less than the first one (the second sphere is in “lepton shadow” of the first one). And on the contrary. Thus, pressure from the direction of the internal space (between the spheres) will be less than the external pressure, which leads to attraction (i.e. pushing together) of two bodies. This effect is called gravity.

So, we need antigravity. There are leptons or aether everywhere in universe. If a device will be invented, which will be able to change leptons’ direction to the necessary one (create aether wind), our task will be solved. We already have such a device – this is our cell. A cell of the conic (or cuneiform) kind takes up a lepton stream from the horizontal direction (it will become obvious after we read Wilhelm Reich’s works in the attachment) and reapportion it to the vertical one: a small part of the stream goes in one direction while almost the whole stream goes in another. Of course, if the cell’s axis is placed vertically as in Grebennikov’s platform.

Now, if we place such a solid net consisting of the micro-cells under the platform (in a zone BETWEEN the bodies, i.e. between the Earth and the platform with a man) and orient it in such a way that “aether wind”, which is created by it, blows the platform from the bottom compensating insufficiency of lepton

pressure (as described above), the platform and its passenger will become imponderable and fly up. Controlling a power of an aether stream and its directions (the blinds are used for this), we have the same rough material idea of force vector as in the case of jet streams. The only difference is that aether is so insensible for us that there are no strong air streams. At first sight, there is nothing! The platform just picks up speed and height without any sound, visual and other effects. Inertia force doesn’t influence a pilot. It is necessary to note that a head is heavier than legs while the legs, in their turn, are heavier than the platform – it is a gradient of the antigravity force!

It is interesting that it is possible to make symmetric cells (like usual honeycombs) instead of cuneiform ones. A half of this “aether wind” can blow in the ground – it’s all right. It is unreasonable: about a half of the power is lost (power, however, can be increased by decreasing cells’ size by 0.5) but, technologically, such nets are easier to build.

Now let us tell about the cells’ “fuel”. Grebennikov noted that, in case with the effect of cavitary structures experiments, it is necessary to take the Sun into account under normal conditions. The point is that, together with sunlight, an intensive aether (or lepton, this is the same) flow goes from the Sun. As it was noted by Grebennikov, during take-off, Grebennikov’s aircraft was always carried away in a direction, which was opposite to the Sun. This happened because, from the Sun side, the fans got more effective supply and worked more effectively moving the aircraft in another direction. This is the answer. In the event when the aircraft was moved away due to different reasons, this cannot be explained by “usual conditions”. In this case, different environmental disturbances take place. We will not consider them here because these are fluctuations, which do not hamper in flying.

Let us now think about electrostatics. If in all descriptions of Grebennikov’s experiments including the beetle regularity “two layers of reticular structures are more powerful than one layer” takes place, how a fact can be explained

that a folded fan (a multi-layer package of nets) is much WEAKER than an unfolded by Grebennikov one (i.e. place all nets in one layer)?

It is obvious that power increases during fan unfolding: ***“Moving a handle, I unfold the blinds again and hoick vertically” or “A flexible cable inside the handle transmits motion from the left handle to the gravity blind. Folding and unfolding them, I carry out take-off or landing”***. What increases during the blinds’ unfolding? Right, their square increases. But not just square but a square of interaction with the second layer. It is understandable that there are no additional elements under the fans. But there is such a structure above them! Remember about the sheet metal?

Why electrostatics? Various purely electrical elements are installed on the platform. It means that electricity is used. It is also known that an electrostatic field of high potential can produce yield (remember what Tesla told) and is not consumed during this. It is possible to obtain high voltage of dozens kilovolt by rather compact devices which use watch batteries. In Novosibirsk, in the 90ies, a whole kind of such devices was sold: from shokers to stimulators.

Such a “box” can be easily placed in the box under the post. Pressing the button-starter (the button on the left of the handle bar), the transformer turns on for a short time and the terminal’s plate located a little higher than the nets obtains a considerable static charge. The “green” diode indicates a charging degree of the terminal. The terminal cannot discharge itself, during operation, but it is slowly discharged through the air (a so called corona discharge). Thus, Grebennikov periodically had to press the mentioned button taking into account the diode’s light. It is possible to build an automatic scheme controlling this process but Grebennikov did not know radio electronics and hardly knew electrotechnology.

There is only one vexed question: “What did Grebennikov show on the picture? It could be either BOTH halves of the platform or only ITS BACK half”. The first version will be asserted by supporters of a rough

interpretation of the platform’s operation: a repulsive force, which is directed DOWN (vortex technologies and others). The second version is confirmed by a reasonable thought: “there are NO two internal vertical partitions, to which rotary hinges are fixed, between the fans on the picture. It means that two BACK fans are shown on the picture”. In our supposition, we consider a force directed UP and “blowing” at the platform from below. Understanding the construction this way, it is possible to explain how the brake is carried out by incline of the back couple of the fans. This is how the treadle on the platform works. Accordingly, the front fans work the same way but mirroring (creating traction in the motion direction). It is necessary to note, just in case (for military men and cosmonauts), that the incline changes not the whole fan but each separate plate. Each plate has its own axis.

The left handle USUALLY works only with the back fans (It will not be surprising if two back fans will turn out to be much stronger than the front ones), i.e. creates the vertical traction. Grebennikov stands **only on the back half of the platform**. Make your conclusions. The right handle ALWAYS controls only the front fans, i.e. creates the horizontal traction (the while diode lights). Rotation, as it was already discussed, is transmitted mechanically by twisting a thick flexible cable. The rotary effort is transferred from the lower transmitting unit in the center of the box under the handle bar by a standard “car” method, i.e. through hard control-rods with trunnion balls at their ends (but the trunnion balls can be absent) directly to “rotary” unit of the FRONT fans bonding. The back fans are not used by Grebennikov for control. This allows not transmitting all this to the back block-filters. So, the back couple is mechanically simpler than the front one by one third. During flight, the fans are unfolded and, when the treadle is pressed, the treadle drive rotates the plates and hampers the platform after preliminary turning off the “gas handle” (the white diode goes out and the red one lights). The effort for the plates’ unfolding and their turn to the back fans is transmitted through flexible cables; this allows easily folding the platform. Thus, the treadle is an analogue of the right handle but for the front fans instead of the back ones.

Invisibility of the gravity plane

A reason of a pilot's instable invisibility described by Grebennikov is caused by four crossed fields exists instead of the place of one field's influence. A product space is where a pilot stands. If only one field would exist, it would be stable.

The fans, according to the flight mode, change radiation power and radiation direction all the time (take-off/fall, acceleration/slowdown and, mainly, turn). So we just have to comment presence of the invisibility effect.

Light could freely come to the "sphere" around Grebennikov (in the influence zone of the field created by the nets) but could not come back. This is why Grebennikov was invisible. He could see everything because light reached his retina. But no reflected beams came from him because the entire light (a flow of particles coming from outside) was absorbed by the process generated by the nets, i.e. light was utilized (a flow of particles bringing the "fuel" to the nets).

When Grebennikov stood on the ground, he was visible because the blinds were folded and did not work (therefore, they did not absorb light or any other particles). As soon as he began to rise and increase power (increasing the fans' square), he smoothly (not suddenly) started becoming invisible. Of course, the invisibility was full during flight and, coming back, the process was the same. This is why, when Grebennikov flew low above the ground (and generated low power), he became visible (cast shadow). The same happened during quick landing, in the "falling like a stone" mode, when the blinds were folded: he became fully visible.

This is why it was possible to take a photograph of Grebennikov during take-off, when he flew low. But when he flew "above pine's tops", it was impossible to photograph Grebennikov because there were no reflected beams from him, thus he was invisible.

Humidity and electrostatics

Grebennikov noticed one more detail: it was impossible to fly by the platform during rainy

weather. On the one hand, actually, increased humidity does not promote electrostatics (and a bronze poplar borer flies only during sunny weather because chitin is very electrostatic; a beetle, most likely, uses the following effect: statics+ECS=strong antigravity). On the other hand, as Grebennikov wrote:

"Put a shower head on a tap and turn on cold water. Slowly bring your palm to a beam of falling drops aside: most people feel heat at this moment. In fact, this is ECS increased by motion of new elements of the "multilayer net": falling water drops and gaps between them. After training in a kitchen or in a bathroom, feel stronger ECS at fountains or waterfalls. Even if atmosphere pressure is not falling, remote rain creates a strong ECS field influencing at a distance of many kilometers. Remember how we want to sleep before rain even in a closed room: ECS cannot be screened".

Many small drops and gaps between them form a multidimensional void structure, which influences by its ECS. This, however, does not help the device based on the same principle to fly.

Under the picture with the bronze poplar borer Grebennikov wrote:

"When a big Middle-Asia bronze poplar borer sits like that (this is live!) on a finger, the finger feels like it is pulled up".

Pay your attention: the insect is "LIVE"!!! Possibly, wing cases of a dried beetle will NOT show the repulsion effect. I repeat: possibly. What do I mean? Perhaps, the dried beetle has no sufficient static charge on its chitin and this prevents display of antigravity effect. It is also possible that statics is transmitted not by wing cases' surface but by hemolymph (a blood type) of insects. Or maybe this is not statics but something else.

As an example, here is a small fragment from Mister X's "works" (The editor's note: Mister X is a visitor of <http://gragons-matrix.narod.ru> site forum):

“Once I accidentally killed a standard and not prominent ladybird (I knew about Grebennikov’s discovery from the article). I am confused to confess but I tried even laying one wing case on another but it gave no result. I had no microscope and I used a standard magnifying glass for examination of the wing cases. Even under such a small magnification I could clearly see inside thin longitudinal walls-“edges”. Following mere curiosity, I crushed one of the wing case between my fingers. As a result, a red liquid flew out of it. My curiosity continues, this is why I took a standard flat battery, a lamp and a piece of cross patching. I found out an interesting fact: the liquid was a conductor. After I read the book and analyzed the pictures, it dawned upon me that we have a simplest electrolytic condenser with hemolymph (insects’ blood) as electrolyte and dielectric (chitin)!”.

What an idea! The electrolytic condenser, what do you think?! In general, it is obvious that, even if we get the necessary wing cases, a lot of DIFFERENT experiments must be carried out. But how to impact properties of the “live” wing cases to the “dead” ones? Grebennikov’s platform worked; this is a fact, so it is possible to technically reproduce the effect of the “live” wing cases.

The editor’s note: Here it is appropriate to remember readers about another approach to creation of engines, which is called “asymmetrical condensers”. Articles devoted to this topic have been published in our magazine.

Eye-witnesses

As it was found out, Grebennikov hoped to remain invisible in vain. People who saw him in the sky were found. Mister X writes:

“I was interested in Grebennikov’s question since an article called “Night flight over the city” had been published in “Molodost Sibiri” newspaper in 1991. A precondition was my only observation of UFO flight in the middle of March 1990. The UFO did not look like a “saucer” or an “object”. The observed object was practically the same as on the picture thought I cannot judge whether it was Grebennikov’s flight or not.”

Biological hazard

Grebennikov died at the age of 74. The age is venerable, but death was caused by a number of diseases, which can be obtained, for example, as a result of irradiation of a **strong electromagnetic field**. And Grebennikov confirmed that obtained the diseases due to flights by the platform. But a triangular bearer frame can be made of pipes, a platform can be placed in each corner of the frame and a pilot’s seat can be placed in the middle of this construction. In this case, a pilot will NEVER be in a field of the platform’s influence. Moreover, Grebennikov mentioned that the triangular design with three elements (net platforms) is an ideal kind of control.

In order to exclude a pilot’s contact with atmosphere, a hermetic cockpit is installed. It provides full comfort and safety.

Questions and answers

Question: Why did Grebennikov stood flying instead of, for example, sitting on the platform with his legs down and, in this case, why did not he make a shorter handle bar?

Answer: Both the platform and Grebennikov was COMPLETELY in the zone of compensated gravity’s influence, i.e. their mass and, more precisely, their weight was not positive but negative, which allowed flying. If he would put his legs OUT the field’s limits, their weight would become normal again, i.e. about 30-40 kg. As a result, the platform would change its vertical position in space to a horizontal one due to outweigh by the appeared weight. And Grebennikov would just fall from it. In general, nothing can be put out the platform’s limits during flight.

Question: Thus, it is impossible to build a device where a pilot will be OUT of the dangerous radiation of the blinds. Is it necessary to be in the field’s influence zone as Grebennikov did?

Answer: No, this is a mistake. The pilot’s cockpit can be placed outside the limits of the admittedly harmful radiation. It is just necessary to have at least three independent platforms placed on the edges of such a “saucer”

in the device's construction. Besides, the blinds must be made more powerful than Grebennikov's blinds because we will have to carry a not nullificated mass of the cockpit and a pilot placed in the center between the irradiators. Moreover, it is necessary to have an automatic stability device, which would remove list of the aircraft manipulating by powers of all three irradiators.

Question: Why do cells (for example, pipes) oriented vertically "irradiate" stronger than the ones oriented horizontally (remember how Grebennikov tried to tie some wing cases together and all his experiments on ECS) if aether is everywhere?

Answer: There are not sufficient quantity of aether wind in a space BETWEEN two objects in a vector's direction from one object to another. As we see, the Earth has a huge size and, accordingly, considerably ties up a stream flowing through it. This causes its strong gravity influence on other objects. If we place any cell (pipe) horizontally, aether will be absorbed from the vertical direction through walls of such a cell. Due to the fact that a lepton flow in this case is very depressed, we obtain low efficiency. If we place any cell (pipe) vertically, aether will be absorbed from the horizontal direction. In the horizontal direction, aether winds are not "screened" (because the Earth is lower than the pipe and, for example, the platform is higher. The second object can be missing).

Question: What is a "fractal principle"?

Answer: Imagine standard honeycombs. We take one hexagonal cell. If it has the right size, antinodes of the ECS field from each wall of this cell must coincide exactly along the central axis (reflection of de Broglie waves), i.e. the same "maximum" of the stationary wave. We have a certain power. Let us add six cells along the circumference – it is an approximate hexagon. Antinodes of the ECS field from the newly formed EXTERNAL sides of this big hexagon will coincide again and meet in the center but these will be other reflections (stronger than the first ones observed by us). Both groups of "maximums" sum up and, as a result, we obtain a field, which is stronger than that created by all cells participating in the

process and taken individually. Now we add other 12 cells along the external outline and so on. ECS maximums of different ranges will sum up all the time. This is a clear "fractal principle". Obviously, this is why there were so many hexagons in Grebennikov's book.

Question: How can we work with micro-cell nets – press them, assemble them in block-boards and install these boards to the device, - if a cell will immediately fly if we let it off?

Answer: This is a widely spread mistake. The nets do not fly themselves. Only objects placed in the compensated gravity zone (above the horizontally placed nets) has weight equal to 0. Difficulties appear only at the last stage of assembling when powers of construction elements are relatively strong and influence each other. In this case, assembling the device, it is necessary to watch the nets being in the vertical position. This relates to Grebennikov: when he folded and unfolded his platform, he put it vertically (I mean the board).

Question: Grebennikov could not turn at small power of the vertical traction (during take-off, landing and slowdown), could he?

Answer: Yes, it is because, in the event of the minimal vertical traction, the blinds are hardly unfolded. This does not allow normally turning the plates around their axes (change their incline angle). During slowdown, a drive of the "gas" handle turns off. This makes use of the handle bar useless because the plates of the front fans are placed in the horizontal plane too.

Due to the fact that the back fans bore the main vertical load, it is possible that the front fans are half-unfolded in their minimal position (when the right handle is not turned), which allows using the handle bar during low-power flight modes. If it is not so, it is still possible to do so. It seems to me that Grebennikov did not do this because he was pulled away from the Sun and he could not fight with it and, therefore, could not manipulate the turning function during take-off. Fundamentally, these details do not influence flight because motion is inertialess and, during change of reapportion of an aether wind flow, a motion vector changes at the same time.

Question: Could the handle bar really turn?

Answer: Let us think: actually, the left handle is busy (it unfolds the blinds and creates the vertical traction); the right handle, according to the description, changes incline of the blinds' elements (i.e. creates the horizontal traction from zero to maximum). Thus, only the treadle is left of all control tools. But, using the treadle (if we consider it as an analogue of another turn handle from a motorbike), we can turn the horizontal plane only in one side (motion of the treadle is one-way like motion of the handle). It is very inconvenient and, therefore, unreal. So, we make a conclusion that the handle bar actually turns to the left and to the right and the handle bar controls turning. The photographs confirm this.

Question: How can you prove that the treadle is used as a brake and is not, for example, a device controlling operation of a complex motion device?

Answer: Let us think again. Both handles change speed from zero to maximum (one – vertically while another – horizontally). In order to contradict, if necessary, a vertical force, it is possible simply to unfold the blinds (de-energize them) and, due to the fact that the platform ALWAYS flies with its bottom turned to the ground, gravity force does its work for us. It is different with the horizontal motion. We can gather speed from zero to maximum without any problems but how can we quickly slowdown if necessary? According to Grebennikov's words, there is not even air friction! It leads to a necessity to have another control element on the platform, i.e. the treadle-brake, which acts the same way but opposite to the right handle.

Question: It is not logically to trust one's life to presence or absence of voltage in the accumulator. What if it will run down during flight?

Answer: First, this is unlikely. Second, even this happens, nothing fatal will happen. The nets will work though not with maximal power. This event, possibly, will lead to a smooth landing of the aircraft (because the high-potential terminal will run down not quickly but smoothly).

Question: Why did Grebennikov tried to draw energy vortex exhaust from the platform on pictures of night flights?

Answer: Possibly, Grebennikov used not cone cells but symmetric ones in his design. I.e. an aether flow was distributed up as well as down in them. This variant is a working one, too. Taking into account use of high-voltage potential, aether flows carried bigger particles (charged ions, for example), which became visible in darkness. They were formed into single discrete pseudo-vortexes due to presence of holes in the blinds' metal plates (metal absorbs or hamper radiation while the holes let them pass freely).

Question: Why do you think that the drive from the right rotary handle goes only to the front fans but not for all of them?

Answer: Here is what Grebennikov wrote: *“The upper part of my device is really a bike's one: the right handle is used for horizontal-forward motion, which is made by incline of both groups of the blinds also through the cable”*. He wrote “BOTH”, i.e. he meant the two front fans (a fan is a single group of the blinds or, in other words, a block-board).

Appendixes: scientific hypotheses and extracts from articles

Lepton-hypothesis of B.I. Isakov. Extracts

Consequence 5. According to the formulas, an opportunity follows that high values of gradients of lepton physical fields' objects can be observed in zones opposite to acute angles of solid bodies, geological rocks, on tectonic plates' edges, on rock peaks, on tops of big cliffs and pyramids etc., particularly, matter outflow in the form of leptons and other elementary particles is possible.

Discovery of electron emission in zones of geological rocks' fractions (USSR, 1984) is a particular manifestation of a more general law. A body placed opposite to acute projected angles of other bodies or solid rocks, on tops of cliffs and pyramids etc. can be irradiated by leptons. On the contrary, bodies placed inside hollow planes of other solid bodies, for example,

inside pipes, cylinders, and cones or placed in a polyhedral or a 3-dimensional angle can experience “swap-out” of microleptons.

Biological objects with weakened microlepton fields can be “charged” with lepton energy on tops of rocks or pyramids. On the contrary, excessively excited biological objects calm down quicker if they are placed into internal cavities of solid matter with negative curvature or into an angle, a bay etc. with geometrical unbalance of matter, which is equivalent to negative curvature (possibly, a custom of many nations to calm down overexcited children placing them in a corner makes sense).

Consequence 14. According to the lepton hypothesis, each body is permeated extensively by lepton streams, which bombard it and balance lepton pressure up to a zero average resultant. Interaction of leptons with a body happens all over the body’s volume, not only on its surface. If preponderance or deficiency of lepton pressure will be artificially created just on one side by focusing lepton streams or, on the contrary, by obstruct them from the body by some screen or an artificial lepton vortex, a no-zero resultant can be created, which will be able to move light objects.

This can explain telekinesis phenomenon, particularly, experiments of V. Avdeev, R. Kuleshova and others and also poltergeist effects. The lepton hypothesis allows comprehending the universal gravity mechanism expressed by Newton’s law from a new point of view. Two bodies located close to each other partially screen each other from lepton streams’ pressure. From the external sides, preponderance of lepton pressure in comparison with a pressure from the side of a space between the bodies is created because each body partially hampers lepton streams coming through it. If point mass m is located near distributed mass M , a force equal to the screening force influences m ...

... where d is a constant of proportionality; p is a density of matter in the distributed mass, g is a distance and a multitude of distances from variable body point M to point mass m ; l is a body angle corresponding to angle sizes of distributed mass M and a point of location of point

mass m ; $f(r)$ is a function of body M geometry; 12 is a function of geometry and curvature of a lepton stream in the given point of space.

The lepton hypothesis allows not postulating but concluding, substantiating theoretically and comprehending, understanding Newton’s law, understanding the concealed gravity and remote influence mechanism. If two bodies with distributed masses $M1$ and $M2$ are located close to each other, a resultant force does not change fundamentally, only a conclusion of Newton’s law becomes more complex while the fundamental nature of the dependence does not change.

Thus, according to the lepton hypothesis, attraction is a deficiency of repulsion, i.e. the law of gravity can be considered as a consequence of the law of lepton repulsion (or lepton compression, pressure) during bodies’ screening, which leads to that the bodies are pressed to each other. If the lepton hypothesis is right, it is possible to suppose a potential possibility of varying gravity and inertia mass of a body under certain conditions:

1) during change of lepton streams’ focusing with the help of “lepton lenses” causing their concentration on the given, lepton rockets and lepton flying discs;

2) during huge speed of lepton vortexes’ rotation with high angular velocity, which is equivalent to screening from lepton streams. If the lepton hypothesis is right, the mentioned mechanism gives a possibility of partial or complete gravity control. The suggested mechanism of potentially possible partial or complete levitation must be thoroughly checked experimentally. If the lepton hypothesis is right, lepton engines, rockets and flying discs are possible.

A nature of the effect of cavitory structures

Which is a physical nature of the cavitory structures effect? Many suppositions and hypothesis have been expressed but, unfortunately, many of them are connected with extrasensory perception, which is fashionable among modern intellectuals for some reasons. A theory of Leningrad physician, Doctor of Technical Science, V.F. Zolotarev

deserves better attention. It was developed by him earlier and experimentally confirmed now.

As a result of long combined researches, we characterized the discovery as “an unknown effect of multi-cavitary structures’ interaction with living systems consisting in that, due to interference, de Broglie waves accompanying motion of electron flows in solid walls of cavities form a macroscopic field of multi-cavitary structures, which cause change of functional state of living objects locating in this field”.

De Broglie waves are peculiar to moving micro-particles of any body. They are compensated inside the body and displayed as radiation on its surface. They are so short-wave and super-high-frequency that instruments pick them up only in the form of diffraction but still they helped science. Remember peculiar pictures of electrons and neutrons obtained on crystals and films with the help of de Broglie waves. Nobody thought that these scanty radiations can influence living matter somehow. And they did not influence – at least near flat objects. But near multi-cavitary structures, where a square of solid bodies is big and multiply curved, de Broglie waves are put together and form, like musical overtones, harmonies with lower frequencies.

Thus, lengthening and strengthening due to laying on each other in cells, they form antinodes-maximums of stationary de Broglie waves. Striking on these passive barriers, nerve impulses glitch changing their frequency and speed and causing not only seeming feelings but also sometimes considerable physiological changes.

Stationary de Broglie waves do not have their own energy and, therefore, the law of energy conservation is not violated. Due to the fact that de Broglie waves move in physical vacuum, the effect of cavitary structures must permeate everything. We observe it when we uselessly try to stop the effect up by any screen.

The editors’ note: In 1996, Prof. Zolotarev gave me a copy of his manuscript. We studied it, prepared a plan of experiments and began

to search for investors. It was useless. Our situation that time could be described by words “starvation” and “poverty”. I remember that Professor had to raise chickens in his flat for some food. Possibly, now somebody will be seriously interested in beginning a research program on the effect of cavitary structures aimed at creation of real engines for space systems. A.V. Frolov.

Energy fields of geometrical forms

www.keelynet.com

Works of Wilhelm Reich are also connected with change aether density. We would like to express some interesting thoughts:

“Energy fields of geometrical forms” are special effects connected with the modern concept of aether. Some optimal geometrical forms and materials can be used for constructing devices, which react under influence of only environmental conditions, i.e. without additional external stimulation. Contraction details of two simple devices, which produce a tangible linear force influence without use of any additional energy at the input. It is possible to note two meanings of these training demonstration devices: (1) they prove that an aetheric kind of matter exists and any average person can feel it; (2) they demonstrate reliable methods of aetheric activation, which can be used for new energy applications.

Other examples of devices with efficiency more than one include a venerable organ-pipe and an electromagnetic antenna.

These devices work using resonance method when relatively low vibration of amplitude is reflected back. An echo signal can be many times more than an input signal in dependence on sizes of the device. The most effective size of the resonator accurately corresponds with a quarter of the initial wave length. Resonance will also occur with any lengths which are divisible by an odd number of a quarter of waves’ lengths. In these cases, we find that geometry of the specific device has minor significance. If the geometry is optimized for conditions at the

input, a maximal increase or an increased echo can be obtained.

We can summarize characteristics of these “super-single” devices as devices using “geometrical energy fields” because intensity of full energy of echo, which can be produced only as a function of size, form and location. Remembering that, we can suppose that certain highly optimized geometrical forms could provide for an increased echo without any additional input signal at all. Such a device could induce an effective echo increasing the finest vibrations at quantum level, which are much lower than the threshold our ability to measure them.

Despite the fact that the subtlest natural forces have been studied for thousands years, it can be proved that a modern era began in 1844. In 1844, Baron Karl von Reichenbach from Stuttgart published a series of letters describing his research of aether, which was called “OD” by him. Reichenbach discovered that a part of all people can visually feel outflow from tops of crystals and magnets if they had been first properly located in full darkness. He called such people “sensitives”.

Some time later, Reichenbach decided that aether can permeate through materials like silk, glass and metal. According to his ideas, aether seems to permeate all things in different density. Large quantities of aether could be found in sunlight and candle flame.

On the edge of the century, an Austrian philosopher Rudolf Steiner with clairvoyance talent researched an invisible world of aetheric forces. His close partner and biographer Guenther Wachsmith continued this work after Steiner’s death and published a masterwork of his teacher called “Aetheric shaping forces in Space, Earth and Man”.

A first true engineer of aetheric forces was Wilhelm Reich who discovered, as he called it, an “orgone energy” in 1939. Like Reichenbach, Reich discovered that metals able to conduct aether a hundred ears ago. His real big achievement, however, was an understanding of the fact that organic materials have a tendency to absorb aether. Laying two kinds of

materials together, Reich could produce a directed aether flow.

Reich developed a first working device for collection and concentration of aether. An “orgone accumulator” is a box with six walls made of alternating layers of metal and organic materials. Under controlled conditions, this device produced an inexplicable temperature increase in its internal part. This was enough for attracting attention of Albert Einstein who met Reich in January 1941. Reich also experimented with a “cloudbuster” (a buster for clouds dispersion), a tower-shaped device which, most likely, directed an aether flow through atmosphere.

Possible, the biggest contribution to aether engineering technologies was made by Trevor James Constable. He was a follower of Steiner, Wachsmith, Reich and others. He spent more than 40 years improving use of the aether technology of weather control. He discovered that some geometrical forms, possibly, show a big aether echo. During many years, he developed his methods so that a device with a size of a coffee mug located, accordingly, far from an ocean ship could change weather condition over a distance of many miles around it.

Constable discovery of resonance aetheric structures was important for research of the new energy. Now a simple geometrical device can direct a concentrated beam of aetheric forces through any type of a device with high accuracy. Actually, a degree of aether concentration is so high that human organs of senses can directly feel its resultant pressure. Thanks to pioneer works of the above mentioned scientists, it is possible to describe a design of two resonance aether devices, which

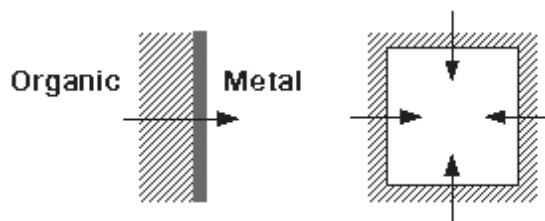


Fig. 10. Stimulation of the directed aether stream

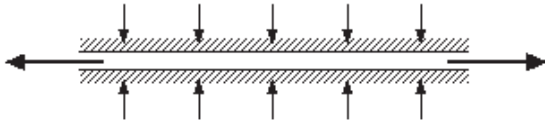


Fig. 11. The “emitting” device of ECS

were called “Chi Pencils” by the author. Both devices are built around a central resonance cavity. A formula for calculation of the resonance cavity’s size was obtained from a research of a ballistics expert Gerald Bull from Philadelphia.

An “emitting” device is generally a cylindrical metal cavity with a no-metal external layer. Due to boundary effects discovered by Reich, aether is absorbed from space through a side surface and emitted through both sides (actually, it is like laser). Geometrical energy fields around the emitting device are shown on Fig. 11.

How to build the emitting device. The following things are necessary:

- a piece of a 5/32-inches copper pipe;
- a 1/8-inches soft cotton cord;
- a metal knife for the pipe;
- a meter-stick, a sharp knife and glue.

Cut a piece of the copper pipe with a length of 18.1 cm. Apply a small bead of hot glue to the external part of one end and fix the cotton cord there. Wind 2 cm, apply a bead of hot glue and wind the cord around the entire pipe. Cut excess of the cord.

A “vacuum” device is made the other way. We need a non-metal cylindrical cavity with a metal external layer. Aether is drawn into one end and dispersed through the sides. A geometrical energy field around the vacuum device is shown on Fig. 12.

How to build the vacuum device. The following things are necessary:

- a piece of vinyl hose with a diameter of 5/32 inches;
- a piece of a copper pipe with a diameter of 5/16 inches;

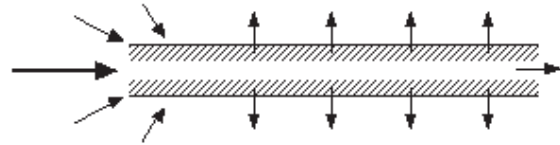


Fig. 12. The “vacuum” device of ECS

- a metal knife for the hose and the pipe;
- a meter-stick, a sharp knife and electrical insulation tape.

Cut a piece of the copper pipe with a length of 18.1 cm. Wind the electrical insulation tape around the vinyl hose in some places in such a way that it could closely go into the copper pipe. Push the vinyl hose into the copper pipe until its end appear. Cut excess of the vinyl hose.

The noted streams of aether forces generated by above described different resonance devices allow defying their discovery by standard instruments. It is not surprising that, as many people think, aether is “live” energy while standard instruments are, of course, “dead”. However, discovery of aether forces by a living organism (such as a human body) is known.

Editors’ note: we hope that publication of the given materials will cause interest of experimenters who will try to examine these effects. Creating aether streams, changing aether density, it is possible to produce not only force effects, i.e. motion. Due to the fact that matter elements are processes in aether (vortex processes), aether parameters influence speed of existence of any matter. It was confirmed in the experiments which were carried out by our company with V.A. Chernobrov. It is obvious that gravity and time speed are mutually connected effects. Due to this, creation of such devices defies not only the Earth’s gravity but also Time. We would appreciate offers from organizations which could invest into development of these technologies.

**A.V. Frolov,
General Director of
“Faraday Lab Ltd” company**

In figures from Grebennikov's book "My world", effects of repulsion of recently cut plants' stems (Fig. 15) and a bunch of pipes (Fig. 13, 14) are shown. These are simple and convincing experiments during which the effect of repulsion is manifested.

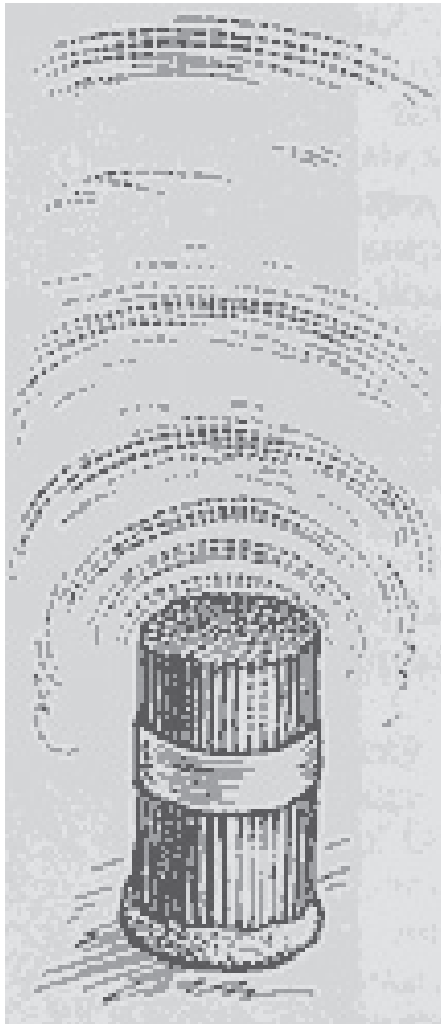


Fig. 13

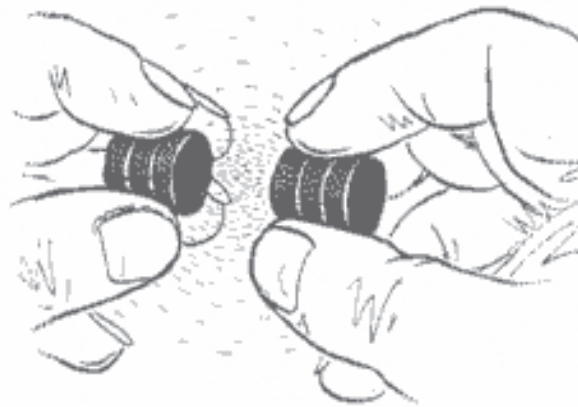


Fig. 14



Fig. 15

Dear subscribers, thank you for interest to "New Energy Technologies" magazine.

Please note that publications in 2006 are not planned.

***All best respects,
Editors***

Gravity Driven Generator

Russell Lee
RusLee863@aol.com

I would like to bring to your attention the Pinwheel Generator located at the following address: <http://www.godproven.com/gp33.htm>. The Designs for the World Project has openly given this design, as they have all of their others, freely to all nations of the world.

Description of the Pinwheel Generator

As weight ball #1 moves down cylinder (A), the fluid in (A) is forced at high pressure through piping #2, turning the Pelton wheel (C), and into cylinder (B). When the weight ball has reached the bottom of the cylinder, the situation will exist where the mechanism is over-weighted to one side, the side having the top cylinder filled with fluid, and the right horizontal cylinder filled with fluid. The weight ball in the empty left horizontal cylinder has rolled near the axis and is held in place there by magnetic attraction from the inside cradle. The filled right cylinder weighs more than the empty left cylinder so that when the #1 weight ball unlocks cylinder (A) (at the bottom of the cylinder), the weighted right side will begin moving down causing

the entire mechanism to rotate 90 degrees until the full right cylinder has rotated to be on the bottom and vertical, where its weight ball begins its ascent-beginning the process again.

During this process, as cylinder (A) began rotating up to the empty left side position, its weight ball, still at the bottom begins to assert its weight as a counter weight to the filled right cylinder's weight. At the same time, however, the filled top cylinder (B), now rotating to the filled right side cylinder position, begins to assert its weight also counteracting cylinder (A)'s weight with more weight. Now the situation exists where two full cylinders are combining their weights to rotate empty cylinder (A) to the horizontal position. They have more than enough weight to do this.

When cylinder (A) is at the horizontal position, its weight ball rolls toward the axis, and, being magnetic, is held in place there. At the bottom, the unlocking mechanism, as it is depressed by the 20,000 pound weight ball (made of a magnetic material- a solid steel ball would be 1/4+- the inside diameter of the cylinder), depresses the spring loaded shock absorber-type mechanism and compresses its inner spring-storing 15,000 pounds+ energy in the spring.

As the mechanism unlocks, and the rotation begins, the shock absorber rotates with the unlocking mechanism, applying its compressed spring energy to the rotation, giving cylinder (A) a 15,000 pound push-off. Between the combined weights of the filled cylinders, and the 15,000 pound boost, the successful operation of the mechanism is assured. The turning of the Pelton wheel also turns the larger wheel that turns the generator.

The scale of the mechanism, the weight of the balls, and the length/width of the cylinders, can be adjusted to produce the amount of electricity needed. This is a perpetual motion mechanism, the generator is an attachment, as would be a water pump, an air compressor, etc... In a chain these generators could pump water from South Africa to the Sahara, without ever needing one watt of electricity, or one gallon of fuel! No more droughts, no more lack of energy, no more justification for energy wars.

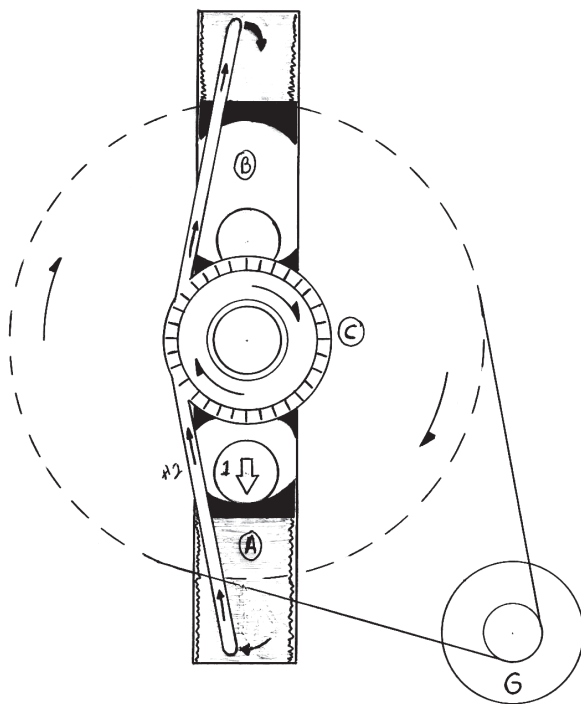


Fig. 1

Membraneless Fuel Cells

Review by S. Shlenchak, Russia
using materials from www.physorg.com

Fuel Cell Prototype for ThinkPad Notebooks

IBM and SANYO Electric unveiled initial plans for a prototype micro direct methanol fuel cell system for IBM ThinkPad notebooks. Leveraging SANYO's latest advancements in fuel cells that increase the longevity of notebook batteries, IBM and SANYO jointly developed a basic design of a fuel cell power source. Based on the design, the companies developed a prototype fuel cell system that could supply up to 8 hours of power per cartridge on current and future ThinkPad models.

SANYO's system was designed to be compatible with most current ThinkPad models without the need to alter the notebook design.

A fuel cell is an electrochemical device similar to a battery, but differing from the latter in that it is designed for continuous replenishment of the reactants consumed; i.e. it produces electricity from an external fuel supply as opposed to the limited internal energy storage capacity of a battery. Typical reactants used in a fuel cell are hydrogen on the anode side and oxygen on the cathode side (a hydrogen cell). The only byproduct of a hydrogen fuel cell is water vapor.

The fuel cell system also includes an auxiliary bay IBM's Ultrabay Slim Battery to supplement peak power consumption for business applications. In addition, the auxiliary bay could be used to make the power supply even more versatile by charging an Ultrabay Slim Battery.

The fuel cell system could enable ThinkPad notebooks to run intensive business applications such as multimedia, graphics and computation programs, while performing tasks such as security updates and scheduled maintenance without draining PC battery power. These capabilities could provide added stability for increased productivity, access to information and customer service.

"There are a number of vendors developing fuel cell battery prototypes for PCs and mobile devices, but the combination of IBM's first-class ThinkPad notebooks and SANYO's leadership position in the technology will accelerate research and development in the field," said Peter Hortensius, vice president, IBM Personal Computing Division. "We do not focus simply on the 'wow factor' of fuel cells - we see it as a powerful enabler that could support a wide variety of business applications. These companies are collaborating to help carry ThinkPad notebooks to the next generation of power supplies, while supporting the highest levels of business productivity."

The IBM PC Division's ThinkPad development team has focused on new behavioral usage models for fuel cells in mobile computing, such as docking stations used for office 'hoteling' concepts and the deployment of notebook computers in locations remote from traditional power sources.

"SANYO, as the world technology leader in rechargeable batteries, has been conducting research and development of fuel cells. I am proud to work in earnest specifically with IBM to create an innovative fuel cell system with the ThinkPad design, the industry standard in business computing," said Mitsuru Homma, Group Executive of SANYO's Power Solutions Group. "This is quite a new concept that utilizes both micro fuel cells and rechargeable batteries. This hybrid system could enable the user to efficiently operate IBM's ThinkPad notebooks for a longer time compared to systems with only a fuel cell while also providing the convenience of an AC cordless environment."

The IBM PC Division's research and development of ThinkPad mobile computing technology takes place at the Yamato Laboratory in Kanagawa Prefecture, Japan and at development facilities in Research Triangle Park, North Carolina. After the launch of the new

Lenovo Group in the second quarter, 2005, these resources will be joined by Lenovo R&D facilities in Beijing and Shanghai.

SANYO is the world's leading producer of rechargeable batteries, supplying power to mobile phones, notebook PCs and other mobile devices. SANYO's Energy Research Facility is a stronghold for research and development in the mobile energy field. SANYO is building a strong base for the next generation of mobile energy businesses by consistently performing fundamental and application technology research, working with a wide range of mobile energy related technology.

Membraneless fuel cell is tiny, versatile

A fuel cell designed by researchers at the University of Illinois at Urbana-Champaign can operate without a solid membrane separating fuel and oxidant, and functions with alkaline chemistry in addition to the more common acidic chemistry.

Like a battery, a fuel cell changes chemical energy into electrical energy. While most fuel cells employ a physical barrier to separate the fuel and oxidant, the microfluidic fuel cell developed at Illinois utilizes multi-stream laminar flow to accomplish the same task.

“The system uses a Y-shaped microfluidic channel in which two liquid streams containing fuel and oxidant merge and flow between catalyst-covered electrodes without mixing,” said Paul Kenis, a professor of chemical and biomolecular engineering and a researcher at the Beckman Institute for Advanced Science and Technology.

Fluids flowing through channels of microscale dimensions behave differently than fluids flowing through the much larger pipes found in home plumbing systems, Kenis said. “At the microscale, there is no turbulence. This laminar flow means streams of fuel and oxidant can pass side by side without having a physical barrier in between.”

A fuel cell consists of two electrodes (an anode and a cathode), a fuel source and an oxidant. Reactions occur as the anode liberates protons and electrons from hydrogen atoms. The protons

pass through the cell to the cathode, where they recombine with electrons, which traveled through an external circuit. Most fuel cells use a polymer electrolyte membrane to separate the cathode and anode.

In the Illinois fuel cell, the physical membrane is replaced by the behavior of laminar flow. The fuel and oxidant are brought together as liquid streams in the microchannel. The protons and electrons diffuse through the liquid-liquid interface.

This configuration offers several advantages over PEM-based fuel cells, including fewer parts and simpler design. It also means that membraneless fuel cells are compatible with alkaline chemistry.

Just as alkaline batteries outperform acidic batteries, alkaline fuel cells should be superior to acidic fuel cells, Kenis said. Several problems, however, have prevented the widespread use of alkaline chemistries in PEM-based fuel cells. Among them are poor permeability of the membranes to hydroxide ions (which take the place of protons in acidic fuel cells) and clogging of the membranes from the formation of carbonates.

The system designed by Paul Kenis (Fig. 1), a professor of chemical and biomolecular engineering, uses a Y-shaped microfluidic channel in which two liquid streams containing fuel and oxidant merge and flow between catalyst-covered electrodes without mixing.

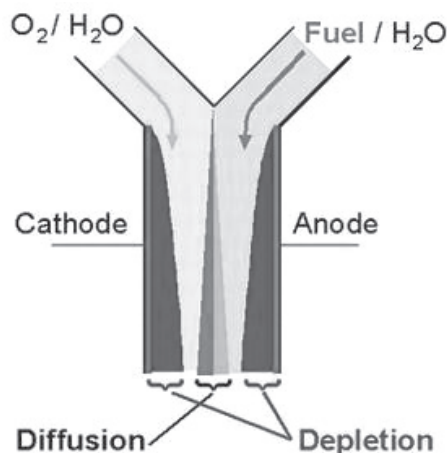


Fig. 1. Paul Kenis' system

"Our fuel cell doesn't suffer from these problems, because it doesn't make use of a membrane," said Kenis.

"Since the membraneless fuel cell is based on a phenomenon that occurs only at the microscale, we can't just scale up to larger dimensions," Kenis said. "Instead, we need to scale out by creating arrays of many fuel cells connected in series and in parallel."

In applications such as power sources for portable computers or battery chargers, multiple fuel cells will have to be integrated to attain sufficient power levels.

New fuel cell drives around hydrogen economy roadblocks

"A hydrogen economy is not a perfectly clean system," said Scott A. Barnett, professor of materials science and engineering. "You have to process fossil fuels at a plant to produce hydrogen fuel as well as develop an infrastructure to get that fuel into vehicles. We have bypassed these technological hurdles by basically bringing the hydrogen plant inside and pairing it with a high-temperature fuel cell in one compact unit that has a fuel efficiency of up to 50 percent."

In a paper to be published online today (March 31) by the journal *Science*, Barnett and graduate student Zhongliang Zhan report the development of a new solid oxide fuel cell, or SOFC, that converts a liquid transportation fuel - iso-octane, a high-purity compound similar to gasoline - into hydrogen which is then used by the fuel cell to produce energy. The cells could lead to cost-effective, clean and efficient electrical-power sources for applications ranging from aircraft and homes to cars and trucks.

Although only demonstrated on a small scale, Barnett and Zhan's fuel cells are projected to have a 50 percent fuel efficiency when used in a full-sized fuel cell generator, which would improve on other technologies. Higher fuel efficiencies mean less precious fuel is consumed and less carbon dioxide, a greenhouse-effect gas related to global warming, is produced. Internal combustion engines have a "well-to-wheels" efficiency of a mere 10 to 15 percent. Current hydrogen fuel cells that require hydrogen plants and new

infrastructure have been calculated to have a 29 percent fuel efficiency while commercial gas/electric hybrid vehicles already have achieved 32 percent.

"The advent of hybrid vehicles has shaken up the fuel cell community and made researchers rethink hydrogen as a fuel," said Barnett, who drives a Toyota Prius and foresees his new fuel cells being developed for use in battery/SOFC hybrid technology for vehicle propulsion or in auxiliary power units. "We need to look at the solid oxide fuel cell - the one kind of fuel cell that can work with other fuels beside hydrogen - as an option."

A fuel cell is like a battery that can be replenished with fresh fuel. It consists of two electrodes sandwiched around an electrolyte material that conducts ions between them. Oxygen enters at the cathode, where it combines with electrons and is split into ions that travel through the electrolyte to react with fuel at the anode. Fuel cells are environmentally friendly: water and carbon dioxide are the only by-products. In the process, the oxygen ions traversing the electrolyte produce a useful current. Heat is also generated.

Because conventional solid oxide fuel cells operate at such high temperatures (between 600 and 800 degrees Centigrade) Barnett recognized that the heat could be used internally for the chemical process of reforming hydrogen, eliminating the need for hydrogen plants with their relatively low fuel efficiency. Barnett and Zhan found the optimal temperature for their system to be 600 to 800 degrees.

The real key to the new fuel cell is a special thin-film catalyst layer through which the hydrocarbon fuel flows toward the anode. That porous layer, which contains stabilized zirconia and small amounts of the metals ruthenium and cerium, chemically and cleanly converts the fuel to hydrogen.

"A major drawback of using solid oxide fuel cells is that carbon from the fuel is deposited all over the anode because of the high temperatures," Barnett said. "But our thin film catalyst, plus the addition of a small amount of oxygen, eliminates those deposits, making it a viable technology to pursue with further research. We

have shown that the fuel cell is much more stable with the catalyst and air than without."

"The main drawback of fuel cells has been their complexity and high cost," said Barnett. "The simple design of our system, which brings the hydrogen reformer in house, is a great advantage for a range of applications. For example, imagine a unit cheap enough to be used for auxiliary power in cars or diesel trucks. It would supply electricity continuously, cleanly, quietly and efficiently even when the engine is not running. This work has the potential to lead us in that direction."

UNC researchers study fuel cells, focus on portable possibilities

The University of North Carolina at Chapel Hill is among the newest participants in a statewide alliance formed last summer to explore renewable and efficient energy sources. UNC is participating in the N.C. Fuel Cell Alliance through the laboratory of Dr. Joseph DeSimone, W.R. Kenan Jr. distinguished professor of chemistry and chemical engineering at UNC and N.C. State University. DeSimone recently was elected to membership in the National Academy of Engineering.

First devised in 1839, fuel cells are not currently used in the commercial industry. Researchers believe they have the potential to provide energy for a wide range of applications, such as powering laptops, providing light and heat to homes and running automobiles.

"You can use fuel cells anywhere you use batteries. For example, if you used a fuel cell in a laptop it could last about a week, instead of lasting three-to-four hours with batteries," said Dr. Everett Baucom, deputy director of the NSF Science and Technology Center and adjunct professor of chemistry at UNC. "Then, instead of recharging the cell you would simply replace the fuel cartridge."

UNC's fuel cell research will focus on portable uses for the technology, including laptops, cellular phones and U.S. departments of Defense and Homeland Security applications, DeSimone said.

Fuel cells offer high automotive fuel efficiency (especially in city traffic), low emissions and silent

operation. Most major automotive manufacturers worldwide are active in fuel cell development, said Baucom. In addition, several ongoing demonstration projects employ fuel cells in city buses in the United States, Canada and Europe, he said.

"We are working primarily on the chemistry end, designing a new type of membrane that would give higher surface area and higher performance per unit volume," said Baucom, formerly the technology manager for DuPont's PEM division and who joined UNC in 2000. "This would lead to more effective use of the membrane."

UNC researchers are taking this field in a new direction, said DeSimone.

"Most of the PEMs used in fuel cell manufacture are solid materials. We are pioneering liquid precursors. Having a liquid precursor can open new ways of fabricating fuel cells."

UNC researchers will work with the Teflon division of DuPont in Fayetteville, the leading manufacturer of PEMs. UNC's Institute for Advanced Materials, Nanoscience and Technology and its NSF Science and Technology Center both focus on this kind of technology.

A Prototype Next-Generation Mobile Phone Fuel Cell With High Output Power

Nippon Telegraph and Telephone Corporation have developed a prototype micro polymer-electrolyte fuel cell (PEFC) 1 that uses hydrogen gas as a fuel and is small enough to directly fit in a mobile phone. Under tests using a production-model mobile phone, this prototype PEFC successfully powered start-up and signal reception/transmission (i.e., video phone, voice calls, and "i-mode" internet services). In conjunction with this development, a device for automatically topping up the micro PEFC with hydrogen was also developed.

At present, the direct-methanol fuel cell (DMFC)-which uses methanol as the hydrogen fuel supply-is the mainstream development concerning batteries for mobile-phone use. However, a DMFC suffers two key problems: firstly, CO₂ is produced during power generation;

secondly, since the power density per unit area of the power-generation part is insufficient, battery miniaturization is difficult.

In light of this problem, utilizing hydrogen gas as a fuel, the PEFC NTT have developed attains a high output power compatible with that of a lithium-ion battery without producing CO₂ during power generation. On top of that, as a result of unifying the power-generation unit and the hydrogen-storage alloy tank and simplifying electrical circuitry, our PEFC has a compact size (external dimensions: 42*80*13 mm; weight: 104g), which makes it suitable for directly fitting into a mobile phone, and enables a talk time of nine hours. Furthermore, by changing the surface area of the PEFC's power-generation part, it is possible to apply the PEFC to a wide variety of mobile electronic devices like video cameras, digital cameras, PDAs, and notebook PCs.

Development background

In recent years, as high performance and multi-functionality of mobile electronic devices (such as mobile phones and notebook PCs) has advanced, the problem of insufficient capacity of batteries as the power source of these devices has come to the forefront.

Under these circumstances, investigations on energy sources to replace the lithium-ion battery-which is nearing its limit on further improvements in energy density-are continuing. At the same time, as a breakthrough technology exerting a low environmental load, fuel cells are continuing to create great expectations and spur on their development by many manufacturers.

NTT, as part of our creation of fundamental technologies for supporting a "Resonant" communication environment, is making great efforts to establish environmental energy technologies aimed at realizing a sustainable society, and driving forward with research and development on powerful, high-efficiency, clean fuel-cell technologies that will contribute to reductions in CO₂ emissions.

Characteristics of the micro PEFC

In a micro PEFC, with hydrogen gas as a fuel, water vapor only is produced as emission. This

means that even under a high-power-density environment, a PEFC is a benign and extremely clean power source. It is thus regarded as a next-generation power source that is compact enough for directly mounting in a mobile phone. The main characteristics of our PEFC are summarized as follows.

1. *High power density.* Compared to a DMFC (i.e., methanol-fuelled), our PEFC produces a higher output, since it is hydrogen-gas fuelled, even though the power-generation area is smaller.
2. *Compactnes.* Its high energy density enables a compact size.
3. *Simple construction.* Owing to booster technology, the conventionally required "stacking" of cells is unnecessary. And by unifying the hydrogen-storage alloy tank and electricity-generation part, the number of parts and battery size have been reduced.
4. *Long-term power generation*

By utilizing a high-capacity bcc2 (body-centered-cubic) type alloy system for hydrogen storage, our PEFC attains long-term power generation.

In addition to the above, even in the case of mobile electronic devices such as notebook PCs-which have relatively high power consumption-the micro PEFC can be easily adapted by increasing the area of its electricity-generation part.

Future developments

As regards all-out practical application of fuel cells, several challenges-such as setting up hydrogen-fuel supply systems as part of a social infrastructure-remain to be overcome. However, even given the forecasted increases in power consumption of future devices due to their higher performance and more functions, micro PEFCs are expected to meet the power demand and target early commercial applications.

At NTT, from now onwards, with our goal of realizing the next generation of fuel cells, we will continue to push forward research and development in areas such as further validation of safety and investigation into optimum utilization conditions from a general user's viewpoint.

Hypothesis of I.O. Yarkovsky

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*It is undoubtedly so, let us say...
if only we have common sense.
For it is impossible to disagree
with the one who tell the truth.*

Socrates

*Scientific truth develops by a complicated
and winding way and not all scientific
ideology expresses it.*

V. Vernadsky

This article is devoted to Russian scientist Ivan Osipovitch Yarkovsky (12.05.1844-09.01.1902). I.O. Yarkovsky is an author of the book called "Universal gravity as the result of the formation of ponderable matter inside celestial bodies" published in 1889. [1]

Yarkovsky attracts attention to his book only by its name though it is not easy to make a summary of the "Universal gravity" book's meaning after reading. If a reader judges only by names of its chapters, he or she will find a natural science encyclopedia or, more precisely, philosophy of natural science. Unfortunately, some generations in Russia and in the world did not and still do not know about this work's existence and the author's name is almost consigned to oblivion. Yarkovsky's book takes the reader's attention from the very beginning; it makes him or her think, object to the author's conclusions and, then, follow the scientist searching for confirmations of his ideas in the environment. All strange things have a simple and logical explanation in the book.

What is the main point of I.O. Yarkovsky's work? We think that, in memory of people who published its second edition, we should give them permission to speak: "The main purpose of this work can be briefly summarized as the following: to recreate the universe, with its complex transformations, using one single matter – aether". [2].

Speaking of I.O. Yarkovsky and his work, it is impossible to keep silent about aether. In natural science history, this Something was considered as something passive. No attention has been paid to the thoughts and theories of ancient people taking into account scientific achievements of the following centuries. Ivan Yarkovsky, on the contrary, expresses his main idea through his entire book: interactions of aether and chemical elements are the main reason of gravity formation and the main condition of celestial bodies' evolution, self-consciousness.

Yarkovsky has found a reasonable and logical explanation of the integration of an "invisible" world, which is aether, and ponderable matter. The developed gravity concept became rather unexpected even for its author: "...in short, it does not matter which point of view on universal gravity and chemical elements you have, you must consider it absurd that there is a connection between these two things".

A thoughtful modern researcher will find many interesting and new things familiarizing himself or herself with Yarkovsky's work. This means that the concept of material aether is not subjected to ageing and cannot fall to oblivion. We will not make a mistake thinking that any person who read the main Yarkovsky's work asks the same questions: why the author of the so well grounded hypothesis is not known? Why does a silent conspiracy exist around the scientist's work for more than a century? Who was this man?

I.O. Yarkovsky had an excellent education: he graduated from Saint Petersburg Technological University. After he defended his thesis in 1872, Yarkovsky obtained a rank of a mechanical engineer. It may seem strange but long-standing financial troubles and limitations of childhood and youth could do him good: Ivan Yarkovsky learned not to divert himself on empty and senseless dreams. It is also possible that, in this period of his life, Yarkovsky could develop a very high level of

self-consciousness, which later helped him uphold his views with firmness and resolution. He also was naturally observant and inventive; his quick mind was always aimed at solution of practical problems. Working on his work, I.O. Yarkovsky provided himself for a thing, which was inadmissible for most scientists: complete freedom of research and independence on influence of different scientific schools.

I. Yarkovsky managed to do, possibly, the best analytical review of ideas and names connected with problems of gravity, celestial bodies' genesis and star energy sources in all natural science. Yarkovsky thought about numerous poorly argued descriptions of effects in the environment. Conclusions, which were made by the scientist and underlay the developed hypothesis, exceeded the bounds of usual scientific ideology. Yarkovsky understood it: "I offer readers a book, which includes thoughts so different from the ones now acknowledged by science that I thought a lot before deciding to publish them".

Yarkovsky did not claim to explain everything. Possibly, the strength of careful prudence showing up in his works' conclusion and opinions had Socrates spirit: "What is higher than we, it does not concern us". We suppose that, due to such self-control, "gathering patiently facts according to the ideas", the author successfully moved toward his work's purpose, which was to explain the reasons of universal gravity. There were no fantasies in his ideas. In one of his works, I.O. Yarkovsky said: "I, naturally, value my ideas; it is understandable that I will fight for them *to the best of my ability* but, however high I value them, I will not be keen on them so much that I will fight against indisputable scientific truth defending them; I will never act against *logic* and *common sense*". [3]

It is possible that all developers of cosmological hypotheses were inconsistent materialists. Formally, they recognized materialism but their world outlooks were tangled and contradictory. Scientists forgot that the world is material and single when talking about the most subtle effects, which could not be observed by instruments. It caused serious defects of concepts, which explained material things only by a so called ponderable matter. This was a methodological and ideological impasse and mistake.

Ivan Yarkovsky has found the way out. He was not afraid to introduce the concept of material aether and gave it an active, creative role in the Earth's life and life of all celestial bodies. It was not easy for I. Yarkovsky to make such a decision: "...I have to discuss so many scientific fields that my knowledge is insufficient". Yarkovsky paid attention to an interconnection between the formation of chemical elements and universal gravity. This regularity was never a subject of serious scientific study. A research method suggested by Yarkovsky gave amazing results. Possibly, due to this, scientific ideology tried to keep silent about Yarkovsky later.

Proofs of Yarkovsky's hypothesis, which were so obvious, are, possibly, not connected enough with just a sum of scientific intelligence. Why could not other scientists make the same conclusions? What prevented them? Here, it is advisable to mention an interesting article by N.A. Morozov devoted to the same problems as Yarkovsky's work. Morozov only marked the following lines: "*...during the long evolution of celestial bodies, no matters were ever formed and will never be formed except the ones belonging to Mendeleev's periodic table*". [4] No conclusions follow from this established fact. The article was published in 1912. There were no references to Yarkovsky's ideas in it, and this is difficult to explain.

What was the reaction of contemporaries to Yarkovsky's idea? In 1891, a book of Professor Mushketov called "Physical geology" was published. Yarkovsky is mentioned there. The Professor included him into a list of authors of hypotheses of Earth formation. In 1902, D.I. Mendeleev, in his article devoted to aether study [5], paid attention to Yarkovsky's thoughts [6] and mentioned respectfully the author's aspiration for clarifying a matter of understanding of this matter, which can be hardly measured.

The Imperial Academy of Sciences kept silent during Yarkovsky's life. The reason of the absence of polemics concerning his works are considered to be very well argued statement of thoughts and the practically complete absence of gaps in the concept theses' defense. It is also possible to add an unusual ideological approach to investigation of gravity and a number of other cosmological problems. Yarkovsky kept distance from the orthodox science. An insuperable gap

for any criticism appeared. Paying attention to Yarkovsky's ideas could cause serious and objectionable "disturbance" among views on natural science problems. Possibly, in order to stop a "destructive" influence of Yarkovsky's ideas on usual scientific views, a very effective method was applied to Yarkovsky's hypothesis – suppression.

Besides life-time reviews of Yarkovsky's book, some interest to his hypothesis existed in popular science periodicals [7], [8], [9]. The scientist was formally mentioned in a work devoted to aether dynamics [10]. A member of Academy of Sciences, E.E. Milanovsky, referred to Yarkovsky's ideas [11]. 100 years after the scientist's death, a work of V.F. Blinov appeared [12]. It was the first book devoted to I.O. Yarkovsky's ideas.

The unexpected and unusual ideas of Yarkovsky, the encyclopedic nature of the book, the seriousness and vital importance of the considered questions make it rather difficult even to approach a narration about the scientist and his ideas. That is why we will consider only energy aspects of Yarkovsky's hypothesis of the entire variety of his conclusions and their practical applications. In order to do this, we will have to consider the situation, which developed in the according fields of natural science in his period.

Ivan Yarkovsky could sum up the science of the XIX century and show ways of natural science development next century. Actually, studying gravity problems, I.O. Yarkovsky began to develop, according to his own words, a "view of integrity" for creation of a "truly strong science". However, the scientific community paid no attention to Yarkovsky's ideas. It was not by accident, taking into account his epoch. At that time, physicians began to refuse to try to obtain a description of the world on the basis of phenomenological models; a new method of research and interpretation of nature decrees appeared. Undoubtedly, Yarkovsky saw the rise of a "new physics" and a "new world outlook". The engineer's attitude to the beginning scientific age totally differed from enthusiasm of the 'public opinion'. The scientist warned of danger of unreasonable introduction of such trends into natural science and, probably, his unconquerable arguments were the main reason of his falling into oblivion.

We suppose that the unwillingness to tolerate the idea of aether in physics was caused by impossibility to explain logically its role in different physical laws. There were not even suggestions considering how the role of this Something in natural effects can be understood. Such an intellectual impotence was irritating. Possibly, that is why there was such a cruel and ruthless fight against the aether theory in physics as nowhere else among the fields of natural science. Against a background of doubts and scruples, which were typical for the scientific community of that age, I. Yarkovsky made material aether a full member of the main universal effect – gravity.

During Yarkovsky's age, many attempts to detect aether by instruments were carried out. At the same time, there is an impression that the scientific world of that time impatiently waited for an experiment, which would undoubtedly prove that aether did not exist. This waiting ended up with the experiment of A. Michelson – A. Morley, 1887.

The results of A. Michelson's experiments became the "facts", which underlay the theory of relativity (TR). In the Russian scientific community, one of the first responses to the appeared TR postulates was the following: "... first of all, it is not necessary to search for the explanation of these negative experiments, for example, Michelson's ones.....the first postulate of the principle (TR) clearly makes such a search absolutely unnecessary..., ...we must inevitably conclude that aether does not exist, i.e. there is no interstellar medium... ..negation of aether lead to a new wide energy doctrine" [13].

Here, it is necessary to mention that no one among thoughtful scientists ever stated that it was possible to detect aether by instruments. This follows from the definition of aether: "Something permeating everyone and everything". In the series of Albert Michelson's experiments, the purpose was another: some characteristic of light was detected".

Nevertheless, A. Michelson got a Noble Prize of physics for the "Invention of a high-accuracy optical device (an interferometer), which allowed proving that "aether wind" does not exist. This work was an experimental prerequisite for the creation of Einstein's TR". It is difficult to explain the change of the "aether" idea to "aether wind"

one in the given formula. Possibly, the reasons of this are hidden not only in the above described situation in physics at that time.

The experiments of 1887 became classics of physics. Everyone knows that they proved that aether does not exist. This statement was introduced into the scientific community with surprising haste and insistence. No one paid attention to the remarks and objections of A. Michelson [14].

In the beginning of the twenties of the last century, Michelson's experiments were reproduced. The titanic efforts of Dayton A. Miller, who used a more sensitive device than in the experiments of 1887, allowed determining speed of aether wind and making an important conclusion: "the experiment of Michelson – Morley must not give a zero result and, most likely, never gave such a result" [4].

In 1913, a book of G. Mi (Greifold) called "Molecules, atoms, and universal aether" was translated into Russian. This work is a collection of proofless and contradictory discourses, which explain almost nothing. G. Mi is considered one of not many creators of general relativity (GR). Possibly, G. Mi wrote about aether in such a way, which was typical for theoretical physics of those days: "Before we go further, we should ask again a serious question: does it make sense to speak of a physical substance, which is not actually matter? How can such a substance be an object of physical study? Maybe we should substitute it for a better, more natural system of ideas?"

An exclusion of the aether idea from natural science, which seems so harmless, hid an ideological impropriety. Later this fundamental mistake led to serious problems in the understanding of energy effects' meaning. The existing method of physical-chemical processes' research is that ponderable matter is given all properties, which has been displayed. The following interpretation of the obtained results leads to the loss of a part, which possesses energy and is as material as anything in the world though it remains "invisible" for us. Now the words of D.I. Mendeleyev must be cited: "... it must not be said that aether is imponderable but that it is impossible to weigh" [5]. Undoubtedly, it is difficult to detect aether in physical-chemical

processes. But, possibly, we are just used to thinking so? Probably, we should take into account Leibniz's words: "Possibly, ... many people who thought deeply had some knowledge, which allowed them to introduce and fight for substance forms... And these people are not as far from the truth and funny as the most ordinary of our modern philosophers think". [20]

In his book and the following works, I.O. Yarkovsky permanently emphasized that his hypothesis is based only on facts. An example of GR shows what can be caused by the reation of "completely mathematical" theories. In this case, the search of facts-proofs began after the mathematical model was designed. Yarkovsky predicted such things: "A deliberately false, quite out of place hypothesis, *which has no confirmatory fact in nature, contradicts both experience and common sense, can be introduced in science only if there are facts, which can be explained by it*". [16]

By the 80th of the XX century, an opinion was formed that GR gave an "explanation to the precession of Mercury's orbit, which was caused by space band caused by gravity influence of the Sun" [17]. Before this explanation was given, an article by a German astronomer E. Freindlich about Mercury anomaly had appeared. E. Freindlich had showed impossibility of a satisfactory explanation of the anomaly on the basis of Newton theory [18]. The astronomer's conclusions had not been new. He had to know about his predecessors' achievements. In his book, Yarkovsky showed possibly reasons of the mentioned discrepancies.

Let us read Yarkovsky: "After thorough calculations, Bessel even made a conclusion that it is possible to suggest a hypothetical construction of the Sun, the planets and their satellites in such a way, *that the Sun's attraction of the planets and their satellites would be proportional to the matter's quantity, i.e. to their mass, but attraction of one planet to another could have some other ratio*. But this suggestion was *equal to rejection* of the universal law of gravity. Evaluation of other planets' masses often led to some disagreement. In 1813, Lindenau published Mercury tables and paid special attention to disturbances produced by neighboring Venus. Thus, he showed that the estimated up to now *mass of Venus had to be considerably increased* in

order to coordinate a position of Mercury, which was shown in the tables, with the observed one”.

During I.O. Yarkovsky's time, it was considered a difficult task to take into account the mass increase of celestial bodies and making according dynamical corrections in systems of equations during astronomic calculation. Now it is easy to make the necessary calculations. If such a work will be done, its performer will discover amazing things.

The importance of such works is confirmed by a message about research of our solar system's planets by space probes: “Even after the evaluation of Uranus' mass had been considerably changed (it was increased by 0.3%), it became possible to achieve the necessary coincidence of the calculated and observed paths...” [19]. The spacecraft “Voyager-2” was meant. Undoubtedly, the age-old slowing down of the Earth's rotation also confirms I. Yarkovsky's hypothesis.

In the history of the “new ideology”, A. Addington was the first to suggest some hypothesis about reasons of stellar heat appearance (except unknown Yarkovsky). A name of the chapter in Addington's article must be noted: “Material and aether heat” [20]. Something in these words imperceptibly looks like Yarkovsky's words. But this expression is illusive. Addington compares ponderable matter and aether while Yarkovsky considers the world single and material. We think that Yarkovsky created his concept, first of all, in order to establish a precedent, i.e. to show how changeability and dynamics of the world must be explained.

In the beginning of the XX century, a conviction clearly appeared that science knows everything about matter and energy. Now it seems premature. It is possible to say that there is no evidence that ponderable matter is connected with energy and Poincare dependency explains almost nothing. Taking into account the orthodox method of investigation of the given world's properties, I.O. Yarkovsky is always very reserved and careful in its suppositions: “I did not try to understand the essence of matter and energy. These questions may remain unascertained for mankind forever. Instead, I considered matter only the properties, which undoubtedly belong to matter and are acknowledged by everyone”.

The main book of Yarkovsky arouses a feeling that the author's confidence demonstrated on its pages hides many untold things. Yes, the book is devoted to the explanation of the universal gravity reasons by aether and energy united by a process of chemical elements' formation. The scientist's work is also a call for action. Undoubtedly, Yarkovsky understood the operation principle of the World Machine. Possibly, he could understand how the inexhaustible energy source can be used. There are rough drafts of how to carry out according experiments in the book.

Scientists knew that the understanding of gravity is a key to energy sources. In an article- reflection devoted to aether, D.I. Mendeleev wrote: “It is impossible to solve problems of gravity and energy engineering without a real understanding of aether as the universal medium transmitting energy for a distance”. [5]

In all theories where something called “energy” is present, one element is always missing – an intermediary between energy effects and ponderable matter. This gap in knowledge is especially evident in cases of gravity theory development and explanation of the reasons of the stellar heat appearance. This problem with the “missing part” took place in Newton's theory and in GR. In Newton's case, something was untold and had in mind while, in case of GR, incomprehensible gravitons were introduced as a violation of logic and, possibly, common sense. Unlike the mentioned theories, Yarkovsky's idea contained such an intermediary, which was not a passive medium but dynamical material aether. The engineer's hypothesis explained and revealed cause-and-effect relations, which cause and maintain each energy process in celestial bodies. Due to such a balanced description of the world, Yarkovsky's concept is convincing and grounded.

It seems difficult to compare Yarkovsky's conclusions with the results of cosmological researches of the XX century. Possibly, since works of D.G. Gins had appeared, an opinion was formed that “a source of stellar heat is a star's mass” [21]. Gins meant that suns lose their mass due to radiation; this is a theory. Actually, on the contrary, stars become brighter every century [1], [22]. This is confirmed by modern measurements and coincides with Yarkovsky's conclusions: “Our Sun

must grow like our Earth and any other planet. That is why it can never die away". More from Yarkovsky: "... which were the reasons of the view that the Sun must get cold and then die away and the Earth must turn into a cold sphere?"

The new gravity theory was, according to Brillouin's opinion, "a brilliant example of a great mathematical theory built on sand, which leads to the increase of the mathematics' part in cosmology (a typical example of science fiction). [23] This note was confirmed by cosmogony researches, which followed Yarkovsky's epoch. Then they went into a field of explanation of the Universe's formation, the search for virtual black holes and gravity waves. A new competition concerning singularity of purely created mathematical theories began in cosmology. In Russia, no attention was paid to the "obsolete" and, therefore, "useless" works on gravity research. Yarkovsky foresaw such things and envisaged that they are temporary: "*an idea will not die without a trace even if it has a part of truth...*".

In the 30-40ties of the XX century, scientific interest to origin of the stellar heat increased. At that time, the first works of A. Bete appeared in Germany. In 1957, the Noble committee formulated achievements of this scientist in such a way: "A contribution to the nuclear reaction theory (Bete cycle), which is the main stellar energy source".

For some reason, Bete's ideas were instantly acknowledged by the scientific community though a part of scientists doubted that they were true. Before Bete's theory was acknowledged, another hypothesis had appeared. It was as beautiful and heretical as Yarkovsky's one. It was created by Nikolay Alexanrovitch Kozyrev [24]. It is considered that N.A. Kozyrev "paid" for doubts that thermonuclear reactions exist inside stars. An article by three members of Academy of Sciences appeared in "Pravda" newspaper: L. Artsimovich, P. Kapitsa, and I. Tamm [25]. The article devoted to "mistakes" of Professor Kozyrev was multidimensional and had correct style.

Claims connected with the fact that his hypothesis "violates" the second law of thermodynamics were also presented to Kozyrev. Such remarks will undoubtedly be applied to Yarkovsky. He

understood and explained this: "It seems to me that we forget about the sources... It seems to me that, in this case, thermodynamics makes its conclusions on the basis of facts of one kind not taking into account others". Talking about "the source", Yarkovsky meant aether. Another extract from his book must be added to this: "...the universe must be... eternal, ...*it cannot have such a pitiful end, which is predicted by thermodynamics!*".

Reading I. Yarkovsky, it is possible to find a permanently mentioned idea that strong pressures influence processes of chemical elements formation inside celestial bodies: "... under a certain pressure, aether turns into something we call the primary matter, i.e. into this explosive amorphous mass with enormous energy reserves, which, under violation of balance, makes this *primary matter* disintegrate and form ponderable or chemical matter". It is necessary to make a correction that the book's author did not know scientific data on structure and properties of the nuclear nucleus and he had to create its own terminology. In spite of this, it is possible that Yarkovsky could predict behavior of ponderable matter inside celestial bodies.

Probably, the most amazing conclusion of the ones created by Yarkovsky's hypothesis is explanation of the solar heat reasons. Comparing Yarkovsky's views on the construction and operation principle of the Sun with the according theories of the XX century, we find a great difference. The idea of thermonuclear reaction occurring inside stars appeared on the basis of theoretical physics' conclusions concerning the Sun's structure. Presuppositions of this were evaluation of the Sun's density, the following supposition of its internal chemical structure and ideas of physical processes creating its energy supply etc. Yarkovsky's doubts concerned accuracy of evaluation of the Sun's density and were caused by the mistaken calculation of its mass: "Attractive force of the Sun and the planets has been determined by astronomers on the basis of its influence on other bodies. This definition is indubitably true but, on the basis of this, it is impossible to determine masses of the planets because this attraction, possibly, depends not on mass but on some other reasons. ...Believing in accuracy of the numerator of Newton's formula, scientists... consider it gaseous".

Such an idea of the Sun (of all stars) is a canon, only a gas is substituted by “plasma” now. The impossibility to evaluate real masses of celestial bodies and the following strange ideas of their structure show an obvious divergence of Newton’s gravity theory. This means that the known explanation of gravity must be seriously corrected. Now such a revision is not carried out.

Almost one hundred years since the book “Universal gravity” was published, an article of a member of the Academy of Sciences E.B. Alexandrov appeared [26]. The scientist made a review of reports on research results, which, according to his words, could lead to the “revision of Newton’s law”. It is possible to say that the article consists of the same key words as Yarkovsky’s book chapter. Right there the similarity ends because E.B. Alexandrov copies all mistakes caused by the impossibility to find analogies between gravity and mutual attraction of check weights. Yarkovsky warned against this mistake many times. Naturally, Yarkovsky’s hypothesis is not mentioned in the article. Nevertheless analyzing the existing situation with determination of celestial bodies’ masses, Yarkovsky suggested rational methods of elimination of mistakes. Newton’s doubts concerning the gravity reasons are rarely cited: “the fact that one body can interact with another over a distance, through vacuum, without influence of something else, seems to me so absurd that I cannot imagine that someone, who can think with competence in the field of philosophical questions, can make such a conclusion”. [27] Thinking about gravity, Leibniz considered it a “physical barbarism” to explain it in such a way, that, “using the suggested presuppositions, conclusions are made, which are not only unreliable but also wrong and impossible like this universal attraction of matter to matter” [28].

I. Yarkovsky made two conclusions developing the hypothesis about the origin of gravity and evolution of celestial bodies (all without exceptions, including stars): “1. Due to the fact that new layers of ponderable matter are permanently forming inside a body, we can say that *the body transforms aether into ponderable matter; that the body grows*. 2. Due to the fact that aether turned into ponderable matter cannot go to the surface as aether again and has to form chemical bodies, which has the same ability to

absorb and condense aether, the absorption will continue and cause a kind of a permanent aether current from the surface to the center of the body”.

The given important conclusions point at the source of enormous energy hidden in the process of gravity formation.

In the XX century, interesting researches were carried out directly or indirectly connected with the gravity problem. On the basis of their analysis, V.F. Blinov wrote a work showing presence of Yarkovsky’s ideas in many of the effects around us. According to Blinov’s book, another conclusion is possible: the western scientific community, which considers itself sufficiently independent, does not know Yarkovsky’s works.

A new century has come, but nothing has changes in the scientific “public opinion”. The works of Miller and Kozyrev are considered unremarkable as well as the works of the most evident “unknown” Yarkovsky. Possibly, this is why recognized cosmology specialists can hardly understand that the equations, which formed a fantastical idea of “the big bang”, are based on wrong and shaky grounds.

Let us read Yarkovsky: “Even if the temperature in universe becomes the same, if aether of universal space has the same energy, but if there is only one material body of a big size in universe, it is sufficient for aether to condense itself inside the body using its own, even small, energy and, therefore, create a new source of heat and, hence, to revive the universe again”.

Yarkovsky understood the complexity of the idea of “energy”. This is why he refused to try to find out what is meant by the word “energy” in an introduction to his book (1889): “we will not try to explain the essence of matter and energy because this is a completely wasted labour considering the existing state of our intellect”. In chapter IV, Yarkovsky writes about the essence of energy: “possibly, it will always remain an incomprehensible and inexplicable element of motion. ...we can always consider energy as a special matter”.

Despite the fact that Yarkovsky only lightly went into the energy side of his hypothesis, nevertheless, his explanation of the universal

gravity reasons can show a direction of researches on a path leading to new energy. An analysis of Yarkovsky's ideas and the research results of some scientists of the XIX and XX centuries allow finding a hypothetical possibility to find the source of this energy. Undoubtedly, it will require using some aether properties, but it is a mistake to think that this matter is "fuel".

The most important observed aether effect is heating of the Earth and all celestial bodies after they reach a certain size. Which size? This is a very important question and, maybe, it is possible to explain the reason of the stellar energy answering it. Yarkovsky understood it: "...*the body only has to have a size of the certain magnitude*. We cannot say now what magnitude it is – probably, very big or maybe not. Anyway, we know that *there must be the certain size of the body*". Kozyrev mentioned a diameter of celestial bodies of about 2,000 km. Having this diameter, the body begins to heat. The scientist noted that this process can be also initiated in bodies of the smaller size. According to Kozyrev's works, it is also necessary to take into account "a geometrical form of these bodies" [24]. Photographs of a number of extraterrestrial objects obtained by spacecrafts allow considering that, in addition to the size and form, plastic morphology of satellites of our solar system's planets must be taken into account. There are a lot of such objects, celestial bodies of different sizes and forms, which can be used for tracing their evolution from the beginning of the heating process.

It is unknown whether Kozyrev knew about Yarkovsky's works but a copy of "Universal gravity" book is kept in a library of Pulkovo observatory, where Kozyrev worked. It is natural to mention Kozyrev in the article devoted to Ivan Yarkovsky. The Professor was a peculiar successor of Yarkovsky.

The researches of Yarkovsky and Kozyrev gave another approach to creation of an artificial source of the stellar heat, which is different from the orthodox one. Even if we understand the reasons of the internal Earth's heat formation, we will be able to make the following steps in exploration of the world. Undoubtedly, the operation principle of the Earth's heat machine will underlie energy technologies of the future. Possibly, there are confirmations of this in Blinov's

book: "Plasma necessarily appears inside a nucleus of a growing planet because *the development of the planet leads to its turning into a star*. The question is when plasma appears in the nucleus. Possibly, plasma already exists in the Earth's nucleus". [12]

The oracular ideas of Yarkovsky turned out to be uncalled. They were not understood in Russia and in the West and, due to this, became obsolete. There were important reasons for this: Ivan Yarkovsky's thoughts appeared at the inappropriate time.

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Flying Platform

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An endless ribbon with apertures rotating on shafts with unbalanced masses can exerts non-zero lifting force. The influence of the phase shift between rotations of the ribbon and the unbalanced bodies on the lift force is considered.

This is an attempt to find out what parameters of the device shown in Fig. 1 must be to ensure the lift of the system in the gravitational field. Essentially, the system is an endless ribbon W of length πnd having apertures of length πd , where n is digital number. The ribbon rotates between four shafts of diameter d two of which have unbalanced masses $m/2$. In fact this is a variant of the vibrational air craft [1]. The only distinction is in that the body W contacting with the surrounding medium changes its sizes and form synchronously with the rotation of the unbalanced masses. In the vibrational air craft, the form and the sizes of this body are immutable. Therefore, one may consider this system as a variant of the ornithopter [2]. Possibly that the aspiration to save the form of the wing was a reason of failures in attempts to build the ornithopter [3]. Unfortunate choice of the phase shift Δ can be another reason of the mentioned failures. There is meaning to consider a case when the resistance force F_r proportional to the effective area of wing W is

also proportional to the velocity of this body relative to surroundings.

The unbalanced bodies rotate in opposite directions. Therefore, the motion of these bodies may be represented as a vibration of one body of the mass m executed forced oscillations in the vertical direction. When the wing is open (small effective area of the wing) the mass m must move downwards to produce the motion of the wing upwards. When the mass m moves upwards the wing should be closed (large effective of the area of the wing). In this case the essential magnitude of the resistance force prevents the wing from motion downwards. The center of mass of the system, therefore, rises. It is all over up with the principle of action of the platform. But such an interpretation of the lifts valid only in the case of the piecewise-constant dependence of the area of the wing on time when the wing is open or closed. In the device shown in Fig. 1 the area of wing changes harmonically with time. Therefore the influence of the phase shift Δ on the lift force must be investigated. Now about the lift force. By all appearance, this is the weight of the system that can be kept on a immutable distance from the earth to the platform. In another words, this is the weight corresponding the critical regime

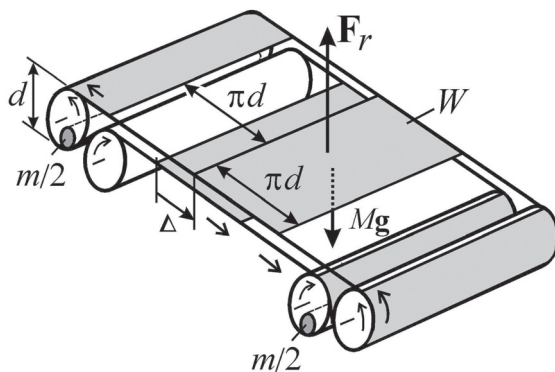


Fig. 1. The flying platform

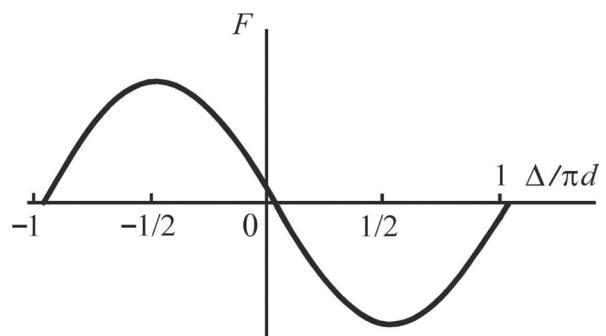


Fig. 2. The dependence of the lift force F on the phase shift Δ

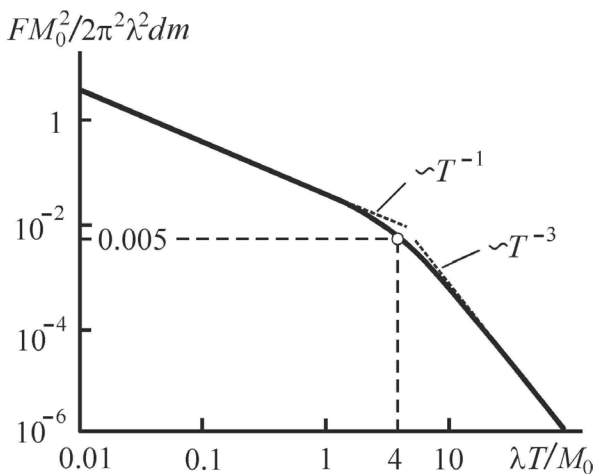


Fig. 3. The dependence of the lift force F on the period of rotation T

of the flight [4]. In this case the calculation procedure is almost identical to that corresponding to the vibrational air craft [2,4]. But the results of calculations are quite unexpected (Fig. 2). It turns out that when the unbalanced bodies are downstairs, the wing must be *half open and must be in state of closing*.

Suppose that $\Delta = -d/2$ and $d = 0.5$ m. A plane of area 1 m^2 moving with velocity $\langle v \rangle = 10$ m/s exerts the resistance force 76 N [5]. This means that the period of rotation of the unbalanced bodies must approximately be $T \approx 2d / \langle v \rangle = 0.1$ s if the mass of the system without the

unbalanced bodies is small $M \ll m$. At such frequency of rotation, the platform can lift the mass 80 kg if the minimal area of the wing is about 60 m^2 . More the frequency of rotation, more the weight of the system which can be lifted. Therefore it would be a good thing to calculate the lift force as a function of all parameters of the platform. It is found out that the results of calculations can be presented as an universal scaling curve which enable us to find any parameter of the platform (Fig. 3). It is sufficient to know the resistance coefficient λ corresponding to the minimal area of the wing. The maximal area is two times more. M_0 is the total mass of the platform. It is interesting to note that at small periods of rotation the lift force F is inversely proportional to the period T . If the value T is large ($T \gg 4M_0\lambda$) the system cannot even lift itself.

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News

I have invented, patented, and tested a chip containing very many very small diodes that absorbs uniform ambient heat and releases D.C. Electrical power. This is a superior energy source that is very inexpensive and will power mall appliances out of the box without a need for power wiring anywhere in the world.

Michael Huff at the Stanford MEM network, a network of nanotechnology evelopers, has given me a quote that \$50,000 would pay for developing this chip. He could receive grant funding directly to improve the accountability as I am an unaffiliated inventor that cannot personally produce the chip.

U.S. Patent 3,890,161, DIODE ARRAY. As a 1975 patent, it may be vailable in an image form only, not yet in an electronically searchable text form. The original materials specified in the patent have been superseded by C60 carbon buckyballs as anodes on an N type InSb (semiconductor) substrate.

In 1993, I commissioned the preparation and testing of an adapted satellite transponder chip containing 5,600 Au on GaAs diodes fabricated in a patch as an expedient for assemblers to find one diode where diodes operating at high frequencies have to be very small. Conductive paste was applied over the face of the chip to connect all the diodes in consistent alignment parallel as required. Next, the chip was immersed in a constant temperature pure vegetable oil bath inside a shielding box in the California desert. The chip produced approximately 25 watts where an output more than 1/2 watts validates the theory that electrical thermal noise (Johnson Nouse) can be rectified and aggregated.

If replication of this test is desired, the chips may still be available as draw down obsolete stock from Virginia Diodes Inc. www.virginiadiodes.com. I have lost contact with the lab that adapted and tested the chip. The C60 / N type InSb version of the chip should perform much better.

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Company News

Cyclone Magnet Engines

<http://cyclone.com/>



All-permanent-magnet engine by U.S. company with R&D lab in Australia. October 2003 TV footage shows demo prototype in action. Company claims to be building a prototype that can be fitted to an automobile.

The Project

Recent developments in the manufacture of magnets has opened this exciting new arena for technological advancement.

Cyclone Magnetic Engines (CME) is the concept of using permanent magnets in a configuration that supplies mechanical power on demand. To offer an alternative to the ubiquitous internal combustion engine that is commercially viable, the technology must imitate the manner and principles that the internal combustion engines operate under. That is to, accelerate, decelerate, maintain a required revolutions per minute while responding to an increase or decrease in load and to have the ability to be operated by humans in a fool proof fashion.

CME believes that it is able to meet this criteria by concentrating development on the control and configuration of the applied magnets. The shape and composition of the magnets is the technical heart of the concept and one of our most guarded secrets.

The composition of the metals that the magnets are mounted to or applied with, is another area that gives accurate control.

Practically all of the research and development work carried out in the race to create a power source utilizing the attraction and repulsion of magnets has been derived from linear motion. Cyclone magnetic engines combine cyclic motion with the use of spinning metals that clone the magnetic pole, hence the name cyc-clone.

The Magnets

Magnets attract certain materials - such as iron, nickel, cobalt, certain steels and other alloys. They also exert an attractive or repulsive force on other magnets, have an effect on electrical conductors, and have an effect on electrically charged particles.

Based on these effects, magnets transform energy from one form to another, without any permanent loss of their own energy. Examples of magnet functions are;

- Mechanical to mechanical - such as attraction and repulsion
- Mechanical to electrical - such as generators and microphones
- Electrical to mechanical - such as motors, loudspeakers, charged particle deflection

There are four classes of modern commercialized magnets, each based on their material composition. Within each class is a family of grades with their own magnetic properties. These general classes are;

- Neodymium Iron Boron (NdFeB)
- Samarium Cobalt (SmCo)
- Ceramic (also known as Ferrite magnets)
- Alnico (Al Ni Co)

NdFeB and SmCo are collectively known as Rare Earth magnets because they are both composed of materials from the Rare Earth group of elements in the lanthanides section of

the Periodic Table of the Elements. NdFeB is the most recent commercial addition to the family of modern magnet materials. At room temperatures, NdFeB magnets exhibit the highest properties of all magnet materials. Samarium Cobalt is manufactured in two compositions: Sm₁Co₅ and Sm₂Co₁₇ - often referred to as the SmCo 1:5 or SmCo 2:17 types. 2:17 types, with higher H_{ci} values, offer greater inherent stability than the 1:5 types.

Sintered Rare Earth/Neodymium Magnets made from rare earth elements are the most powerful permanent magnetic materials commercially available. Made from either Neodymium Iron Boron(NdFeB) or Samarium Cobalt(SmCo), rare earth magnets boast magnetic energy values ranging from 18 MGOe to over 45 MGOe, depending on grade and material.

Basic problems of permanent magnet design revolve around estimating the distribution of magnetic flux in a magnetic circuit, which may include permanent magnets, air gaps, high permeability conduction elements, and electrical currents. Exact solutions of magnetic fields require complex analysis of many factors, although approximate solutions are possible based on certain simplifying assumptions. Obtaining an optimum magnet design often involves experience and tradeoffs.

The basis of magnet design is the B-H curve, or hysteresis loop, which characterizes each magnet material. This curve describes the cycling of a magnet in a closed circuit as it is brought to saturation, demagnetized, saturated in the opposite direction, and then demagnetized again under the influence of an external magnetic field. The second quadrant of the B-H curve, commonly referred to as the "Demagnetization Curve", describes the conditions under which permanent magnets are used in practice. A permanent magnet will have a unique, static operating point if air-gap dimensions are fixed and if any adjacent fields are held constant. Otherwise, the operating point will move about the demagnetization curve, the manner of which must be accounted for in the design of the device.

The ability of a permanent magnet to support an external magnetic field results from small

magnetic domains "locked" in by crystal anisotropy within magnet material. Once established by initial magnetization, these positions are held until acted upon by forces exceeding those that lock the domains. The energy required to disturb the magnetic field produced by a magnet varies for each type of material. Permanent magnets can be produced with extremely high coercive forces (H_c) that will maintain domain alignment in the presence of high external magnetic fields. Stability can be described as the repeated magnetic performance of a material under specific conditions over the life of the magnet.

The effect of time on modern magnets is minimal. Studies have shown that permanent magnets will see changes immediately after magnetization. These changes, known as "magnetic creep", occur as less stable domains are affected by fluctuations in thermal or magnetic energy, even in a thermally stable environment. This variation is reduced as the number of unstable domains decreases. Rare Earth magnets are not as likely to experience this effect because of their extremely high coercivities. Long-term time versus flux studies have shown that a newly magnetized magnet will lose a minor percent of its flux as a function of age. Over 100,000 hours, these losses are in the range of essentially zero for Samarium Cobalt materials to less than 3% for Alnico 5 materials at low permeance coefficients.

If a permanent magnet is stored away from power lines, other magnets, high temperatures, and other factors that adversely affect the magnet, it will retain its magnetism essentially forever. Shock and vibration do not affect modern magnet materials, unless sufficient to physically damage the material.

The Mechanical Application

The internal combustion engine produces power through the mechanical advantage of a reciprocating crankshaft. These engines are configured as either two stroke or four stroke. In a two stroke engine, there is a power stroke for every revolution, however, these engines have proven to be uneconomical in the modern environment. A four stroke engine has a power

stroke for every two revolutions. Both engines use a scalene triangle with two fixed sides to convert the power stroke into usable rotating mechanical power. The concept behind CME is to replace the liquid fuel power stroke of two revolutions with a load line (permeance coefficient, Pc) power pulse in four to eight deliveries per revolution depending on the size and power requirement.

This will equate to four power strokes per revolution in a four cycle configuration eliminating the wasted energy of one and a half rotations of the four stroke engine. Further, the power consuming components of the reciprocating engine such as the camshaft, valve train, oil pump, water pump, fan, and fuel pump in diesel engines will further advantage the CME as they will not be required.

When arrays of magnets are assembled, especially when the magnets must be placed in repelling positions, it is very important to consider safety issues. Modern magnet materials such as the Rare Earth types are extremely powerful, and when in repulsion they can behave as projectiles if adhesives were to break down. CME has identified several potential methods of mechanical retention.

CME believes now is the time to forge forward and consolidate it's technology into commercial reality. With the advent of hybrid powered vehicles at the cutting edge and the ever increasing demand on environmental management, the need for alternative power systems has never been greater.



See the Engine Running

You can view the video clips (http://www.cyclclone.com/videos/cycc_20031125-215Kbps.wmv) over a broadband connection (1.8MB) and (http://www.cyclclone.com/videos/cycc_20031125-56Kbps.wmv) over a dial up connection (918KB). Requires Windows Media Player 7 or greater.

Founder and Inventor



Micheal Peter Nugent (mnugent@cyclclone.com) is the Chief Executive Officer of Cyclclone Magnetic Engines. He is highly regarded as one of the top engine builders of today. Being a member of the Australian Corporate Lawyers Association and Australian Institute of Company Directors, Mr Nugent brings more than 25 years experience in engine technology. Mr Nugent will manage the Technical Development Centre for Cyclclone Magnetic Engines and carry out the assembly and further development of the new engines including the fitment of an engine to a vehicle for testing in a long distance drive in the near future.

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