New Possibilities of Vortex Electric Power Devices

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The earlier published article [1] was devoted to the explanation of the excess energy output at the rotation of flow medium in vortex tube (VT). The researches on VT demonstrated by the real examples that the excess energy output is a real fact, which is determined by natural physical processes. These processes take place in the fluid at its vortex (rotational) motion in the closed volume by means of phase transformations (skips) of the fluid state. However, the practice shows that for obtaining of patents and benefits for the real vortex devices, which are made for heat generation, it is necessary to write a little about their real technical characteristics, though technical and constructive possibilities of vortex devices can be much better. Temperature of water of these devices could not be higher than 120°C, and value of fluid pressure is confined within 5…6 kg/cm^2. Circulation pumps of pressure over 6 kg/cm^2 are used to increase thermal power output of vortex heat generators (VHG). It causes the discredit of VHG since at such a method their generative possibilities reduces to 100% value and less! We set a problem to discover the ways and engineering solutions for the essential increase of the coefficient of VHG energy conversion to not less than 200% value.

Our experience in development and exploitation of deep-sea physical devices has given some engineering solutions in this way. Actually, we have the opportunity to use the generally applicable circulation pumps, which have pressure not more than 4.0 kg/sm^2. At the same time we can raise the temperature of the heat carrier to 300°C and higher! and the pressure can be increased to 1000kg/sm^2! Such fluid parameters allow to use this fluid as a heat carrier in powerful hot-water generators of steam engines, turbines etc. By the way, this method allows to make the value of temperature of water enough to supply its PYROLESIS! The main point of the method is the following: all the closed system of water-filled VHG works at pressure with the value under 1000kg/sm^2. It is provided by means of the special device, the so-called automatic pneumohydraulic block (APHB). This lets to raise the temperature of working fluid to 1000°C with no change in its aggregative state. The practical functional scheme of such a device is shown in Fig.1.

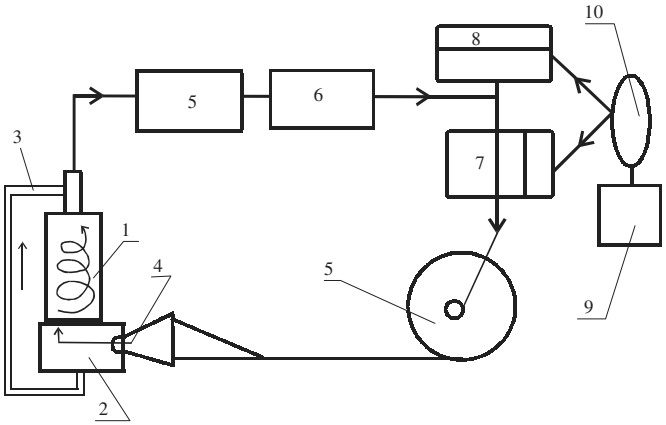

Fig. 1

1 – vortex tube; 2 – entry vortex chamber; 3 – by-pass;
4 – upstream end; 5 – circulation pump; 6 – heat-exchangers;
7 – APHB; 8 – volume of fluid leakage compensation;
9 - compressed-air flask; 10 - gas pressure regulator

The device works in the following way. The whole device is filled with working fluid without entrapped gas. At the operation of the circulation pump (5), fluid through the upstream end (4), placing in the entry vortex chamber (2), swirls, accelerates and gets into the vortex tube (1), where its "energy saturation" is realized. Then heated fluid gets into the heat-exchangers (6) for heating or for other purposes. After passing through the heat-exchangers, fluid gets into the pneumohydraulic device (7), where there is kept up the proper level of fluid pressure in the whole system. To prevent the system breakdown at the accidental fluid leakage, there is a device (8), which compensates such leakages. Compressed-air flask (9), with the volume under 1000kg/cm^2, and gas pressure regulator (10) keep up the selected level of the pressure in the system. The use of blocks (7,8,9,10) excludes evaporation in the system and prevents the breakdown of the circulation pump (5).

This VHG scheme allows to double the effectiveness of YUSMAR devices [2] only at the expense of rise in working fluid temperature in 2…3 times.

Observation of any fluid swirls and film documents of windspouts arrive to conclusion that all vortex structures are rotation bodies, created by the lines of the second order: $Y=aX^2$. In other words, as a result of the rotation in the swirl, air or fluid mass gets the acceleration of the second order. Taking into account the aforesaid, it is evident that in order to form the classical swirl in the VT, the very VT should be a tubular body of rotation. This body is created by the curve (see below Fig.2).

In YUSMAR and similar devices the vortex fluid motion take place in straight cylinder and 1/3 of this area is used for fluid deceleration that causes vortex flew

disruption. This results in the impossibility to increase additional heat in the straight tube in more than 1.54 times. It is caused by the fact that the main vortex formation takes place only in the vortex chamber and the flows separation does in the tube itself. Then, this vortex formation is right away disrupted by different plate brakes! It suggests itself that output part of VT should be made in the spiral form, expanding at the flow passage.

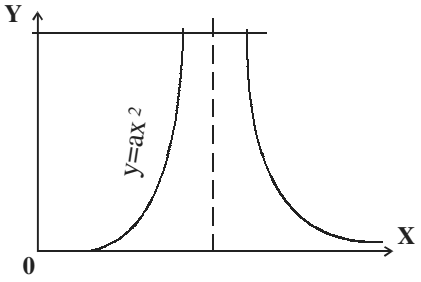

Fig. 2
Generatrix of the wall of vortex tube

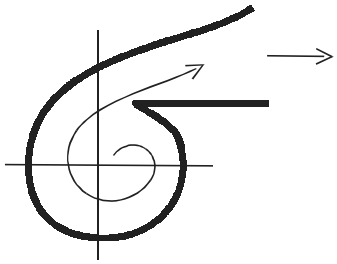

Fig. 3
Upper part of the tube

Such section, made on the outlet of the vortex tube, helps to slow down the flow avoiding its disruption, since axial-cold flow, placed along the tube axis, should stay intact. Two of such engineering solutions allow raising the level of the additional VHG energy up to 180…200%.

YSMAR devices are designed for one tube with the assigned heat output. However, if to take into consideration and to use the aforesaid conclusions, then we can raise energy conversion coefficient (ECC) above 200% at the series connection of two and more VT. The scheme of such a device is shown in Fig. 4.

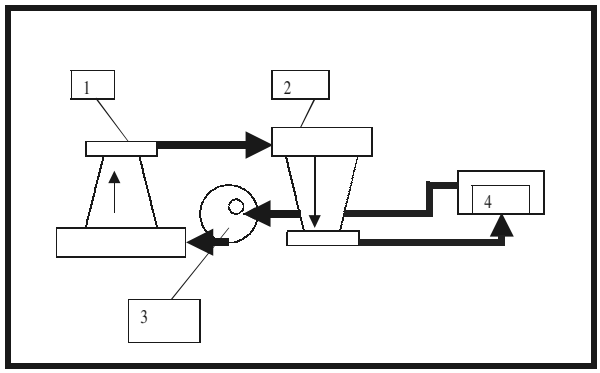

Fig. 4

Where: 1 – the first VT; 2 – the second VT; 3 – circulation pump; 4 – heat exchanger

According to Fig.4, the total energy output of the presented device is:

$$Q=K^2$$

Where: *Q* is the total output of the device; *K* is energy conversion coefficient of one VT; 2 – quantity of serially connected VT; *P* – the assigned power of the circulation pump.

In our earlier article [1], concerning VT application, we supposed that there is a straight transformation of vortex motion of ionized fluid into electric current. Under studying of many articles, devoted to the methods of water ionization, we discovered a significant one. It demonstrates that at the determined temperature, pure water increases its ionization capacity up to 3 orders without changing in the aggregative state [3]. The diagram in Fig.5 shows such dependence.

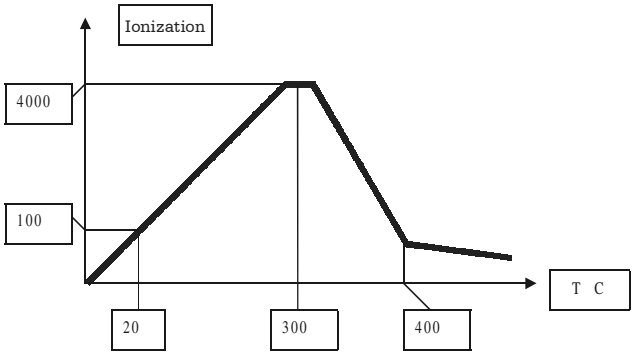

Fig.5
Diagram of the dependence of pure water ionization from temperature

The diagram demonstrates that water at 300°C temperature increase the quantity of ions in 4000 times as compared to 0°C and in 40 times as compared to 20°C. If to take into consideration that first experiments on VHG modernization help us to find the ways of fluid heating up to the practically any temperature without changing of its phase state, then on using the dependences (see Fig.5) it seems possible to create vortex fluid electric generators of the forward transformation. The aforesaid pneumohydraulic block, which is used for VHG functioning, allows to keep up water temperature at 300°C and pressure at about 90kg/cm^2 without threat of water evaporation! Presence of any rotation of fluid medium always causes appearance of two vortex flows. **These flows always move and rotate in opposite directions and if we do not put obstacles for their motion then they transform into each other and can exist without energy supply for an indefinite period of time.**

The presented VT form (see Fig.6) provides the producing of two fluid flows in the tube. These flows do not influence to each other and there is only their reciprocal overflow without disruption of the flows in the central part of VT. The tube presents a tubular body of rotation, which is created by hyperbola. There is positive angular acceleration of fluid in the lower part

of the tube; maximum speed of rotation of the axial and peripheral flows is in the middle part and negative angular acceleration, i.e. deceleration and transfer of kinetic energy into heat energy, is in the upper part of VT.

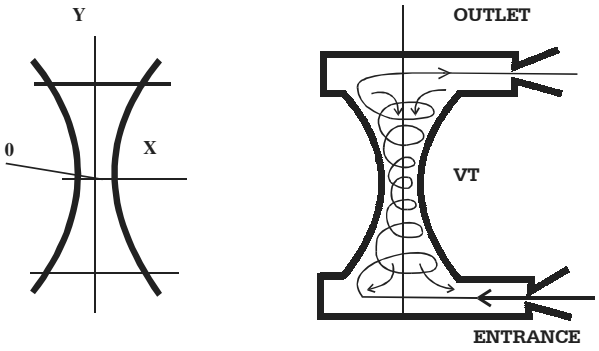

Fig.6

The maximum heating of fluid and its polarization is in the point Y=0. The polarization potential in the point can reach 10.000 V at 5m/sec flow speed for 10 cm diameter in the point. The cold flow, which comes along VT axis, is opposite to the peripheral hot flow. These flows close into one system in lower and upper chambers of VT. Thus, the presented VT classically modeled "rolling" and "unrolling" of water area.

There are no single vortexes in nature. Two vortexes, rotating in opposite directions, always appear while fluid mediums rotation! Science is not still able to describe energy overflows from one vortex center to the center of another one by means of mathematics. However we believe that this moment is close. There are maximum energy transformations of rotating water in the point Y=0.

The potential of the inner flow is equal to the outer flow by its value but is opposite by its sign. Potential difference is maximum in the point Y=0, in which removal of electric charges is the most effective.

It is appropriate mention here the name of Romanian engineer and researcher Henry Koanda, who in 20th of the last century discovered the so-called "Koanda effect" (attachment of fluid jet to the surface of usual kettle at pouring of it out the cups). Basing on this effect he suggested to make new type of aircrafts, which could have advanced bearing capacity and maneuverability. Unfortunately, money and conservatism of aircraft-industrialists did not allow realization of these engineering solutions.

At the same time, Koanda charged his disciple Patrick Flanagan with the job to research all **water properties**. The result was amazing! It was turned out that water actually has infinitely many phase states and when it is moving, then it can trap energy from the environment by some way. The publications on the point appeared in our press in the early eighties, late nineties of the last century. Most likely, they had become the basis of the invention, made by Potapov, i.e. vortex tubes for water!

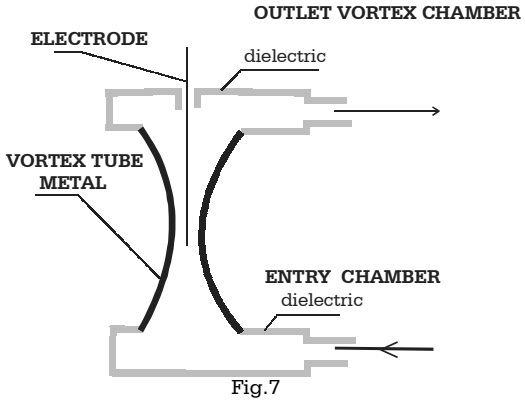

Fig.7
Scheme of vortex electric generator

In the presented scheme of electric generator the entry and outlet vortex chambers are made of dielectric material in the spiral form. This material certainly should withstand not less then 300°C of fluid temperature and about 100kg/sm^2 of pressure. Fluoroplastic or ceramic can be used as such a material.

From aforesaid it seems to be possible to submit the new scheme of electric generator for readers' consideration (see Fig.8).

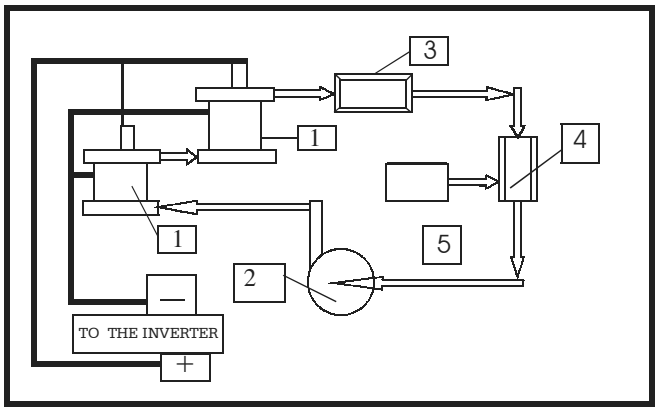

Fig.8
Generalized scheme of vortex electric generator
1 – vortex tubes; 2 – circulation pump; 3 – heat exchanger; 4 – automatic pneumohydraulic block; 5 - compressed-air flask

Actually we could finish the article if it were no disputes about excess energy, which is released at vortex motion of fluid in tubes. Having used a simple experiment, which any inquisitive person can repeat, we found the positive solution (see the scheme of the experiment in Fig. 9).

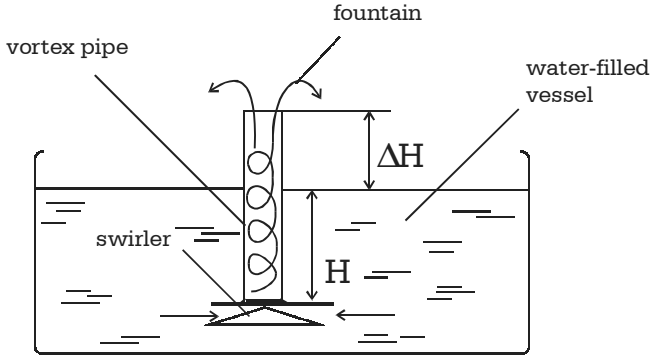

Fig.9
Demonstration of energy increase of fluid, rotating in vortex tube

A pipe with not less than 60 cm length and about 1-inch diameter is placed in a reservoir with not less than 50 cm depth. The lower part of the pipe is formed as an arm circular generator with about 15...17cm diameter. The gap width is about 2 cm. If we place the pipe with closed top end, which then will be open, into the reservoir, then water is splashed out above 20 cm of the reservoir level. Thus at the least 20% energy increase of energy mgH is observed.

By the way, we suggest orthodoxies of physics and other who have doubts to make one more simple experiment. Try to boil water in a can. When water starts to boil, swirl it with a spoon to the right or to the left. Then you will suddenly discover that all water surface is calm and only in the center of the can there is a water-steam mixture, which is about 20% higher than the level of water surface. You will also see that water is absolutely calm at walls of the can. This experiment can be reproduced anytime and anywhere, even in space, since it is a demonstration of **vortex** fluid motion and its actual influence on everything, which is around!

All presented engineering solutions are practically reproducible in any laboratory. The authors of the article would welcome the opportunity to co-operate with science and industry representatives for realization of the ideas in real serial production devices.

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Investigation of Electric Energy Transmission Processes in non-Metallic Conducting Channels

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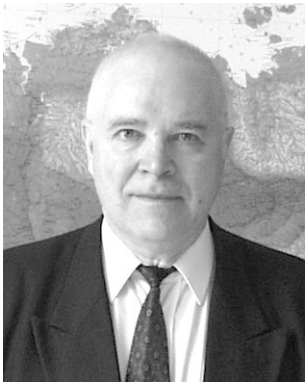

D.S. Strebkov

(Editor's notes by Alexander V. Frolov)

It has been found that at low frequency (1-25 kHz and higher) electric power can be transmitted with low losses from generator to receiver along single channel made of non-metallic conductive media such as water in plastic tube carbon thread, layer of damp soil, ITO films on glass substrate, laser and electronic beams. Transmitted power, as well as for traditional three phase lines, is limited by natural power of the transmission line and line capacity may reach at high voltage and pulse and operation modes the value 10^9 Wtt.

Introduction

The well-known methods of electric power transmission are based on transmission of active energy by means of conductivity currents in closed circuit. Electromagnetic energy spreads along power transmission lines (PTL) as progressing waves of electromagnetic field or field of charge [1]. Line wires made of aluminum or copper are conductive (guide) channels. Electromagnetic energy stream moves along these channels from generator to energy receiver and backwards to the generator. Maximum transmission possibility of 3-phase PTLs is limited by losses on the line resistance, by peak voltage (which is determined by electric strength of the insulation) and by electromagnetic stability of the line.

The modern approach to provide the electromagnetic stability consists in rigid regulation of line parameters by means of high-speed shunt reactor and consequence capacitive compensation for the purpose to except changes of electromagnetic power flows and to suppress resonant properties of a line [2].

In Tesla works [3] and in the researches of Russian scientists [4] a method of active power transfer was offered. This method supposes to transfer active power by means of electromagnetic capacitive current assisting with resonant properties of a single-wire line (SWL), made of a metal conductor. The purpose of the present work is a research of an opportunity to use non-metal conducting mediums for transmission of electric energy.